

**A Thesis**  
**On**  
**Exchange Rate Fluctuations and its**  
**Impact on Economic Growth of**  
**Bangladesh**

Course Code: ECO-799



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# **Exchange Rate Fluctuations and its Impact on Economic Growth of Bangladesh**

## **ABSTRACT:**

Exchange rate is an important factor affecting on economic growth of every country in the worldwide. This study has made to examine the impact of exchange rate fluctuation on economic growth of Bangladesh during 1979 to 2018. This research paper conducted to analyze using simple linear regression model (SLRM). We have used STATA software as it provides a deep investigation for calculating of data analysis. We have collected the data from the sources of World Development Indicators (WDI), Asian Development Bank and Trading Economics by using as secondary data. There are some limitations we have faced in this research. Last of all, this research paper has focused on the impacts of exchange rate fluctuation on the economic growth of Bangladesh.

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# Chapter 1: Background of the Study

## 1.1 Introduction

Nowadays, exchange rate fluctuation on the economic growth has been one of the most widely researched topics. Exchange rate means the price or rate of one currency in term of another currency of the any country. It may fluctuate day by day with the changing market forces of supply and demand of currencies from one country to another country. It reflects the strength of a country's economy.

Exchange rate plays a significant role in foreign trade. It is a worldwide international price measuring for the competitiveness of an economy. On the other hand, the exchange rate also plays a major role in the production of income, spending and economic goods and services. It affects not only economic goods and services but also capital in a country.

Exchange rate also has major impact on foreign direct investment (FDI). Exchange rate fluctuation may also increase the risk and uncertainty to extent in the case of foreign direct investment. An important determinant which may cause instability of GDP growth rate for exchange rate differentials, inflation differentials, interest rate differentials and foreign investment differentials. These variables or factors explained that how affects the exchange rate fluctuation and what changes take place in overall country's economy.

So, exchange rate fluctuation and economic growth remain important issues in the worldwide as well as in developing countries like us. This research paper has explained to find out how exchange rate fluctuations influence GDP growth rate in our country.

## 1.2 Problem Statement

A research problem statement is the kind of an active challenge (i.e. problem) faced by researchers or investigators. That does not have enough solutions existing including the logic for its viability based on strong equivalent and reviewed sources as well as theoretical basis. The research problem statement should resolve all six questions like what, how, where, when, why, and who.

The important problem of statement which this research is designed to solve is whether the exchange rate fluctuation has any bearing on Bangladesh's economic growth and development. If there are instabilities of the foreign exchange rate so that it also create a problem to the economy. This study is guided by the essential sources of all determinants within a research framework, using the current data during 1979 to 2018. The data was collected from different sources. The data was collected from different sources for that reason it helped us to study the research paper. A major finding of the study is that impacts of exchange rate fluctuation in Bangladesh are statistically affected by changes in the identified variables.

The main purpose of this research paper is to find out whether economic growth rate of GDP has a relationship with the following explanatory or independent variables. Those variables are exchange rate, inflation, interest rate and foreign direct investment. These variables help us to explain the impact of exchange rate fluctuations on the economic growth of Bangladesh.

### **1.3 Research questions**

Now we faced some research questions about the impact of exchange rate fluctuations on the economic growth. The research questions were collected from the objectives of the study. Those research questions were given below:

1. Is there any relationship between exchange rate fluctuations and GDP growth rate?
2. Does intention effect of the inflation on the economic growth?
3. Is there any relationship between interest rate and economic growth of GDP?
4. Is there any relationship between foreign direct investment and economic growth of GDP?
5. Has exchange rate fluctuation had any significant impacts on GDP growth rate?

### **1.4 Research Objectives**

The main objective of this study was to determine the impact of exchange rate fluctuations on selected economic sectors of the economy. The specific objectives were given below:

- To analyze the reasons are important while considering exchange rate fluctuations.
- To investigate the effect of exchange rate fluctuation on economic growth of GDP.
- To find out the relationship of inflation and economic growth of GDP.
- To examine the effect of interest rate and economic growth of GDP.
- To measure the relationship of foreign direct investment and economic growth GDP.

## **1.5 Significance of the Study:**

The significance of this research work derives from the fact that if the cause of the exchange rate fluctuation of the country is identified and corrected, the economy will grow rapidly and develop into a progress one. The study investigated the impacts of exchange rate fluctuation on the economic growth of Bangladesh. The study mainly covered by Exchange rate, inflation, interest rate, foreign direct investment and the economic growth of GDP. These are the independent and dependent variables. These variables are estimated for the measurement of growth of economy. Significantly, this study would help the government to identify the strength and weakness of economic growth. It also would help to know about the impact of exchange rate fluctuation and economic growth. This will definitely enrich growth of the economy. The study will also provide as a guide for the future researchers on this subject.

## **1.6 Scope and Limitations of the Study**

This study is mainly describing the impact of exchange rate fluctuation on the economic growth in Bangladesh over a period of 40 years. So there are some scope and limitation that we have faced in this research. The scope and limitations of the study are the following:

1. Most of the data collected from WDI.
2. To generalize is difficult as secondary data.
3. Time and budget (money) are limited.
4. Lack of experience in research work.



5. Too many short time for this reason we are not appropriate with this type of work as data is secondary.

# Chapter 2: Literature Review

## 2.1 Literature Review

In the review of literature, various theoretical models are available to analyze exchange rate fluctuation appraisal and determinant. There are many studies that have evaluated the relationship among exchange rate fluctuations and economic growth.

Most of the research studies on exchange rate models before the 1970s were based on the fixed price assumption (Marshall 1923). In 1973, the floating exchange rate was applied in most of developing countries from fixed exchange rate. For this change in exchange rate, most of the researcher investigate this factors how impact on the economies.

Begum and Abul (1998), examined on a two sector growth model and by using annual data for the period of 1961-92 and found that exchange rate has significantly increased economic growth through its positive impacts on total factor productivity in the country.

Akhtar and Hilton (1984) shown that there is a negative relationship between the strength of exchange rate and the amount of foreign trade.

Saleh Mohammed and Shyamapada Biswas, investigated the exchange rate and its impacts on GDP and inflation in Bangladesh. In this research paper, they compared the economic track lists of the two different exchange rate rules that the “Free Exchange rate” and the “Free Floating Exchange rate system” in retaining economic efficiency. They also examined the relationships between exchange rate and inflation and between exchange rate and country’s GDP growth rate in Bangladesh.

Agenor (1991) and Montiel (1997) examined on exchange rate and they found that exchange rate fluctuations have significant effects for economic growth in Bangladesh. Because of this fluctuation in exchange rate effects some changes in trade balance by influencing the country's export and import.

Rosengren, Eric (1992) noted that there has been a significant relationship between foreign direct investment in the United States and the US real exchange rates since 1970. Because of two reasons that the real exchange was affected relative cost of production and the exchange rate affected relative wealth significantly across countries.

Robert J. Barro (1995) examined a study on the estimated effects of inflation on economic growth were significantly negative. He found out that inflation and economic performance are negatively correlated because of less purchasing power and higher price level to the people.

Azid et al. (2005) have investigated that fluctuation of exchange rate and economic growth effected positively if there are easy-going arrangements for exchange rules.

Khondker, Bidisha, Razzaque (2012) examined a research on the exchange rate and economic growth which is an empirical assessment on Bangladesh and this research has tried to investigate that the impact of exchange rate changes on Bangladesh's overall output which measured by GDP.

From the review of literature, some authors claimed that exchange rate is positively related to economic growth and some authors claimed it is negatively related. Last of all, there is no question to say that exchange rate fluctuation has a significant impact on the economic growth of any country.

# **Chapter 3: Methodology of the study**

## **3.1 Introduction**

This part mainly provides the conceptual framework on the basis of literature review. This chapter will also explain the key factors, variables and relationships among theories or models and makes a theoretical outline. The conceptual framework will help us to get answers of the study's research questions and also will conduct the data collection of this study.

This study is primarily based on secondary data. All the data was collected sources from world Development Indicator (WDI), Asian Development Bank and Trading Economics by using as secondary data. We had gathered all information about exchange rate fluctuations, inflation, rate of interest, foreign direct investment and GDP growth rate from World Development Indicator, Asian Development Bank and Trading Economics.

## **3.2 Research Framework:**

This research framework is Descriptive by its nature. In the descriptive research it will be a causal investigate. Because these types of research will be implemented to test the hypotheses and find out the answers of research questions will be a causal study. This type of study will show a causes and impact relationship between the dependent and independent variables. Now we will show the research framework:

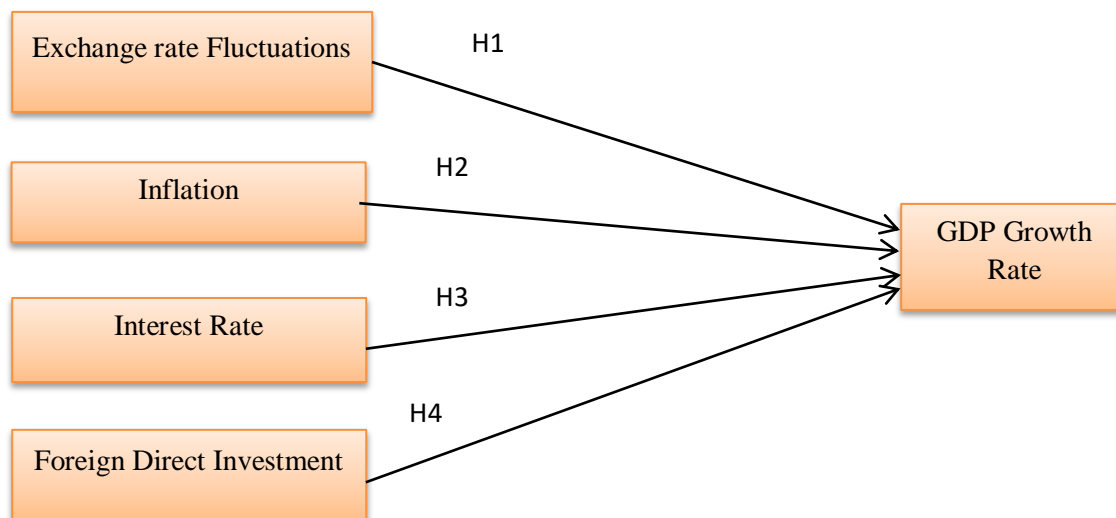


Figure 3.2: Research Framework

### 3.3 Model Specification

The study explains the determinants of exchange rate fluctuation. For determining the impact of exchange rate on the economic growth of Bangladesh the specific model can be shown by the following regression model:

$$\text{GDP growth rate} = \beta_1 + \beta_2\text{EXRF} + \beta_3\text{INF} + \beta_4\text{INR} + \beta_5\text{FDI} + u_i$$

Where,

EXRF = Exchange rate fluctuation

INF = Rate of Inflation

INR = Interest rate

FDI = Foreign direct investment

$\beta_1$  = Intercept and

$u_i$  = The error term

### **3.4 Variables list and description**

Two kinds of variables will be used: The dependent or endogenous variable and the independent or exogenous variable. In this equation Gross Domestic Product (GDP) is the dependent variable. Exchange Rate Fluctuation (EXRF), Inflation (INF), Interest Rate (INR) and Foreign Direct Investment (FDI) are the independent variable.  $\beta_1$  is the intercept and  $\beta_2$ ,  $\beta_3$ ,  $\beta_4$  and  $\beta_5$  are the slope of the GDP growth equation.  $u_i$  denotes the error term which is normally distributed with a zero mean and a constant variance.

### **3.5 Hypotheses Development**

H<sub>1</sub>: There is a relationship between GDP growth rate and Exchange rate Fluctuation.

H<sub>2</sub>: There is a relationship between economic growth of GDP and Inflation.

H<sub>3</sub>: There is a relationship between GDP growth rate and Interest rate.

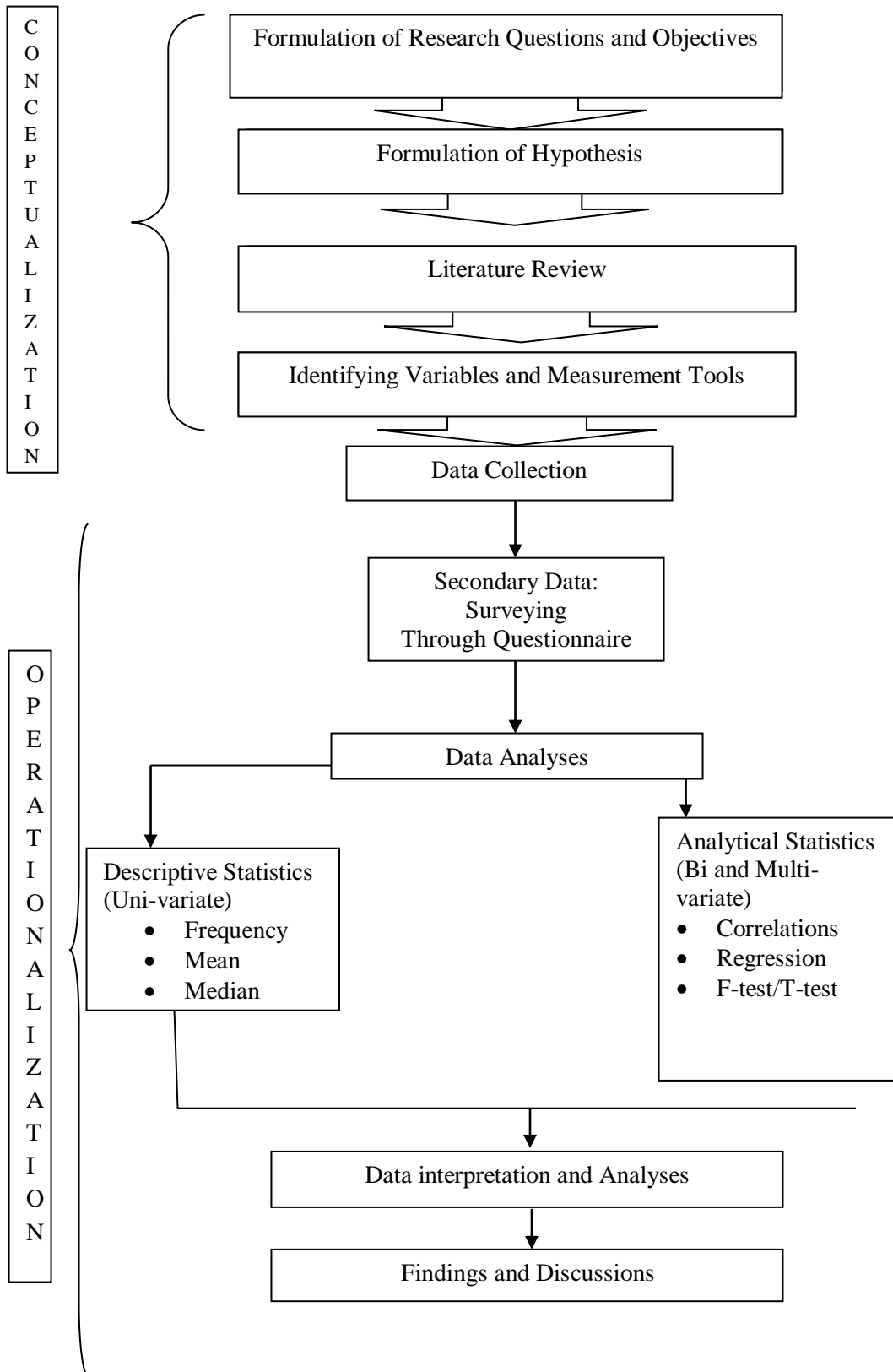
H<sub>4</sub>: There is a relationship between GDP growth rate and Foreign Direct Investment.

### **3.6 Research Design:**

As shown in the diagram of the conceptual framework of the research there are four independent variables and one dependent variable. The conceptual framework also shows that there is a relationship between the Independent variables and the dependent variable. It is very important to search this type of relationship so that the previously mentioned purpose of the study can be met.

Now the research design will be shown:

Figure 3.6: Research Design for the Study



### **3.7 Measurement of variables**

We have collected total 5 variables. Those are GDP growth rate, Exchange rate fluctuations, Inflation, Interest rate, Foreign direct investment. Here, GDP is the endogenous variables and exchange rate fluctuation, inflation, interest rate, foreign direct investment are the exogenous variables for the model. The model of variables was measured over the period 1979 to 2018.

### **3.8 Data Collection**

For collecting the data Secondary sources are used. Secondary data were used to ensure completeness of the research work. It involved the consultation and use of articles from the Daily newspapers, management's reports and from the internet website like as [tredeconomics.com](http://tredeconomics.com). The secondary data were to collect from World Development Indicators (WDI) in the World Bank website. The data acquired from World Development Indicators only focusing on the country of the Bangladesh for 40 years from 1979 - 2018.

### **3.9 Techniques of Data Analysis**

For data analysis purpose, STATA software have used as it provides in-depth inquiry in data analysis and determination. Authenticity analysis, regression analysis and correlation analysis have used to investigate the result of the data. Step by step regression analysis can be carried out to test of hypotheses to search which independent variables individually provided a significant contribution towards the explanation of the dependent variable noted that if an investigator wishes to find out whether some conceptually newer measures add anything to the depending



variable. MS Excel has also used to carry out for collecting data as sequential wise in some cases.

# Chapter 4: Findings of the Study

## 4.1 Introduction

Findings of the study we collected all data from World Development indicators (WDI) as our all data are used as secondary sources. Those sources of the data used for this is from WDI website from years 1979-2018 stating with 40 years. The reliability test has been carried out to verify the inner consistency of the variables obtained in the data. There are several analytical techniques such as regression analysis, correlation analysis, multicollinearity analysis, autocorrelation analysis, testing for heteroskedasticity have been used to measure the research work. For data processing purpose STATA software was mainly utilized in this study.

First of all we research descriptive statistics. The descriptive statistics table's results of the model are shown below:

## 4.2 Descriptive Statistics

The descriptive statistics table 4.2 is:

**Descriptive Statistics**

<b>Variables</b>	<b>Obs</b>	<b>Min</b>	<b>Max</b>	<b>Std. Dev.</b>	<b>Mean</b>
GDP	40	15.45406	83.5	21.08535	50.2876
Exchange Rate Fluctuation	40	1.56e+10	2.74e+11	6.74e+10	7.43e+10
Inflation	40	2.007174	15.4	3.131164	7.351439
Interest Rate	40	-4.31683	12.82143	3.000845	5.877487
Foreign Direct Investment	40	-.05146	1.735419	.5380599	.4685851

## Interpretations:

Descriptive statistics are mainly describing the summary statistics for the variables and measures of the data. In the research study, these statistics may help us to manage the data and it represents as summary table. The table of descriptive statistics explains the number of observation, mean, standard deviation, minimum and maximum value in the research study. Our observation value is 40 because of collecting the data of 40 years. All the above, we can see all the variables of GDP, exchange rate fluctuation, inflation, interest rate and foreign direct investment.

### 4.3 Correlation Table

The correlation table 4.3 is given below:

**Correlation Table**

Variables	Exchange rate fluctuation	Inflation	Interest rate	Foreign direct investment
Exchange rate fluctuation	1.0000			
Inflation	-0.2333	1.0000		
Interest rate	-0.1662	-0.4033*	1.0000	
Foreign direct investment	0.7790*	-0.1080	-0.0843	1.0000

\*. Correlation is significant at the 0.05 level (2-tailed).

The table of correlation table represents the significant level of 0.05. In this table, \* indicates correlation is significant at the level of 0.05. On the other hand, most of the correlation values are appeared to show positive and good associations among the independent variables with each other.

**Correlation Matrix of coefficients of regress model**

e (V)	Exchange rate fluctuation	Inflation	Interest rate	Foreign direct investment	_cons
Exchange rate fluctuation	1.0000				
Inflation	0.3413	1.0000			
Interest rate	0.2952	0.4746	1.0000		
Foreign direct investment	-0.7802	-0.1747	-0.1463	1.0000	
_cons	-0.4816	-0.8495	-0.7872	0.1759	1.0000

Besides, we can see the correlation matrix of coefficient regression model. Here the correlation matrix of coefficient values of independent variables is positive relationship in the table.

## 4.4 Multiple Regression Analysis

Now the multiple regression analysis results table of the model is given below:

Number of Obs	=	40
F( 4, 35)	=	87.17
Prob > F	=	0.0000
R-Squared	=	0.9088
Adj R-Squared	=	0.8984
Root MSE	=	6.7223

**Multiple Regression Table**

GDP	Coef.	Std. Err.	t	P>  t
Exchange rate fluctuation	1.07e-10	2.75e-11	3.89	0.000
Inflation	-1.604131	.4046266	-3.96	0.000
Interest rate	.3996147	.4143953	0.96	0.341
Foreign direct investment	23.18318	3.24935	7.13	0.000
_cons	40.93025	5.368935	7..62	0.000

### Analysis and Interpretations:

The regression analysis has presented actual values for the unknown parameters. Using the specific model can be shown by the following regression model:

$$\text{GDP growth rate} = 40.93025 + 1.07e-10\text{ExchangeRateFluctuation} - 1.604131\text{Inflation} + .3996147\text{InterestRate} + 23.18318\text{ForeignDirectInvestment} + u_i$$

In the economic theory we can see the sign of the coefficient, there is a positive relationship between exchange rate fluctuation, interest rate, foreign direct investment and the dependent variable of GDP growth rate. Here Inflation and GDP growth rate should have positive relationship but in the sign of the coefficient is negative.

Now we can see our regression analysis table, here is the p-value and R-squared values. The p-value indicates the statistical significance of the parameter and the R-squared value is the percent that explains the regression in itself. It indicates about the explanatory power of the estimated model.

The R-squared value of the model is 0.9088 or 90.88% which is close to 1 or 100%. Since the value is high, it means the estimated model is powerful in explaining impacts of the regressors on the regressand. This level of R-squared value explains us that the data fits pretty well for the regression. The Adjusted R-squared value of the model is 0.8984 or 89.84% as shown above.

In the regression analysis table shows our first variable which is exchange rate fluctuation. The coefficient of exchange rate fluctuation is  $1.07e-10$  which is a positive relationship with GDP growth rate. Here the probability (p-value) value is 0.000 which is less than 0.05 or 5%. It's meaning that exchange rate fluctuation is a significant variable to explain our dependent variable which is GDP growth rate.

Next we can see our second variable which is Inflation. The coefficient of inflation is -1.604131 which indicates a sign of negative relationship but it should have a positive relationship with GDP. Here the p-value is 0.000 which satisfies the condition that the p-value is less than 0.05 or 5%. It's meaning that our inflation is a significant variable to explain our dependent variable which is GDP growth rate.

Here the third variable which is interest rate. The coefficient of interest rate is .3996147 which is a positive relationship with GDP growth rate. The probability of p-value is 0.341 or 34.1% which more than 0.05 or 5%. When the probability value is more than 5% then that particular variable is not a significant. So here meaning that interest rate is not a significant variable to explain GDP growth rate.

Lastly, the fourth variable is foreign direct investment. The coefficient of foreign direct investment is 23.18318 which is a positive relationship. Here the probability of p-value is 0.000 which is less than 0.05 or 5%. It's meaning that foreign direct investment is a significant variable to explain our dependent variable which is GDP growth rate.

The F statistics is 87.17 and corresponding probability value (Prob>F) is 0.0000 meaning that less than 0.05 or 5% which is highly statistically significant. When the probability value is less than 5% we can reject the Null hypothesis and can accept the Alternative hypothesis. It's meaning that the independent variables jointly influence our dependent variable which is GDP growth rate.

## 4.5 Multicollinearity Test:

Now we can see the testing of Multicollinearity table 4.5 that is given below:

Variable	VIF	1/VIF
exchangerate	2.96	0.338311
foreigndirectinvestment	2.64	0.379068
inflation	1.39	0.721857
interestrate	1.33	0.749298
Mean VIF	2.08	

Multicollinearity means the existence of a perfect or exact linear relationship among all explanatory or exogenous variables of a regression model. Multicollinearity can cause weird results when attempting to research how well individual independent variables benefit to an understanding of the dependent variables. The test of multicollinearity, Variance inflation factors (VIF) for the independent variables we used on STATA. In this test of VIF should not exceed or equal to 10. Our STATA result is shown above that 2.08. It's meaning that the VIF is less than 10 which is tolerable.



## 4.6 Testing for Heteroskedasticity

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance

Variables: fitted values of gdp

chi2(1) = 1.31

Prob > chi2 = 0.2530

In the testing of Heteroskedasticity, first of all we can see the Bruesch-Pagan / Cook-Weisberg test. Here, Ho: Constant variance. Actually it means that,

Null Hypothesis is: Residuals are Homoscedastic (constant variance).

ALT Hypothesis is: Residuals are Heteroskedastic.

Here, the Null hypothesis is desirable and the Alternative hypothesis is not desirable. The probability value is 0.2530 or 25.30% which is more than 0.005 or 5%. It's meaning that we cannot reject the Null hypothesis rather than accept Null hypothesis. That means our residuals are Homoscedastic. It means that constant variance so we are happy about this model. Another test of Heteroskedasticity which is Information of matrix test (imtest) is given below:

White's test for Ho: homoskedasticity

against Ha: unrestricted heteroskedasticity

chi2(14) = 17.07

Prob > chi2 = 0.2523

Cameron & Trivedi's decomposition of IM-test

Source	chi2	df	p
Heteroskedasticity	17.07	14	0.2523
Skewness	6.37	4	0.1730
Kurtosis	0.39	1	0.5328
Total	23.83	19	0.2026

In this table explains the information of matrix test (IM-test). Here the white test for  $H_0$ : Homoscedasticity against  $H_a$ : unrestricted heteroskedasticity. The probability value is 0.2523 or 25.23% which is more than the significant level of 0.05 or 5% so we are happy about this model and this model is not violating heteroskedasticity.

## 4.7 Diagnostic Checking

Diagnostic checking means whether the residual of this model is normally distributed or not. Residual means actual GDP growth rate minus fitted GDP growth rate. We can create a residual. So the new variable which is R1 has been created in the STATA that is called residual. Our Null Hypothesis is: Residual is normally distributed and ALT Hypothesis is: residual is not normally distributed.

## 4.8 Testing for Autocorrelation

First we test the Shapiro-Wilk W test that is given below:

Shapiro-Wilk W test for normal data

Variable	Obs	W	V	z	Prob>z
R1	40	0.96004	1.579	0.962	0.16806

Here the probability value is 0.16806 or 16.806% that is more than 0.05 or 5% meaning that we cannot reject the Null hypothesis rather we accept Null hypothesis. That means residuals are normally distributed and that is desirable so we are happy about this model.

Next we test the Durbin's Alternative test for Autocorrelation that is:

Durbin's alternative test for autocorrelation

lags (p)	chi2	df	Prob > chi2
1	0.298	1	0.5851

H0: no serial correlation

Durbin's Alternative test for Autocorrelation is meaning that serial correlation. Here, Ho is the Null hypothesis that is no serial correlation in the residual and that is desirable. We can see the probability value is 0.5851 or 58.51% which is more than the level of 5% or 0.05 meaning that we cannot reject the Null hypothesis rather we accept null hypothesis. That means our model has no serial correlation in the residual and this model is desirable.

Then we test the Breusch-Godfrey LM test for Autocorrelation.

Breusch-Godfrey LM test for autocorrelation

lags (p)	chi2	df	Prob > chi2
1	0.358	1	0.5496

H0: no serial correlation

The result of Breusch-Godfrey LM test for Autocorrelation calculated from the STATA. Here Ho is the Null hypothesis that is no serial correlation. The probability value is 0.5496 or 54.96% which is more than the level of 5% meaning that we cannot reject the Null hypothesis rather we accept Null hypothesis. So our model has no serial correlation in this model.

Lastly we test the Durbin-Watson test that is:

$$\text{Durbin-Watson } d\text{-statistic}(5, 40) = 1.10889$$

The result of Durbin-Watson test we can see the value is 1.10889. In this test we can conclude that there is no autocorrelation in this model.

## 4.9 Testing for White noise in the Residual

Testing for White noise in the residual is given below:

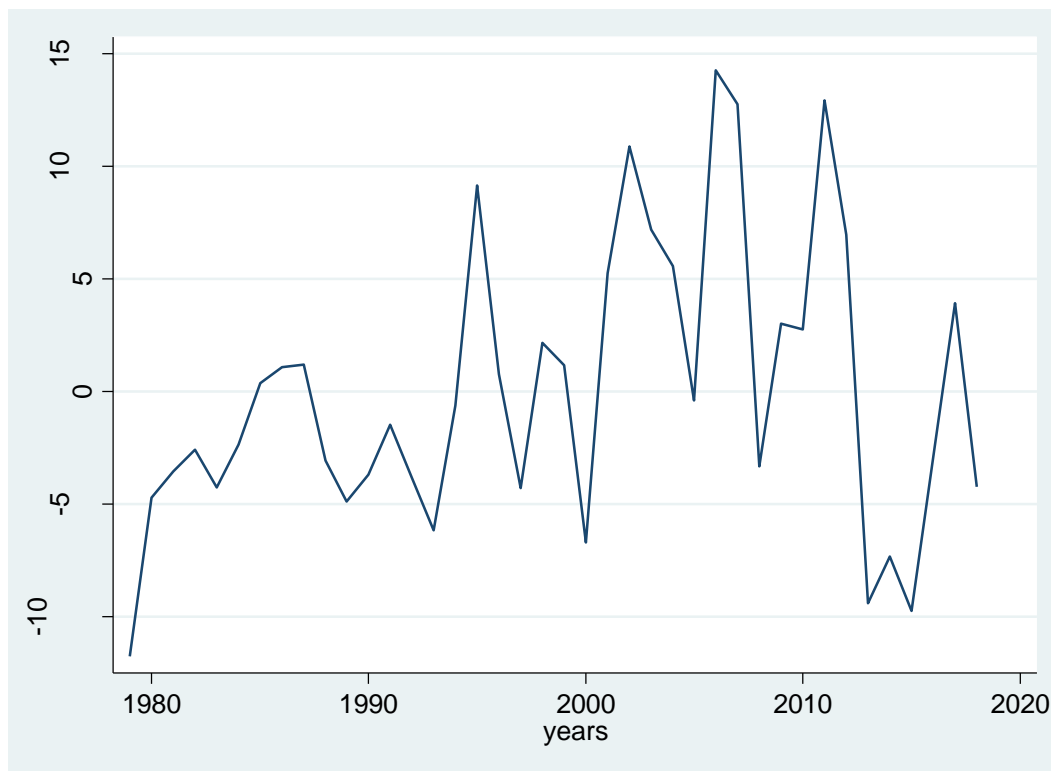


Figure 4.9: Testing for white noise in the residual

We have developed white noise test of the residual derived from a regression model. Now we set our null hypothesis about residual variable as follows: residual variable is the white noise

meaning that there is no serial correlation. Residual are homoscedastic and mean of the residual is zero. Residual variable is random or independent and also stationary.

Here the graph is the plotting of the residual that is R1 and plotting is actually looks like stationary or white noise. There is no trend because some are going up and some are going down in the graph. So that this residual is stationary or white noise.

### 4.10 Testing for Autocorrelation and partial autocorrelation

We have some test and from those test we can know whether our residual is white noise or not. The test of autocorrelation and partial autocorrelation table 4.10 is given below:

LAG	AC	PAC	Q	Prob>Q	-1	0	1	-1	0	1
					[-1	0	1	[-1	0	1
					Autocorrelation]			Partial Autocor]		
1	0.3960	0.3999	6.7568	0.0093						
2	0.0312	-0.1642	6.7999	0.0334						
3	0.1148	0.2441	7.3986	0.0602						
4	0.1819	0.0746	8.9425	0.0626						
5	0.2763	0.2962	12.606	0.0274						
6	-0.0302	-0.3744	12.651	0.0489						
7	-0.0652	0.2758	12.868	0.0754						
8	0.0937	-0.2401	13.329	0.1010						
9	-0.0119	-0.0304	13.337	0.1480						
10	0.0151	0.0821	13.349	0.2048						
11	-0.0642	-0.0518	13.588	0.2566						
12	-0.1679	-0.3384	15.28	0.2265						
13	-0.1436	-0.1710	16.563	0.2200						
14	-0.1373	0.0600	17.781	0.2169						
15	-0.0529	0.0370	17.969	0.2643						
16	-0.0200	0.2816	17.997	0.3241						
17	-0.0612	0.0165	18.271	0.3720						
18	-0.1276	-0.2761	19.515	0.3608						

Here the test of the residual is white noise or not, we can see the results of probability values. The probability values are more than 5% or 0.05. So we can say that the Null hypothesis of residual is white noise. The probabilities of all values are more than 5% in this table meaning that we cannot reject the Null hypothesis. So our residual is white noise and this particular residual has no serial correlation which is desirable for a good regression model.

### 4.11 Graph of Cumulative Periodogram White-Noise test

The graph of Cumulative periodogram white-noise test is given below:

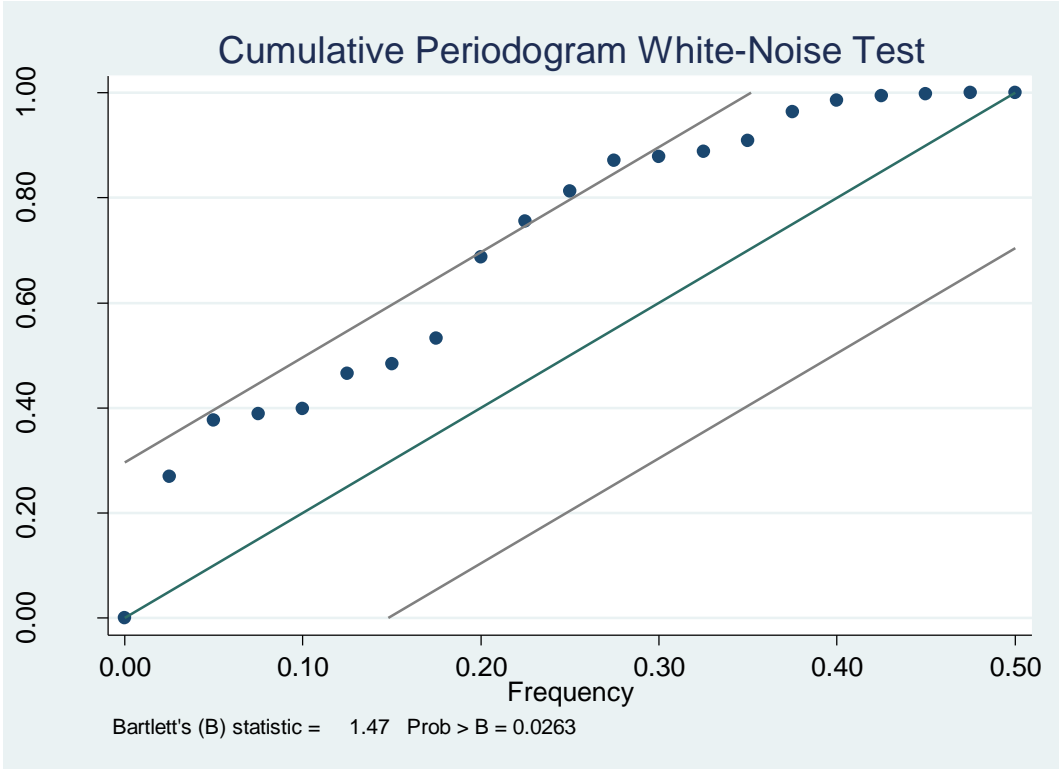


Figure 4.11: Cumulative periodogram white-noise test

Here, we can see the statistic is 1.47 and the probability is 0.0263 or 2.63% which is more than 5% or 0.05 meaning that we cannot reject the Null hypothesis rather we accept Null hypothesis

because the probability value is more than 5%. We can see the plot of the residual which is R1 in the graph. So the residual is white noise and residual variable is random meaning that residual variable is stationary.

#### **4.12 Testing for Portmanteau white noise**

One more test which is Portmanteau test for white noise. This test is given below:

Portmanteau test for white noise

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Portmanteau (Q) statistic =	19.5149
Prob > chi2(18) =	0.3608

Here, the probability value is 0.3608 or 36.08% and that is more than 0.05 or 5% meaning that we cannot reject Null hypothesis rather we accept Null hypothesis. So, it's meaning that our residual variable that is white noise and meaning that our variable which is R1 is independent or random or our R1 variable is stationary also because we could not reject Null hypothesis. Our residual is white noise and that is desirable for our regression model.

### 4.13 Scatter plot

The scatter plot of graph 4.13 is given below:

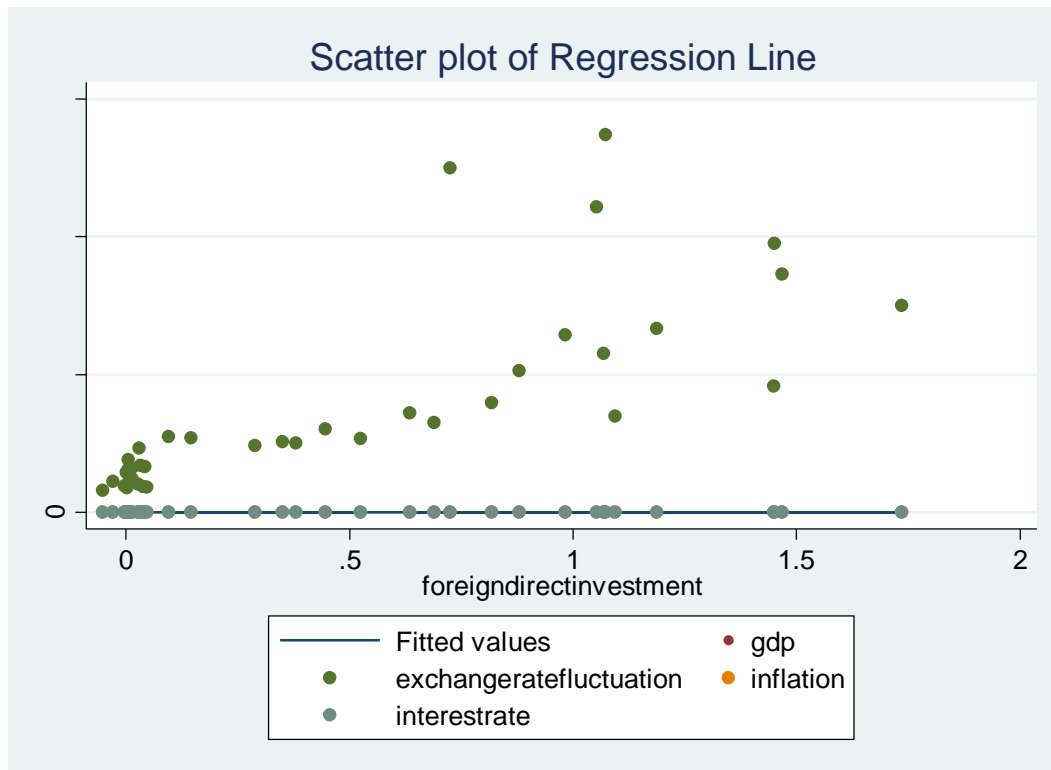


Figure 4.13: Scatter plot of regression line

In the graph we shows scatter plot of regression line. Here, we can see our dependent and independent values. In this figure we can see the fitted values of GDP growth rate. There are many residual variables which are plotting by different colors. The fitted values are GDP growth rate, exchange rate fluctuation, inflation, interest rate and foreign direct investment. Here the data of all the variables are collected from WDI and many sources. Data are collected for 40 years of during 1979 to 2018.



# **Chapter 5: Conclusion and Recommendation**

## **Conclusion and Recommendation**

The main aim of this research is to analyze if there is correlation between exchange rate fluctuation and economic growth of GDP. This research study tried to examine the impact of exchange rate fluctuations on economic growth in Bangladesh from 1979 to 2018. We have used the 40 years of data as a time series.

This research paper defines a set of variables that has helped to explain the choice of exchange rate fluctuation in Bangladesh. We have selected five variables which are GDP growth rate, inflation, interest rate, foreign direct investment and exchange rate fluctuation. To obtain the answers to the problems indicated at the beginning of the research paper, we look into the regression analysis, correlation analysis and its significance. Our analysis shown that exchange rate fluctuation, foreign direct investment and inflation rate have positive relation with GDP growth rate except interest rate. Therefore, this research paper refers that some changes the strategies in order to maintain sustainable economic growth rates in the country.

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