

Factors Influencing Foreign Direct Investment in Lesser Developed Countries

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I. INTRODUCTION

Net private capital flows to developing countries have dramatically increased in the past 15 years with much of the investment coming in the form of long-term, foreign direct investment (FDI). Because of the unique characteristics of this type of growth-enhancing investment, many developing countries desire to attract and retain FDI. As a result, lesser-developed countries (LDCs) have an incentive to strengthen areas and aspects of their economy or government that are heavily scrutinized by firms that are considering a possible long-term investment.

This study intends to measure the magnitude and the direction of suspected determinants that heavily influence a firm's decision to invest in FDI in an LDC. By utilizing the World Bank's World Development Data from 1997 in an OLS regression model, this study demonstrates the nature of key determinants of FDI, thus providing LDCs with the necessary information to make policy changes in order to maximize FDI. The remainder of this paper will further examine why firms decide to invest in an LDC. Section II offers pertinent background information while Section III outlines the research design. Section IV examines the results of the empirical model while Section V concludes the paper and offers policy implications.

II. BACKGROUND

The past 20 years have been both an exciting and frustrating age for lesser-developed countries (LDCs). In 1996, net private capital flows to LDCs had grown nearly 600% since 1990, reaching a total of \$240 billion (World Bank, 1997). Investors, who look for increased returns and aim to diversify risk, have fueled the investment interest in developing countries. Although investments in the economies of LDCs have increased, much of

this capital (namely portfolio capital and bank and trade related lending) has a high degree of volatility and is subject to massive inflows or outflows resulting from speculative attacks.

These types of investments, which are highly liquid, are easily moved from one state to another in order to maximize profits and diversify investment packages. Since these forms of investment are highly volatile and liquid, they are also subject to investor "herding" behavior in which the reaction of a small group of investors can trigger a race to pull out investment by an even greater number of investors (Boyd, 1996). Even though the choice of an investor to reallocate his money may be completely speculative and unfounded by underlying economic principles, this reallocation is a phenomenon that has devastated some LDCs. If large reversals in capital flows occur, then the LDC is often left in a state of economic chaos, depending on how much the economy relies on the growth of financial instruments in these markets.

At first glance, the increase in net private capital flows seems entirely positive; however, it is largely up to the government to effectively deal with volatile "boom or bust" periods. Subject to large reversals in net private capital flows, many economies of LDCs have been severely crippled (See Table 1). Mexico (1981-83, 1993--95) Turkey (1993-94), Argentina (1982-1983, 1993-94), and Malaysia (1993-94) are just a few examples in which large reversals in private capital flows have led to economic hardship (World Bank 1997). In addition, Malaysia, along with other Asian Tigers, experienced another reversal during the recent Asian Crisis. Not only are large reversals negative, but the level of dependence on these types of foreign investment for certain LDCs is also problematic. When an LDC depends on this type of investment and centers its economy on expected growth in these

investment areas, reversals occur and economic and social turmoil results. In short, the governments of LDCs have to be extremely careful when structuring an economy around suspected inflows of net private capital because it is just as likely that a large reversal will occur as well.

Although it appears that a government with emerging markets would have a difficult time managing an economy that are a result of these volatile types of investment, not all types of investments react in such a manner. Other types of private capital are easier for the government to manage, provide more stable growth, are less volatile, and are less apt to suffer from herding and speculative attacks. Foreign direct investment (FDI) is one such investment. As a form of long-term investment that flows from large, multinational corporations (MNCs) to LDCs, FDI is measured as a combination of reinvested earnings and equity and intercompany lending and flows (Billet, 1993). In short, FDI is the investment in domestic structures, equipment, organizations, and physical assets of an LDC, not including foreign investment in stock markets (econterms.com, 1999). In addition, FDI "is thought to be more useful to a country than investment in the equity of its companies because equity investments are potentially 'hot money' which can leave at the first sign of trouble, whereas FDI is durable and generally useful when things go well or badly" (econterms.com, 1999). Also, since FDI is usually in the form of a factory or some other fixed object, it is very illiquid and thus is a long-term investment in an LDC. Since the MNC that uses FDI has a larger stake in the

LDC, the MNC is less apt to pull out of the country during speculative periods. This is one reason why FDI is so important to a country.

Another reason why FDI is so important to an LDC is that it is a unique, safe type of investment that can raise the growth of an LDC. According to the World Bank, "There is empirical evidence to suggest that a dollar of FDI raises the sum of domestic and foreign investment by more than a dollar; thus FDI compliments rather than substitutes for domestic investment" (World Bank, 1997). In addition, especially in LDCs, FDI has been shown

to be more efficient than domestic investment (World Bank, 1997). Not only is FDI a more stable type of investment for an LDC, it is also a very efficient, worthwhile type of investment to attract.

Not only is FDI a more stable, productive, long-term type of investment whose positive implications to the economy of an LDC are significant, FDI has also become an increasingly relevant form of investment over the past decade. As a result, the importance of FDI has become increasingly important for LDCs compared to other

forms of foreign investment. For example, FDI accounted for only about 20% of net private capital flows to LDCs in 1980-82, while in 1995-96 FDI accounted for approximately 50% of incoming net private capital. In addition, more LDCs are receiving more of the world's FDI funding. For example, developing countries' share of global FDI in 1990 was only 15%. However, now it is close to 50%. Since more money is being invested in LDCs and a greater percentage of this investment is in the form of FDI, it is obvious that the study of FDI is very

Table 1: Major Reversals of Private Capital Flows

Country	Billions of Dollars	Reversal as a % of GDP
Mexico, 1981-83	29	12
Mexico, 1993-95	22	6
Turkey, 1993-94	18	10
Argentina, 1982-83	17	20
Argentina, 1993-94	10	4
Malaysia, 1993-94	7	10
Venezuela, 1992-94	6	9
Venezuela, 1988-89	3	5
Chile, 1990-91	2.5	8
Chile, 1981-83	2.5	7

Source: IMF, *International Financial Statistics* data base; World Bank data.

important from the perspective of the LDC (World Bank, 1997).

FDI has become a more important part of the economic picture of LDCs as LDCs find it desirable to attract FDI. However, can LDCs take an active role in attracting FDI? The answer is mixed. Many times, countries (industrialized or not) have to accept world market trends (i.e. world interest rates, oil prices, global recession, etc.) and strategically react to them. On the other hand, countries can be active players, somewhat controlling their own destination. LDCs, for example, can attract FDI by controlling certain economic and political variables, thus making their country a more attractive investment than other countries. Although LDCs are partially market takers, reacting to global trends, they also can create and provide a suitable environment for growth by making intelligent decisions related to economic policy. In short, market trends and the well being of industrialized nations "push" capital to LDCs, but LDCs can also create an environment that attracts investment. By publicizing their worthiness of investment, LDCs can "pull" investment, namely FDI, into their country (Calvo, 1993; Fernandez-Arias, 1994; Cheenan, 1993). Since the LDC cannot alter global trends or the economic welfare of the industrialized nations (or the "push" factors), it can only focus on strengthening certain sectors or aspects of its own economy (concentrating on "pull" factors).

There are numerous "pull" factors that can influence inflows of FDI to LDCs. Because FDI is a long term, often-costly investment for an MNC, the multinational firm usually considers numerous economic and state-specific criteria when weighing investment options. The following factors play a large role in the MNC's decision regarding which country to invest in: past and present economic stability, current economic welfare, current economic capacity, level of human capital, wages, and technological capacity.

Present economic indicators play a role in an MNC's decision to invest in an LDC. Current economic performance represents the current governmental regime's ability to handle the state's economy as well as other societal factors. Investors will seek out countries that have had recent eco-

nomical success, hoping that the trend will carry on in the long-run.

Along with the current state of the economy, the past economic stability of a nation is obviously an important factor. Investors will have more confidence that a nation that has done well in the past will also be likely to do well in the future. This "adaptive expectations" model of FDI flows simply states that if an economy has done well in the past, then investors should have more confidence that it will have economic success in the future as well.

In addition to macroeconomic stability, the consistency of exchange rates is also important. The foreign investment of an MNC many times is used to supplement the firm in the host country. As a result, consistent exchange rates are necessary for an MNC to repatriate fractions of its FDI profit to the home country. As a result, predictable exchange rates are a plus for the investing MNC.

Lastly, the human capital of an LDC is an important factor for an MNC when considering to invest in an LDC. Obviously, when investing for the long term in another country, an MNC will most likely have to utilize the labor in the host country. As a result, the MNC seeks a large, efficient, educated population to harbor its investment. In turn, the more educated a population is, the more likely its state will attract FDI.

It is important to know not only what factors to concentrate on in order to attract FDI from MNCs, but also to determine the relative importance of these factors. This study provides LDCs with that knowledge. In addition, because LDCs have limited resources, it is important to know what factors should be more of a priority compared to others. If variable X is ten times more important in attracting FDI than variable Y, then resources aimed at improving variable X will be more cost-efficient for the nation in terms of attracting FDI. Poorer countries will know what policies to concentrate on in order to best attract FDI. Focusing on the factors that the government of an LDC would have control over, this study provides LDCs with the knowledge concerning the direction and the importance of major economic and societal factors that influence FDI.

III. RESEARCH DESIGN

A. Data and Case Selection

The World Development Indicator Report serves as the major source of data in this study. While it provides economic, social, and political statistics on numerous subjects for every country, it also groups countries by economic performance. This study recognizes LDCs as countries that fall into the categories "low-income," "middle-income," and "upper-middle income" nations of the 1997 World Development Indicators. There were 157 countries with these characteristics, and all of these countries are classified and utilized as LDCs in this study. However, complete data for each variable was difficult to come by using this data set, a problem that is further explained later in the study.

B. Dependent Variable

The dependent variable in this study is level of FDI. However, there are numerous ways that FDI can be measured depending on the purpose of the study. In this study, it is beneficial to measure FDI as a percentage of GDP. As it was suggested before, FDI is a very efficient and desirable form of investment in many LDCs and may positively contribute to other areas of the economy as well. Assuming that FDI is desired by LDCs and exhibits the aforementioned positive economic characteristics, it is also safe to assume that an LDC would want FDI to play a large role in its economy. It is for this reason that FDI is measured as a percentage of GDP. FDI is essentially measured as the role FDI plays in the economy of an LDC. If an LDC is a good long-term investment for an MNC, it will have a large FDI to GDP ratio. However, if an LDC is a bad investment, FDI will play a lesser role in the economy, and thus a smaller FDI to GDP ratio should exist.

C. Independent Variables and Hypotheses

Based on the information above, ten important factors emerge as being strong influences on FDI in LDCs: GDP average growth from 1988-1997, GDP of 1997, GDP growth variability from 1988-1997, exchange rate variability from 1988-1997, population in 1997, percent of urban population of 1997, illiteracy rate of 1997, number of technicians per million people in 1995, average in-

flation from 1988-1997, and unemployment in 1997.

GDP average growth and average inflation from 1988-1997 serves to measure the economic performance and consistency of an LDC over the long run. It also measures the government's ability to successfully manage the macroeconomic state of a nation. If a country has consistently shown the propensity for growth, then it should attract high levels of FDI. However, if the past growth of an LDC has been sluggish, it is likely that future growth will be the same. As a result, the expected relationship between average past economic growth and FDI should be positive. Also, if a nation's government is competent, it should be able to keep inflation at a minimum. A negative relationship should exist between the average inflation from 1988-1997 and FDI.

GDP and population of 1997 measure the current economic capacity of an LDC. The expected relationship between these variables is positive. The larger the GDP of a nation, the more diverse its economy should be. Also, with a more populated state, an LDC has a greater labor pool to choose from. In addition, it also provides a larger market for the MNC to sell the goods it produces in the host country.

Current unemployment should also be considered. This serves to measure the current economic state of the economy, as well as symbolizing the capacity of the current government. The expected relationship between FDI and unemployment is negative.

The percent of urban population should also play a role in a country's FDI. For example, if much of an LDC's population was in a rural area, it is unlikely that large quantities of labor could be pooled in order to operate a factory or large-scale business. In addition, rural areas generally do not contain the necessary infrastructure to accommodate the needs of an MNC. For these reasons, the relationship between FDI and percent urban population should be positive.

GDP growth variability from 1988-1997 and exchange rate variability from 1988-1997 serve to measure the stability of a nation's economy. While other previous variables measure economic perfor-

mance and capacity, these variables measure a nation's economic consistency. For example, an MNC needs to be able to predict the future economic conditions of a nation when considering investment opportunities. If an LDC's growth is sporadic, it may be a risky investment. In addition, many MNCs repatriate portions of their profits from FDI in LDCs, thus relying on a nation's exchange rate. If exchange rates are unpredictable, repatriation is made much more difficult. As a result, one would expect a negative relationship to exist between FDI and the economic stability variables (variability of growth and exchange rates).

While basic macroeconomic conditions should be considered, labor issues need to be inspected as well. A highly educated labor force with low wages is preferred by MNCs. Obviously, MNCs desire maximum intelligence and competency, factors that increase productivity and efficiency. The greater the illiteracy rate and the real average wage of a nation, the less FDI it should have.

Lastly, a trend from unspecialized FDI to highly technical types of FDI has begun in the past few years. The higher the percentage of technologically educated people in a nation, the more FDI it should have. In short, if MNCs that invest in FDI are turning toward more technical disciplines, then

they would desire a larger pool of technologically oriented people. Table 2 shows the variables used in the study, the basic economic principles that they capture, and their expected relationship with the dependent variable.

This study will begin by providing simple descriptive statistics and displaying the basic nature of the dependent variable and each independent variable. Then the nature of the combined effects of all independent variables will be inspected using the following OLS regression model:

$$\%FDI/GDP (97) = \text{Constant} + A1[\text{Average GDP Growth (88-97)}] + A2[\text{Average Inflation (88-97)}] + A3[\text{Population (97)}] + [A4\text{Percent Urban(97)}] + A5[\text{Unemployment(97)}] + A6[\text{GDP Standard Deviation (88-97)}] + A7[\text{Exchange Rate Standard Deviation(88-97)}] + A8[\text{Illiteracy Rate(97)}] + A9[\text{GDP(97)}] + A10[\text{Technicians per Million People(95)}]$$

It is important to note, however, that the above model in its entirety will not be used. In this study, different groupings of the above independent variables will be made in order to provide clearer and more useful results. In short, when conducting regression tests, different combinations of the above

Table 2: Independent Variables- Expected Relationship

Type of Measure	Variable Proxy	Expected Sign
Economic Performance-Past	Average Inflation, 1988-1997	Negative
Economic Performance-Past	Average GDP Growth, 1988-97	Positive
Economic Capacity-Current	Current GDP, 1997	Positive
Economic Capacity-Current	Current Population, 1997	Positive
Economic Capacity-Current	Unemployment, 1997	Negative
Economic Capacity-Current	% Urban Population, 1997	Positive
Economic Stability-Past	GDP Growth-Standard Deviation, 88-97	Negative
Economic Stability-Past	Exchange Rate Standard Deviation, 88-97	Negative
Human Capital-Current	Illiteracy Rate, 1997	Negative
Technology-Current	Number of Technicians per Million People	Positive

variables will be utilized.

IV. RESULTS

Before running final regression tests, it is important to inspect the basic nature of each independent variable with the dependent variable. A bivariate test is useful because it provides supporting evidence of the basic direction of each independent variable's effect on the dependent variable. As a result, the test minimizes the interactive effects that would appear in a regression test. Table 3 provides the basic descriptive statistics after running a bivariate test with each dependent variable.

As Table 3 shows, the descriptive statistics largely support the previous hypotheses that were offered earlier in the study. An overwhelming majority of the variables responded as predicted. Seven out of the ten variables have the correct sign and six out of the ten are significant at the .10 level. However, a few obstacles present themselves. Three of the variables did not have the sign that was expected (Average GDP 88-97, GDP Growth Standard Deviation 88-97 and Exchange Rate Standard Deviation 88-97). Although the bivariate testing is only a preliminary analysis to a more advanced statistical device (OLS regression), the numbers should

represent the basic directional relationship between the dependent and independent variables. If the trend continues after running numerous multiple regression tests, an attempt to explain the unexpected direction of these variables will be made.

Secondly, many of the variables are not statistically significant. Although this is distressing from a statistical perspective, it also provides an interesting preliminary finding. Perhaps the statistically significant independent variables play an explanatory role in explaining levels of FDI while the others do not. The following regression results in Tables 4, 5, and 6 provide a more complete depiction of the relationship between FDI and the other independent variables.

These three regression tests compare both the direction of influence and magnitude of influence of the independent variables on FDI. The problem of significance was not completely solved with regression analysis, but the directional problem has been slightly alleviated.

According to Table 3, illiteracy rate (97), average GDP growth (88-97), number of technicians per 1 million (95) and urban population (97) were all significant. After running additional regression tests, illiteracy rate remained highly sig-

Table 3: Bivariate Test Results: Two Way Correlation with FDI

Variable	Number of Cases	Coefficient	Significance	Expected Sign
Ave. GDP Growth, 88-97	110	-.081	.401	No
Current GDP, 1997	121	.029	.750	Yes
Current Population, 97	121	.009	.924	Yes
% Urban Population, 97	121	.187	.040	Yes
GDP Growth-Standard Deviation, 1988-97	110	.089	.354	No
Exchange Rate Standard Deviation, 1988-97	98	.031	.762	No
Unemployment 97	15	-.317	.250	Yes
Illiteracy Rate, 1997	87	-.518	.000	Yes
Number of technicians per 1 million people, 95	48	.267	.066	Yes
Average Inflation, 88-97	79	-.092	.420	Yes

nificant while other variables were not consistently significant.

As stated before, the magnitude of a variable's influence can be determined by this model. After comparing the coefficients within each of the regression tests, one clear trend is evident: the education of a country is an important factor in the attraction of MNC's FDI. Illiteracy of a nation, shown in Tables 4 and 6, consistently accounted for much

of the variance of FDI. Not only was the illiteracy variable consistently significant, but it also consistently accounted for much of the variance of the dependent variable. This is important because, when determining what areas to prioritize in order to attract FDI, LDCs should first choose to better educate their population. Because the illiteracy rate of an LDC accounts for much of the variance in levels of FDI, a policy that strengthens the education of

Table 4: Multivariate Results #1

Variable	Coefficient	Significance	Expected Sign
Ave. GDP Growth, 1988-97	.219	.038	Yes
Urban Population, 1997	.179	.159	Yes
Current GDP 1997	.001	.990	Yes
Exchange Rate Standard Deviation, 1988-97	-.136	.168	Yes
Illiteracy Rate, 1997	-.409	.001	Yes

Adjusted R²=.289 Dependent Variable=FDI Total Cases=77

Table 5: Multivariate Results #2

Variable	Coefficient	Significance	Expected Sign
Avg. GDP Growth 88-97	0.173	.457	Yes
Current population '97	0.049	.803	Yes
Exchange Rate Standard Deviation	-.115	.502	Yes
Number of Technicians per 1 Million People	.448	.038	Yes

Table 6: Multivariate Results #3 Adjusted R²=.068 Dependent Variable=FDI Total Cases=34

Table 6: Multivariate Results #3

Variable	Coefficient	Significance	Expected Sign
Current GDP '97	.086	.490	Yes
Percent Urban Population '97	.251	.096	Yes
GDP Growth Standard Deviation	-.144	.244	Yes
Illiteracy Rate 1997	-.319	.031	Yes
Average Inflation 88-97	-.081	.542	Yes

Adjusted R²=.223 Dependent Variable=FDI Total Cases=65

the LDC should be the highest priority.

In Table 5, the number of technicians in a state also played a large role in the MNC's attraction toward a particular LDC. While the LDCs educational attainment should be a high priority when attempting to lure FDI from MNCs, it is important that this education has a technical concentration. Because the level of FDI increases as the number of technicians increases in an LDC, it is important to incorporate technological disciplines into a government's educational programs.

Also, in Table 6, the percent of an LDC's urban population appears to be important when explaining the levels of FDI. This result seems to suggest that MNCs look for labor that is easy to assemble. Large amounts of people assembled in an urban area with a sufficient infrastructure seems important to an MNC when choosing an LDC to invest in.

Lastly, in Table 4, Average GDP growth from 88-97 was highly important and was significant at the .05 level. In the bivariate analysis, this variable moved in the unexpected direction. However, in the regression test, the variable moved in the expected direction. As a result, this study suggests that the past economic performance of an LDC is important when an MNC is choosing where to invest.

V. CONCLUSIONS AND POLICY IMPLICATIONS

The education of a nation, especially in technological disciplines, is important when attracting FDI. Apparently, FDI is moving from an unskilled type of labor to a more specialized, highly technical type of labor. Because of this trend, more highly technical firms look to produce abroad, an LDCs have to compensate for this trend by providing an educated populous in order to attract FDI. By concentrating on these two aspects first, LDCs will be best suited to attract FDI.

Besides education, the long-term economic performance of a country is also important. When looking for an LDC to invest in, past economic stability and performance seems to be a sufficient proxy for expected future performance and stability. LDCs should concentrate on maintaining long-run eco-

nomical stability when attempting to attract FDI. By producing long-run economic stability, a country's government signals to MNCs that it is capable of producing economic success because it has done so in the past.

Lastly, it is important for an LDC to have numerous large urban areas. This study suggests that MNCs are attracted to areas that contain large amounts of people. Also, these urban areas presumably have a sufficient infrastructure, an amenity that rural areas lack. When attempting to lure FDI, LDCs should attempt to urbanize the nation while providing a sufficient infrastructure.

The most important finding of this study is that the education of a country plays an important role in attracting FDI. While the urban population and past economic performance are important, the human capital of a nation is essential in attracting FDI. Education, especially in technical disciplines, provides the LDC's populous with the skills that are demanded by the MNC. LDCs that have highly limited resources should invest in the education of the nation first in order to increase their probability of attracting FDI.

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