

Effects of Exchange Rate on Foreign Direct Investment in Pakistan

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Abstract:

There are various determinants of foreign direct investment, but the exchange rate is one of the most important determinants. The major concern of this research is to locate the impact of exchange rate on foreign direct investment in favor of the Pakistan economy. A secondary time series data are used over the period 1980 to 2009. The aim of the study is to establish the short run and the long run relationship between the variable. ARDL and ECM are used to establish long run and short run relationship. To check the stationary of each variable in both models Augmented Dickey Fuller unit root test is used. The result of the model shows that there is a positive relation between the variables.

Key words: Foreign Direct Investment, Exchange Rate, GDP, Augmented Dickey Fuller.

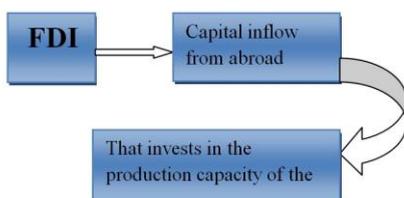
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Introduction

The value of FDI and the exchange rate has been increased with the passage of time. FDI and exchange rate are measured as the most important growth stunning factors for the enlargement of the economy. Foreign direct investment is deal of foreign resources into home structures, equipments, and organizations the possible crash of FDI is of significant plan concern on receiver and investing economies inside the combined sovereignty for example, there are common claims that the supply-side of the economy convert secret investment with the help of the financial system (Eltis, 1996).

Foreign direct investment (FDI) has a round into a basic accepting. FDI enlarged in combining production and better repair part of the international financial system, enlarged reduction of exports and exchange of environment. There is a future for FDI to make technological skills among the nation and shareholders and increase employment, raise output, move technology. FDI is imaginary to attract into the country due to a few exports and set into the long run financial development of the factors such as honesty of the financial system, market range, taxes emergent nations in the world (Anthony et al., 2008).

Foreign direct investment has identified as one of the main resourceful ways of attracting flows from external sources. For developing nations, the positive result of FDI is becoming more and more accepted as a solution for economic growth (Brozowski, 2003).



The exchange rate is a very essential factor in an open financial system; it has the nonstop effect of the macroeconomic aspects like FDI and GDP. Economics shareholders and plan creator paying attention to the exchange rate of the country and then create asset their money in that focused country. They have understood that raise in exchange rate makes competitive reward in worldwide deal. Through rising exchange rate of a country the home export merchandise become cheaper and it also boosted the require of export, it means the worldwide demand of goods will raise and import will be reduced. It impacts on FDI, overall effects, at least on GDP of the country (Khan et al., 2012).

The supply and demand of currency really are the major part of exchange rate insecurity. Exchange rate insecurity openly affects the decision creators make a decision that how much import and export is positive (Javed and Farooq, 2009).

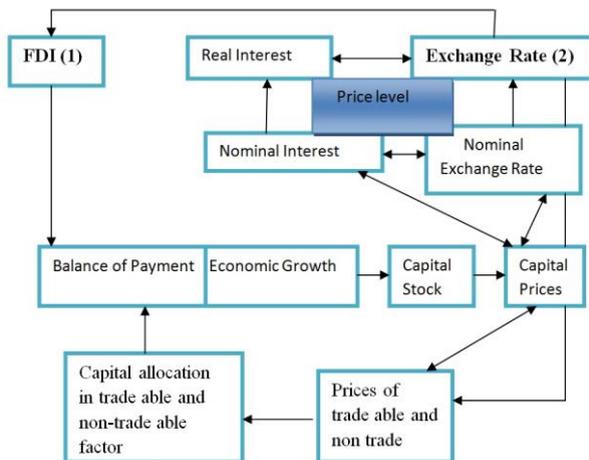
Exchange rate uncertainty affects FDI through the guide that reduction of the currency of the host country against the domestic currency increases the comparative capital of foreign persons thus raising the beauty of the host country as firms are capable to obtain property in the host country reasonably cheaply for FDI. Thus a reduction of the host currency should raise FDI into the host country, and equally an appreciation of the host currency should reduce FDI (Froot and Stein, 1991). The primary benefit of the FDI is to provide speed up economic growth (Collins et. al, 1999). There is no trend of FDI in 1990 because of tiny amount receive as FDI. It is because of dependence on debt (Hukro and Ghumro, 2007).

For growth in developing countries the position of FDI is very essential. Foreign depositors are forced to spend in the host country, if the hope of creating long-term profits by contributing part that host country of production are very clear. The foreign direct investment not just plays its important role to capital formation in emergent countries, but it is a root of technology move and modern skills from industrial to

developing countries. For the growth of the least developed countries, these countries suggest encouragements to foreign shareholders in order to attract further FDI (Huchet and Korinek, 2011).

When the exchange rate shifts from a fixed to a flexible exchange rate it means we are looking instability in exchange rate. The different theories declare when the instability in exchange rate raises it openly impacts on the export trade, export trade reduces due to the improbability in future profit. In the short term by organizing the receipt and payment capably companies can decrease the uncertainties in trade. Because of instability in exchange rate, there is the largest risk of shareholder, in this way trade profit decrease instability in exchange rate and undesirable relationship with demand of export. Pakistani export is depending on the volatility of exchange rate. (Mustafa and Nishat, 2004).

Framework of Exchange Rate and foreign direct investment

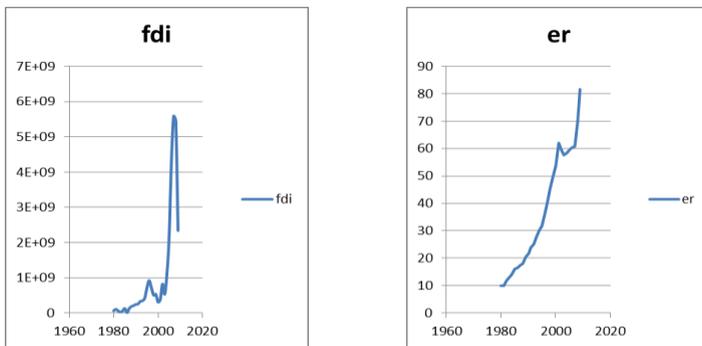


The exchange rate is founded on the tradable and non tradable goods. As contrasted to no sstop working tradable commodities the tradable commodities part has greatest output development that is connected with greatest output growth. The relative price of tradable and non-tradable goods show the country's

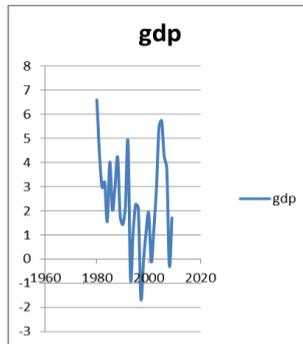
competitiveness in foreign trade (Crowley and Lee., 2003). Foreign direct investment adds positively to economic development, but it's on the whole impact on economic growth may not be vital and the component of FDI prepared a positive role (Ayanwale, 2007).

The Most important economic command in Asia are Pakistan other than the political instability in the country poses a serious notice to not only investment but also on its economic growth in the country

Figure 3: FDI, Export and GDP during the period of (1980-2009)



Sources: Word Development Index



Through Gross Domestic Product (GDP) Different economists measure economic output of a country. In this study, we have taken Gross Domestic Product as a control variable.

On the topic of the foreign direct investment and exchange rate the majority of the previous studies has been offered from which the main component of the research work has been prepared internationally, which observed significantly and examined to draw a few vital ends. To conclude the foreign direct investment, the exchange rate plays a very vital role. The cause of the back is that the foreign financier obtains their profit or return to their residence countries. The writer has also done that the exchange rate has a reverse connection and that characteristic explains that if a decrease in the rate of the currency there will be harmful impact on the inflow of FDI. Here the writer took exchange rate as an independent variable. (Ahmed and Malik,2012).

Demirhan (2008) Investigate the impacts of exchange rate on foreign direct investment using secondary data from the time period 1982 to 2013. Correlation and regression analysis technique are used and the result shows that the exchange rate has the positive impact on foreign direct investment. (Bilawal et al., 2012) During his cross sectional investigation shows the result that situation through a small amount price rises is excellent in encouraging further FDI. Mehmood et al., 2011 investigate the impacts of exchange rate on macroeconomics variables. The study used time series data for the time period 1975 to 2005 and augmented Dickey Fuller test has been used to check the stationary. 2) GARCH model has been applied in this study. 3) The OLS regression technique is used to investigate the relationship between dependent and independent variable. The results indicate that presence of positive impacts of exchange rate on GDP, Growth rate, and trade openness negatively impact on FDI. Falki (2009) Used time series data on behalf of Pakistan during her experimental investigation, conclude that in the case of Pakistan FDI impact on GDP is unrelated. She says FDI force motivates economic development just but occurs within big level industrialized area. Muhammad Mumtaz and Syed Shahzaib Pirzada, 2014)

investigate the role and impact of foreign direct investment on the economic growth of the Pakistan from 1975 to 2010 the study used the time series analysis and OLS technique to find the results that FDI has a positive effect on the economic growth both short and long. Adamand Tweneboah (2008) studied that the majority of the point FDI inflow is influenced by the reduction in the value of a nation's currency. We think this feature because many of the theories show that the foreign depositor invests in the further nations to get a further return on FDI and the stock exchange. Nyarko et al (2011) used data from 1970 to 2008. The aim of this paper to study the effect of exchange rate regime on FDI inflows for the model of Ghana economy by relating co integration, OLS, error correction modeling approach. They used foreign direct investment as dependent variable and exchange rate regime, Democracy as independent variable. The results show that Democracy and exchange rate regime has no effect on FDI. It explains that there is no relationship between exchange rate regime and FDI. Dhakal et al (2010) examine the impact of exchange rate uncertainty on FDI by used panel data. This reading was complete in New York by choosing the East Asian Economies. They use a example of Indonesia, China, the Philippines, Thailand and South Korea. FDI inflows, exchange rate uncertainty, real exchange rate and current account used as variables. Dependent variable is FDI and variable whereas relax of the variables as independent. First, then a panel co-integration test performed they collect data, then developed and expected an error correction model. This revision locates that exchange rate volatility has positive effect on FDI in the example countries.

Brozowski (2003) studied the effect of exchange rate on FDI for a lot of countries and apply universal technique of the second system and fixed result model. GARCH (1, 1) method is applied to compute the instability which results the inverse relation of exchange rate insecurity on FDI. Ahmad et

al (2003) establishes the connection among exports, FDI and yield in favor of Pakistan on behalf of 1972-2001 by using the time series statistics initiate with the purpose of established a time-consuming link among exports, FDI and home yield. Further cause answer for shaping the flow of FDI is present financial credit stability; on the other hand, it dealings the power of the nation's currency. It is broadly received that, a failing current account balance is problem-solving of reduction of that nation's currency. Froot and Stein (1991) Examined that the shortage of current account balance reasons for fluctuations and divergences in exchange rate and as a result gets inflation in the country. Therefore, we are correct in arguing that the decrease in FDI inflows is reasoned by shortage in existing account balance. The study only gave a conclusion that there is a positive connection between the progress of stock exchange and foreign direct investment (Shabaz et al, 2008).

- To estimate the impact of real exchange rate on foreign direct investment in Pakistan.
- To suggest the policy measures to increase the foreign direct investment through real exchange rate.

Methodology and results

The study is used to analyze the effect of exchange rate on FDI in Pakistan from 1980-2009. The main purpose of this study is to estimate the effect of exchange rate on FDI using the control variable GDP.

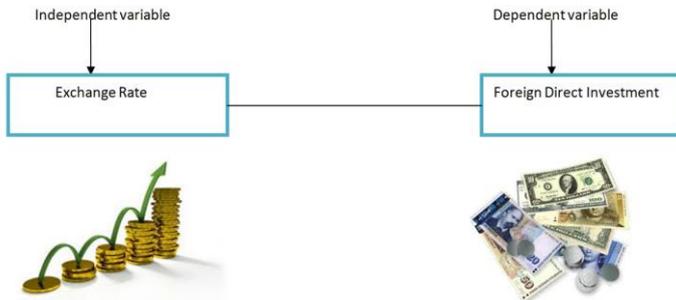
Table 1 Labeling of variables description and sources of data

Label	Variable	Description	Source of data
Er	Exchange Rate	It is defined as the value of one country's currency in terms of another (foreign) currency.	World Development Indicators (WDI)
FDI	Foreign Direct Investment	1) Increased number of foreign firms in a country. 2) Influence the production capacity	World Development Indicators (WDI)
GDP	Gross Domestic	1) Transformation of input to	World

	Product	output. 2) Increase the size or expansion of Production capacity	Development Indicators (WDI)
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Theoretical Methodological Framework

The following given theoretical framework shows the relationship between the exchange rate, which is independent variable and dependent variable foreign direct investment.



Model

$$FDI=f(Er, GDP)$$

$$FDI= \beta_0+\beta_1Er+ \beta_2GDP+\mu_t$$

FDI=Foreign Direct Investment

Er= Exchange Rate

GDP=Gross Domestic Product

Hypothesis of Model

H₀: $\beta_1= 0$ Exchange rate does not have an impact on foreign direct investment.

H₁: $\beta_1\neq 0$ Exchange rate does have an impact on foreign direct investment.

H₀: $\beta_2= 0$ GDP does not have an impact on foreign direct investment.

H₁: $\beta_2\neq 0$ GDP does have an impact on foreign direct investment.

The unit root test is used to test stationary of variables. A quality of a statistical model of a time series whose autoregressive limitation is "one" called as unit root. Unit root is used to check the stationary of time series data. There are different test planned by the theory for the existence of unit

roots. These tests consist of Dickey and Fuller (1979), Augmented Dickey-Fuller (Dickey and Fuller, 1981), Phillips Perron test (Phillips, 1987), Perron (1988 and 1989), KPSS test (Kwiatkowski, et al, 1992). Check for unit roots in first order auto regressive model (AR (1)) the Dickey Fuller test is used among the necessary statement that errors are white noise. I used one main unit root tests which are ADF (Augmented Dickey-Fuller). The Augmented Dickey-Fuller test (Dickey & Fuller (1981)) is the addition of the DF tests to make sure of serial correlation in the error terms by including further lags difference terms of the dependent variable. There is another advantage of ADF test is that, it can be used for higher order auto regressive model.

Variables	Results of Augmented Dickey Fuller			Stationary
FDI	-7.873664	1%	-4.323979	At Level
		5%	-3.580623	
		10%	-3.225334	
Exchange rate	-5.707830	1%	-4.440739	At 1 st Difference
		5%	-3.632896	
		10%	-3.254671	
GDP	-6.849810	1%	-4.323979	At 1 st difference
		5%	-3.580623	
		10%	-3.225334	

ARDL Model

Long Run Equation

$$\Delta FDI_t = \alpha_0 + \sum_{i=1}^k \alpha_{it-i} ER + \sum_{i=1}^k \chi_i GDP_{t-i} + \varepsilon_t.$$

In this equation α_i and χ_i are the long run coefficients of Exchange rate and GDP. Finally the short run dynamics are:

Short Run Equation

$$\Delta FDI_t = \sum_{i=1}^m \rho_i \Delta ER_{t-i} + \sum_{i=1}^m \tau_i \Delta GDP_{t-i} + ECM_{t-1} + \varepsilon_t \dots$$

The empirical results consist of the model which empirically defines the impact of Exchange Rate on Foreign Direct Investment. Where in these modules GDP is used as Control variability and its impact on foreign direct investment.

Result

Table 2 Variable Addition Test (OLS case)

Lagrange Statistic	Multiplier	CHSQ(3)	11.2620
Likelihood Ratio Statistic		CHSQ(3)	14.5735
F Statistic		F(3, 19)	4.5321

The exceeding results of the variable addition test verified that their exit long run relationship between foreign direct investment and Exchange rate. F-statistic shows no co-integration because of rejection of the null hypothesis, as suggested Pesaran, et al (1999).

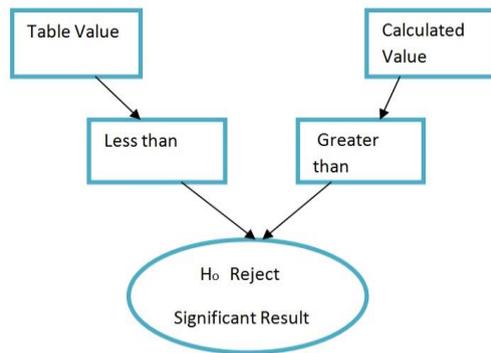


Table 2 Estimated Long Run Coefficients using the ARDL Approach

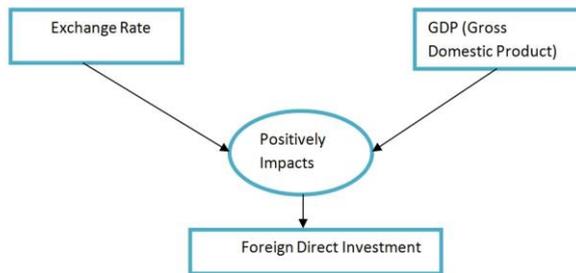
ARDL (2, 0, 2) selected based on Akaike Information Criterion

Dependent variable is FDI

27 observations used for estimation from 1983 to 2009.

Regressor	Coefficient	Standard Error	T-Ratio	Prob
ER	2.810000000	7005526	4.0131	.001
GDP	2.740000000	1.150000000	2.3863	.027
C	_-1.070000000	4.080000000	-2.6320	.016

The empirical results of long run model are obtained by normalizing the FDI, which is shown in the above table. Most of the economist shows the positive relationship between the FDI and Exchange rate means that because of an increase in the exchange rate the FDI of the country increase. The above result shows a positive relationship between variable because according to the table of Pesaran (1997) and Pesaran *et al.* (2001). The results show that one unit change in the foreign Direct Investment leads to increase the 2.810000000 units in the exchange rate and 2.740000000 units in GDP are statistically significant. If the calculated F - statistic is compared with the two sets of critical values and calculated F-statistic is less than the critical value, then no co-integration and we reject the null hypothesis shows that there exists long run equilibrium among the variable.



Error Correction Representation for the Selected ARDL Model

ARDL (2, 0, and 2) selected based on Akaike Information Criterion

Dependent variable is dFDI.

27 observations used for estimation from 1983 to 2009

Regressor	Coefficient	Standard Error	T-Ratio	Prob
dFDI1	1.4501	0.23307	6.2218	0.000
dER	1.840000000	5951330	3.0946	0.005
dGDP	3.700000000	4.310000000	0.85901	0.400
dGDP1	-8.210000000	5.300000000	-1.5482	0.137
dC	-7.030000000	2.900000000	-2.4291	0.024
ecm (-1)	-.65508	.093539	-7.0033	.000

Once identifying the reality of the long - run relationship between foreign direct investment and exchange rate; therefore in command to establish the short-run dynamics we used the Error-Correction Model (ECM). From the above Table, elaborates the ECM model results that verify the reality of a short-run relationship between foreign direct investment and exchange rate in Pakistan. Error correction model (ECM) what shows the speediness of convergence which is close to concerning .65508. The value of the ECM shows that 65 % (per cent) convergence get position in one year.

R-Squared	.83310	R-Bar-Squared	.78303
S.E. Of Regression	3.8300000000	F-stat. F (5, 21)	19.9666[.000]
Mean of dependent variable	8.420000000	S.D of Dependent Variable	8.2200000000
Residual Sum of Squares -	2.94000000000000000000	Equation Log-likelihood	-567.8819
Akaike Info. Criterion	-574.8819	Schwarz Bayesian Criterion	-579.4173
DW-statistic	2.6794		

As of lower Table, elaborates the Error correction model results that verify the reality of a short-run relationship between foreign direct investment and exchange rate in Pakistan. The negative value of the Error correction model (ECM) value shows the speediness of convergence. The probability is less than 5%, which means that the relationship is significant. The value of Durbin-Watson statistics is 2.6794, which shows that there is no autocorrelation among the variables.

Suggestion

The examination frameworks expose that foreign direct investment in Pakistan raises with the reduction of the Rupee (Rs.). FDI of Pakistan raises by 0.61 units in reply to 1 unit

raise in exchange rate. Depreciation of the Rupee is used as an encouragement by the foreign investors and they are concerned to invest in Pakistan because of their relative rise in the value of their property. Pakistan has chased freely floating exchange rate system since 2000 which creates country more responsive to the small differences in the foreign exchange market.

Pakistan is a developing country which is in dire required of foreign investment to inspire domestic economy, seek new technology, new managerial ability and employment creation for still rising population. Foreign Direct Investment in this view can play an important role not only to handle hard economic circumstances, but it also encourages competition in the economy, which gets success key to the beauty of capitalism; innovation. Our policy suggestion is to reduce the exchange rate and to remain exchanged rates in a friendly manner. Any such progress in the exchange rates that leads to the failure of competitiveness should be avoided by good preparation and fine regulated foreign exchange market. Economic liberalization with established exchange rate should be promoted in order to carry new FDI by improving the exchange controls and developing new financial markets.

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