

Effect of Macroeconomic Variables on Foreign Direct Investment in Pakistan

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Abstract

Foreign direct investment is essential for economic growth of a country. It acts as a catalyst for the economic development of a country. Keeping this in mind, the objective of this study is to determine the effect of macroeconomic variables such as interest rate, exchange rate, industrial development and trade openness on foreign direct investment in Pakistan. For this purpose, data has been taken for 34 years i.e. from 1980-2014. Results revealed that interest rate and exchange rate have significant negative effect on FDI while trade openness and industrial development has insignificant effect on FDI.

Keywords: *trade openness, industrial development, foreign direct investment.*

1. Introduction

Foreign direct investment has been acting as a catalyst for the economic growth around the world since past two decades. It is an essential part of international economic system and a major key to development (OECD, 2002). FDI is being sought by most, if not all, developing countries as a means of complementing the level of domestic investment, as well as to access foreign markets in order to increase employment opportunities and improve living standards of people.

FDI is defined by the United Nation World Investment report (1999) as “investment involving long term relationship reflecting interest and control in one economy”. The important feature in FDI definition is control and controlling interest. The control refers to the power of making decision while controlling interest refers to the benefit an investor can get from the investment and the consequences of the ownership. FDI refers to the investment in real physical assets. When the economic condition of a country changes, the inflow of foreign direct investment changes with it.

In recent decades, FDI by multinational companies has increased and developing

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countries have been able to attract an increase inflow of FDI. It can be safely proposed that FDI flows in developing countries has increased mainly through a continuing increase in Greenfield projects and for the developed countries it has been increased due to the growth of cross border M&As by foreign TNCs. Due to continued economic uncertainty and slow growth of financial markets, countries worldwide have continued to liberalize and promote foreign investment in order to support economic growth and development (WDR, 2011). In this regard, many researches have been conducted in the developed countries about the effect of different macroeconomic variables on FDI. However, there is not sufficient evidence when it comes to the developing countries around the globe. Accordingly, this study is focused on the relationship between macroeconomic variables and Foreign Direct Investment in Pakistan, which is a developing country and needs an increase in FDI inflows for its economic development.

2. Literature Review

2.1. Exchange Rate

There is no consensus about the relationship between FDI and exchange rate in both theoretical and empirical literature. The confusion found in theoretical work is reflected in empirical studies as well. One possible reason for lack of consensus in empirical work could be data constraint and specification problem (Phillips and Esfahani, 2008). Theories about the relationship between FDI and exchange rate emerged during 1970s and 1980s. Two of the most popular theories were presented by Froot and Stein (1991) and Blonigen (1997). Froot and Stein (1991) used an imperfect capital market approach and observed a systematic effect of exchange rate on FDI. They examined that for a firm, external sources of borrowing are more expensive than internal cost of capital due to imperfect capital market approach. As a consequence, when the host currency depreciates, it has a positive impact on inbound FDI as it increases the wealyj of foreigners. Similarly Blonigen (1997) also proposed that inbound FDI is increased by depreciation in host's currency. Later on empirical researches conducted by different authors such as Feliciano and Lipsey (2002) and Kiyota and Urata (2004) arrived at the same results.

2.2. Trade Openness

De Mello (1997, 1995, and 2000) examined that the significant connection between FDI and business is more powerful in trade-oriented financial systems. If the host country offers

economic freedom then not only FDI inflow increases, but the economy of the host country also develops (Bengoa & Sanchez-Robles, 2003). Accordingly, Demirhan and Masca (2008) found a significantly positive relationship between trade openness and FDI inflows in a country. They concluded that if a developing country offers trade openness then it can result in greater amounts of FDI inflows.

Wang (2010) discovered that inward FDI “exerted considerable influence on the overall China trade development.” Their result covered both the development of exports of household organizations and international affiliates. They also discovered that the effect of inward FDI on China exports was more powerful for labor-intensive products than for capital-intensive products. FDI also promotes exports by shifting new products and technological innovation to new and profitable marketplaces (Kiran, 2011).

2.3. Industrial Development

Foreign direct investment is an integral part of international economic system and an effective catalyst to development. Over the time, developing countries have ended up in relying on FDI as a source of economic development, employment and eventually income growth. The studies conducted on the relationship between FDI and industrial development have concluded that given the appropriate policies of the host country, FDI can play an effective role in the enterprise development and competitive business environment (OECD, 2002). Moran (2005) critically evaluated case studies done on the relationship between FDI and development. He concluded that FDI plays an important role in the development of manufacturing, processing and agribusiness industries only if it occurs in an open setting, where competition is promoted. Similarly, Alfaro et.al (2006) proposed that local financial markets in a host country promotes the role of FDI in the economic growth and development of industries.

According to Markusen and Venables (1999), foreign direct investment may affect economy of the host country through different channels. One of these channels is product market competition, through which international firms may replace local firms. However, due to the role of FDI as a catalyst, the local firms become so strong that they weaken the position of international firms in the industry.

2.4. Interest Rate

Chingarande et.al (2012) and Singhanian & Gupta (2011) have examined that FDI and interest rate have a significant positive relationship i.e. when the interest rate increases, the FDI also increases. Similarly, Trevino, Daniels and Arbelaez (1996) observed that FDI and Interest rate have a positive and significant relationship with each other. Chakrabarti (2001) studied the economy of India and concluded that an increase in interest rate causes an increase in FDI.

However, Faroh and Shen (2015) studied the economy of Sierra Leone and concluded that higher interest rate does not play any role in attracting higher FDI.

2.5. Hypothesis

H₁= Industrial development has no impact on FDI.

H₂= Interest rate has no impact on FDI.

H₃= Trade openness has no impact on FDI.

H₄= Exchange rate has no impact on FDI.

3. Methodology

3.1. Data

Secondary data is used in this research. It is a time series data and has been taken for a period of 34 years from 1980 – 2014. The data was collected from World Bank and State Bank of Pakistan. For the measurement of the variables “Ratio Scale” was used and all the variables were taken in percentage.

3.2. Test and technique applied

In order to determine the relationship between macroeconomic variables and FDI, Ordinary Least Squares (OLS) econometric technique has been applied by using E-views. The assumptions of OLS have also been tested i.e. autocorrelation, heteroskedasticity and multicollinearity. For autocorrelation, Breusch-Godfrey Serial Correlation LM test has been applied. For checking heteroskedasticity, White test has been applied. Furthermore, for checking multicollinearity, Vector Inflation Test (VIF) has been applied.

3.2.1. OLS regression model

The model for the research is given as under:

$$FDI = \alpha + \beta_1 ID + \beta_2 I + \beta_3 TO + \beta_4 ER + \varepsilon$$

Where, FDI is the dependent variable measured as net inflows as a percentage of GDP, α represents the constant, β represents the coefficient of respective independent variables. Among the independent variables, ID stands for industrial development, I stands for interest rate, TO represents trade openness measured as the sum of real exports and imports divided by real GDP and ER represents exchange rate.

4. Data Analysis

Table 1: OLS Estimation Results

Variable	Coefficient	Std. Error	T-Statistic	Prob.
C	11.21347	6.474018	1.732073	0.0943
Industrial Development	-2.162451	1.412906	-1.530499	0.1371
Interest Rate	-0.069874	0.025869	-2.701026	0.0116
Trade Openness	1.478884	1.141091	1.296026	0.2055
Exchange Rate	-2.074306	0.552192	-3.756495	0.0008
AR (1)	0.511724	0.177926	2.876052	0.0076
R-squared	0.783778	Mean dependent var		-0.345942
Adjusted R-squared	0.745167	S.D. dependent var		0.784770
S.E. of regression	0.396160	Akaike info criterion		1.144786
Sum squared residual	4.394387	Schwarz criterion		1.414143
Log likelihood	-13.46136	Hannan-Quinn criter.		1.236644
F-statistic Prob (F-stat)	20.29935 0.000000	Durbin-Watson stat		1.893482

4.1 Interpretation of the results

The co-efficient of Industrial Development is -2.162451, which shows that Industrial Development has a negative impact over growth rate of FDI i.e. 1% change in Industrial Development will decrease the FDI growth rate by 2.16 %. The probability value of Industrial Development is 13.71, which shows that the variable of Industrial Development is not significant and it has no significant impact on foreign direct investment in Pakistan. For interest rate, the coefficient is negative, which indicates an inverse relationship between interest rate and FDI. It reveals that a 1% change in interest rate will decrease FDI by 6.98%. The value of probability is indicating a significant relationship between the variables. Furthermore, the coefficient for trade openness indicates a negative relationship with FDI. The probability value indicates the relationship between the two variables is insignificant. Furthermore, the coefficient of exchange rate indicates a negative relationship with FDI, which is significant as determined the probability value of 0.0008.

Additionally, the coefficient of determination R^2 is 78.3778% which means that the 78.3778% changes in the FDI are due to independent variables included in the study. The probability value for F-statistic is showing that the applied model is a good fit.

4.2. Residual Analysis

Table 2: Breusch-Godfrey Serial Correlation LM Test

F-statistic	0.434370	Prob. F(2,26)	0.6523
Obs*R-squared	1.099313	Prob. Chi-Square(2)	0.5771

The above table shows us the results for serial correlation test. Here the null-hypothesis is:

Ho: The residual has no serial correlation

The value of probability is indicating that the residual does not have the problem of serial correlation.

Table 3: Heteroskedasticity Test: White

F-statistic	0.613953	Prob. F(14,20)	0.8233
Obs*R-squared	10.52049	Prob. Chi-Square(14)	0.7232
Scaled explained SS	5.728480	Prob. Chi-Square(14)	0.9729

The above table shows us the results for test of Heteroskedasticity. Here the null-hypothesis is:

Ho: Residuals are Homoscedastic

The value of probability is indicating that the residual does not have the problem of Heteroskedasticity.

Table 4: Multicollinearity Test

Variables	Centered VIF
Industrial Development	1.329457
Interest Rate	1.178283
Trade Openness	1.044371
Exchange Rate	1.109974

As the VIF values of the variables is less than 10, so the variables have no issue of multicollinearity.

5. Findings and Conclusion

The study examines macroeconomic determinants of foreign direct investment in Pakistan. The objective of this study was to explore that whether there is a long-run relationship exists among FDI and macroeconomic determinants or not. As macroeconomic economic variables which are Trade openness, exchange rate, Industrial Development and Interest rate as

independent variable was taken for the period of 1980 – 2014 using E-view software and applying ordinary least square method to identify the significance or insignificance result of these variables. The study examines that there is significant and negative relationship of Interest rate and exchange rate with FDI. And the other two variables industrial development and Trade Openness has insignificant result which defines that both variables need more attention and favorable policies for long-run relationship to attract more FDI and foreign private investors.

The result is not fully satisfying the conditions because there are many other macroeconomic determinants which has been not taken in this study while they are also important. The result could be more satisfactory and explanatory if those variables also be taken to clarify the results and explain to the how to increase FDI in Pakistan.

Trade openness is a positive and significant variable for affecting FDI inflows in Pakistan, having economic significance on FDI. Infrastructure is statistically insignificant for Pakistan and has strong positive correlation with FDI. Real exchange rate is statistically insignificant at ten percent level for Pakistan. Pakistan if stabilizes their exchange rate for better view of foreigners to investment in Pakistan. When currency in a country decreasing the investors tries to avoid those countries because these areas are not profitable or not stabilize for long-term investment.

There are other determinants or variables like market size, central government expenditure, inflation, money supply, population, interest rate, gross fixed capital formation, political instability financial risk rating and other dummy variables which also could be use in studies so the policies and recommendations may made for higher foreign direct investment in Pakistan.

5.1. Implications

The results of this study support the view that FDI plays an important role in economic growth of a country. It has some implications for the policy making. The result shows that FDI has a negative relationship with exchange rate and Interest rate, which is very important for market participants. State Bank of Pakistan and other responsible institutions must make sure the

stability of exchange rate and government should pay attention in providing a peaceful economic environment to the investors that will encourage private investment and FDI.

The relevance of implementing open-trade policy is seen in the extent to which it causes net foreign capital inflows to the Pakistan's economy. This implies that in a globalized world, the mere implementation of open-trade policy is not a panacea for higher industrial performance unless it is able to attract foreign direct investment. There is a good opportunity in Pakistan for build industries and manufacturing sites, to establish trade openness could be a key for it. The studies found a positive impact of FDI on Trade openness but foreigners are frightened from bringing their technology and machinery to build and establish industries. Essentials for trade openness must give to build good industrial environment. Although reserves could be a good key to make exchange rate better and controlled.

5.2. Recommendations

Above the variables used as the determinants of FDI, there are certain macro-economic variables that are not taken in the analysis, like market size, central government expenditure, inflation, money supply, population, gross fixed capital formation, political instability financial risk rating and dummy variables etc.

The equation of econometric model has fewer variables to identify all the determinants and single econometric test is applied in the present study. While econometric model should be enlarged by using more macro-economic variables and more test should be apply to exemplify the results and make policy to gain higher foreign direct investment for the country in future. However the time period should also be increased and not only Pakistan but other Asian countries also should be included in the research studies for better results and to know the comparison of Pakistan with other Asian countries using as Panel Data.

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