

## SHORT AND LONG RUN ROLE OF EXCHANGE RATE MOVEMENT ON ECONOMIC GROWTH IN NIGERIA

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Research Article

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### ABSTRACT

The study investigated the effect of exchange rate movement on economic growth in Nigeria for the period of 32 years (1986-2017). The study specifically examined the effect of exchange rate, import, and export and government expenditure on economic growth proxied as real gross domestic product in Nigeria. Autoregressive Distributed Lag model (ARDL) Bound test was employed. The study found evidence of long run relationship between exchange rate movement and economic growth in Nigeria. The study further revealed that exchange rate and government expenditure have significant positive effect on economic growth; import has insignificant negative effect on economic growth; export has insignificant positive effect on economic growth. The study concluded that exchange rate movement has significant effect on economic growth in Nigeria. The study therefore suggested that the government should introduce import reducing policy that will stabilize the import-export balances such that local goods can be well embraced.....

**KEYWORDS:** Exchange rate, Economic growth, Nigeria

## 1.0 INTRODUCTION

Exchange rate movement has been a topical issue among various academicians, theoretical thinkers and policy formulators over decades (Zahoor&Muhammed, 2009). Exchange rate system can be traced to the collapsed of Gold standard in 1930s which led to the appearance of Breton wood system of fixed exchange rate system in 1940s and further led to the flexible exchange system by developing countries in 1970 as well as others carrying out structural programmes in the 1980s and in the wake of currency instability in 1990s. Flexible exchange system which was attended by the variations of exchange rate subject it to the main attention in the argument as a result of the influence it portrayed on business outcome as country's trading activities friends preferred stability in exchange rate system compared to the instability and fluctuating exchange rate (Iyeli&Utting, 2017).

Exchange rate is the degree of price at which local nation's currency exchange in relation to foreign nation's currency. Exchange rate relates to the demand quantity/volume of element of a local currency which can purchase other quantity of element of foreign currency (Humyra, 2014). Fluctuation of exchange rate induces uncertainty and risk in investment decision with destabilizing effect on the macroeconomic indicators (Mahmood& Ali, 2011). Mordi (2006) noted that private sector operators are concerned with trend of exchange rate because of its influence on their businesses which has significant effect. Aliyu (2011) established that when exchange rate increases it favors import over export and when exchange rate decreases it encourages export and becomes unfavorable to import. Devaluation in exchange rate propels adjustment from abroad goods to local goods. Therefore, it distract placing the revenue from exporting countries above importing countries through a change in term of trade and this however affect the parties countries economic growth (Iyeli&Utting, 2017).

Notably, the era of structural adjustment programme (SAP) in 1986 caused the country to shift attention from fixed exchange rate to flexible exchange system. Irrespective of the exchange rate system being practiced in a country, there is no clean or purely float, that is, a situation where it is left completely to be determined by market forces of demand and supply (Mordi, 2006). Despite all the policies adopted by government to achieve stability in exchange rate especially twenty years ago, the naira ( ) remained devalued against the U. S(\$ ) Dollar. The economic growth of Nigeria started on a good note in the 1970's where its GDP stood at 5281.10 million as the period coincided with the end of civil war which necessitated the need for massive reconstruction activities. Growth rate of GDP was negative in 1986, 1987, 1991, and 1995 while exchange rate

kept on rising. Apart from these four years. Nigeria has never experienced negative growth since flexible exchange rate was adopted in Nigeria. There was a drastic increase in exchange rate from 1999 to 2000; 2003 to 2004 and 2015 to 2016 and 2017 as naira was depreciated from 21.89 in 1999 to 85.98 in 2000 while the growth rate moved from 0.5% to 5.3%, the naira was further depreciated from 129.22 in 2003 to 132.89 in 2004 while the growth rate moved from 10.4% to 33.7% in 2004, the exchange rate was increasingly depreciated from 193.28 in 2015 to 305 in 2017 while the growth rate moved sluggishly from 5.73 to 7.51 in 2017 (Inam&Umobong, 2015; CBN, 2017). The depreciation against the U. S. dollar was attributed by some to the decline in the nation's foreign exchange reserves while some others argued that the activities of some market operators (speculators) and banks are responsible for recent decline in the value of the naira (Iyeli&Utting, 2017). Obadan (2006) claimed that powerless production base, over dependency on imported goods; friable export and low non-oil export revenue were the main factors responsible for devaluation of exchange rate. From the above illustration, exchange rate of naira increases although the rate of growth seems to maintain a positive state, but the rate at which exchange rate rises is far above the rate of growth.

The growing trend of exchange rate and its coarse effects on economic actions stand as a main concern among macroeconomists, theoretical thinkers and policymakers. In the reign of fixed exchange rate regime, there is stability of exchange rate movement but the economy is retrogressing on daily basis as a result another exchange regime came to being which is called flexible exchange rate regime, nevertheless the flexible exchange rate is not much different from what was earlier adopted as the naira deteriorates on daily basis leading to instability of macroeconomic variables (Iyeli, Nenbee&Opue, 2011; Okoronta & Odoemena, 2016). The depreciation of naira value is unfavorable to import and favorable to export and over dependence on imported inputs. Changes in income earning of the export crop producers came as a result of variations in foreign world price. Such price changes, however, may lead to a great diminution in tomorrow's production if not cautioned and unsteady. These variations therefore are undesirable since they promote foreign transactions risks and uncertainties and thus distract trade, this implies that the greater the exchange risks the lower the expected income returned from exports thus minimizing the incentives to trade (Onyago, 2014), and this therefore hampers economic growth of a nation.

Import dependent economies like Nigeria faces exchange rate challenges due to lack of technological infrastructure, industrial activities greatly depend on imported inputs. Nigeria depends extensively on income return from oil exports, but massively imports refined petroleum and other related products. The prevailing import-dependent

industrial structure became unsustainable as the mounting import bills could not make up with the current export earnings (Nwosu, 2016). Hence, there is problem since import bill naturally give rise to the demand for forex and naturally lead to an increase in exchange rate. The various monetary policy reforms and exchange rate adjustments have failed to restore stability in exchange rate and maintain a low and stable inflation rate. The study of Nwosu (2016) indicated that exchange rate fluctuation tends to induce undesirable macroeconomic phenomena such as inflation and also the giving of subsidies for instance by the government when prices of products are low which ultimately yield a wasteful loss.

There exist controversial evidence in literature relating to exchange rate and economic growth, some empirical studies established a significant negative relationship between them (Okorontah & Odoemena, 2016; Eme, Akpan&Atan, 2012) other studies have instead concluded a positive relationship (Iyeli & Utting, 2017; Usman & Adegbite (2013). A negative relationship would imply that GDP growth rate is dampened by unstable exchange rate and therefore risk-averse investors and traders do not fully involve in economic actions. A direct nexus would mean that traders and investors are induced to fully employ their operation throughout with a thought of using unpredictable exchange rate and this could lead to increased economic growth. It is against the background that the study investigated effects of short and long run exchange rate movement on economic growth in Nigeria.

## 2.0 LITERATURE REVIEW

Exchange rate is referred to the price of home currency (naira)in respect to foreign currency US (dollar)(Mordi, 2006; Jhingan, 2010). It is the price at which naira exchanges for U S dollar. Theupward and down shift of exchange rate signified the potency and feeble of currency in respect to international currency and it is the accepted range for clarifying the competitiveness of localsectors in the globalbazaar (Razazadehkarsalari, Haghiri&Behrooznia, 2011). Azeez, Kolapo and Ajayi, (2012) also claimed that when exchange rate departed from its benchmark within lengthy period, it is referred toas exchange rate fluctuation which also indicatedthe misalignment of exchange rate as occurred where there is multiplicity of markets parallel with the official market.

Depreciation occurred when the quantity or volume of naira which is demanded to purchase US dollar increases, however appreciation occurred when reverse is the case (Jhingan, 2010). When real exchange rate appreciates, it has tendency to create current

account problem as a result of overvaluation. The effect of the overvaluation is that it generally makes import falsely cheap thereby making export costly, thus minimizing the foreign competitiveness of a nation (Takaendesa, 2006). Oladipupo and Ogheneov (2011) applaud the significant role of exchange rate in foreign transaction due to the fact that no economy is self sufficient. Exchange rate has its way at influencing other macro-economic variables like interest rate, inflation rate, unemployment, money supply etc. This belief emphasized the significance of exchange rate to the economic wellbeing of every nation that opens its doors to foreign trade in goods and services.

In the debate of Balassa and Samuelson model (1963), it was reported that nations with good production capacity usually face high growth in wage which spur high real exchange rate. Moreso, any upward shift in tradable good sector will result to an upward shift in non-tradable sector of the nation but should the growth in wage not commensurate with the productivity economies it will result to current account surplus that is, producing over what they could consume. Should the growth of wage rate increases speedily than the rate of productivity, labourers will consume excess goods which result to current account deficit. This indicates that the type of exchange rate system either peg or flexible exchange rate regime a nation adheres to determine the influence of such on her economic growth. Increases in general prices are an indication of peg exchange rate system while increase in exchange rate indicates the adoption of flexible exchange system (Akila, 2004).

Okorontah and Odoemena (2016) studied the influence of exchange rate on economic growth of Nigeria. The study gathered annual time series data for the period 1986-2012, ordinary least square (OLS) technique, Johansson co-integration test and the error correction mechanism (ECM) analytical tests were employed and the study found evidence of no strong relationship between exchange rate and economic growth in Nigeria. Amassoma and Odeniyi (2016) empirically analyzed the relationship between exchange rate and economic growth in Nigeria using annual data between 1970 and 2013. The analyses were carried out through Johansen Cointegration test. Evidently, the study found insignificant positive effect of exchange rate on the growth of Nigerian economy.

Hajilee and Al-Nasser (2017) evaluated the influence of exchange rate on financial depth of 26 nations; i.e. developed, developing, and emerging countries over the period of 32 years which covered 1980 and 2011. The study carried out its analysis using error

correction mechanism and Johansen cointegration model to discover the short and long run effect of exchange rate in large number of the countries. The study found that financial depth contributed meaningfully to exchange rate on 16 out of 26 countries. The bounds test approach showed that exchange rate has contributive influence on financial depth of 20 nations. In a study carried out by Gbatu, Wang, Wesseh and Tutdel (2017) on interrelationship between exchange rate and economic growth of Liberia. The study disclosed via vector autoregressive model that exchange rate has no significant interrelationship with economic growth however the variance decomposition result made it explicitly seen that shocks to economic growth in Liberia transport to variation in exchange rate. In South Africa, Fourie, Pretorious, Harvey, Van-Niekerk and Phiri (2017) employed smooth transition regression (STR) model to investigate nonlinear nexus between exchange rate volatility and economic growth from 1970 to 2016. The study proved that the exchange rate-economic growth correlation is indeed nonlinear within the sampled time period. In particular, the study discovered that regime switching behaviour was facilitated by government size in which exchange rate fluctuation significantly influenced economic growth when growth in government spending is below 6 percent. Volatility exerted an insignificant effect on economic growth. Guellil, Marouf and Benbouziane (2017) studied the influence of the exchange rate regimes on economic growth in developing countries. The study used time-series data (Panel Data), a sample consisting of about 38 developing countries during the period from 1980 to 2013 relying on two types of exchange rate regimes: fixed and intermediate regimes. The study relied on Fully Modified Least Squares (FMOLS) in order to know the regime which has the best in terms of economic growth. The study disclosed that there is a positive relation between exchange rate regime and economic growth with a preference for fixed exchange rate regimes in achieving the highest growth rate.

In Nigeria, Iyeli and Utting (2017) gathered secondary data on Real GDP, exchange rate, balance of payment, oil revenue and inflation sourced from CBN Statistical Bulletin to analyze the role of exchange rate on economic growth between 1970 and 2011. Johansen Co-integration analytical tool was employed and revealed that OREV and EXR positively aligned with RGDP. Based on the result, the study concluded that oil revenue as well as exchange rate impact positively on RGDP.

Mbanasor and Obioma (2017) assessed the effect of exchange rate variation on Nigeria's balance of payment. Annual time series data on import rate, export rate and the GDP were tested using two-stage least square and granger causality. The study discovered and concluded that exchange rate fluctuations have an insignificant positive effect on Nigeria's balance of payment. Ndu-Okereke and Nwachukwu (2017) applied VAR econometric tool to study the effect of exchange rate fluctuations on the Nigerian economy. Evidence from the findings showed indication of significant and positive influence of foreign exchange supply on economic growth whereas demand for foreign exchange depicted negatively on economic output.

### 3.0 RESEARCH METHOD

#### 3.1 Estimation Technique

Autoregressive Distributed Lag model (ARDL) was employed in the study. The technique of ARDL became essential for the study because it can simultaneously establish short run and long run relationship at a time. More so, ARDL is superior to Johansen co integration based on mixed stationary level i.e. I(0) and I(1) but must not exceed I(1) unlike Johansen co integration which rule stated that all variables should be associated of the same order.

The ARDL estimation technique is stated as;

$$\begin{aligned} \ln(RGDP)_t = & \lambda_0 + \sum_{i=1}^n \lambda_1 + \ln(RGDP)_{t-1} + \sum_{i=1}^n \lambda_2 + \ln(EXR)_{t-1} + \sum_{i=1}^n \lambda_3 + \ln(IMP)_{t-1} + \sum_{i=1}^n \lambda_4 \\ & + \ln(EXPr)_{t-1} + \sum_{i=1}^n \lambda_5 + \ln(GEX)_{t-1} + \beta_0 \ln(RGDP)_{t-1} + \beta_1 \ln(EXR)_{t-1} \\ & + \beta_2 \ln(IMP)_{t-1} + \beta_3 \ln(EXPr)_{t-1} + \beta_4 \ln(GEXP)_{t-1} + \mu_{it} \end{aligned} \quad 3.2$$

Where Ln (RGDP) the natural logarithm of foreign direct investment deflator is, Ln (EXR, IMP, EXP, GEXP) were the natural logarithm of exchange rate, import, export and government expenditure,  $\Delta$  is the change in each operator and  $\mu_{it}$  is the i.i.d stochastic error term. In investigating the long run association with restriction of coefficients  $\alpha_1, \alpha_2, \alpha_3, \alpha_4$  the null hypothesis in long run was written as follow:

$$H_0 = \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = 0$$

However, for policy reasons, the short-run adjustment of foreign direct investment, gross domestic product, government size, exchange rate, inflation rate, interest rate to changes in its determinants is necessary. The significance of error correction model lies in its ability to correct spurious regression results on time series data. The error correction model (ECM) is specified as:

$$\ln(RGDP)_t = \alpha_0 + \sum_{i=0}^n \lambda_i \ln(EXR)_{t-1} + \sum_{i=0}^n \lambda_i \ln(IMP)_{t-1} + \sum_{i=0}^n \lambda_i \ln(EXPr)_{t-1} + \sum_{i=0}^n \lambda_i \ln(GEXP)_{t-1} + (ECM)_{t-1} \quad 3.3$$

Where;  $ECM_{t-1}$  = Error correction model;  $t-1$  shows variables were lagged by one period;  $\lambda_i$  = Changes in ECM coefficient.

## 3.2 Model Specification

The empirical model of the study was based on the study of Inam and Umobong (2015) on exchange rate movement and economic growth in Nigeria (1970-2011) which was modified and adapted. The modified model for the study was stated as:

$$RGDP = f(EXR, IMP, EXPr, GEXP) \quad 3.4$$

$$RGDP_t = \alpha_0 + \alpha_1 EXR_t + \alpha_2 IMP_t + \alpha_3 EXPr_t + \alpha_4 GEXP_t + \mu_t \quad 3.5$$

Where:  $RGDP$  = Index of Gross Domestic Product (Real GDP) expressed in naira value;  $EXR$  = Exchange rate expressed in rate;  $IMP$  = Import expressed in naira value;  $EXPr$  = Export expressed in naira value;  $GEXP$  = Government expenditure expressed in naira value;  $\mu_t$  = error term.

## 3.3 Sources of Data and *Apriori* Expectation

Annual time series data employed were based on secondary measurement. The data for these variables namely; Exchange rate (EXR), import (IMP), export (EXPr), total government expenditure (GEXP) were the explanatory variables regressed on real gross domestic product (RGDP) as the dependent variable. The data were secondarily sourced from Central Bank of Nigeria Statistical Bulletin for the period of 1986-2017. The justification for the former year was as a result of structural adjustment programme and the latter year was the extent at which annual time series data could be gotten. Expectantly, all the variables should depict positive influence on RGDP. Summarily, it is expected that:  $B > 0$ ;  $\beta > 0$ ;  $\beta > 0$ ;  $\beta > 0$



## 4.0 RESULTS AND DISCUSSION

### 4.1 Unit Root Test

The presence of a unit root implies that the time series under investigation is non-stationary while the absence of a unit root shows that the stochastic process is stationary. The unit root test was carried out with the aid of Augmented Dickey-Fuller (ADF) tests.

**Table 4.2: ADF Unit Root Test Results at Level**

Variables	ADF Test Statistics	Critical Value	Integration Level	Remarks
<i>RGDP</i>	-3.062111	-2.963972	I(1)**	Stationary
<i>EXR</i>	-6.057405	-3.670170	I(1)***	Stationary
<i>IMP</i>	-3.495136	-2.960411	I(0)**	Stationary
<i>EXPr</i>	-3.036327	-2.960411	I(0)**	Stationary
<i>GEXP</i>	-3.723719	-2.960411	I(0)**	Stationary

*Note: \*(\*\*)(\*\*\*) - Significant at 10%(5%)(1%) percent level respectively*

Source: E-view 9 Statistical Package

Table 4.1 showed that all the variables that is; real gross domestic product (RGDP), exchange rate (EXR), import (IMP) export (EXPr) and government expenditure (GEXP) were stationary at levels and first difference respectively and at 10%, 5% and 1% significant levels respectively. This implied that import, export and government expenditure were stationary at level and at 5% whereas real gross domestic product and exchange rate were stationary at first difference at 5% and 1% respectively. The implication was that there existed mixture of differencing order of integration which theoretically nullified the rule of Johansen co integration and validates the adoption of Autoregressive Distributed Lag model (ADRL). Hence ARDL bound test method was employed onco-integration.

## 4.2 Co-integration

Null Hypothesis: No long-run relationships exist

**Table 4.2: PesaranShin (1999) Bounds Test Table**

Test statistics	Value	Regressors(k)
F-statistics	9.039732	4
Critical Value Bounds	I(0) Bound	I(1) Bound
10%	2.45	3.52
5%	2.86	4.01
2.5%	3.25	4.49
1%	3.74	5.06

Source: E-view 9 Statistical Package

Table 4.2 indicated that the F-stat of 9.039732 is higher than any of the Upper Bound Table value which implied that the null hypothesis that no long run relationship exist cannot be accepted. Hence, the existence of long-run relationship among the variables in the model was accepted leading to the analysis of long run analysis and the short-run dynamic and error correction analysis.

## 4.3 Long and short run Estimation Coefficients

**Table 4.3 Long Run Co-Integrating Coefficients**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C (RGDP)	3.657923	0.139864	26.153385	0.0000
EXR	0.379271	0.074737	5.074748	0.0004
IMP	-0.318247	0.219554	-1.449516	0.1751
EXPR	0.279589	0.143645	1.946387	0.0776
GEXP	0.578680	0.156571	3.695951	0.0035

Source: E-view 9 Statistical Package

Table 4.3 showed the interrelationship among the variables. Evidently, Table 4.3 showed that there existed a positive relationship between exchange rate and economic growth in Nigeria. It therefore implied that exchange rate has significant positive relationship with economic growth and will spur the growth of Nigerian economy by 3.79% increase. The study also revealed negative and statistically insignificant coefficient of import implying the existence of negative and insignificant long run relationship between import and economic growth in Nigeria. As a result, 1% changes in import decreases economic growth by 3.18% change. The coefficient of export was positive with an insignificant effect on economic growth, hence there existed a positive and insignificant long run relationship between export and economic growth in Nigeria. Therefore, 1% change in export insignificantly increases economic growth in Nigeria by 2.79%. Lastly, the coefficient of government expenditure revealed a positive and statistically significant relationship with economic growth in Nigeria. Hence, there is evidence of positive and significant long run relationship between government expenditure and economic growth in Nigeria. This therefore implied that 1% increase in government expenditure will in turn yield about 5.78% increase in Nigerian economic growth.

#### 4.4 The Short-run Dynamic and the Error Correction Model

**Table 4.4: Short-run Dynamic and ECM**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(RGDP(-1))	0.332501	0.205911	1.614781	0.1347
D(RGDP(-2))	0.668215	0.301882	2.213495	0.0489
D(RGDP(-3))	-0.502242	0.198397	-2.531499	0.0279
D(EXR)	0.025643	0.055016	0.466098	0.6502
D(EXR(-1))	0.153892	0.065566	2.347136	0.0387
D(IMP)	-0.010918	0.048289	-0.226090	0.8253
D(IMP(-1))	-0.061537	0.036111	-1.704112	0.1164
D(EXPR)	0.003499	0.033104	0.105712	0.9177
D(GEXP)	0.055239	0.038431	1.437354	0.1784

D(GEXP(-1))	0.000218	0.039202	0.005560	0.9957
D(GEXP(-2))	0.101584	0.037554	2.705026	0.0205
ECM(-1)	-0.259210	0.071618	-3.619354	0.0040

Source: E-view 9 Statistical Package

Table 4.4 explained that ECM was correctly signed at -0.259210 though a slow rate of adjustment but significant. Hence, it can be said that the level at which exchange rate movement adjust to equilibrium was about 25.9% on yearly basis.

The short run result revealed that exchange rate has an insignificant positive relationship with economic growth but after differencing (EXR(-1)) became significant. Therefore, it can be concluded that the lagged of exchange rate value has the coefficient of 0.153892 implying that exchange rate increased economic growth by 1.53% in the short run. The short run result further showed that the value of import and lag of import were negatively and insignificantly related to economic growth in Nigeria, this implied that the value of import and lag of import insignificantly decreased economic growth by 0.01% and 0.06% respectively. Interestingly the result of import is in consistence with the long run result indicating negative and insignificant effect on economic growth in Nigeria. The value of export submitted the existing association between export and economic growth in Nigeria is insignificantly negative within the study period. This implied that the relationship between export and economic growth is negative in nature and thus decreased the output of economic growth in Nigeria by 0.03%. Finally, government expenditure has positive effect on economic growth in Nigeria. However, lagged of government expenditure (GEXP(-2)) denoted the significant result of government expenditure at 5% level of significance. Therefore, government expenditure (GEXP(-2)) has positive and significant effect on economic growth in Nigeria. All things being equal, 1 percent change in government expenditure positively increased economic growth in Nigeria by 1.01%. The result equally validated the result of the long run relationship.

## 4.5 Residual Diagnostic Test

In the study, diagnostic tests that were identified are serial correlation LM test; Ramsey Reset test; normality test and heteroscedasticity test (ARCH). The results of the diagnostic tests were shown in the Tables below.

### 4.5.1 Autocorrelation Test

Breusch-Godfrey serial LM test measures the validity of the modeling assumptions intrinsic in applying regression-like models to observe data series. The Breusch-Godfrey test result as depicted in LM section of table 4.5.1 showed that there was existence of no serial correlation in the residuals because observed R-squared (8.650988) has its corresponding prob. chi-square to be higher than 5% level. Therefore, the hypothesis that no existing autocorrelation is accepted which made the model dependable and free from any serial error correlation.

**Table 4.5.1: Breusch-Godfrey Serial Correlation LM Test:**

F-statistic	2.011960	Prob. F(2,9)	0.1896
Obs*R-squared	8.650988	Prob. Chi-Square(2)	0.1332

Source: E-view 9 Statistical Package

### 4.5.2 Stability Test

Ramsey RESET test is a regression specification error test. The RESET test is widely employed to test for a non-zero mean of the error term. The null hypothesis is that, the regression model fit the data well versus its alternative hypothesis of invalid regression model. From all indication the p-value of 33.93% is higher than 5%, therefore it can be inferred that the model do fits the data leading to stability of the model.

**Table 4.5.2: Ramsey RESET Test**

	Value	df	Probability
t-statistic	1.003424	10	0.3393
F-statistic	1.006859	(1,10)	0.3393

Source: E-view 9.5 Statistical Package

### 4.5.3 Normality Test

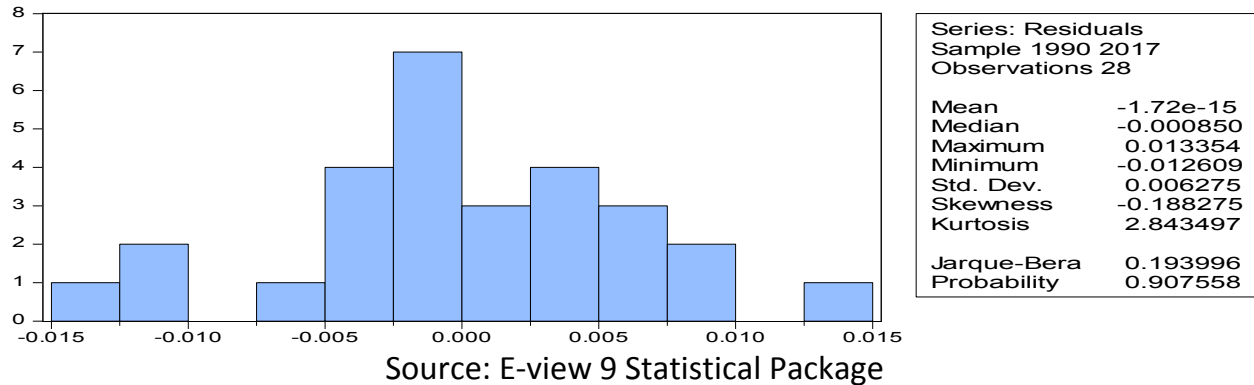


Fig. 4.1 Normality Test

It is expected that the regression residuals should be normally distributed. It is a good idea to check if the residuals are normally distributed, this is not essential for forecasting but it does make the calculation of prediction intervals much easier. Hence, a critical look at the histogram test result in Fig.4.1, the Jarque-Bera statistics indicated the normal distribution of the residual because of the JB p-value 0.193996 (19.39%) > 5%. Therefore, the residual of the analysis was normally distributed.

### 4.5.4 Heteroscedasticity Test (ARCH)

The existence of heteroscedasticity ARCH test is a major concern in the analysis of variance (ANOVA), including the presentation of regression analysis, as it can invalidate statistical tests of significance that postulates that modeling errors are uniform and uncorrelated. Therefore, this section of the Table revealed that the observed R-squared probability chi-square (0.216338) is above 5% significant level which implied that there is no heteroscedasticity in the modeled regression thereby affirming the regression result efficient and reliable. Hence, the residual of the regression are homoscedastic (all random variables in the sequence or vector have the same finite [variance](#)) and normally distributed with no serial autocorrelations therefore it can be concluded that the model was valid.

**Table 4.5.4 Heteroskedasticity Test: ARCH**

F-statistic	0.216338	Prob. F(1,25)	0.8993
Obs*R-squared	0.217633	Prob. Chi-Square(1)	0.8944

Source: E-view 9 Statistical Package

## 5.0 DISCUSSION AND RECOMMENDATIONS

### 5.1 Discussion and Conclusion

The study investigated effect of exchange rate movement on economic growth in Nigeria. Evidence from Augmented Dickey-Fuller (ADF) unit root test indicated that import, export and government expenditure unit root were stationary at level  $I(0)$  while exchange rate and real gross domestic product were stationary at first difference  $I(1)$ . Hence, ARDL Bound test was employed on co-integration and discovered that truly there existed long run association among the parameters.

The long run relationship between exchange rate movement and economic growth indicated that the F-statistic of 9.039732 was higher than the lower and upper bound values of 2.86 and 4.01 respectively. This point to the importance of exchange rate movement in economic growth and development of an economy, hence exchange rate movement has a longrun relationship with economic growth in Nigeria. This therefore implied that exchange rate system of a country has the propensity and the magnitude to accelerate the pace of growth and development in an economy. It is consistent with Odili (2015) who found long run relationship between exchange rate and economic growth in Nigeria.

Taking a careful look at the result of the study both at the long run and short run, it was revealed that import has a negative and an insignificant relationship with economic growth. This is in tandem with the economic *apriori* positive expectation and it is in connection with empirical findings of Nwosu (2016) and Elias, Agu and Eze (2018) whose studies concluded negative effect of import on economic growth in Nigeria. The study implied that the negative relationship between import and real gross domestic product will subject the Nigerian economy to continuous shrinking, that is, the more Nigeria

depends on import goods and services the lower the economic growth rate, this is because exchange rate and import affect economic growth simultaneously such that the weighty importation into the country and continuous variation in exchange rate could bring distortions to the terms of trade causing the balance of payments to be opposing. This study further implied that Nigerians need to swap from excessive import consumption to domestic consumption in an effort to promote local industries and home made goods other than foreign goods and services. Hence, effort should be reinvigorated by the Nigerian government to put in policy measures that will cater for trade balance such that Nigerians will reframe her extravagant consumption and dependence on foreign goods and services.

The study revealed that export has insignificant positive relationship with economic growth in Nigeria on the long run as well as in the short run. The relationship conformed to the positive stated *a priori* expectation. The study equally validated the empirical findings of Adeleye Adeteye and Adewuyi (2015); Oloyede and Essi (2017); Elias, Agu and Eze (2018), that export has positive relationship with economic growth in Nigeria. This result is not amazing on the note that the Nigerian export sector is well overwhelmed by oil which is an essential national commodity and earns large foreign exchange for the economy. Nwosu (2016) asserted that about 70% receipts from oil export are used to finance government expenditure leading to economic growth. The implication arising from the study is that while Oil sector account for the large proportion of the revenue to Nigerian government, other sectors such as the Manufacturing sector, Mining sector, Agricultural sector, etc could be revitalize, encouraged and well concentrated on in such a way that the sectors will favour economic growth through high demand of goods globally. Therefore, Nigerian government should give room for export diversification.

The study further explored that exchange rate has positive and significant relationship with growth of Nigerian economy. The outcome conformed to the theoretical expectation of positive relationship with economic growth. The study is consistent with the empirical study of Inam and Umobong (2015), that exchange rate positively related with economic growth in Nigeria. Nevertheless, government needs to adopt a befitting exchange rate policy that is capable of stabilizing exchange rate to enhance economic growth and development. The depreciation of the country's currency value is likely to increase the cost of imported raw materials as well as the cost of imported finished goods. Thus, producers would prefer domestically sourced inputs. Similarly, homemade



products would become more preferable to consumers as they will be offered at a cheaper rate than their foreign substitutes. Thus, exchange rate depreciation has a way of encouraging local production and boosting national output (Inam&Umobong, 2015). Based on this, occasional devaluation of the naira by the government and the monetary authorities should be allowed as it is capable of enhancing growth performance and boosting the Nigerian economy.

Lastly, government expenditure has significant positive relationship with economic growth in Nigeria on the long run as well as on the short run. This is in conformity with the positive *a priori* expectation. The study is also in consistent with the finding of Ismaila (2016); Jelilov and Musa (2016) whose studied concluded positive significant relationship between government expenditure and economic growth in Nigeria. The implication arising from the study is that government should position its expenditure on human capital development that will yield direct and continuous economic growth. To ensure the standard of living of citizens in the economy, public funds must be adequately and well fashioned in rightful projects at the right time to meet the country's demand rather than spending on enormous projects that will not significantly influence every citizen of the country. Hence, the government should position its budget towards the productive sectors like education, infrastructure and social amenities as it would reduce the cost of doing business as well as raise the standard living of poor ones in the country. The study is consistent with the study of Inam and Umobong (2015), that exchange rate movement positively affect economic growth in Nigeria.

## 5.2 Recommendations

**The study proffered the following recommendations based on the test of hypotheses:**

The government should introduce import reducing policy that will stabilize the import-export balances such that local goods can be well embraced; Exchange rate is a macroeconomic variable on economic growth that cannot be overemphasized hence regulatory authorities need to study and comes up with the best approach that could help stabilize fluctuation of exchange rate which at the end would promote economic growth and development; Export diversification to manufacturing and agricultural sector will help to minimize the over revenue dependence on oil sector. Hence, government should diversify its export base to other productive sectors aside oil sector; Government expenditure should focus on the welfare of the citizen and not to improve economic growth unnecessary without proper concern and care for welfare of the people.

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