
Foreign capital inflows and economic growth: an empirical study of Pakistan (1975-2009)

Goher Fatima

Department of Management Sciences
Bahria University, Islamabad, Pakistan

Key words

Foreign Capital Inflows, Openness, Real Exchange Rate

Abstract

Capital inflows are very important for the development of any country developed or under developed. Many developing countries depend on foreign capital inflows (FCIs) to assemble their economic resources. There are many types of (FCIs) e.g. foreign direct investment (FDI), loans, official development assistance, portfolio investment etc. Many developing countries, including Pakistan are depending on such types of FCIs to foster their economic growth. The present study investigated the twin impact of all types of FCIs and exchange rate on GDP of Pakistan using co integration techniques covering time period from 1975-2009; furthermore, this study also investigated the impact of efficient combination of labor and capital on economic growth of Pakistan for the period of 1975-2009. Results show that among all types of FCIs, the FDI has more contribution in economic growth of Pakistan and remittances have lower contribution in economic growth. The results of short-run and long-run analyses show that in the long run all independent variables positively affect the economic growth except of real exchange rate and in the short run employed labour force, real exchange rate and remittances have insignificant impact on economic growth.

1. Introduction

Economic and technological forces are playing very important role in the growth of any country. But it is very difficult for developing countries to analyze the factors which help them to foster their economic growth. Trade liberalization, foreign capital inflows (FCIs) and friendly relation with other developed countries are also very important factors which are essential for economic growth/performance of a developing country. Pakistan is also a developing country and in recent era this country is facing many problems including higher inflation, slow economic growth, higher unemployment rate etc. The inflow of foreign capital could be helpful to overcome these problems. As mentioned by Hye et al. (2010) in their study, which is conducted to ascertain impact of FCI on economic performance of Pakistan being one of the developing countries of the globe. They empirically demonstrated, by applying ARDL, a positive impact of FDI on the economic growth of a country both in the long-run as well as in the short-run. Besides, the different forms of aid from the foreign world have also contributed towards the economic growth. They further demonstrated that the foreign assistance and aid provided officially through the governments have also shown positive impacts on economic growth, but only in long-run. Foreign capital inflows have multiplier effects on economic growth of any country. It increases employment opportunities through Foreign Direct Investment (FDI) and also provides opportunities to worker to learn how to use new technologies in production.

Chaudhary and Anwar (2000) explored that FCIs have significant impact on economic growth of a country and these inflows contributed to improve economic situation of any country. However, some economists have different view regarding contribution of inflows. Mosely, 1980 explored that due to FCIs, the saving ratio remains low and this leads to reduced domestic and public investment. The low ratio of saving and investment leads to lower incomes of people and due to these lower incomes they are not able to pay tax and ultimately government faces fiscal deficit. Ahmad (1996) found that FCIs (aggregate level) and saving rate are inversely related to each other. In case of Pakistan, FCIs has positive impact on economic growth. It helps to increase saving, public and private investment and also reduce the trade gap, which further improves economic growth. According to Khor (2000), FCI positively affects the economic growth as the former contributes in overcoming the deficit in balance of payment, which leads toward the increased exports, savings and investment, hence generating employment; which are the positive indicators of the economic growth. Some studies suggested that in developing countries the financial sector development showed a significant and positive impact of FCI on the economic growth (Ljunwal and Li, 2007). The same are proved by Bailliu (2000) and Hermes and Lensink (2003).

This article aims to obtain the following objectives:

1. To investigate the impact of foreign capital inflow (FCIs) on GDP growth.
2. To explore the nature of the inter-relationship between capital inflow and economic growth of Pakistan.
3. How much FCIs contributing in the economic growth of Pakistan?
4. To investigate that is short run impact of FCIs on economic growth is different from long run impact or not?

The next section of the paper elaborates the current literature on the issue. The model is specified in section 3, moreover detailed methodology and data sources are provided therein. The results are incorporated in section 4 and the results are concluded and some policy implications are suggested in the section 5, respectively.

2. Literature review

Pakistan, including some other South Asian countries, has received high amount of foreign loans; however its role is somewhat critical. Khan et al. (1993) concluded that though foreign aid has a very important role to foster economic growth of country when it is in need of it but dependence on foreign aid also leads to increase debt burden of the country. Bloomstrom and Wang (1992) stated that foreign capital inflow in the form of FDI not only increase technological advancement but also it enhance manufacturing and service sector side by side. There are some panel researchers who used panel data set to find relationship between capital inflow and economic growth and demonstrated positive and significant relationship between them. Easterly (2003) used panel data set to find the relationship between foreign aid and economic growth and found that there is positive and vigorous relationship between them.

Malik (2008) also used panel dataset of six African countries and by using cointegration technique he found that in short run there is positive impact of openness and foreign aid on growth whereas in the long run former variable has negative impact on economic growth. Chenery and Strout (1966) argued that the different kinds of the foreign capital inflows in the form of loans, grants, aids and other assistance programs primarily contributing in overcoming the savings and the investments. The minimal the gap the more will be the economic growth of

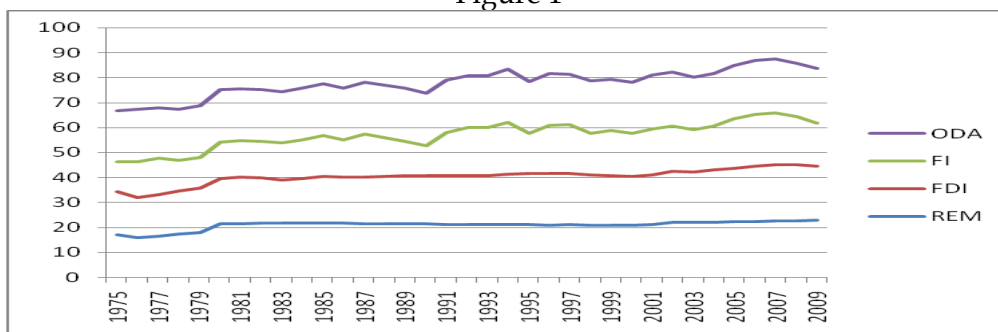
the country, provided other factors of the economy are performing ideally for economic efficiency.

There has been a very low level of savings and investment experienced by the developing countries across the globe, which attributed towards their inclination to have relied on the Foreign Capital Inflow. According to Yasmin (2005), Pakistan also relies on such FCIs, which helps in the improved economic performance. She conducted research on Pakistan by taking data from 1970-71 to 2000-01 for FCI, GNP and savings and demonstrated a positive and significant impact of FCI on economic growth. The major contribution in the economic growth accounted for by the foreign direct investment, which is one of the dimensions of the FCI. Mohey-ud-din (2005) conducted a study to explore impact of FCI on the economic growth of Pakistan by taking data for the period of 1975-2004 and also explored a positive impact of FCI on the GDP growth of Pakistan. Some of the studies in the past had explored a negative impact of the FCI on the economic growth of the country (for example see Leff, (1999) and Griffin (1970). Therefore, FCI-Economic growth relationship may have different effects under different circumstances and given conditions of the economy.

Shahbaz and Rahman (2010) conducted a study while using time series data from World Bank and Economic Survey of Pakistan for years 1971-2008 to find that how foreign capital inflow affects GDP. They applied ARDL bounds testing technique for the estimation of the causality between the variables and demonstrated a positive impact of CFI on the economic growth. They further explored that inflation has also affected economic growth positively. According to Lim and Sidall (1997) and Cotton and Ramachandran (2001) in their comprehensive studies on the foreign capital inflows and domestic investment have demonstrated positive impact of the former on the latter. According to the Economic Survey of Pakistan (2009-10), there is substantial fluctuation in the Gross Fixed Capital Formation, as it was 5.5% in FY 2008-9 and declined by 0.6%. According to the report there has been a decline in the investment during FY 2009-10, which was due to diminishing trend of the FDI, which was declining across the globe. According to International Institute of Finance (IIF) there was a 32% decline in the FDI observed during the FY 2009-10.

Capital Inflow in Pakistan

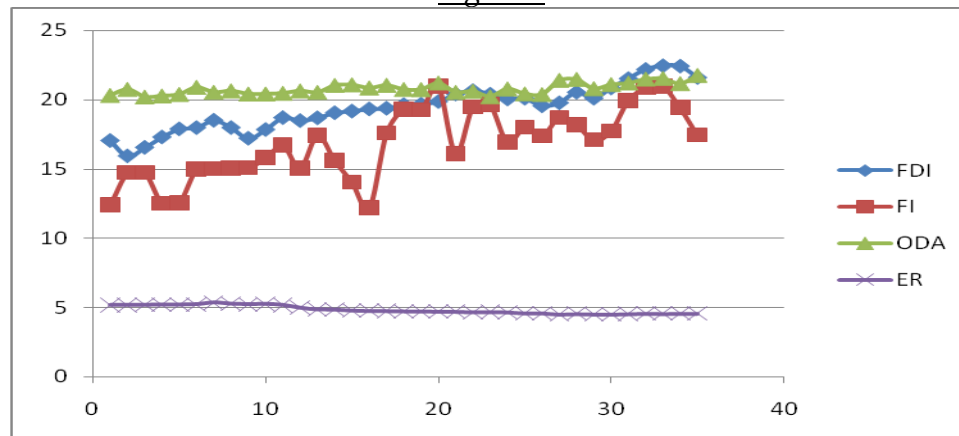
Figure 1



Source: International Financial Statistics (2010)

Capital Inflows and Exchange Rate:

Figure 2



Source: International Financial Statistics (2010)

3. Model specification, methodology and data source

MODEL:

Many studies were conducted to investigate the impact of FCIs on economic growth with different issues being explored while employing different variables and techniques. In current research paper, labor, openness and exchange rate along with all types of Foreign capital inflows (FCIs) which are coming Pakistan as independent variables and we will check impact of all these variables on growth rate of real GDP. The different forms of FCIs are loans, foreign direct investment (FDI) and grants from international agencies and Foreign Portfolio Investment (FPI), etc. But FCIs takes three main forms, which are FDI, Foreign Portfolio Investment-FPI and the Public and official Development Assistance (ODA) provided by difference sources including developed countries. The last form of FDI also includes bi-lateral and multi-lateral Aids, grants, financial aids and grants provided by international community.

Cob-Douglas Production Function with endogenous growth theory is used in this study as it is also used by Athukorala (2003 in his study. We will make macroeconomic model to probe the impact of FCIs on economic growth. The new growth models treated technology and knowledge (learning by doing) as production input. Furthermore, Lucas (1988) demonstrated that human capital (which was taken as factor of production) positively affects economic growth.

Cob Douglas Production Function with endogenous growth theory is

$$Y=f(L, K, E) \quad (1)$$

Where

L =Employed labor Force

K=Capital

E=Real exchange rate

Where K is further extended in four types of capital inflows namely

K_1, K_2, K_3, K_4

After substituting the values of L and K in equation (1) the model is functionally represented below:

$$Y= F(L, K_1, K_2, K_3, K_4 O, E) \quad (2)$$

The mathematical form of the equation is

$$Y = \beta_0 + \beta_1 L + \beta_2 K_1 + \beta_3 K_2 + \beta_4 K_3 + \beta_5 K_4 + \beta_6 \ln O + \beta_7 E + V \quad (3)$$

Where;

Y=	Growth rate of real GDP
L=	Employed Labor Force (ELF)
K ₁ =	FDI
K ₂ =	Foreign Portfolio Investment (FPI)
K ₃ =	Official Development Assistance(ODA)
K ₄ =	Remittances (REM)
O=	Openness (OPN)
E=	Real Exchange Rate (RER)
V=	Error Term

Whereas $\beta_0, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6,$ and β_7 represent parameters.

Johansen's (1988) also estimated the above model while employing co-integration technique. This technique is efficient in exploration of not only the short-run but also useful for exploring the long-run relationship between the variables. In this case the dependent variable is Y and the independent variables are predicting Y (i.e. causal relationship between the variables of the study). Comparatively, the Co-integration technique is more efficient than that of the technique suggested by Engel Granger (1987), which yields test statistics that are further used to identify and determine the co-integrating vectors as well as estimates thereof. A dataset for the period of 1975 to 2009 (including both the years – on annual basis) is used for the purpose of the current research study. The data are collected from sources provided by the International Financial Statistics, 2010, Pakistan Economic Survey (2010) and World Development Indicator (2010).

4. Data analysis and result interpretation

The stationarity of the data, which is the pre-requisite for estimating the model, was checked by employing ADF (Augmented Dickey-Fuller). The results are provided below:

Results of Unit Root Test

Table-I

Variables	Level		
	Lags	Intercept	Trend & intercept
Y	1	-2.4455 (-3.1485)	-3.7891 (-5.5248)
ELF	1	-2.8975 (-7.5897)	-3.4592 (-4.7891)
FDI	0	-2.4580 (-5.4598)	-3.3695 (-6.7412)
ODA	1	-2.1256 (-7.2603)	-3.2136 (-8.4159)
FPI	0	-2.4891 (-6.6983)	-3.4489 (-6.7452)
REM	0	-2.5692 (-5.4158)	-3.4985(-7.7845)
OPN	1	-2.2369 (-3.4510)	-2.4872 (-3.5294)
RER	1	-2.9358 (-5.7819)	-2.3215 (56.8957)

At level all the regressors are stationary and significant at 5% critical value.

Subsequently by employing ADF test the long run relationship of the series was explored. The purpose of this exploration is to come across whether the series have any long-run relationship. The series, for this model, are integrated at order one; therefore, the co-integration among the series is further explored. At first instance the VAR is estimated, which is used to decide the

model's length of lag. For the current model the maximum lag length was set as 1. In addition to that, another indicator i.e., minimum AIC is also utilized for estimation. The minimum AIC explores the significant lag length. The Johansen's test was employed in the current study to apply the co-integration and estimation of the model. The table-2 below shows the results of the co-integration test. It is evident from the results that long-run relationship exists in the model between the variables selected for this model. Therefore co-integration test is employed and is suitable in current circumstances (i.e., the minimum AIC in VAR).

Table II Co-integration Test (As proposed by Johansen)

Eigen value	Likelihood Ratio	5 PCV (Percent Critical Value)	1 PCV (Percent Critical Value)	Hypothesized No. of CE(s)
0.878800	247.9428 ~ 248	156.00	168.36	None **
0.787809	178.3025 ~ 178	124.24	133.57	<= 1 **
0.753850	127.1436 ~ 127	94.15	103.18	<= 2 **
0.599078	80.88381 ~ 81	68.52	76.07	<= 3 **
0.530812	50.72220 ~ 51	47.21	54.46	<= 4 *
0.334836	25.74937 ~ 26	29.68	35.65	<= 5
0.200207	12.29454 ~ 12.3	15.41	20.04	<= 6
0.138568	4.922240 ~ 5	3.76	6.65	<= 7 *

* Rejection of hypothesis at 5 % significance level

** 5% significance level

$$Y = 0.7489 + 0.2354ELF + 0.8951FDI + 0.0125FPI + 0.6589ODA + 0.0789REM + 0.36OPN + 0.874RER$$

(2.7895)
(3.2688)
(2.5698)
(2.749)
(2.569)
(3.2589)
(1.369)

These results show that ELF positively and significantly affects the economic performance of Pakistan in long-run. The reason of this is that as the growth rate in population in Pakistan is high so more people enter in the labour market. When the supply of labour increases its wage decreases and the employers employ more labour to reduce its cost of production. As far as concern the sign and significance of the variables which shows the impact of FCIs on economic growth of Pakistan, among all types FCIs, FDI has more contribution than all other types of FCIs. Openness also positively and significantly affects the growth rate of real GDP of Pakistan. Many researchers have shown that openness of an economy increases economic growth through increased competition, efficient allocation of resources, improved technology, increased knowledge spillovers, and access to essential production inputs from abroad. Real Exchange rate has negative and insignificant impact on economic growth of Pakistan in long run. Furthermore, higher real exchange rate results in the depreciation of the domestic currency and appreciation of the competitiveness in open market. In the last error-correction model is applied to find the relationship (short-run) between the variables included in the model of the current study.

Short Run Relationship:

$$\Delta \ln Y_t = \alpha_0 + \alpha_1 EC_{t-1} + \sum_{i=1}^n \beta_1 \Delta EFP_{t-i} + \sum_{i=1}^n \beta_2 \Delta FDI_{t-i} + \sum_{i=1}^n \beta_3 \Delta \ln FPI_{t-i} + \sum_{i=1}^n \beta_4 \Delta \ln ODA_{t-i} + \sum_{i=1}^n \beta_5 \Delta \ln REM_{t-i} + \sum_{i=1}^n \beta_6 \Delta \ln OPN_{t-i} + \sum_{i=1}^n \beta_7 \Delta \ln RER_{t-i} + e_t$$

Table III Error Correction

Variables	Co-efficient	t-statistics
ΔY_{t-1}	0.199546	(2.96757)*
ΔELF_{t-1}	0.124186	(1.32956)
ΔFDI_{t-1}	0.732704	(3.24666)**
ΔPI_{t-1}	0.090434	(3.46318)**
ΔODA_{t-1}	0.732704	(3.24666)**
ΔREM_{t-1}	0.206362	(1.54203)
ΔOPN_{t-1}	0.817541	(3.05186)**
ΔRER_{t-1}	1.427779	(0.83829)
EC_{t-1}	0.368510	(4.80403)**

* Significant at 10%

** Significant at 5%

***Significant at 1%

At this stage the dynamic error correction (ECM) model was estimated. All the variables were also estimated in first difference. The error correction term that is EC_{t-1} in the estimated equation is significant and bears a theoretically correct signs. The estimated co-efficient of EC_{t-1} indicates that approximately 36% of the disequilibrium in economic growth is corrected immediately i.e. in the next year. The results further show that the coefficient of lagged change in economic growth i.e., GDP is positive (shows increasing trend) and significant at 5 % level of significance. This implies that in the short-run the GDP in the previous period led to a positive change in the GDP the subsequent period. Remittances, employed labor force and real exchange rate have insignificant impact on economic growth in short run. This insignificance of the coefficient demonstrates that in short-run the inflow of remittances is slow as compared to long-run. In Pakistan due to higher population growth the problem of unemployment is very grave and it is very intricate for workers to find jobs therefore this variable has insignificant impact on economic growth in short run. As far as concern the insignificance impact of real exchange rate on economic growth it is also observed that the detrition of exchange rate is common in Pakistan and economically it is evident that capital inflows have positive relationship with exchange rate. Changes in RER not only affects current account but also affects aggregate demand of home output. It is pointed out here that rise in RER makes domestic goods and services cheaper relative to foreign goods and services, which is due to the appreciation of the local currency viz-a-viz the foreign dominating currency. This also includes the shifts of both domestic and foreign spending from foreign good and services. As a result, current account rises and aggregate demand therefore increases. Consequently, it is argued that the depreciation (real) of home currency raises the aggregate demand of home output and higher RER is the attributed towards the real depreciation of the local currency (home-currency). From above discussion it is also shown that if RER will be higher then there will be need of higher capital stock in the economy

in the form of local and foreign investment to produce more to fulfill aggregate demand. So there is direct relationship between FCIs and RER. Higher the capital inflow leads to appreciate real exchange rate and hence it effects economic growth positively (Rehman 2010).

Analytical Tests:

Table IV

White Heterosacdsticity Test (WHT) (N*R ²)	2.8451 (Prob.0.06124)
Ramsay RESET Test - RRT (F- Statistis)	7.1289 (Prob. 0.0521)
Jarque Bera Test JB-Test	3.1258(Prob. 0.8648)

In this section the heteroscedasticity of the model was tested. The results of the diagnostics show that there are no such evidences of the problem of the heteroscedasticity in the current model, which is employed in the study. For the model specification, a different test named as Ramsay RESET test was employed. The results of Ramsay RESET test show that the null hypothesis is rejected, which confirms that the model is correctly specified, hence fulfilled the pre-requisition of the model specification. Furthermore, the result of the test shows that the calculated F-Value is less than the tabulated F-value. On the basis of this result it is explored that the null hypothesis is accepted. The results support the conclusion that the model is correctly specified. For the normality of the dataset, a designated test was used under the null hypothesis. Normality of error term was showed Jarque Bera and the coefficient of Jarque Bera is less than that of the χ^2 value.

5. Conclusion and recommendations

The paper empirically identifies the impact of FCIs and real exchange rate on economic growth of Pakistan over the period 1975-2009. Cointegration and error-correction techniques are used to find short-run and long-run relationships between FCIs and GDP growth.

The analysis finds that in all types of FCIs, FDI has more contribution in economic growth of Pakistan and remittances have the least contribution in economic growth. The results of short-run and long-run analyses show that in the long run all independent variables positively and significantly affects the economic performance of an economy, except of real exchange rate and in the short-run the employed labour force, real exchange rate and remittances have no impact on economic performance of Pakistan. Besides this, FCIs has a productive impact to fill the three gaps in the economy, budget deficit, import- export, investment- saving. There is a dire need of such government policies, which attract foreign investment in Pakistan. These inflows help to create jobs for skilled workers and hence helpful to reduce unemployment. The effective government policies are also important to attract foreign capital, as the FCIs positively affected economic growth. In the presence of poor policies, on the other hand, FCIs has no positive effect on growth. There is also need of monitoring of foreign funded projects and utilization of foreign aids to avoid miss utilization of these resources. The prevailing law and order situation of the country dissuade foreign investors to invest their capital which results minimal FCIs. Therefore government should improve law and order situation in the country by ensuring foolproof security to foreign investors in order to pursuit them to invest their resources.

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