

# Empirical Analysis of Macroeconomic Determinants on Foreign Direct Investment Inflows in Pakistan

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## Abstract

Foreign Direct Investment is a significant component for escalating economic growth of a country. Meanwhile, several domestic factors are held responsible for influencing the flow of foreign direct investments of a country. The purpose of this paper is to investigate the influence of macroeconomic variables on the inflow of foreign capital in Pakistan. Data for 30 years ranging from 1986 – 2015 has been taken for analysis. The data has been extracted from Statistical Bulletins of State Bank of Pakistan. Descriptive and Inferential Statistical analysis used as to evaluate the data. Ordinary Least Square Estimation Technique is employed to find out the significance of independent variables against the dependent variable. The study concludes that GDP, Inflation, Imports and Exchange Rate significantly influence the Foreign Direct Investment inflows in Pakistan.

**Keywords:** Foreign Direct Investment, Gross Domestic Product, Exchange rate, Inflation.

## 1. INTRODUCTION

Foreign Direct Investment is a crucial growth-enhancing channel for the developing countries. FDI is transfer of capital and the extension of a firm from its home country with lasting interest and control to a foreign country. FDI act as a catalyst for the developing economies. It has been subject to significance since last three decades. Developing countries face problematic macroeconomic issues and insufficient resources, hence hampering the way of economic enhancement. Foreign Direct Investment positively affect the real output. It is crucial for enlarging output in primary and services sector (Khan and Khan, 2011). Foreign Direct Investment has promoted the economic growth in Pakistan. However, business friendly policies are required to attract Foreign Investments (Falki, 2010).

Pakistan must rely on foreign capital and technology but to attract the foreign investments enduring and reliable macroeconomic environment is required. For the past two decades, Pakistan has been following liberal policies to attract foreign capital and technology. To encourage foreign investors 4Cs should be focused i-e cost, convenience, capability and concession. The government of Pakistan has focused only concession ignoring the other Cs. Other Cs should also be focused to gain investors' confidence (Khan, 1997). The policy formulation should be paid attention to maximize FDI influx (Khaliq and Noy, 2007).

The paper is organized in five sections. Section II consists of trends of FDI inflows and macroeconomic variables of Pakistan. Section III comprises of literature and theoretical review. Section IV contains methodology and modeling framework. Results and conclusion are represented in Section V and VI respectively.

### 1.1: Research Issue:

Pakistan is mainly a capital-deficient country, followed by scarce means of technology, magnifying fiscal deficit, shrinking foreign reserves, narrow tax base and prolonged balance of payment. The situation is hence boosting the gap between domestic saving and investment-creating hurdles for capital formation. FDI can be a significant weapon to deal with these major challenges and have the potential to bridge the gap between investment and domestic savings. Beside this, some macroeconomic factors are considered responsible to influence FDI inflows in a country these factors are Exchange rate, GDP, inflation, money supply and trade policies of the state.

### 1.2: Research Question:

Q. What is the impact of Macroeconomic variables on FDI inflows in Pakistan during 1986 to 2015?

### 1.3: Objective of Research:

The purpose of this paper is to investigate the impact of macroeconomic variables on Foreign Direct Investment

of Pakistan. To carry out this task the 30 years' time series data during 1986 to 2015 have been collected to explain the association between FDI inflows in Pakistan and some macroeconomic variables.

## 2.0. THEORETICAL LITERATURE REVIEW:

### 2.1: *Macro-Economic Theories of FDI:*

There are number of theories explaining the purpose and determinants of FDI. In this regard, **Capital Market Theory** is one of the oldest theories focusing the determining factors of foreign direct investment. The theory marked interest rates as the determinant of FDI. This theory further elaborates three positions being responsible for the attraction FDI to the less developed countries.

First, one is the undervalued exchange rate. The lower exchange rates allow lower cost of production in the host countries. Hence, this attracts the foreign investment in the host country. Secondly, the less developed countries lack properly managed securities market; therefore, these countries have long-term investments in the form of FDI rather than portfolio investment. Thirdly, due to lack of knowledge regarding securities, FDI is highly focused in these countries allowing control of assets in the host countries.

Moreover, **Gravity Model** is another important model explaining the push and pull factors of FDI. It states that the trade flow between two countries depends upon the size of their economies, their geographical distance and some trade considerations. In other words, the gravity model identified determinants of FDI in the form of market related factors, distance and endowment associated dynamics. The market related factors include Market volume, having GDP as an indicator, degree of production indicated by level of development and size of the host country indicated by population size. Distance related factors include the geographical distance between the trading economies. Endowment related factors are wages indicating labour cost, technology and general development indicated by skilled employees and GDP per capita.

Further, in the way of explaining the factors determining the FDI, the **Eclectic Paradigm of International Production** is having a considerable position. The theory was proposed by J.H. Dunning in 1976. It aimed at explaining the perspective of firms investing in comprehensive foreign countries. It is considered as a comprehensive theory. According to Dunning's theory, the investors consider three advantages while investing in foreign countries namely: Owner Specific Advantages (O), Location Specific Advantages (L) and Internalization Specific Advantages (I). The theory is also named as OLI paradigm. Owner Specific Advantages refer to the privileges, which a firm possesses while the competitors are lacking them. High technology, management skills and knowledge are the advantages, which are considered to compete in other countries market. Location Specific Advantages are based on the area of production. Good infrastructure, low cost inputs and trade liberalization are the advantages, which the firms consider before investing. Internalization is about the choice of mode of entry in a host country focusing efficient operation.

**Dynamic Macroeconomic FDI theory** states that FDI is a long- term function and time is crucial for it. Timing of investment depends upon the host country's macroeconomic environment at that time. Macroeconomic environment consists of GDP, real exchange rate, risk perception and the degree of openness. **Risk Aversion Theory** states that FDI increases as exchange rate volatility increases as higher volatility creates uncertainty. While Production Flexibility Approach considers increase in FDI due to exchange rate volatility as the firm can adjust one of their variable factors.

### 2.2: *Current Trend of FDI in Pakistan:*

In Pakistan, more than 80% of foreign investments are employed in manufacturing, financial, industrial, telecommunications and power sector. Automobiles, textile and chemical industries are mainly focused (Economic Survey). Studies suggest that macroeconomic indicators are responsible for attraction or repulsion of FDI. Exchange rate, GDP, inflation, money supply and trade policies are found significant for the foreign direct investment of a country. FDI inflows in Pakistan are subject to fluctuations for last two decades but since 2008, it has been continuously at a decline. For this, political, economic, law and order situations are considered responsible.

FDI growth in Pakistan became significant in 1990. The removal of controls on capital flows, remittances and ownership in 1988 helped the FDI to accelerate from US\$ 939 million (1996). In 1998, the foreign direct investment declined to US\$ 500 million. The decline was due to the freezing of foreign accounts, economic sanctions after nuclear tests, the controversy of Independent Power Products and the Asian crisis. To overcome this situation, New Investment policy 1997 and the Corrupt Business Practices Ordinance 1998 were implemented. In 2001, the situation slightly improved at US\$ 205 million from US\$142.1 million in 2000. In 2005 FDI increased to US\$1524 million, growing at rate of 21.47%. The FDI peaked during 2007-08 at US\$5409 million. FDI in Pakistan increased by 10-15% until 2007-08 and then a steady decline of 89% until 2012.

### 2.3: *Trend of Macroeconomic Variables in Pakistan:*

Pakistan's GDP has grown every year since recession of 1951. In 1980s, average real GDP growth rate in Pakistan

was 6.5% which fell to 4.6% in 1990s and slightly increased to 4.9% during 2000s. Fiscal deficit during 1980s was 6.8% of GDP, which increased to 7.3% in 1990s and declined to 4.5% in 2000s. Inflation remained 7.6% in 1980s while current account deficit on average was 2.8% of GDP. In 2000s Current account balance was surplus around 1.9% of GDP on average. The rising oil prices increased the import bill by 40%. Exports remained 18.4% of GDP. Trade gap was filled by increased remittances. Therefore, the current account balance remained surplus in 2001 and onwards. Inflation rate was below 4% in 2000-01 but had an upward trajectory in 2004-05 by climbing double digit. GDP growth rate in 2012 increased to 3.7% as compared to 3% in 2011. The oil import bill increased by \$3.8 billion and exports remained to \$24.4 billion. Inflation reduced to 10.8% as compared to 13.8% in 2011. Investment and saving decreased by 0.6% and 2.5% respectively. Industrial sector grew by 3.1%, service sector by 4.02% and agricultural sector by 3.13% in 2012.

### 3.0. EMPIRICAL LITERATURE REVIEW:

Several studies have taken place previously to explore different aspects of foreign direct investment. The several scholars have highlighted the significance on the topic determinants of FDI and impact of certain indicators on FDI but the effects of macroeconomic variables are still vague. The studies proved that FDI influence the economic growth of Pakistan and positively affect the employment level of the country.

Habib and Sarwar (2013) studied the impact of FDI on employment level in Pakistan. Using Johanson Co-integration approach, they concluded FDI has a positive impact on employment level in Pakistan as FDI opens new paths of employment opportunities. Hung (2003) highlighted the importance of FDI in poverty reduction in Vietnam. The inflows have significant positive impact on economic growth and further explained the role of labour intensive industries in reducing poverty.

Attari, Kamal and Attaria (2009) examined the impact of FDI on economic growth and found economic growth cause FDI inflows in Pakistan. He also pointed out that the GDP of Pakistan is not efficient enough to influence the foreign investors. The study suggested the development of monetary and fiscal policies discourage the dependency on loans and grants. Tasneem and Aziz (2011) stated that the economic consequences of FDI in host country could be positive or negative. Using OLS regression analysis and time series data, the paper analyzed the impact of FDI on economic performance of Pakistan. They concluded that domestic output, exports, growth and employment are affected positively by FDI while its impact is negatively for imports. However, an investment in Import substitution industries can affect import negatively and exports positively.

Alfaro (2003) examined the impact of FDI on primary, manufacturing and services sector. The result evidenced that FDI has negative effect on growth in primary sector, positive on manufacturing sector and ambiguous effect in case of service sector. Yasin and Ramzan (2013) studied the impact of FDI and exports on the economic growth of Pakistan. The study covers the data from 1976-2010. The results reflect that FDI and exports affect the economic growth in short run but no such relation is found in long run.

Aqeel and Nishat (2005) identified the determinants of FDI in Pakistan. Using co- integration and error-correction techniques over the period of 1961-2003. They found statistically significant impact of tariff rate, exchange rate, per capita GDP and credit to private sector on the FDI inflows of Pakistan. However, no significance for wage rate and share price index was found.

Memon, Khoso and Laghari (2008) studied the impact of FDI on labour productivity, GDP growth and financial markets. Panel data of 50 Asian countries was included over the time of 2001-2008. By using panel regression model, they found that Asian countries having strong financial markets and friendly investment policies enjoy increasing FDI while FDI affect the GDP growth negatively. They further concluded that countries with low inflation, appropriate macroeconomic policies attract more FDI.

Dondeti and Mohanty (2007) studied the interrelations among FDI, GDP, imports and exports of China, India, Malaysia and Singapore. They found that FDI promotes economic growth. According to their analysis, one dollar of FDI raises 3.27 dollars of GDP for each of four countries. They further concluded that FDI has no impact on Balance of Payment of these four countries.

Majeed and Ahmed (2004) found that the economic growth is crucial in attracting foreign direct investment and promote exports. He further highlighted that the depreciation of exchange rate significantly enhance exports. They found negative impacts of external debt and balance of payment deficits on FDI while economic growth and exports positively affect FDI. Yousuf, Hussain and Ahmed (2008) evaluated the impact of FDI on imports and exports and found positive relation between FDI and real demand for imports while negative relation between FDI and export was found both in long and short run.

In order to attract FDI macroeconomic and institutional variables, financial and trade policies are found to have significant impact. Wyk and Lal (2008) investigated the impact of institutional and macroeconomic variables on FDI in developing countries. They found that the higher growth of real GDP affect FDI positively. On the other hand, exchange rate affects FDI negatively. They also found economic freedom positively affect FDI while political risk affect FDI negatively.

Okafor (2012) studied the impact of macroeconomic variables on FDI inflows in Nigeria. Using Ordinary

least square estimation technique, the study reflects the macroeconomic variables affect the FDI inflows in Nigeria. The result shows that real GDP, interest rate and real exchange rate are significant determinants of FDI in Nigeria.

Barrell, Gottschalk and Hall (2004) investigated the impact of exchange rate uncertainty on US FDI in Europe. They found that increase in exchange rate volatility decrease the US investments in Europe as US firms tend to be risk averse. Hence, exchange rate uncertainty affects the FDI negatively. Alba, Park and Wang (2009) found that in a favorable environment for investments, exchange rate has a positive and significant impact of FDI inflows. Foreign investors are more willing to invest in a country with strong exchange rate, as in this case they can enjoy increase in their revenues.

Udoh and Egwaikhide (2008) examined the impact of exchange rate volatility and inflation uncertainty on FDI in Nigeria for the period during 1970-2005. They found that inflation and exchange rate create volatility. This cause for risk and uncertain environment for the foreign investors. Thus, inflation and exchange rate volatility negatively affect the FDI inflows in Nigeria.

Therefore, this study is to investigate the macroeconomic variables affecting the foreign direct investment in Pakistan.

#### 4.0. MODELLING FRAMEWORK

##### 4.1. Methodology:

This research study analysis the impact of macroeconomic variables on FDI inflows in Pakistan. GDP, imports, exchange rate, inflation and interest rate (deposits) are independent variable while FDI is dependent variable. Military government is considered as dummy variable. The data is extracted from Statistical Bulletin of State Bank of Pakistan. The study has covered a period of 27 years during 1986-2012.

##### 4.2. Model Estimation

Following equation is derived to estimate mentioned relationship.

$$FDI = \beta_0 + \beta_1 GDP + \beta_2 INF + \beta_3 INT + \beta_4 EXCH + \beta_5 IMP + \beta_6 D_6 + \mu$$
$$\beta_1 > 0 \quad \beta_2 < 0 \quad \beta_3 < 0 \quad \beta_4 < 0 \quad \beta_5 > 0$$

Where:

$\beta_0$  is a constant and  $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$  are parameters.

GDP = Gross Domestic Product

INF = Inflation

INT = Interest Rate

EXCH= Exchange Rate

IMP = Imports

$D_6 = 1$ , if military government

$D_6 = 0$ , if non-military government

To estimate the impact of independent variables on FDI, Ordinary least square regression technique is used in the study. Descriptive statistics and correlation is also calculated.

##### 4.3 Research Hypothesis:

H1: There is a positive association with Gross Domestic Product and Foreign Direct Inflow in Pakistan.

H2: There is a negative association between Inflation rate and Foreign Direct Inflow in Pakistan.

H3: There is a negative association between Interest rate and Foreign Direct Inflow in Pakistan.

H4: There is a negative association between Exchange rate and Foreign Direct Inflow in Pakistan.

H5: There is a positive association between Imports of Goods and Foreign Direct Inflow in Pakistan.

#### 5. RESULT ESTIMATION

Table 1 shows the descriptive statistics for the variables for the period of 1986-2015. The value of mean, median, standard deviation and lower limit, maximum ranges of respondent and explanatory variables are calculated through E-view 8 statistical software from 1985 to 2015. The Mean explain the average value of observations and standard deviation indicates deviation /change of data from average mean. The dependent variable FDI has mean Rs.79832 and range between Rs.1885.4 to Rs.338389. The GDP has an average of Rs. 3316602 with range of Rs. 342224 to 10644336. Moreover, Exchange rate showed an average mean Rs. 52 with range of Rs. 16 to 102.8. Imports of goods have an average 1366864 with range of Rs. 90946 to 4641931. Inflation rate has average value Rs. 231.6 with range Rs.100 to 439. Interest rate has an average mean is 6.41% with range 1.32% to 10.6%.

Table 1 DESCRIPTIVE STATISTICS

	FDI	GDP	EXCHANGE	IMPORTS	INFLATION	INTEREST	M2
<b>Mean</b>	79831.62	3316602.	52.10019	1366864.	231.6797	6.414667	1832457.
<b>Median</b>	28185.31	3597055.	54.67270	580396.0	212.6250	6.580000	1073341.
<b>Maximum</b>	338389.1	10644336	102.8591	4641931.	439.4300	10.66000	7074570.
<b>Minimum</b>	1855.440	342224.0	16.14520	90946.00	100.0000	1.320000	116510.0
<b>Observations</b>	30	30	30	30	30	30	30

Table 2 shows the correlation matrix. It shows GDP, imports and exchange rate are strongly and positively correlated while interest rate is having weak but negative correlation. It shows that GDP, imports and exchange rate positively influence the FDI inflows in Pakistan. However, interest rate negatively affects the foreign direct investments of Pakistan. Inflation and dummy variable do not affect the FDI inflows.

Table 2 CORRELATION MATRIX

	EXCHANGE	FDI	GDP	IMPORTS	INFLATION	INTEREST	M2
EXCHANGE	1.000000						
<b>FDI</b>	<b>0.601811</b>	<b>1.000000</b>					
GDP	0.943148	0.623329	1.000000				
IMPORTS	0.925180	0.627130	0.932297	1.000000			
INFLATION	0.277838	-0.016534	0.126367	0.354149	1.000000		
INTEREST	-0.515904	-0.408373	-0.543709	-0.308243	0.392367	1.000000	
M2	0.936089	0.557678	0.948500	0.988774	0.363814	-0.340518	1.000000

Table 2 explain that the result of correlation matrix of seven variables (FDI, EXCH, GDP, IMP, INF, INT and M2). According to this matrix, FDI has positively connected with EXCH, GDP, IMP and M2 that is 0.60, 0.62, 0.63 and 0.55 respectively. This indicates that as the level of EXCH, GDP, IMP and M2 increase, the FDI will also show increasing trend. Whereas, INF and INT have shown negative association with FDI that is -0.016 and -0.40 respectively. As there is any negative variation in interest rate and inflation rate, they will cause to enhance the trend of FDI in the country.

Table 3 represents the Ordinary least square technique used to test the significance of independent variables against the dependent variable at 5% significance level. The result shows that GDP, Imports, Inflation and exchange rate are linked to the dependent variable i-e FDI inflows. It discloses that imports and exchange rate affect FDI positively while GDP and inflation affect the FDI inflows negatively. Overall model is found significant. The adjusted R<sup>2</sup> denotes that 93% of the variations in FDI are explained by the variations in the independent variables. The Durbin Watson statistics is 1.51 signifying that there is no correlation exists between variables and residuals in this research. Thus, there is no autocorrelation problem in this data set. F-statistics is 0.0000 explaining that overall model is good fit.

Table 3 Ordinary Least Square Estimation

Dependent Variable: LOG(FDI)				
Method: Least Squares				
Date: 05/14/16 Time: 20:35				
Sample: 1986 2015				
Included observations: 30				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	11.02828	4.306736	2.560705	0.0175
LOG(EXCHANGE)	0.189488	1.258410	0.150577	0.8816
LOG(GDP)	-2.625412	0.636017	-4.127896	0.0004
LOG(IMPORTS)	2.583603	0.645211	4.004279	0.0006
LOG(INFLATION)	-2.513921	0.655148	-3.837182	0.0008
LOG(INTEREST)	-0.346522	0.238842	-1.450843	0.1603
LOG(M2)	1.140018	1.341013	0.850117	0.4040
R-squared	0.941071	Mean dependent var		10.34637
Adjusted R-squared	0.925698	S.D. dependent var		1.563329
S.E. of regression	0.426139	Akaike info criterion		1.332861
Durbin-Watson stat	1.515131	Prob(F-statistic)		0.000000



## 6. CONCLUSION AND IMPLICATIONS

The paper examined the impact of macroeconomic variables on FDI in Pakistan. The study included GDP, interest rate, inflation, exchange rate and imports. The study covers the period of 30 years between 1986-2015. The study found that GDP, inflation, exchange rate and imports significantly affecting the FDI inflows in Pakistan. Therefore, to attract foreign investments, policy formulation is required focusing the monetary, fiscal and trade policies. There is a need to stabilize the macroeconomic environment to gain investors' confidence. The rate of inflation should be controlled and stable exchange rate is required to enhance foreign investments. Besides this infrastructure, political, law and order situation should be monitored to attract foreign direct investment for Pakistan.

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