

# Behavior of Exchange Rate Volatility: Once Again in Action

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## **Abstract**

In the area of international trade few studies have examined whether fluctuation in exchange rate is base on macro variables that are used in this study. Basically the study is conducted in Pakistan. As it has been noticed that there is continuously increasing in exchange rate since last 20 years. This paper investigate that foreign direct investment, inflation and supply of money have strong relationship with exchange rate. This means that if there is increase in foreign direct investment then the exchange rate will decrease , if there is increase in supply of money then the exchange rate will grow and if there is increase in inflation then the exchange rate will increase and vice versa.

**Keywords;** Exchange rates, Money supply, Inflation, Foreign direct investment

**JEL:** F31, F30, P33

## **1. Introduction**

Exchange rate tells the value of one currency in terms of other. Generally it is recognized that depreciation in exchange rate be a positive signal for the economy it increases cost of imports that discourages imports and encourages exports and have a positive impact of the balance of trade. As far as appreciation of the currency is concerned it decreases exports and increases imports. This in turn proves that depreciation in exchange rate transfers income from

importing countries to the exporting countries and effects terms of trade. Because of uncertainty of exports revenue people reduces trade and this affects the economic growth of both importing and exporting nations. It is to be noted that for the purpose of adjustment of regime people hold foreign as well as domestic stocks. If exports are more than imports (Trade surplus) then people started to hold foreign currency. In case of holding demand for the currency decreases and foreign currency will depreciate. If expectations of trade deficit in the future then as imports are more than exports then foreign money holding will be less. In case of that the foreign currency will started to appreciate. If courtiers inject money in the economy then money supply is larger so more consumption and investment in the economy is undertaken. More production will increases demand for goods and prices of goods increases. More money supply means lower interest rate and rise in exchange rate. If prices rises as a result of money supply then domestic interest rate increases (Contraction in monetary policy) then demand for the currency will rises and more capital inflow will have a significant impact on the economy and currency will started to appreciate. Different countries are having fixed as well as floating exchange rates. The goodness of flexible exchange rate is that countries are not dependent on one another in terms of formulating policies like monetary and fiscal policy. But in a fixed exchange rate regime if one country has implemented expansionary monetary policy then other country also has to follow the same policy. If a government increases its consumption in development projects then output of the economy will be more. Increase in consumption in domestic country will affect balance of trade positively and that will ultimately increase output and depreciation of exchange rate. Fluctuations in exchange rate are regarded as a significant impact on foreign debt. The currency depreciation is regarded as a positive signal for the economy because it improves investment decisions and makes exports intensive and less reliance on foreign flows. Currency appreciation will intend investors toward dis saving mechanism because of expectations of tomorrow consumption will be more expensive for them, so people will spend and demand more. Due to an increase in demand imports increases and current account deficit enlarges. Foreign direct investment also has a significant positive impact on the economy. Government revenue increases due to FDI, which also leads to government investment in development projects that has a positive impact on the economy. FDI will be a source of revenue for countries but some countries don't enjoy it like those having political instability and prices volatility. It is to be noted that inflation has a significant impact on exchange rate volatility. Due to rise of import prices there is a rise in import prices which leads to increase inflation and currency depreciates (Calvo, 1993) (Dornbusch, 1984) (Kim 2007) (Ravn 2012) (Globerman & Shapiro, 1999) (Hafeez-ur-Rehman 2010) (Ali, 1999). (Jin, 2008) (Hsing, 2011). Exchange rate volatility adversely affects economic growth. So, various factors affecting exchange rate are inflation, interest rate, exports, imports, foreign debt, industrial growth and foreign direct investment. Exchange rate has a significant impact on the growth of the economy. So, the research problem is to find out "the inflation, money supply and foreign direct investment have a significant impact on exchange rate and is exchange rate volatility.

## 2. Litration Review

The relationship of exchange rate with foreign direct investment, inflation and the supply of currency fluctuated in Pakistan. It is noticed that the exchange rate behave in different ways. In reality, exchange rate fluctuation has been better than had been projected and have not been very expected. It is investigated the impact of exchange rate strength on export flows, adverse effect from exchange rate instability on foreign trade have contributed in the

elimination of flexible exchange rate and to shift towards systems of exchange rate management (Arize, Malindretos, & Kasibhatla, 2003). It was analyzed the link between the exchange rate and the business cycle. He identified the different types of macroeconomic shock that establish fluctuation in aggregate output and the exchange rate (Chadha & Prasad, 1997). Instability in the foreign currency future market, arrival of new information induces instability, in this paper it was also noticed that public news announcements also played a vital role in unsteadiness patterns (Sarno & Taylor, 2001). It is examined the possible implications of the launching of the euro on the existing exchange rate arrangements of the countries. Due to it most of the countries face adverse economic conditions. The reasons behind it was that the more important given to the euro in world trade, and a policy of more exchange rate against the euro, result the economic and structural weakness of the particular countries and alternately investment also affected (Papazoglou, 2003). When the major currencies fluctuates sharply then they put significant impact on the developing countries' economies and foreign exchange management. Foreign exchange management involves to impacts, foreign exchange reserves held by the countries and their exchange rate policies. Problems created by the fluctuation in major currencies for the foreign exchange reserves are less as compare to the exchange rate policies (Khatkhate, 2009). The consequences of pricing to market foreign exchange rate pass-through and real exchange rate dynamics across different sample of trade. He also observed that huge swings in exchange rate and investments have not bring about large engagements in inflation and disinflation as one guess (Faruqee, 1995). Joint models formalized monthly growth of US imports relating exchange rate improbability and trade expansion. In this paper Parametric linear, nonlinear semi parametric time series models were evaluated. The overall impact of exchange rate variations and trade expansion forecasts gain from habituation on instability (Helmut, 2003). Exchange rate courage is that the foreign exchange market must be efficient. Prices reflect all accessible information, so that the surplus returns of the exchange rate reflects potential concerning the future course is immediately reflected in changes in the exchange rate (Moosa, 2002). Using the forecast surveys observed the relationship between expectations and foreign exchange rates. This paper explained that they are likely to correlated but not contributory. The results provided, based on the conception that market participants forecast create new prices (Harvey, 2006). It is observed that the change in prices occurs due to the high inflation, and high inflation also put negative impact on exchange rate and thus investment also disturbed (Rogers, 1995). He also explained the forceful effects of fiscal monetary, output and exchange rate shocks on the comparative price ratio with the help of predictable structural Vector auto regression model. Using different price indexes, which include consumer price index, GDP deflator and unit labor cost, calculated different procedures of exchange rate and then used the projected values of these variables (Pons & Lacasta, 2003). When exchange value fluctuates, foreign competitors will affair in the resolve of the relative market share of the firms. A model to evaluate the contact between the exchange rate vision and foreign direct investment on the basis of well-known real interest rate from the resultant interest rate. He analyzed that how expectation impact the worldwide economy (Li, Xue, & Zhu, 2006). Two impacts that mean-reverting tendencies in real exchange rates are suitable to be more apparent at elevated inflation rates. Second, when inflation is high, demand for domestic money as an asset falls and it begins to be displaced by foreign currencies (Bleaney, Leybourne, & Mizen, 1999). Exchange rates raised domestic inflation which increased production if credit is rationed. Increasing inflation beyond the threshold level will reduce domestic output. Arising instability may arise independently of the exchange rate system.

Currency should appreciate when a specific intervention actually increases a country's economic and political strength and vice versa and having same impact on investment too. Various factors affect the behavior of the exchange rates and the result of the factors different in different countries (Sobel, 1998). So this research study investigates the behavior of the exchange rate in country like Pakistan where the exchange rate fluctuation is frequent.

### **3. Methodology**

This research study is to find out the behavior of the exchange rate with the inflation, foreign direct investment and money supply for last 20 years for Pakistan. Exchange rate is basically a market for currencies driven from the normal forces of demand and supply. Exchange rate is actually concerned when the currencies will be converted in to other currency, e.g. 1\$ is converting in Pakistani Rupee, the exchange rate may be Rs.80 i.e. 1\$=Rs80 it may be increase or decrease due to demand and supply of the currencies. The data for this research study is collected from the internet from various websites. These websites include [www.sbp.pk](http://www.sbp.pk) (State Bank of Pakistan (SBP)), [www.fbs.pk](http://www.fbs.pk) (Federal Bureau of Statistics (FBS)), and [www.kse.pk](http://www.kse.pk), [www.pide.org](http://www.pide.org).

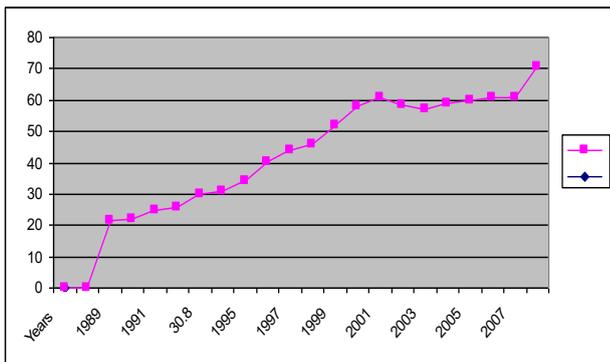
FDI comes in to a country it brought its management, capital and technology. The capital is in its home currency. When capital is bought, the supply of that country increases in term of host currency so that host country currency appreciates and home currency depreciation and vice versa. Inflation affect the exchange rate of the country when inflation increases, exchange rate also increases but the value of currency depreciates. Inflation affect the time value of money and this affect the exchange rate supply of currency also affects the exchange rate when the supply of currency of any country increases, the currency depreciation, but when the supply of currency of country decreases, its value appreciate when people demand any currency the value appreciate and vice versa.

### **4. Results And Data Interpretation**

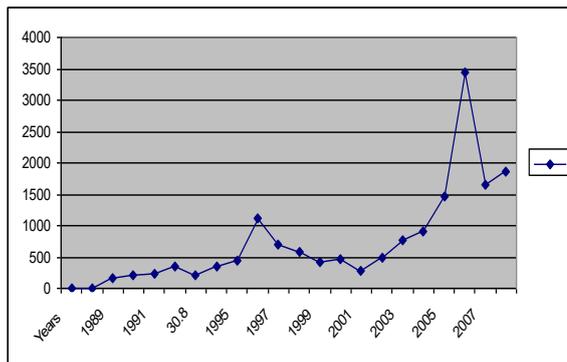
The variables are testified with regression by using Minitab. The column of Predictor shows the variables used in this paper, Coefficient shows the impact of independent variables on dependent variable which is -0.019589 of foreign direct investment, 0.034366 of supply of money and 0.035892 of inflation on Exchange rate. This means that if there is 1% increase in foreign direct investment then the exchange rate will decrease with -0.019589% , if there is 1% increase in supply of money then the exchange rate will grow with 0.034366% and if there is 1% increase in inflation then the exchange rate will increase by 0.035892%. T shows the efficiency of the variables which is -3.60 for foreign direct investment, 5.65 for supply of currency and 5.78 for inflation; these values show that the variables are very efficient. P shows the significance level of the variables which is 0.004 for foreign direct investment, 0.000 for supply of currency and 0.000 for inflation; showing that these variables are very significant. The relationship between dependent and independent variables is 74.4%, shown by R-Sq, shows that foreign direct investment, supply of currency and inflation have strong relationship with the exchange rate. Graph 1 shows the change in exchange rate with time. As the graph clearly shows that there is almost continuously increasing trend from 1989 to 2001. But in 2001 to 2004 there was decreasing trend. But again it was noticed that in 2005-06 there was increasing trend of exchange rate. It's all due to the change in macro variables and political conditions of the country. Graph 2 shows the change in Foreign Direct Investment (FDI) with time. As the graph clearly shows that there is almost continuously equal increasing trend from 1989 to 1996. But in 1996-97 there was a large increase as from \$500

million to \$1000 million. After that in 1997-98 FDI decreasing from \$1100million to \$600 million and then another increasing trend had been noticed after 2002-03. Due to this exchange rate fluctuates as shown in the first graph. Graph 3 shows the change in inflation with time. As the graphs show that there is almost continuously increasing and decreasing trend in inflation rate throughout the 20 years. But in 2007-08 inflation rate increasing from 8% to 12%, which is considered as drastic change. Due to this changing trend exchange rate also fluctuates.

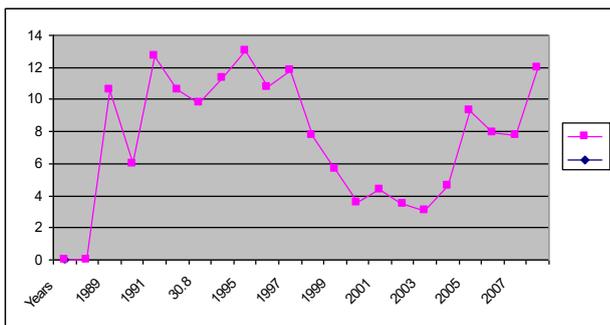
**Graph 1: Change in exchange rate**



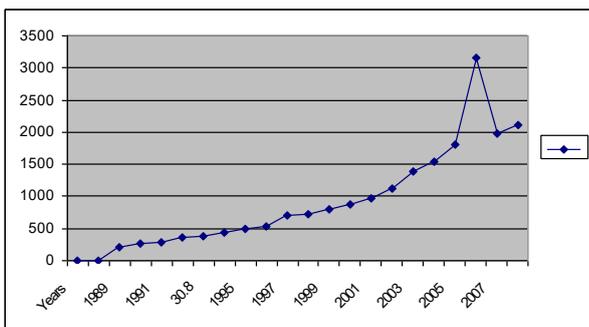
**Graph 2: Change in FDI**



**Graph 3: Change in Inflation**



**Graph 4: Change in supply of money**



Graph 4 shows the change in supply of money with time. As the graph clearly shows that there is almost continuously equal increasing trend from 1989 to 2005. But in 2005-06 there was a large increase in supply of money from \$1800 million to \$32000 million. After that in 2006-07 there was a decreasing trend from \$32000 to \$2000 million. It is due to the political conditions in the country. Due to the changing trend of supply of money, exchange rate also fluctuated as shown in first graph.

By applying the linear regression following is the equation given as follow.

$$\text{Exchange Rate} = 26.4 - 0.0196 \text{ FDI} + 0.0344 \text{ SM} + 0.0359 \text{ Inf} \dots\dots\dots (1)$$

The above equation shows that the FDI has a negatively impact the exchange rate in the equation while two are positively impact exchange rate. R square is calculated as 87 which

shows a strong relationship and F value shows the model I fit at a significant level of 0.000. Moreover, result also shows that the value of the t for foreign direct investment, money supply and inflation are -3.60, 5.65 and 5.78 respectively and all are significant. So it defined the relationship and behavior of the exchange rate. Foreign direct investment is one of the variable which show negative behavior with the exchange rate volatility. So one time change in the foreign direct investment will bring decrease the exchange rate and has negative relationship with exchange rate movement. Inflation and money supply are those factors which are positively impact the exchange rate movement.

## 5. Conclusion

This means that if there is increase in foreign direct investment then the exchange rate will decrease, if there is increase in supply of money then the exchange rate will grow and if there is increase in inflation then the exchange rate will increase and vice versa. The result also shows that FDI, inflation and supply of money have strong relationship with exchange rate. So, countries like Pakistan face such kind of problem that foreign direct investment has negatively affected. Inflation and money supply are positively affected. So government should make fiscal and monetary policies in order to consider these matters very carefully.

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