

Effect of Foreign Exchange Rate on Economic Growth in Nigeria: An Empirical Analysis

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ABSTRACT

The Nigerian monetary authorities have implemented several foreign exchange policies with the aim of achieving faster economic growth but without desired success. This study was conducted to examine the effect of foreign exchange rate on economic growth in Nigeria between 1985 and 2019. Multiple regression techniques were employed on time series data covering the period under investigation. It was found that while nominal foreign exchange rate and foreign exchange reserves have positive effect on gross domestic product, real foreign exchange rate has negative effect on gross domestic product in Nigeria. Therefore, it was recommended that Government of Nigeria should adopt policies that will lead to rise in foreign exchange value of naira. To this end, frantic efforts should be directed at creating enabling environment that would encourage foreign investors to come and invest in the economy and/or Producing manufactured goods for foreigners to come and buy. This will lead to rise in the demand and nominal value for Nigerian currency and hence economic growth in the country.

KEY WORDS:

Economic growth; Error correction mechanism; Gross domestic product; Nominal foreign exchange rate; Real foreign exchange rate

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Introduction

Exchange rate is a key variable in the context of economic policy making. Its changes affect the performance of other macroeconomic variables in any economy. It provides a key link between a country and the rest of the world, both in goods imports and exports (by changing the relative prices), as well as the stock of foreign debt in domestic currency terms (Martins, 2009). According to Roa and Tolcha (2016), all transactions with the rest of the world can be potentially affected by the level of the exchange rate. A depreciation of exchange is often associated with competitiveness gains in a sense relative price of export will fall and imports become relatively expensive.

In view of the crucial role of foreign exchange rate in influencing macroeconomic variables, the Nigeria government has placed serious emphasis on its determination over the years. Before the introduction of structural adjustment programme (SAP) in 1986, the Nigeria economy was substantially regulated. During that time, Nigerian currency, the naira-was said to be overvalued and that was why it was opened to market forces in 1986 to determine its actual value (Tarawalie, 2010). Between 1986 and 1994, when the SAP lasted, foreign

exchange rate for Nigeria was deregulated. Consequently, the exchange value for naira which stood at ₦1/ \$1 in 1986 continued to fall to ₦10.28/ \$1 in 1994. Available information showed that after experimenting with flexible exchange rate policies through second-tier foreign exchange market (SFEM) in 1986, Dutch Auction system (MDAS), weighted Dutch Auction system (WDAS), etc, punctuated by fixed exchange rate (1994-1998), the Nigerian government found it necessary to revert to fixed rate system in 2008. Government opted for currency redenomination, but was rejected by majority of Nigerians. Thus, it was abandoned. The government changed to DAS, with some modifications, but without desired success. The review above means that the Nigerian monetary authorities have not gotten the foreign exchange policies right. With regards to gross domestic product, the World Bank (2018) report that, it rose steadily from ₦37,281.82 billion in 2006 to ₦532,248.42 billion in 2017, after reaching all time high of ₦631,882.94 billion in 2015.

The historical review above indicates that although foreign exchange rate (FER) in Nigeria has been generally falling, its effects on macroeconomic variables (including gross domestic product, imports and exports) have been mixed. One factor that contributed to instability in FER in Nigeria was the overvalued exchange rate (Anyanwu et al, 1987). Overvaluation of exchange rate caused misallocation of resources in production and promotes investment of resources in rent-seeking and socially unproductive but privately profitable activities which reduces the growth rate of output. Besides, despite different measures adopted to stabilize FER in Nigeria by past regimes, the real exchange rate (RER) of the country is still deteriorating through time, which has negatively affected competitiveness of the country's exports in the world market. Also, the gap between nominal exchange rate (NER) and real exchange rate (RER) in Nigeria is widening over time, which has further compounded the problem of competitiveness of Nigeria export commodities in the global market. This is due to undesired change in other determinants of RER, including consumer price index in the country (CBN, 2018). Another problem that has affected FER in Nigeria in the recent times is terrorist attacks which induce a higher level of insecurity, risks and uncertainty and has negatively affected foreign direct investment, as well as caused lack of domestic production and even deterioration in exportation of manufactured commodities in the face increased importation of all kinds of goods in the country. There has also been the problem of the collapse of international oil market, which saw Nigeria foreign exchange earnings significantly fall relative to its imports demand. This has negative implication for Nigeria's FER as the foreign exchange intervention at the prevailing rate would only deplete the foreign reserves.

Foreign exchange rate (FER) fell consistently from #0.48 per U S dollar in 1980 to #8.04 in 1990, #102.11 in 2000, #205.34 in 2016, and #365.24 per one dollar in 2020. Its value was generally in downward trend. Available statistics in Central

Bank of Nigeria (1991, 2001, 2006, 2011, and 2019) showed that although gross domestic product (GDP) which stood at #140.28 billion in 1980 rose consistently to #625,326 billion in 2019, greater proportion (85%) of it was contributed by crude oil export.

In summary, a tentative conclusion emerging from the trend analysis above is that exchange rate movement has some association with economic growth in Nigeria. However, an empirical analysis is required to determine the exact relationship existing between these variables. This is the motivation to conduct this study which is designed to examine the effect of foreign exchange rate on economic growth in Nigeria during the 1985-2019. The paper is organized into five sections. Section one is the introduction. Section two contains literature review. Section three is concerned with description of the methodology. Presentation, interpretation and analysis of data are done in section four, while conclusion and recommendations are contained in section five.

Literature Review and Theory

The relationship between foreign exchange rate and economic growth is a highly debated issue in growth literature. Several authors have expressed their opinions on the issue. The arguments have been contradictory and sometimes inconclusive. According to Korkmaz (2016), foreign exchange rate is the price of one currency in terms of another or it is simply the rate at which currencies are exchanged. In other words, FER links the domestic economy with rest of the world through both the goods and assets markets. Rao and Tolcha (2016) defines foreign exchange rate as the rate at which foreign exchange can be bought and sold for immediate delivery, usually one or two days. Nominal exchange rate indicates quantities of one currency that can be traded for a unit of another currency. Real exchange rate on the other hand describes how much of goods and services that can be bought in another country (Lee, Leong, Lin, Nong, & Yee, 2006).

There are several theories that can be used to explain the relationship between foreign exchange rate and economic growth. One of them is quantity theory of money. This is one of the simplest models of determining the long-run equilibrium exchange rate which enhances economic growth. The domestic version of the quantity theory states that a one-time increase in the money supply is soon reflected as a proportionate increase in the domestic price level. Some of the proponents of domestic quantity theory of money are Nwani (1975) and Ahmed (2003) who stated that a stable and equilibrating relation exists between the adjustments in the quantity of money and the price level. The more orthodox monetarist assumes that a rise in the quantum or variation in money supply determines the value of money, but not necessarily changes in output. In other words, they refute any form of monetary influence on real output both in the short- and long-run. This led to the popular paradigm that, "Inflation is always and everywhere a monetary phenomenon". For the less stringent monetarist, they

agree that money influences output in the short-run, but only prices in the long-run. Nevertheless, irrespective of the path of adjustment, the monetarist all seem to concur that in order to reduce or curtail inflationary growth, money growth should be less than or equal to the growth in output.

The international version stipulates that the increase in the money supply is also reflected as a proportionate increase in the exchange rate. The theory was originally formulated by Polish mathematician Nicolaus Copernicus in 1517. It was popularized later by Milton Friedman (1963) after the publication of his book, "A Monetary History of the United States, 1867-1960". According to the quantity theory of money, if the amount of money in an economy doubles, all other things being equal, price levels will also double. This means that the consumer will pay twice as much for the same amount of goods and services. This increase in price levels will eventually result in a rising inflation level; inflation is a measure of the rate of rising prices of goods and services in an economy (Kelly, 2021).

The exchange rate, as the relative price of money (domestic per foreign) can be viewed as determined by the demand for money (domestic relative to foreign), which is in turn influenced positively by the rate of growth of the real economy and negatively by the inflation rate. In other words the growth of the real economy impacts significantly on a nation's currency position. In the same view, Ude (1999) noted that a defect of the international quantity theory of money is that it cannot account for fluctuations in the real exchange rate as opposed to simply the nominal exchange rate. The real exchange rate is defined as the nominal exchange rate deflated by price levels (foreign relative to domestic). It is the real exchange rate that matters most for the real economy. If a currency has a high value in real terms, this means that its products are selling at less competitive prices in world markets, which will tend to discourage exports and encourage imports.

The quantity theory of money which states that a one-time increase in the money supply will lead to proportionate increase in the domestic price level is the root of this study. Thus, the real exchange rate which is determined by quantity of money in circulation and general price level explains the behaviour of investor decisions. Stable exchange rates become more attractive for firms that decide to increase their investment, create employment and enhance output in an economy. Therefore, quantity theory of money is used in this paper.

Another theory that can be used to explain foreign exchange rate-economic growth relationship is the purchasing power parity (PPP) theory. This theory, according to Scott (2008) recognizes inflation levels and trends as important determinants of exchange rate of a currency both in emerging and developed economies. The theory states that typically a currency will lose value if there is a high level of inflation in the country or if inflation levels are perceived to be rising. This is because inflation erodes purchasing power, and hence, demand for that particular currency. However, a currency may sometimes be strengthened when inflation rises because of expectations that the central bank of the country

concerned will raise short-term interest rates to combat rising inflation. The theory concludes that the equilibrium exchange rate between two inconvertible paper currencies is determined by the equality of their purchasing powers. In other words, the exchange rate between two countries is determined by their relative price levels, (Obadan, 2006). As a matter of fact, Dickson (2008) faults this notion by stating that unless the real exchange rates were constant, then “purchasing power parity” would hold otherwise the exchange rate would not be proportionate to relative price levels. He posited that the purchasing power parity does not in effect hold in the short run, not even approximately, for goods and services that are traded internationally. But, purchasing power parity, according to Edwards (1989) does tend to hold in the long run rather than in the short run.

Several empirical studies have been conducted on foreign exchange rate-economic growth relationship. But the results have been mixed. Razin and Collins (1999) constructed a fundamental-based index of RER over valuation derived from a structural macroeconomic model and used it for a pooled sample of 93 developed and developing countries during the 1975-1992. The study found that their index correlates negatively with economic growth. The results also suggest the existence of asymmetries; the negative effect of over valuation on growth is stronger than the positive effect of undervaluation.

Huang (2004) examined the effect of exchange rate movement on economic growth in Togo, using the annual data for the period of 1970 to 2000 Using Ordinary Least Square, the result revealed a negative relationship between exchange rate and economic growth in a shot run while a positive relationship exists in the long run. A result presented by Grauwe and Schnabl (2004) showed that higher output occurred under peg regimes in Central and Eastern Europe because of two main reasons. In addition to the eliminated exchange rate risk that stimulated international trade and international division of labour, fixed exchange rate promoted certainty which would lower interest rate, and eventually spur investment and economic growth. Pius (2006) investigated the relationship between exchange rate and economic growth in Ghana using the annual data for the period of 1980 to 2005. Using ordinary least Square technique, the result revealed that there is a positive relationship between exchange rate and economic growth in Ghana.

Gala (2008) found a negative relationship between GDP per capita growth and a PPP-based index of RER overvaluation in a panel of 58 developing countries between 1960 and 1999. The result is robust to changes in control variables and econometric techniques. The positive association between RER undervaluation and economic growth has also been found in studies that have not estimated equilibrium RER.

Unlike the above studies, Rodrik (2008) explicitly tests for asymmetries between developing and developed countries, using a PPP-based index of RER Undervaluation in a fixed-effects model for a panel of 184 countries between 1960

and 2004. The study defined developing countries as those with a GDP per-capita less than \$6,000 and finds that the positive relationship between RER undervaluation and economic growth is stronger and more significant for developing countries than for developed countries.

Amongst others, Hossain and Ahmed (2009) found that the changes in the real effective exchange rates after the adoption of the floating system had a positive, albeit small, effect on overall exports. Kennedy (2010) studied the relationship between exchange rate and economic growth in Kenya using the annual data for the period of 1970 to 2009. Using ordinary Least Square (OLS), the result showed a positive relationship between the two variables in Kenya. Alhayky (2011) examined the relationship between effective real exchange rate volatility and economic growth in Togo using annual data for the period of 1980 to 2004. Using fully modified Ordinary Least Square technique, the result revealed that real exchange rate volatility negatively affected economic growth.

Chen (2012) studied the role of the real exchange rate in economic growth and in the convergence of growth rates among provinces in China. Using data from 28 Chinese provinces for the period 1992-2008 together with dynamic panel data estimation he find conditional convergence among coastal provinces and also among inland provinces. The results reported there confirm the positive effect of real exchange rate appreciation on economic growth in the provinces.

Kogid et al. (2012) investigated the effects of the exchange rates on economic growth in Malaysia using time series data spanning from 1971 to 2009. Both exchange rates, nominal and real, are considered to have similar effects on economic growth. The results of ARDL bounds test suggest that long run cointegration exists between both nominal and real exchange rates and economic growth with a significant positive coefficient recorded for real exchange rate. In addition, the results of ECM-based ARDL also revealed that both exchange rates have a similar causal effect towards economic growth.

Attah (2013) investigated the econometric analysis of the relationship between GDP growth rate and the exchange rate in Ghana, using the annual data for the period of 1980 to 2013. Using Ordinary least Square technique, the result revealed a positive relationship between exchange rate and economic growth in Ghana.

It is important to mention the work of Odusola and Akinlo (2001) who examined the linkage among exchange rate, inflation and output in Nigeria. A structural VAR model was employed which captured the interactions between exchange rate and output. Evidence from the findings showed a contractionary impact of the parallel exchange rate on output only in the short term. Prices, parallel exchange rate and lending rate were found to be important sources of perturbations in the official exchange rate. In addition, output and parallel exchange rate were significant determinants of inflation dynamics in Nigeria.

In conclusion, most of the empirical studies reviewed above indicated that either increases in the level of the real exchange rate or in the rate of depreciation were associated with a reduction in output and increase in inflation. The studies reviewed above equally supported the existence of a contractionary devaluation in the sampled countries. However, most cases of contractionary devaluations had been focused on Latin America and other developed nations. Only few studies had been conducted on the issue in sub-Saharan Africa. Also, it can be seen that none of the studies reviewed above included the two components of foreign exchange rate, and foreign exchange reserves as explanatory variables in their models. This is the gap this study will fill.

Method

This study adopted ex-post facto method to investigate the effect of foreign exchange rate on economic growth in Nigeria during the 1985-2020. To achieve this, the research used secondary data on included variables and the method of autoregressive distributed lag (ARDL) analysis to carry out the analysis. The data was subjected to diagnostic tests including unit root, cointegration and error correction mechanism before estimating the model. The estimated model was also analysed to determine its policy implications. In order to investigate the effect of foreign exchange rate on economic growth in Nigeria, a standard Cobb-Douglas (1927) production function which relates output (Y) as a linear function of capital (K) and labour (L) was used. The Cobb-Douglas model is given as:

$$Y = f(AL^{\alpha}K^{\beta}) \dots \dots \dots (3.1)$$

To capture the effect of external financial resources on economic growth in Nigeria, Barro (1990) model was applied in this study. The Barro (1990) model as used states that there are two sectors in the economy, that is, Private (P) and Public (G) whose output depend on Labour (L) and Capital (K). Besides, the output of (G) has some external effect on output of (P). Thus, the production function of the sectors is stated as:

$$P = P(L_p, K_p) \dots \dots \dots (3.2)$$

Where: P = Private Sector output, L_p = Proportion of labour output used in the private sector, and K_p = Proportion of capital used in the private sector. The public sector production function becomes,

$$G = g(L_g, K_g) \dots \dots \dots (3.3)$$

Where: G = Public Sector output, L_g = Proportion of labour used in the public sector, and K_g = Proportion of capital used in the public sector. The inputs are given as:

$$LT = (L_p + L_g) \dots \dots \dots (3.4)$$

Where: LT = Total labour input, L_p = Proportion of labour used in the private sector, L_g = Proportion of labour used in the public sector.

$$\text{Similarly: } K T = (K_p + K_g) \dots \dots \dots (3.5)$$

Where: $K T$ = Total capital input, K_p = Proportion of capital used in the private sector, K_g = Proportion of capital used in the public sector. Total output (Y) is the sum of sectoral outputs or a function of sectoral inputs.

Therefore:

$$Y = P + G \dots \dots \dots (3.6)$$

Where: Y = Total output, P = Private sector output, and G = Public sector output.

That is,

$$Y = P (L_p + K_p) + g (L_g + K_g) \dots \dots \dots (3.7)$$

$$\text{Similarly: } Y = L T + K T + G \dots \dots \dots (3.8)$$

Where: all the variables in equation (3.7) and equation (3.8) are as defined in equations (3.1-3.6).

Given the equations above and taking into consideration a single country situation, the structure of Nigeria economy as well as the changes in macroeconomic conditions, the necessary variables of interest are then introduced as presented below:

$$A = h (NER_t, RER_t, FER_t) \dots \dots \dots (3.9)$$

Integrating equation (3.9) and equation (3.8), we have:

$$Y = f (NER_t, RER_t, FER_t, L_t) \dots \dots \dots (3.10)$$

Since Barro (1990) model adopted in this research is an economic optimization model, it is suitable for application in Nigeria. Barro (1990) used the model to measure economic growth. The regression form of the model is thus stated in a linear form as:

$$Y_t = \beta_0 + \beta_1 NER_t + \beta_2 RER_t + \beta_3 FER_t + \beta_4 L_t + U \dots \dots \dots (3.11)$$

We adjust equation (3.11) by dropping labour force (L_t) and replace output (Y) by gross domestic product (GDP). The labour force (L_t) was dropped because this study was focused on capital input (foreign exchange rate). Thus, the linear model stated in the log form is:

$$\ln GDP_t = \beta_0 + \beta_1 \ln NER_t + \beta_2 \ln RER_t + \beta_3 \ln FER_t + \beta_4 \ln GDP_{t-1} + U_t \dots \dots \dots (3.12)$$

Where: $\ln$ = Logarithm; GDP = Gross domestic product (proxy for economic growth); NER = Nominal foreign exchange rate; RER = Real exchange rate; FER = Foreign exchange reserves; β_0 = Intercept of the regression model; $\beta_1 - \beta_3$ = Coefficients of the explanatory variables to be estimated; and U = Error term. The study introduced natural log because Barro (1990) is an adjustment of Cobb-Douglas (1927) model.

Our a priori expectations are that $\beta_0, \beta_1, \beta_2$, and $\beta_3 > 0$

The autoregressive distributed lag (ARDL) equation (3.12) was estimated using the ordinary Least squares (OLS) technique. Equation (3.12) is the autoregressive distributed lag (ARDL) it contains the lagged variable (GDP_{t-1}) of

the dependent variable (GDPt). Annual data on the included variables during the 1985-2020 were used for estimating the model. Before estimation, the study determined whether the variables are stationary or not. This will determine the underlying properties of the process that generated our time series data. In addition, the Augmented Dickey-Fuller (ADF) t-test was used to determine the order of integration. The Augmented Dickey-Fuller (ADF) t-test was used because it is an improvement over the Dickey Fuller and Philip Perron. To carry out the ADF test, the null hypothesis of non-stationary is rejected if the t-statistic (i.e, the calculated value of t) is greater than critical (or tabular) t-value, or otherwise. Similarly, to carry out the co-integration test, we employed Johansen co-integration method. Using this method, the null hypothesis of no co-integration is rejected if the calculated value is greater than the tabular value (at a chosen relevant significance level), or otherwise.

Results and Discussion

Augmented Dickey-Fuller Unit Root Test

The results are presented on table 1 below.

Table 1: Augmented Dickey-Fuller (ADF) unit root test results

Series	ADF Test Statistics	5%Critical Value	Order of Cointegration
GDP [*]	-4.796938	-2.943427	I(1)
NER	-3.894109	-2.943427	I(1)
RER	-6.921891	-2.943427	I(1)
FER	-5.341983	-2.943427	I(1)

Source: Authors computation, 2021, using E-view 10.0 version.

The result of unit root test shown on table 1 above indicates that the absolute value of ADF test statistics is greater than the critical values at 5% (compare column 2 and column 3). This means that all the included variables in the model were integrated of the same order, that is, I(1), see column 4.

Table 2: Johansen co-integration test result
Cointegration Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.805880	197.9842	159.5297	0.0001
At most 1 *	0.733805	138.9701	125.6154	0.0059
At most 2	0.547225	91.32326	95.75366	0.0971
At most 3	0.510614	62.79829	69.81889	0.1597

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Note: ** denotes level of co-integration of equation.

Source: Authors computation, 2021, using E-view 10.0 version.

An examination of table 2 showed that the Eigen value statistics shows existence of two unique co-integrating equations between the variables; GDP, NER, RER, and FER at 5 percent level. Thus, it can be inferred that there is long-run relationship between economic growth and foreign exchange rate in Nigeria during the 1985-2020. Since there is at least one co-integrating equation found in the model, the study concludes that significant long-run relationship exists among the variables. Also, since all the variables were found to be stationary and co-integrated, the study can now perform error correction model (ECM) test.

Table 3: Regression Results of Autoregressive Distributed Lag Model

Variables	Coefficients	Standard errors	t-statistics	prob
DGDP (-1)	-0.177615	0.54405	-0.32647	0.5216
DNER (-1)	0.153905	0.49289	0.31225	0.4609
DRER (-1)	0.124628	0.87112	0.14307	0.4429
DFER (-1)	-1.992948	0.30645	-6.50331	0.5552
C	676.1282	1939.98	0.34852	0.6251
ECM(-1)	-0.64083225	0.267452	2.39607	0.5439
R-square = 0.88383 Akaike info. Criteria =18.19189				
R-square (Adj) = 0.808319 Schwaze =18.82039				
S.E of Regression = 1864.142 mean dependent = 3313.907				
Sum of square resid = 69500475 S.D dependent = 4257.843				
Log likelihood = -295.2621 F-statistic = 11.70471				
5% critical value = 2.07				

Source: Author's Computation 2021, using E-view 10.0 version

The results on table 3 above reveal the following: first, the coefficient of nominal exchange rate (NER) is positive (0.153905), indicating positive relationship between nominal exchange rate (NER) and gross domestic product in Nigeria, and this is in line with a priori expectation. The coefficient of nominal exchange rate is statistically insignificant since its t-stat (0.31225) is less than its critical value (2.07) at 5% level of significance. The finding implies that gross domestic product increases as nominal exchange rate rises. Besides, the probability value (0.6658) is greater than 0.05. This means that nominal exchange rate is not significant in determining gross domestic product (economic growth) in Nigeria.

Second, the coefficient of real exchange rate (RER) is positive, indicating positive relationship between it and gross domestic product (GDP) in Nigeria and this is in line with a priori expectation. The t-stat value of the coefficient (-6.50331) is also greater than its tabular value (2.07), meaning it is significant at the 5% level. The finding implies that gross domestic product decreases as real exchange rate rises. This means that real exchange rate is significant in determining gross domestic product (economic growth) in Nigeria in the period under review.

Third, the coefficient of foreign exchange reserves (FER) is negative, indicating negative relationship between foreign exchange reserves (FER) and gross domestic product (GDP) in Nigeria and this is in line with a priori expectation. The t-stat value of the coefficient (2.076445) is also greater than its tabular value (2.07), meaning it is significant at the 5% level. This finding did not agree with Attah (2013) who found positive relationship between exchange reserves and economic growth in Ghana. The results from the present study reveal that foreign exchange reserve has negative but not significant impact in determining gross domestic product as its t-stat (1.03904) is less than its critical value (2.07) at 5% level of significance.

Furthermore, the coefficient of ECM which is -0.82831 implies that the system corrects itself to previous period disequilibrium at a speed of 82.83% annually, meaning that the speed of adjustment to disequilibrium is 83% approximately. This further underscores the long-run equilibrium relationship between the variables. Consequently, this study concludes that GDP can be said to be positively determined by changes in NER and RER with the exception of FER that has negative effect. These findings are consistent with the findings of Kemboi and Tarus (2012) and Peter and Lyndon (2015).

This further underscores the long-run equilibrium relationship between the variables. Consequently, this study concludes that GDP can be said to be positively determined by changes in NER and RER with the exception of FER that has negative effect. These findings are consistent with the findings of Kemboi and Tarus, (2012) and Peter and Lyndon (2015). The coefficient of multiple determination, $R^2 = 60.13\%$ indicates that the included explanatory variables accounted for about 60 percent of the changes in GDP. This means that the regression model has a good fit. Besides, the small value of Durbin-Watson statistic (1.15) implies that there is absence of first order autocorrelation.

Conclusion and Recommendations

This study investigated the effect of foreign exchange rate on economic growth in Nigeria during the 1980-2017. Time series data on gross domestic product, nominal exchange rate, real exchange rate, and foreign exchange reserves, were collected from various sources and used for the estimation. The major findings are summarized as follows: It was found that nominal foreign exchange rate has positive effect on gross domestic product in Nigeria. It was found that real foreign exchange rate has positive effect on gross domestic product in Nigeria. It was also found that foreign exchange reserve has negative effect on gross domestic product in Nigeria.

From the analysis of the results, it can be concluded that while nominal exchange rate and real exchange rate have positive effect on gross domestic product, foreign exchange reserves has negative impact on it. Based on the findings of this study, the following recommendations are made:

1. Government of Nigeria should adopt policies that will lead to rise in foreign exchange value of naira. To this end, frantic efforts should be directed at creating enabling environment that will encourage foreign investors to come and invest in the economy and/or producing manufactured goods for foreigners to come and buy. This will lead to rise in the demand and value for Nigerian currency.
2. That the monetary authorities and policy makers should be more concerned about the changes in foreign exchange reserves to the economy due to its negative effect on gross domestic product in Nigeria. To this end, government should monetize and channel more resources from external reserves to more productive activities in order to increase gross domestic product.
3. Moreover, there is need for the government to make the economy investment friendly by waging a serious war against terrorists and their dehumanizing activities. This is necessary as to safeguard lives and property and when this is achieved foreign investments would be massively attracted into the country. This would also help reduce the unemployment rate and capital flight devouring the Nigerian economy.

When all these suggested solutions are taken into consideration for implementation the economy would experience and record appreciable GDP growth rate.

References

- Ahmed, N. (2000). Export response to trade liberalisation in Bangladesh: A cointegration analysis, *Applied Economics*, 32(8), 1077–1084.
- Ahmed, M. (2003). Money-income and money-price causality in selected SAARC countries. *The Indian Economic Journal*, 12, 55-62.
- Alhayky, A. G. (2011). Relationship between effective real exchange rate volatility and economic growth in Togo: Empirical evidence. <http://www.google.com>.
- Attah. P.O. (2013). The econometric analysis of the relationship between GDP growth rate and the exchange rate in Ghana (1980-2013): An empirical evidence. *Paris-Jourdan Sciences Economiques*, 1287, 23-40 available at: <http://www.google.com>.
- Brown, W. M. (1955). **The concept and measurement of foreign exchange reserves . Available at :** <http://hal.inria.fr/docs/00/66/67/PDF/wp201205.pdf>.
- Chen, I. (2001). Real exchange rate and economic growth: Evidence from Chinese provincial data (1992-2008). *Paris-Jordan Science Economiques Working paper*, 1263, 83-99, <http://hal.inria.fr/docs/00/66/67/PDF/wp201205.pdf>.
- Cheng, J. (2012). Real exchange rate and economic growth: Evidence from Chinese provincial data (1992-2008). *Paris-Jourdan Sciences Economiques, Working Paper* 1285 , 17 - 29, <http://hal.inria.fr/docs/00/66/74/67/PDF/wp201205.pdf>.
- Dickson, A.F. (2008). Foreign exchange market and development. *European Economic Review*, 37 (21), 160-172.
- Dominguez, K. M. E., Yuko, H. & Takatoshi, I. (2012). International reserves and the global financial crisis. *NBER Working Paper*, 1725, 126-140.
- Edwards, S. (1989). *Real exchange rates, devaluation and adjustment: Exchange rate policy in developing countries*. Cambridge, Mass: MIT Press.
- Grauwe, P. D. & Schnabl, G. (2004). Exchange rate regimes and macroeconomic stability in Central and Eastern Europe. Retrieved from <https://www.researchgate.net/publication/383536566>
- Hassan, M. K. & Tufte, D. R. (1998). Exchange rate volatility and aggregate export growth in Bangladesh. *Applied Economics*, 30 (2), 189–201.
- Hossain, M. & Ahmed, M. (2009). Exchange rate policy under floating regime in Bangladesh: An assessment and strategic policy options. *Working Paper* 2,

Dhaka: BIDS.

Huang, H. P. (2004). The effect of exchange rate movement on economic growth in Togo: An Empirical evidence. Available at: <http://www.google.com>.

Kakkar, V. & Yu, I. (2014). Determinants of real exchange rates: An empirical investigation. *Bank of Finland Discussion Paper* 12, 36-50.

Kelly, R. C. (2021). What is the quantity theory of money? Available at: <https://www.investopedia.com/insights/what-is-the-quantity-theory-of-money/>

Kennedy, J. C. (2010). The relationship between exchange rate and economic growth in Kenya (1970-2009): An empirical investigation. Available at: <http://google.com>.

Khan, M. & Villanueva, D. (1991). Macroeconomic policies and long-term growth. *Special Paper* 12 Nairobi: African Economic Research Consortium (AERC).

Kogid, M., Asid, R., Lily, J., Mulok, M. & Loganathan, N. (2012). The effect of exchange rates on economic growth: empirical testing on nominal versus real. *The IUP Journal of Financial Economics*, 10 (1), 1-17.

Korkmaz, S. (2016). The effect of exchange rate on economic growth. Available at; <https://www.researchgate.net/publication/311588566>;

Lee, A. N., Leong, C. C., Lim, P. S., Nong, J.A.P. & Yee, M.C. (2006). Determinants of foreign exchange rate in Malaysia: 1991-2015. Unpublished paper submitted in partial fulfilment of the requirements for the degree of Bachelor of Finance (Hon.) University Tunku Abdul Rahman Faculty of Business and Finance Department of Finance.

Levy-Yeyati E. & strutzenegger, F., (2005). Classifying exchange rate regimes: Deeds vs words. *European Economic Review*, 46, 1603-1635.

Mansor, M., Jehar, M., N. & Gok, U. (2007). The impact of terrorist attack on foreign exchange rate: Case study of Turkish Lira Versus pound sterling, www.mdi.com/journal.economies.

Martins, P.M. G. (2009). Do capital inflow hinder competitiveness? *Credit research paper* 10(7), 23-45.

McDonald, R., (1999). Exchange rate behaviour: Are fundamentals of import? *Economic Journal*, 109, 673-691.

Montiel, P.L. (1999). *Determinants of the long-run equilibrium real exchange rate*. New

York: Oxford University Press.

- Morley, S. A. (1992). On the effect of devaluation during stabilization programs in LDCs. *Review of Economics and Statistics*, 74(1), 21-27.
- Nwani, A. O. (1975). The quantity theory in the early monetary system of West Africa with particular emphasis on Nigeria, 1850-1895. *Journal of Political Economy*, 83(1), 185-194.
- Obadan, M. (2006). Overview of exchange rate management in Nigeria from 1986 to 2006. *Bullion Publication of CBN*, 30 (3), 1-9.
- Pius N. M. (2006). The relationship between exchange rate and economic growth in Ghana (1980-2005): Empirical investigation. Available at: www.mdi.com/journal.economies.
- Rao, P.N. & Tolcha, T. D. (2016). Determinants of real exchange rate in Ethiopia. Department of economics, Hawassa University, Hawassa, Ethiopia, 10. 5281.
- Razin, A., Martin, R., & Peter, S. (2012). The real exchange rate and economic development. *Structural change and Economic Dynamics*, 23 (2), 151-169.
- Rodrik, D. (2008). The real exchange rate and economic growth. *Brookings Papers on Economic Activity*, fall 2008.
- Scott, T. U. (2008). The impact of international trade in the development of an economy. *Journal of International Economics*, 12 (2), 222-246.
- Tarawalie, A.B. (2010). Real exchange rate behaviour and economic growth: Evidence from Sierra Leone. *South African Journal of Economic and Management Sciences*, 13 (1), 8-25.
- Taylor, L. & Taylor, G. (2004). *Income distribution inflation and growth: Lectures on structuralism macroeconomic theory*. Cambridge Mass: MIT Press.
- Ude, M.O. (1999). *Microeconomics: Application of theories in the Nigerian economic environment*. Enugu: New Generation Books.
- World Bank (2018). World development indicators. Retrieved from <http://data.worldbank.org>.