# Determinants of Exchange Rate in Bangladesh: A Case Study

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**Abstract:**

The study has been conducted to analyze the determinants of exchange rates in Bangladesh economy for the period of 1990 to 2011 using simple single equation linear regression model (SELRM). Inflation rate, GDP growth rate, interest rate and current account balance is used as explanatory variable. These are the most important determinants of exchange rate, which have major impact on exchange rate. Our conclusion includes that inflation rate, GDP growth rate, interest rate and current account balance has positive impact on exchange rate and the major role played by GDP.

**Key Words:** Exchange rate, Inflation rate, GDP growth rate, Interest rate, Current account balance.

**Introduction:**

Exchange rate plays an important role in international trade. You know the exchange rate is the value of one currency with purpose of conversion to another country. In other word the rate at which one currency converted into another. Exchange rate is important factor in this globalization era while considering any country to trade internationally because lower currency rate make its export cheaper and higher make it expensive and vice versa. Appreciation of currency has greater impact on foreign trade.

Exchange rate also has greater impact on profitability of business where they have FDI (foreign direct investment). Exchange rate may also enhance the risk and uncertainty to dramatic extent in case of foreign investment. So exchange rate have more important factor to discuss, in this paper I try to check the determinants which may influence our exchange rate and its impact on Bangladesh economy. Chowdhury (1993) studies about fluctuation in exchange rate affects on trade flows of G-7 countries and founded that fluctuation in exchange rate has significantly affect export density of in G-7 countries.

An important determinant which may cause volatility of exchange rate differentials, inflation differentials and current account deficit, interest rate and last which is most important is GDP growth rate. How these factors affect the exchange rate and what's changing take place in overall economy. Sound macroeconomic policies, inflation management may handle the difference in exchange somehow which cause payment deficit. Proper understanding and management of determinants of exchange rate give help and clear view towards developing sound exchange policies to achieve desired economic growth. Investors may invest in that economy where exchange rate is stable because in that type of economy where exchange rate volatility risk is higher and risk aversion investors never invest in this type of economy. To boost up the economy exchange rate must be managed for this purpose the determinants must be focused.

**Objectives of this study:**

In Bangladesh inflation rate, GDP growth rate, interest rate, current account balances are the most important economic variable to determine exchange rate. To contain the trade deficit which cause by exchange rate volatility should manage by focusing on its determinants. The key objectives of this study are:

- ☞ To check out the determinants are important while considering exchange rate.
- ☞ To check out the effect of inflation and interest rate on exchange rate.
- ☞ To check out the trade effect deficit on Bangladesh economy.
- ☞ To check out the effect of exchange rate on economic growth.

**Literature review:**

In 1973 when floating exchange rate apply in most of developing countries from fixed exchange rate. By this change in exchange rate regime most researcher investigate this factor how these impact on economies.

*Cushman (1983)* introduce the third countries effect in the calculation of exchange rate volatility he argues that there are other factors also included other countries rate also be considered instead of just focusing on countries which are under consideration. Under law of fixed price model prices of all goods in different countries which are internationally traded are same in perfect market.

*Akhtar & Hilton (1984)* shown that there is negative relationship between vitality of exchange rate and volume of foreign trade.

*Gotour (1985)* studied that there is insignificant relationship between exchange rate and volume of trade, but he also argue that there must be an indirect relationship. Risk aversion firms are a major factor in exchange rate volatility to produce goods and exports.

*Rangrajan (1986)* studied about bankers and many traders demand exchange rate volatility risk premium for compensation of that risk.

*Campa & Goldberg (1993)* studied that vitality in exchange rate is negatively related with investment and positive impact was found by Aizenman (1992). Exchange rate volatility affects the investment decision in long run but there is no significant relationships in short run so all countries who deal in long run investments focus on exchange rate fluctuations while considering a foreign direct investment.

*Rogoff (1998)* studied that exchange rate uncertainty is large problem for exporter and importer. Most of investors not take the risk of exchange instead of many risks are there already exists. For this traders export goods to avoid the risk of exchange rate volatility.

*Broll & Eckwart (1999)* developing countries have little access to international capital so their low inflation rate is associated with fixed exchange rate.

*Baak Mehmood & Vixathep (2002)* results show that exchange rate fluctuation has negative impact on exports in both long run and short run periods.

*Herberger (2003)* studied the exchange rate uncertainty and economic relationship and concluded that no significant effect between real exchange rate and economic growth.

*Azid et al. (2005)* have shown that volatility of exchange rate and economic growth effected positively if there are flexible arrangements for exchange policies.

*Kemal (2006)* have studied that exchange rate volatility is positively related with exports and negatively with imports in case of Bangladesh. He has also concluded the devaluation is also by balancing the trade deficit.

**Methodology:**

Data should be collected by using secondary sources from world economic outlook (April, 2012) index mundi, IMF data of Bangladesh and economy watch, these data resources are more reliable and having data which may we use in this study. By checking exchange rate of Bangladeshi Taka with U.S. $ data over period of 22 years (1990-2011) of Bangladesh. We gather all information about exchange rate and GDP rate from world economic outlook. Inflation and interest rate are also be collected from index mundi and run regression to check the significance and relationship of these determinants, are these factors have significant relate to exchange rate.

The study explains the determinants of exchange rate. We have estimated simple single equation linear regression model (SELRM) for analysis of determinants of exchange rate. The model can be shown as follows:

$EXR_t = \beta_1 + \beta_2 INF_t + \beta_3 GDP_t + \beta_4 INT_t + \beta_5 CAB_t + U_i$ …………………………… (1)

Where, EXR = Exchange rate

      INF = Inflation rate

     GDP = GDP growth rate

     INT = Interest rate

     CBA = Current account balance

     $U_i$ = Error term

Model is estimated using Ordinary Least Square technique and significance of results have been checked by using usual t-test. Because of this study uses time series data, so unit root test and cointegration should be checked out. But the sample size is not large enough to test cointegration as well as unit root test. So unit root test and cointegration test are not considered in this study.

**Empirical results:**

Estimated results with ordinary least square method is given below:

**Table-1: Regression Results**

| Model-1 | | Unstandardized Coefficients | | Standardized Coefficients | t-value | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| | (Constant) | -.541 | 13.565 | | -.40 | .969 |
| | INF | .718 | .687 | .141 | 1.045 | .311 |
| | GDP | 7.605 | 2.069 | .508 | 3.675 | .002 |
| | INT | 1.240 | 1.152 | .133 | 1.076 | .297 |
| | CAB | 6.899 | 1.850 | .476 | 3.729 | .002 |

Dependent Variable: EXR

From the table it can be said that the estimated coefficients have all expected sign. The t-value of the coefficient of GDP growth rate and current account balance are 3.675 and 3.729, which is statistically significant. But the t-value of the coefficient of inflation and interest rate are 1.045 and 1.076, which are not highly significant. If all other variables are constant the estimated regression equation is as follows:

$EXR = -.541 + .714\ INF + 7.605\ GDP + 1.240\ INT + 6.899\ CAB$

**Table-2: Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | | Durbin-Watson |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change | |
| 1 | .872 | .761 | .705 | 7.13330 | .761 | 13.538 | 4 | 17 | .000 | 1.429 |

a Predictors: (Constant), INF, GDP, INT, CAB
b Dependent Variable: EXR

From the table it can be said that the fitted line is reasonably good, where the goodness of fit, $R^2$ value is 0.761. That is almost 76% of the variation in the exchange rate in Bangladesh is explained by GDP growth rate, current account balance, inflation and interest rate.

**Table-3: ANOVA**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 2755.385 | 4 | 688.846 | 13.538 | .000[a] |
| | Residual | 865.028 | 17 | 50.884 | | |
| | Total | 3620.413 | 21 | | | |

a. Predictors: (Constant), CAB, INT, INF, GDP

The F-value is 13.538 while the critical values for F are 3.32 at 5% and 5.39 at 1% level of significance. So F-value 13.538 indicates that $R^2$ is statistically significant. That is the estimated equation is significant. P-value = 0.00 which shows impact of all independent variable on dependent variable is significant. So we can say our model is overall significant.

**Conclusion:**

We introduce a variation in the empirical calculations of the exchange rate regime choice. Using a time series analysis, the paper defines a set of variables that helped to explain the choice of exchange rate in Bangladesh for the 1990-2011 periods. Our analysis shows that GDP growth rate, current account balance, interest and inflation

rate have positive relation with exchange rate. But GDP growth rate and current account balance are the major determinants of exchange rate in Bangladesh economy.

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