

## **EFFECT OF EXCHANGE RATE FLUCTUATION ON ECONOMIC GROWTH IN NIGERIA (1998-2018)**

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### **ABSTRACT**

The study examines the effect of exchange rate fluctuation on economic growth in Nigeria for the period 1998 to 2018. The study period was chosen based on data availability. The study used secondary data collected from central bank of Nigeria Statistical Bulletin for various issues. Econometric evidence using Augmented Dickey-Fuller (ADF) unit root tests reveals that the stationarity of the various exchange rates and economic growth were all at first difference. Engel-Granger and Johanson cointegration tests reveal the existence of cointegrating effect thus signifying a long run equilibrium effect between the dependent and the independent variables. Ordinary Least squares (OLS) results and the Error correction model (ECM) show that Average Official exchange rate (AOER), Nominal effective exchange rate, (NEER), and Real effective exchange rate (REER) rate each has a positive but insignificant effect on economic growth of Nigeria both in the long run and in the short run. The findings also showed that contrary to the other variables, the Average Central exchange rate (ACER) has a negative although insignificant effect on economic growth in Nigeria. The study concludes that exchange rate depreciation is more to the advantage of Nigeria as depreciation within the period has enhanced economic growth although minimally. The study recommends diversification of production away from oil while aiming more at technological advancement and industrialization.

**Keywords:** Official exchange rate, Central exchange rate, Nominal effective exchange rate, Real effective exchange rate, Economic growth.

### **INTRODUCTION**

Exchange rate has severally been used by various governments as a tool to influence some aspects of the economy with the objective of directly or indirectly spurring growth. This stems from the realization that several theories abound to argue that a favourable exchange rate result to economic growth. Also, it is common knowledge that international exchange rates are an essential barometer of the general state of an economy. Domestic exchange rates, for

instance, give an idea about the disparity in economic activity between regions and hence are considered as essential economic pointers (Kogid, Asid, Lily, Mulok, & Loganathan, 2012).

Exchange rate specifies the number of units of a given currency that can be purchased for one unit of another currency. It is the mathematical expression of the international medium of exchange and monetary systems as a process of settling foreign accounts or debits arising out of international economic activities (Ibenta,2012). In the opinions of Usman and Adejare (2013), the issue of exchange rate came in as a result of unequal resources endowed in different parts of the world which demand the need for inter-dependence. This need results to international transactions in which case countries require commodities and services of other nations for development purposes. To effect such transactions, an international acceptable mode of payment is required and this brought about the idea of foreign exchange.

The nominal and the real exchange rates are often stressed in economic and financial parlance. In this regard, exchange rate has also been seen as a determinant of the relative prices of domestic and foreign goods, and also as a demonstration of the potential strength and the degree of external sector participation in the international trade. In this perspective, real exchange rate is commonly accredited as an important macroeconomic policy variable compared to nominal, since it indicates a country's international competitiveness (Kogid, Asid, Lily, Mulok, and Loganathan, 2012). The nominal exchange rate, is generally referred to as the price of a nation's currency in terms of another nation's. It's typically expressed as the domestic price of the foreign currency. Conversely, the real exchange is the Nominal exchange rate that has been adjusted for inflation in the domestic relative to those of trading partners.

For the past five decades, exchange rates have undergone metamorphosis in Nigeria. This statement is a reaffirmation of Sanusi's (2004), CBN's (2018) reports stating that exchange rate arrangements in Nigeria have severally been modified since the 1960s. It was a fixed regime in the 1960s, then a pegged arrangement between the 1970s and the mid-1980s. After embracing SAP in 1986, various types of floating regimes have been implemented up to this very moment. Prior to SAP Sanusi noted, precisely in the early 1980s, the fixed exchange rate regime induced an overvaluation of the naira. To make matters worse, this was supported by exchange control regulations that provoked ample and significant distortions in the economy. This unhealthy phenomenon led to enormous importation of finished goods with undesirable consequences for domestic production, balance of payments position and the nation's external reserves level. This coupled with devastating world commodity prices due to the global economic recession, plunged the Nigerian economy into severe crisis. According to Obansa, Okoroafor, Aluko, and Millicent, 2013, this created structural imbalances that resulted from the collapse of oil prices

which adversely affected the nation's revenue. The effect was severe because Nigeria was, and still is to a large extent, a monoculture economy. As a result, large fiscal deficit, huge external debt shock, surging unemployment and inflation rate amidst declining domestic investment input were experienced. These knotty economic conditions cannot guarantee sustained growth.

A stable long-term economic growth necessitates stable trade and foreign exchange markets to ensure a stable exchange rate system and favorable terms of trade in addition to appropriate basic physical capital stock. However, most, often (real) exchange rate misalignment as afore stated affects economic growth. In developing countries, in particular, exchange rate misalignment is often in the form of overvaluation which adversely affects the tradable goods by lowering producers' real prices.

The real exchange rate misalignment basically occurs in markets in which actual exchange rates are not allowed to adjust to changes in economic fundamentals (Kogid et al., 20012). This reduces the incentives and profits, and may instigate a decline in investment and export volumes *ceteris paribus*. These arguments certainly contributed to the decision to float rather than fix or peg the Nigerian currency. In this regard, Aliyu (2011) asserted that appreciation of exchange rate results in increased imports and reduced export while depreciation would expand exports and discourage imports. Depreciation of exchange rate causes a shift from foreign goods to domestic goods. It can therefore be seen that exchange rate is a key connection between the domestic economy and other economies in the world. This explains why exchange rate becomes extremely important when policies regarding economic growth are concerned. However, in spite of the government's efforts over the years to stabilize the exchange rate, it continues to fluctuate. Equally, extant studies on the effect of exchange rate fluctuation on economic growth have shown varying results with some showing a positive effect, for instance, Obansa, Okoroafor, Aluko and Millicent (2013); Uddin, Rahman and Quaosar (2014)

and others a negative effect for instance Basirat, Nasirpour and Jorjorzadeh (2014)) on economic growth. Some studies for instance, Akpan and Atan (2011), Dada and Oyeranti (2012) showed no strong effect. Cognizant also, that in the present global environment in which the world has become a global market where business transactions cut across national boundaries, with firms products extending beyond national frontiers, exchange of currency or foreign exchange becomes not only important, but a necessity. The broad objective of this study therefore was to examine the impact of these fluctuations on the economic growth of Nigeria from 1998 to 2018. Specifically, the study examined the effect of average official exchange rate, average central exchange rate, nominal effective exchange rate, and real effective exchange rate fluctuation on economic growth in Nigeria within the time scope of the study. The remaining part of this study is organized as follows; section II is the review of related literature, section III contains

methodology, section IV addresses the results of the study, while section V is the conclusion and recommendations.

## **REVIEW OF RELATED LITERATURE**

### **Conceptual and Theoretical Review**

According to Ajikobi (2017), following government intervention in the foreign exchange market there exist a good number of dollar exchange rates viz; the official exchange rate, the central exchange rate, the rate incorporated in the government budget, Forex bureau rate, Interbank rates, Travel allowances, school fees & others, Fuel merchants, Pilgrims, and the ever present black market rate formerly referred to as the parallel market rate. Ajikob stated that the parallel market is very resilient in Nigeria despite the foreign exchange law of 1995 prescribing jail terms for unregistered individuals or agents dealing in forex. Nominal and the real exchange rate however, are the exchange rates that dominate in the literature reviewed.

Official exchange rate in Nigeria refers to the exchange rate determined by national authorities. It is determined by the Central bank and mostly applies to a few official international transactions such as debt servicing and obligations to international organization. Meanwhile the central rate is determined by the market forces of demand and supply within the frame work of a foreign market auction system. The nominal exchange rate as earlier stated is the price of a nation's currency in terms of another. It's commonly stated as the domestic price of the foreign currency. The **real exchange rate** (RER) between two currencies is an expression of the product of the nominal exchange rate (the dollar cost of a naira, for example) and the ratio of prices between the two countries. A plethora of studies consider the RER as a very practical appraisal of the competitiveness of an economy. It is a demonstration of whether the domestic prices of goods and services are higher or less than their prices abroad. In a situation where the home prices are less, then the expectation is healthy exports and a trade surplus. Contrarily, if domestic prices are higher, then the expectation should be a sluggish exports and a trade deficit.

However, most often, economists and policymakers are more interested in the real effective exchange rate (REER) when measuring a currency's overall alignment. The REER is an average of the bilateral RERs between the country and each of its trading partners, weighted by the respective trade shares of each partner. Being an average, a country's REER may be in "equilibrium" (display no overall misalignment) when its currency is overvalued relative to that of one or more trading partners so long as it is undervalued relative to others. Based on its importance therefore, in addition to the average official, and average central exchange rates of the Nigerian currency, this study also evaluates the effect of REER and nominal effective exchange rate (NEER) on the Nigerian economic growth from 1996 to 2018. According to CBN

(2018), the trade-weighted NEER indices for Nigeria represent the value of the Naira in terms of a weighted basket of currencies. The weights represent the relative importance of each currency to the Nigerian economy. In other words, it represents the share of each of the selected countries in Nigeria's total trade. Therefore, the NEER index measures the average change of the Naira's exchange rate against all other currencies.

There are a couple of theories that are usually used to explain the fluctuation of exchange rates. Three of the theories which have relevance to the present study will be discussed here. They include; the traditional flow model, the Monetary model, and the Purchasing Power Parity (PPP) Traditional Flow Model of Exchange rate concentrates on the trade account and assumes that:

- (1) Traded goods and services are the ultimate link to the exchange rate.
- (2) No capital flows between countries

According to the theory, like any other "good" the foreign exchange price is determined by the relative supply and demand for each currency.

For instance, Naira/Dollar exchange rate comes from the demand and supply of dollar (\$) relative to the demand and supply of Naira (N). The demand of the dollar comes from the Nigerian demand for US goods and services.

In this respect, the traditional flow model is essentially based on the principle of the interplay of demand and supply. The forces of the market (interaction between demand and supply) determine the rate of exchange. On the other hand, The Monetary theory of exchange rate as amplified by David, Umeh, and Ameh, (2010) postulates that the relative supply of and demand for money between two countries is the foundation for which the determination of exchange rate between the two countries based. According to the theory, increase in the supply of money is able to generate inflation, hence, result in exchange rate depreciation. The model equally states that a situation of falling prices with a given nominal money supply results in exchange rate depreciation. The Purchasing Power Parity (PPP) theory is anchored on the fact that at one point in time, the exchange rates reflect the purchasing powers of the currencies. As an illustration, let's consider a basket of goods that will cost 1 dollar in USA. Following the PPP postulate, the basket of good should cost 250 naira here in Nigeria if that is the prevailing exchange rate. The theory focuses on the inflation-exchange. There are two forms of PPP theory – the absolute form and the relative form. The absolute form which we specify here also called 'the law of one price' proposes that prices of similar products of two different countries ought to be equal when measured in a common currency. If discrepancy in prices as measured by the common currency exists, the demand should shift so that these prices should converge.

### **Exchange rate and economic growth**

Just as the interest rate which was controlled, Nigeria practiced fixed exchange rate regime from independence up to 1986 when it was repealed and replaced with flexible exchange rate regime. The flexible exchange rate regime as it were, is the follow up to the structural adjustment program (SAP) designed to devalue the naira in order to encourage export in Nigeria. Nigeria is noted as an import dependent economy particularly for her capital goods. The manufacturing sector to which exchange rate devaluation was targeted to encourage for increase export is dominated by Multinational Corporation and incapacitated by low capacity utilization. The result is that this sector is rather hampered by high interest rate, high cost of raw materials for production, rising inflation, naira depreciation, foreign exchange shortages and consumer strong resistance to local product. So exchange rate devaluation, instead of a blessing, became a problem in disguise for the sector. The choice of exchange rate regime is indeed significant for economic growth effort but dependent on the level of development of the economy in question (David et al 2010). As for the industrialized economies with complete market and deeper financial market, real and financial shocks are better managed such that economic growth does not depend much on their choice of exchange rate regime.

According to the exchange rate theory, there is a linkage between exchange rate and the macroeconomy. Following the theory, exchange rate is a key connection between the domestic economy and other economies in the world. This linkage takes place through the commodity and asset markets. In the commodity market, the exchange rate establishes linkages between domestic and foreign prices. It has been said that, though not exactly, domestic prices are some sort of exchange rate –adjusted foreign prices. Generally speaking, changes in exchange rate may lead to imported inflation and loss of competitiveness. This happens when the effect of foreign prices on domestic prices is transmitted through the labour market. Higher wages may be demanded by workers even though increase in import prices resulting to higher cost of living may result purely from foreign currency appreciation (Temuhale & Achugbu, 2019). All these changes have implications on economic growth.

### **Empirical Review**

Adopting vector auto- regression (VAR) technique, with specific emphasis on Impulse Response factor and the Forecast Error Variance Decomposition, Obansa, Okoroafor, Aluko and Millicent (2013) investigated the relationship between Exchange Rate, Interest Rate and Economic Growth in Nigeria from 1970-2010. Findings of the study showed that Exchange rate had a strong impact on Economic growth.

Uddin, Rahman and Quaosar (2014) investigated the relationship between Exchange Rate and Economic Growth in Bangladesh from 1973 to 2013. The study employed time series econometric techniques. The results showed a significant positive correlation between exchange rate and economic growth and the presence of long-run equilibrium relationship between them as evidenced by Granger's Causality Test that also showed a bi-directional causality runs through exchange rate to economic growth and economic growth to exchange rate.

Exploring a Generalised Method of Moments (GMM) technique Akpan and Atan (2011) investigated the effect of exchange rate movements on real output growth in Nigeria based on quarterly series for the period 1986 to 2010. The estimation results suggested that there is no evidence of a strong direct relationship between changes in exchange rate and output growth. rather, Nigeria's economic growth has been directly affected by monetary variables.

Employing a simultaneous equations model and a vector-autoregressive model, Dada and Oyeranti (2012) analysed the impact of exchange rate on macroeconomic aggregates in Nigeria. The estimation results showed that there is no evidence of a strong direct relationship between changes in the exchange rate and GDP growth.

Basirat, Nasirpour and Jorjorzadeh (2014) investigated exchange rate fluctuations and economic growth in developing countries over the period 1986-2010. The study put the rate of development of financial markets of those countries into perspective. Findings from panel data analysis of 18 countries showed that the effect of financial development on economic growth and the effect of exchange rate fluctuation on economic growth are both negative and significant.

Adeniran, Yusuf and Adeyemi (2014) researched on the impact of exchange rate on economic growth in Nigeria within 1986 – 2013. Ordinary Least Squares analysis (OLS) regression and correlation methods were used to analyse data for the study. The result revealed that exchange rate has positive impact but not significant on economic growth thus affirming previous studies that developing countries are relatively better off in the choice of flexible exchange rate regimes.

Levy-yeyati and Sturzenegger (2003) studied the link between exchange rate regimes and economic growth for a sample of 183 countries in the post-Bretton Woods period. Contrarily to previous studies, findings showed that for developing countries, less flexible exchange rate regimes are associated with slower growth and greater output volatility. There was no significant impact of regimes on growth for industrial countries.

Wandeda (2014) investigated the effect of exchange rate volatility on economic growth in Kenya from 1980 to 2012 using Augmented Dickey-Fuller test (ADF) for unit root testing and also Ordinary Least Squares estimation method. Findings of the study revealed that exchange rate volatility has a positive but insignificant impacts on GDP growth rate in Kenya.

David, Umeh and Abu (2010) examined the impact of exchange rate fluctuations on the Nigerian manufacturing sector from (1986 – 2005) using regression analysis. The result showed adverse effect and variables including manufacturing output employment rate and foreign private investment were all statistically significant’

Adopting the modified IS-LM framework, a study by Yakub, (2010) investigated the effect of exchange rate on output of different sectors in Nigeria within the scope 1970-2007. The result revealed that exchange rate had significant contractionary effects on manufacturing and agriculture sectors, but had expansionary effect on services sector. This was evidence that the exchange rate structure was detrimental for the performance of the manufacturing sector of the economy.

## **DATA AND METHODOLOGY**

The study is based on secondary data collected from the central bank of Nigeria statistical bulletin for various issues. The study covers the period of 21 years (1998-2018). Stationarity of the data was determined by employing Augmented Dickey Fuller (ADF) unit root test. It is conventional to conduct cointegration test to find out if a long run relationship exists between the dependent and the independent variables. Engel –Granger cointegration and Johansen cointegration tests were used. Ordinary Least square (OLS) regression and Error Correction model were used for the analysis. ting and coefficients estimation methods were employed for analysis.

### **Model Specification**

This work adopts the model of Exchange rate and economic growth following the specification of Kogid et al., (2012) as stated below:

$$RGDP = f(NER, RER) \text{ -----1}$$

Where RGDP is Real Gross Domestic Product, NER is Nominal exchange Rate, RER is Real Exchange Rate.

The model is modified to

$$RGDPG = f(AOER, ACER, NEER, REER) \text{ ----- 2}$$

Where RGDPG is the percentage changes in the Real Gross Domestic Product, ACER is the Average Central Exchange Rate in Nigeria, NEER is the Nominal Effective Exchange Rate, and REER is Real Effective Exchange Rate.



Equation two is transformed to an econometric format thus:

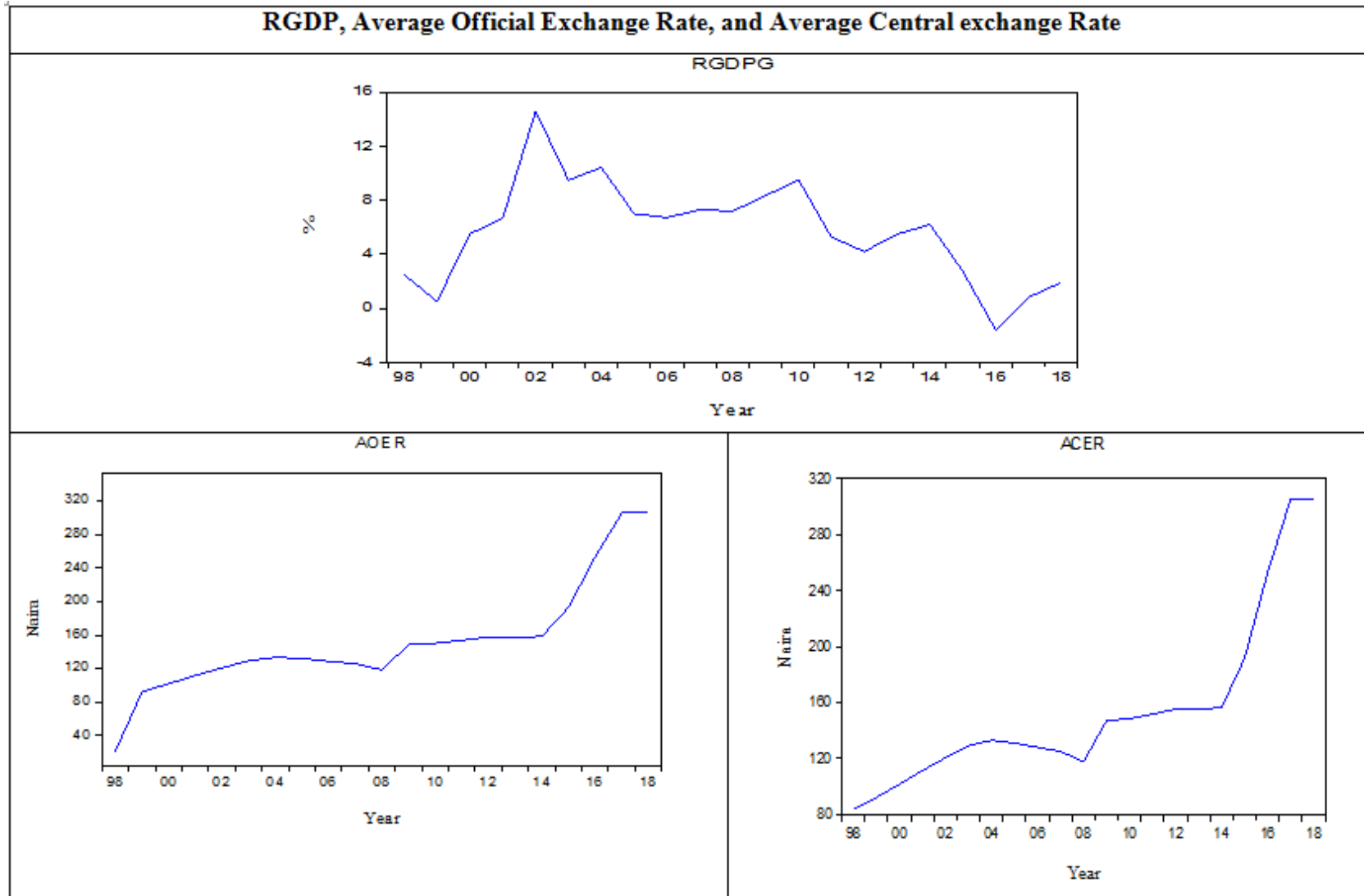
$$RGDPG = \beta_0 + \beta_1 AOER + \beta_2 ACER + \beta_3 NEER + \beta_4 REER_i + \mu_t$$

Where  $\beta_0$  = intercept,  $\beta_1 - \beta_4$  = Coefficients of the independent variables

$\mu$  = Residual term

### **EMPIRICAL RESULTS**

It is common for time series data to reveal component trend - a nonlinear component that vary over time. Figure 1 shows the relationship between RGDP and AOER as well as ACER in Nigeria from 1998 to 2018 while Figure 2 shows the relationship between RGDP and NEER as well as REER. It can be seen that the AOER and the ACER did not have any marked differences from each other under study. They showed a somewhat increasing fluctuating trend. NEER equally showed an increasing undulating trend except in 2008 when there was a sharp decrease. On the contrary, REER showed an increasing trend up till 2007, then a decreasing trend from then. However, within the period, RGDP growth showed an upward trend from 1998 to 2002, before showing a decreasing fluctuating growth over the years.



**Figure 1: Real GDP, Average Official Exchange Rate, and Average Central exchange Rate**

Real GDP, Nominal effective exchange Rate, and Real effective exchange Rate

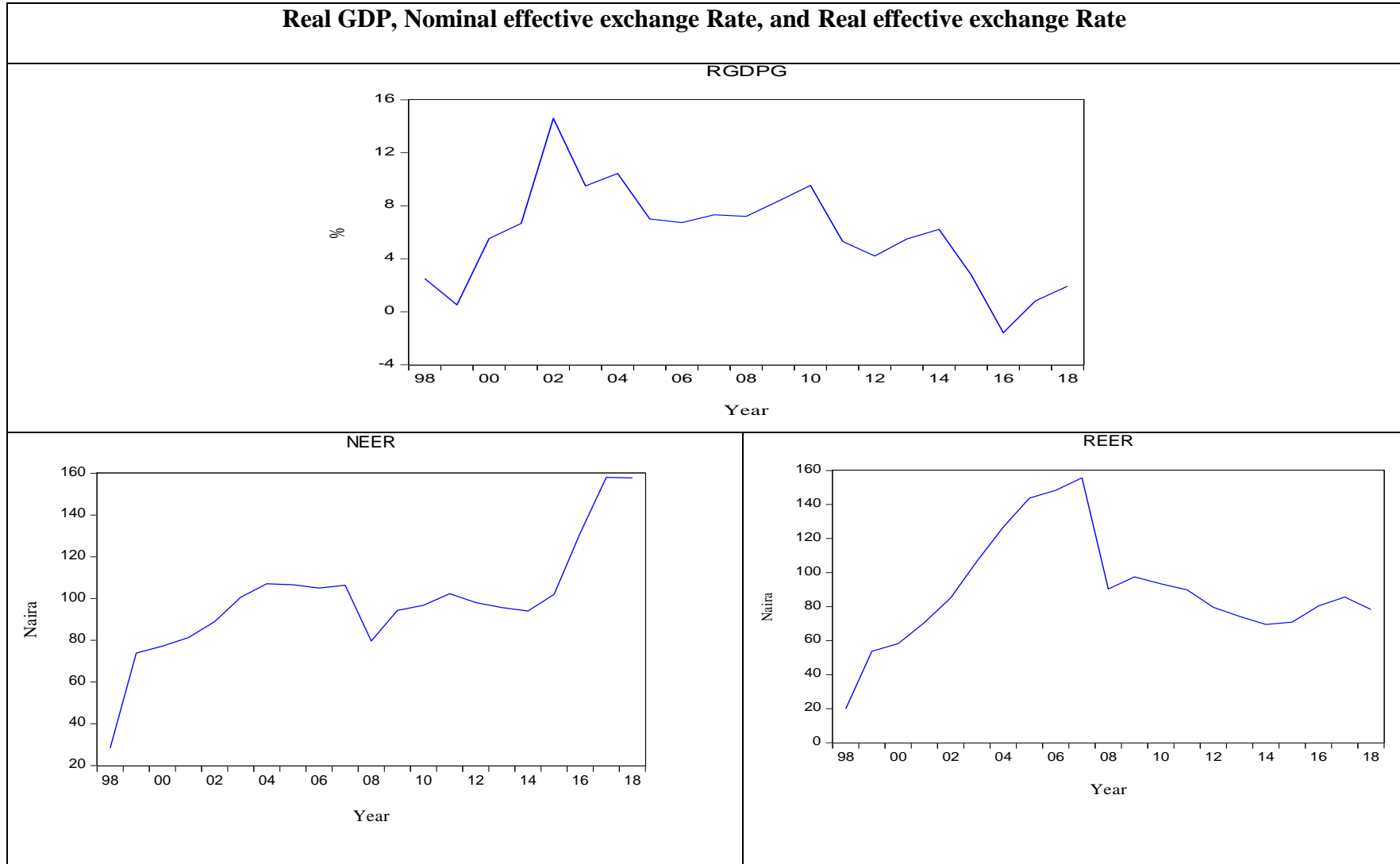


Figure 2: Real GDP, Nominal effective exchange Rate, and Real effective exchange Rate

**Descriptive Statistics**

The summary of the descriptive statistics of the variables used in the study is presented in Table 1. It comprises as usual, measures of the central tendency including the mean and the median as well as measure of dispersion for instance, minimum, maximum, and standard deviation, for both the explained and the explanatory variables. It is visible in Table 4.1 that the number of observations is 21 for each variable in accordance with the time scope of the study. The table also shows that the average growth of the Nigerian economy was 5.8% , with a maximum growth rate of 14.6 % and minimum growth rate of -1.6% respectively within the period. The deviation of growth from the mean was 3.8% showing the high volatility of the economy during the period.

**Table 1: Descriptive Statistics**

	RGDPG	AOER	ACER	NEER	REER
Mean	5.766190	152.5095	154.5105	99.30333	89.43952
Median	6.220000	133.5000	133.0000	98.08000	85.13000
Maximum	14.60000	306.0800	305.5800	158.0700	155.7500
Minimum	-1.580000	21.89000	83.81000	28.32000	19.88000
Std. Dev.	3.779360	66.56114	61.63297	27.54571	32.66128
Skewness	0.134248	0.964750	1.508591	0.092367	0.402202
Kurtosis	3.012213	4.096988	4.331319	4.650861	3.163356
Jarque-Bera	0.063210	4.310561	9.516318	2.414534	0.589531
Probability	0.968889	0.115871	0.008581	0.299013	0.744706
Sum	121.0900	3202.700	3244.720	2085.370	1878.230
Sum Sq. Dev.	285.6713	88607.71	75972.47	15175.32	21335.18
Observations	21	21	21	21	21

**Result of Unit Root Tests**

The result of the Augmented Dickey Fuller unit root tests to investigate the stationarity of the variables is presented in Table 2.

**Table 2: Results of the Unit root tests**

Null Hypothesis : Variable has a unit root

Variable	TEST CONDUCTED	Mackinnon Critical Value at 5% probability level	Level Test Stat	Mackinnon Critical Value at 5% probability level	1 <sup>st</sup> Difference Test Stat	Order of Integration
<b>RGDPGR</b>	ADF	-3.020686	-1.932166	-3.029970	-5.060479	I(1)
<b>AOER</b>	ADF	-3.020686	-0.259284	-3.029970	--3.768326	I(1)
<b>ACER</b>	ADF	-3.020686	1.449604	-1.960171	-2.069845	I(1)
<b>NEER</b>	ADF	-1.955681	1.386096	-1.956406	-2.985272	I(1)
<b>REER</b>	ADF	3.020686	-1.971791	-3.029970	-4.777896	I(1)

Source: Eviews 9.0 Output extract on Excel

Augmented Dickey Fuller tests indicate that Real gross domestic product growth rate (RGDPGR), Average official exchange rate (AOER), Average central exchange rate (ACER), Nominal effective exchange rate (NEER), and Real effective Exchange rate (REER) were stationary at first difference I(1). This implies that the variables are stationary at the order of integration stated above and at 5% level of significance.

**Result of Normality test**

In order to further ascertain that the data for the study was good enough for analysis, we investigated if the data was normally distributed. The Jarque-Bera Normality test which requires that for a series to be normally distributed, the histogram should be Bell-shaped was used. The result of the test is presented in Figure 3. From the figure it can be seen that the data distribution follows a bell shape as required. The null hypothesis for Jarque- Bera test is

H<sub>0</sub>: Data follow a normal distribution at .05 level of significance. From Figure 3, it can be seen that the P-value is 0.201136, which is greater than 0.05. The Null hypothesis of normal distribution can therefore not be rejected. Thus, the data for the study is normally distributed.

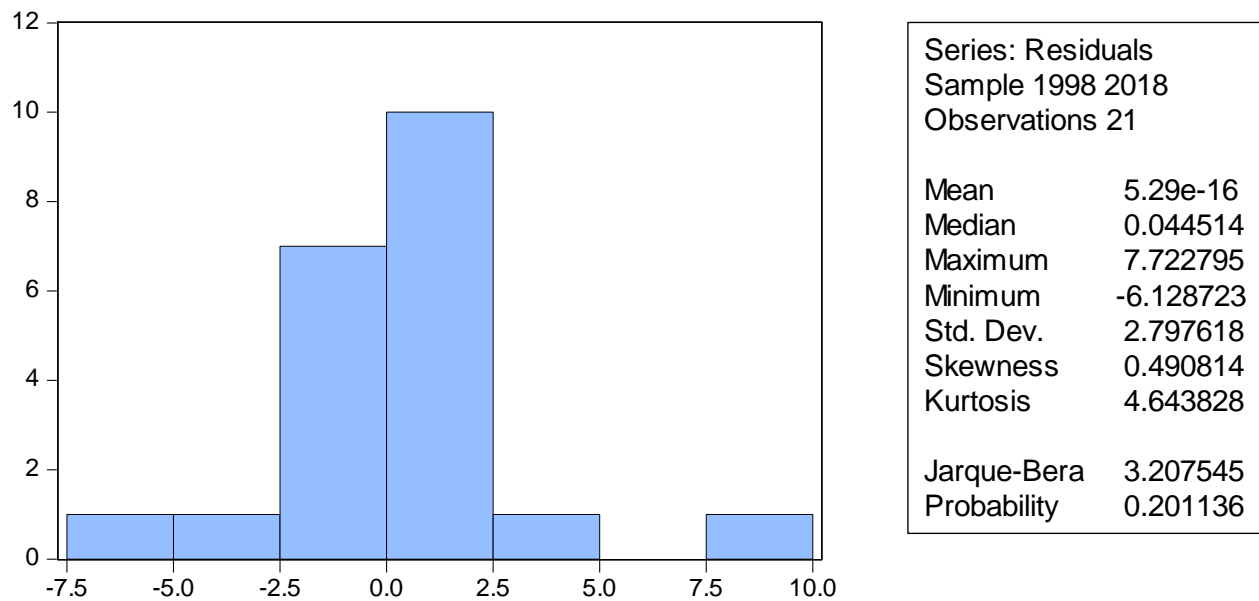


Figure 3: Jarque – Bera Normality Test

Table 2: Engel – Granger Cointegration results

Null Hypothesis: RESID01 has a unit root  
 Exogenous: Constant  
 Lag Length: 2 (Automatic - based on SIC, maxlag=4)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-5.411529	0.0004
Test critical values:		
1% level	-3.857386	
5% level	-3.040391	
10% level	-2.660551	

Source: Extract from Eviews 9.0 output

All the variables were subjected to Engel Granger Cointegration test and to further confirm the validity of the test, the variables were also subjected to Johanson Cointegration test. In Engel-Grangerr test, regression was carried on the variables at level and the residuals subjected to the unit root test as procedure demands. The result of the unit root test, table 2 below showed that the residuals were integrated at level, I(0), thereby, signifying cointegration. We confirmed this by carrying out Johanson cointegration test (table 3) and the statement that trace test indicates 3 cointegrating equationsat 0.05 % level implies there is cointegration. The two results simply

imply that a long run relationship exists between the explained variable and the explanatory variables, in other words equilibrium is attained at a long run.

**Table 3: Johanson Cointegration test**

Unrestricted Cointegration Rank Test (Trace)

Hypothesized	Trace	0.05		
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.903131	97.89400	69.81889	0.0001
At most 1 *	0.695865	53.54052	47.85613	0.0133
At most 2 *	0.594838	30.92513	29.79707	0.0369
At most 3	0.514896	13.75921	15.49471	0.0898
At most 4	0.000777	0.014760	3.841466	0.9031

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level

\* denotes rejection of the hypothesis at the 0.05 level

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

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

**Source: Extract from Eviews 9.0 output**

### The Error Correction Model (ECM)

Next in the series of tests carried out was the Vector Error correction model. This test is conducted to ascertain the short run effect of the explanatory variables on the criterion variable. Though there is a long run relationship between the variables, in a short term, there is an error and the purpose of the ECM test is to know the speed of adjustment for the variables to attain equilibrium in a long run. The ECM test shows that the speed of adjustment is high, 78% and the ECM coefficient has the right sign. This implies that 78% of the errors in the short run are adjusted in each period.

**Table 4: Error Correction Model**

Dependent Variable: D(RGDPG)

Method: Least Squares

Date: 10/24/19 Time: 20:28

Sample (adjusted): 1999 2018

Included observations: 20 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(AOER)	-0.102948	0.114714	-0.897439	0.3837
D(ACER)	0.016950	0.057300	0.295810	0.7714
D(NEER)	0.106170	0.207156	0.512510	0.6158
D(REER)	0.013404	0.074921	0.178909	0.8604
ECM(-1)	-0.781853	0.235669	-3.317588	0.0047
R-squared	0.441358	Mean dependent var		-0.028500
Adjusted R-squared	0.292386	S.D. dependent var		3.196031
S.E. of regression	2.688494	Akaike info criterion		5.028158
Sum squared resid	108.4200	Schwarz criterion		5.277091
Log likelihood	-45.28158	Hannan-Quinn criter.		5.076752
Durbin-Watson stat	1.759626			

Source: Output from eviews 9.0

**Regression Analysis**

OLS regression was conducted on the level values of the variables so as to ascertain the actual effect of each of the explanatory variables on the explained variable. Table 5 shows the details of the regression analysis



**Table 5: Ordinary Least Squares Regression Analysis**

Dependent Variable: RGDOG  
 Method: Least Squares  
 Date: 10/26/19 Time: 07:55  
 Sample: 1998 2018  
 Included observations: 21

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AOER	0.038885	0.097401	0.399226	0.6950
ACER	-0.079845	0.066690	-1.197269	0.2486
NEER	0.021157	0.172088	0.122940	0.9037
REER	0.034142	0.050953	0.670071	0.5124
C	7.018233	4.738060	1.481246	0.1580
R-squared	0.452051	Mean dependent var		5.766190
Adjusted R-squared	0.315064	S.D. dependent var		3.779360
S.E. of regression	3.127832	Akaike info criterion		5.322814
Sum squared resid	156.5333	Schwarz criterion		5.571510
Log likelihood	-50.88955	Hannan-Quinn criter.		5.376788
F-statistic	3.299947	Durbin-Watson stat		1.492417
Prob(F-statistic)	0.037517			

Source: Output from eviews 9.0

From table 5 and following the coefficients of the variables, the regression equation becomes

$$RGDPG = 0.0388848358415 * AOER - 0.0798453660175 * ACER + 0.0211565661389 * NEER + 0.0341423721675 * REER + 7.0182331557.$$

The result shows that Average official exchange rate, Nominal effective exchange rate, and Real effective exchange rate have a positive but a statistically insignificant effect on economic growth within the period under study. However, Average central exchange rate has a negative and statistically insignificant effect on economic growth. Though not significant, the result reveals that a 1% increase in Average official exchange rate will lead to a 3.9% increase in economic growth; a 1% increase in Average central exchange rate will lead to a 7.9% decrease in economic growth. Also, a 1% increase in Nominal effective exchange rate will lead to a 2% increase in economic growth. Equally, a 1% increase in real effective exchange rate will lead to a 3% increase in economic growth. This result is in line with studies conducted by Okafor (2018),

which showed a positive effect of flexible exchange rate on economic growth in Nigeria from 1987 to 2016.

The result of the study shows that exchange rate depreciation/devaluation is more to the advantage of Nigeria as depreciation/devaluation within the period has enhanced economic growth. The market oriented exchange rate which results in continuous depreciation/devaluation of the Naira enhances economic growth in Nigeria which is in line with the financial liberalization theory as this study is within the period of financial liberalization. In this respect, the depreciated naira result in relatively more trade than in the pre-liberalization period when the naira was fixed. This equally enhances economic growth. It is also in line with the traditional flow theory of exchange rate which says that like any other "good" the foreign exchange price is determined by the relative supply and demand for each currency (market determined exchange rate). The F statistics of 3.2 and the probability of 0.037 shows that the joint effect of the variables in the model is significant.

## **DISCUSSION AND CONCLUSION**

The result is a confirmation of the opinion of Obadan (2006) that there are some concerns about the adoption of floating exchange rate by developing and emerging market countries and stressing that repeated depreciations only cause inflation without real effects. However exchange rate flexibility, if properly managed, can be stabilizing. Depreciation implies that local goods will be cheaper than foreign goods leading to less importation of foreign goods, more consumption of local goods, and above all more exportation of local goods. Furthermore, continuous unpredictability in exchange rates may result to unfavourable consequences for capital inflows, especially in the case where foreign investors also are concerned that exchange rate fluctuation may reduce a country's willingness to follow restrained domestic monetary policies (Obadan, 2009).

The negative effect of the average central exchange rate on economic growth implies that relative to the American dollar alone, depreciation of the naira will lead to reduction of economic output. The Nigerian economy is still more or less a monoculture economy, depending so much on oil, and has not been able to produce enough local goods to compete with American goods. In conclusion, the depreciation of AOER, NEER, and REER all enhance economic growth in Nigeria both in the short run, and in the long run although the impact is not very noticeable. The study recommends that for the effect to have a meaningful impact, Nigeria has to diversify production away from oil and aim more at technological advancement and industrialization. This will produce quality and enough goods capable of competing in the international market.

The mixed findings of this study as well as those of other extant studies reviewed presupposes that so long as exchange rate policy is used as an economic growth tool, more research still has to be carried out in Nigeria especially in combination with interrelated variables like interest rate and employing other methods like Autoregressive Distributed Lag method.

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