Ishaq Saad Idris
Lecturer, Department of
Economics, Adamawa State
University Mubi, Adamawa,
Nigeria

Impact of fixed and flexible exchange rate on economic growth in Nigeria: A VECM approach

Ishaq Saad Idris

DOI: https://doi.org/10.33545/26175754.2021.v4.i2a.104

Abstract
The stability of exchange rate in Nigeria is a significant monetary policy target. The fact that monetary authorities in Nigeria have over the years made various efforts to minimize the huge divergence between the official, interbank/autonomous and parallel/ Bureau De change rates in Nigerian foreign exchange market through different exchange rates regimes such as the overall fixed and flexible exchange rates regimes overtime. Accordingly, this paper investigates the comparative analysis of the impact of fixed and flexible exchange rates management policies on economic growth of Nigeria for the period of 1980A-2016A: using vector error correction model (VECM). The empirical results indicated evidence of long run relationship among the variable of interest in the study and in all there is a positive impact of exchange rates management policies on economic growth of Nigeria. Another finding from the Granger causality test confirms a unidirectional short run causality that runs from real effective exchange rate (REER) to economic growth (RGDP). In addition, unidirectional causality that runs from oil price (OPR) to real interest rate (RIR) in Nigeria also exists. However, the need for policy intervention to review and correct the foreign exchange market segments distortions is highly recommended. Again, the Nigerian economy needs a standard set of export base diversification from its mono cultural oil export in order to boost the foreign exchange earnings of the Nigerian economy.

Keywords: exchange rates, Nigeria, economic growth, vector error correction model, cointegration

1. Introduction
The role of exchange rate and its policies in whatever conceptualization, is not only an important relative price but also signals the competitiveness of a country's exchange power in a pure market, the world over. During the last few decades, there have been lots of views among economic analysts, financial analysts, policy makers, as well as free thinkers about the significance of exchange rate for the achievement of sustainable economic growth and development of an economy. According to [5] there is a positive relationship between exchange rate and economic growth in Nigeria in both the short and the long run [18]. Asserts that one of the best ways to achieve economic prosperity is to pursue a robust and well-designed exchange rate policy. In recognition of this role, [27] explains that poorly designed exchange rates policies can be disastrous for economic growth of an economy. However, successive governments in Nigeria have since independence pursued the goal of structural transformation to achieve economic growth considering the country's numerous resource endowments. In the period 1960-1970, the Gross Domestic Product (GDP) recorded 3.1 per cent growth annually. During the oil boom era, roughly 1970-1978, GDP grew positively by 6.2 per cent annually - a remarkable growth [24].

Conversely, in the 1980s, GDP had negative growth rates but effort was made in 1982 with the introduction of economic stabilization Act to reduce government expenditure for conserving foreign reserves to maintain fixed exchange rate of the Naira (N) which was determined by the monetary authorities. Accordingly, the economy not only saw the negative growth but also saw the capacity of the industrial based continue to decline drastically [24]. By 1985 corrective measures were taken to include fiscal, monetary, exchange control measures, and income policies which helped to some extent but the macroeconomic imbalance remained unresolved.

As a result, the structural adjustment program (SAP) as well as flexible exchange rate was introduced with effect from 1986 which marked the end of fixed exchange rate and this had

Correspondence
Ishaq Saad Idris
Lecturer, Department of
Economics, Adamawa State
University Mubi, Adamawa,
Nigeria

made the GDP responded to economic adjustment policies and grew at a positive rate of 4.0 between the periods of 1988-1997. Still, developing countries like Nigeria are facing various kinds of structural changes in their economies. This is in line with the fact that exchange rate policies of these economies become delicate, inconsistent and controversial despite various efforts meant to ensure stability in these economies [20]. From the foregoing, exchange rate policy in Nigeria has revolved basically between the fixed exchange rate regime since the immediate post-independence era in 1960 and 1986 when a flexible based exchange rate regime was introduced in the context of the structural Adjustment Program (SAP), this study argues that the Nigerian economy adopted four types of exchange rate regimes over time. In addtion, the failure of one exchange rate regime led to the adoption of the other.

However, under the fixed exchange rate, Truett and Truett (1987) cited in [4] maintains that the government interventions to keep the rate of exchange of Naira against foreign currencies stable [3]. That the value of the local currency (N) in exchange for the foreign currencies was administratively fixed by the CBN using different policy mechanisms depending on the prevailing economic condition in Nigeria.

Accordingly, under the adjustable peg system of exchange rate the central bank makes some modifications on the fixed rate depending on the economic conditions affecting the foreign exchange market in Nigeria. This was effective at the time of fixed exchange rate system in Nigeria before SAP 1986 and as well before 20th June, 2016.

Conversely, in a flexible or floating exchange rate regime, the authorities allowed the exchange rate to be determined by free market equilibrium without intervention in the markets. Similarly, [25] maintains that under the flexible exchange rate regime, the price of domestic currency in terms of another is determined by the forces of demand and supply because exporters and importers are competing in the open market to buy currencies they require. Therefore, the aim of flexible exchange rate regime is to solve the problems of an imbalance between exports and imports [6]. In reality, only few countries if any do permit the value of their currencies to be determined only by the market forces. The fact that there is always the monetary authorities' intervention to a certain extent as it is usually called managed floating exchange rate system [8].

Under the managed floating system, a country can set a limit within which its currency can fluctuate relative to other countries currencies, beyond such a margin, the authorities can intervene to bring the floating exchange rate to a favorable level against other currencies. The Central Bank of Nigeria actually had to intervene in the Nigerian foreign exchange market because of the persisted hardship and depreciating value of the Naira in the foreign exchange market in Nigeria since the return of the flexible exchange rate system in Nigeria in June, 2016 which brought about a huge gap between official and parallel market exchange rates in Nigeria. The implication for the intervention of the CBN is that, the exchange rate of the dollar to the naira continued to slide. In fact, the value of the national currency has been appreciating significantly since the announcement of the new intervention policy in February, 2017. For instance, the dollar which was sold for N525 at the parallel market on Monday second week of February before the announcement tumbled to N360/$1 on Wednesday 26 July, 2017. This indicates the effectiveness of the policy stand of the monetary authorities in Nigeria. However, the policy option available to Nigeria for adopting a particular exchange rate regime depends on its defining goal of exchange rate stability in the country. It is becoming increasingly recognized that whatever exchange rate system a country may adopt, the long-term success depends on its commitment to the maintenance of strong economic fundamentals and a sound banking system [23].

Given all the policy efforts by the monetary authorities in Nigeria to ensure stable and optimal exchange rate in Nigeria, the Naira still has a significant difference against the US dollar and major international currencies in the official, interbank/autonomous and bureau de change foreign exchange markets in Nigeria. Therefore, strong foreign exchange market management policies can play key role for the acceleration and prosperity of economic growth of the Nigerian economy.

The objective of this study is to investigate and compare the effectiveness of fixed and floating/flexible exchange rate management policies on economic growth of Nigeria using vector error correction model between the periods of 1980 to 2020 with focus on economic background of Nigeria and structural overview of Nigeria's foreign exchange market management policies adopted overtime. Other sections of the paper discuss empirical literature in section 2; section 3 presents the research methodology. Section 4 discusses the empirical results and discussions, and section 5 concludes the paper.

2. Review of Related Literature
Before the establishment of the Central Bank of Nigeria (CBN) in 1958, the enactment of the Exchange Control Act of 1962 and the subsequent centralization of foreign exchange authority in the CBN. The private sector and commercial banks controlled the foreign exchange prior 1958. The fact that, banks acted as agents of the Nigerian local exporters. Among others led to the emergence of the Nigerian foreign exchange market [10]. According to [2] foreign exchange market is a medium of exchange and interaction between buyers and sellers of foreign currencies in a bid to negotiate a mutually acceptable price for the settlement of international transactions and obligations. Accordingly, foreign exchange market rates include the parallel market rate that includes the bureau de change (BDC). This market provides easy access to foreign exchange for its participants who find it difficult to access foreign exchange in the official market because of the formalities and tedious restrictions. The rates are negotiated on the spot from willing and able seller.

The official market of the foreign exchange market deals with the subsidized rate of exchange lower than the other markets rates. Federal ministry of finance and economic development (FMFED) approves and exercise overall control of the public and private sector transactions in this market. While the CBN monitors and issues guidelines that regulates the operations of the market and also supplies the market official foreign exchange at rates lower than the other foreign exchange markets.

The interbank foreign exchange market is a market in which banks extent credit facilities among themselves to meet very short term liquidity obligations from overnight borrowing up to one year [19]. There is rapid transmission of information and the borrowing rate in the market is influenced by the market dominant leaders and this among others increased the instability of the exchange rate in the market. Under the autonomous foreign exchange market (AFEM) segment banks are more or less allowed to deal in interbank but with only privately sourced foreign exchange in order to redress the distortions caused by the market imperfections but the Naira was generally volatile in the parallel market during the (AFEM) system.

[27] Investigate and compares the bureau de change, interbank and official exchange rates against the US dollar in the foreign exchange market in Nigeria using GARCH (1, 1) models with annual data from 1995 to 2014. The findings of the study reveal that the exchange rates fluctuations in the interbank and bureau de change exchange markets in the previous period influence current fluctuations of exchange rates. The study also finds that the speed with which the exchange rates fluctuates shock on current volatility and volatility clustering are greater in the bureau de change than in other foreign exchange markets in Nigeria. The study also reveals that exchange rate depreciation tends to produce higher volatility in the immediate future than appreciation of the same magnitude in both the bureau de change and interbank foreign exchange market in Nigeria.

In another empirical study by [17] examine the Pakistan Rupee/US dollar exchange rate using symmetric GARCH-M (1,1) with other two asymmetric models EGARCH-(1,1) and TARCH (1,1) on daily and monthly data for the period of January 2001 to December 2009. The findings of the GARCH -M (1,1)model reveals evidence of volatility clustering while the results of asymmetric EGARCH (1,1) indicate evidence of asymmetric effects, where positive as well as negative news have different impact on volatility progression. The TARCH (1, 1) model results also reveals support for the asymmetric behavior in both the daily and monthly exchange rate returns in Pakistan.

In connection of the above, [22] conducted an empirical study about the Naira/Dollar exchange rates in Nigeria using several variants of GARCH models on monthly data for the period of January 1970 to December, 2007. The findings of the study reveal that all the GARCH family models indicate evidence of volatility persistent Naira/Dollar exchange rates. The study further reveals that the results are the same for both the fixed and flexible exchange rate regimes.

By applying error correction model and Granger causality test (ECM) [26] investigates the causal relationship between currency exchange rate (EXR) and export growth (EXP) in Nigeria using annual data over the period 1970s-2014. The results of the study reveal that exchange rate has no significant impact on export growth in the long run but the Granger causality test shows a unidirectional causality running from exchange rate to export growth with no feedback. The findings of the study also disagree with the long-held thesis that if you devalue the currency, you will export more is not empirically supported in the Nigerian case. The conclusion of the study impliedly supports the adoption of flexible exchange rate policy in Nigeria.

Accordingly, [12] conducted a panel estimation study for 18 countries to compare exchange rate policy regimes as regards to effects of terms of trade disturbance on growth. The empirical results support that countries with flexible exchange rate policies grow faster than countries with fixed or devaluation policies.

Similarly, [18] investigate the impact of exchange rate regime and economic growth in Nigeria using generalized method of moment (GMM) with annual data in 1970 – 2014. The results show that flexible exchange rate policy induces economic growth of Nigeria than fixed exchange rate policy. The study strongly recommends the sustenance of flexible exchange rate policy.

On the contrary, [1] examines the effects of exchange rate policy and crude oil price shocks on the Nigerian stock market using Autoregressive Distributed Lag (ARDL) model with daily data for two period 2008 2009 and 2012-2015. The results of the study show that devaluation of Naira is found to be effective in mitigating the effect of crude oil price decline on the stock market. However, the granger causality test shows that fixed exchange rate devaluation policy may not be persuasive as expected. Another finding from the study reveals oil prices are positively related with performance of the Nigerian stock market and can consequently pull the market down in times of uncertainties in Nigeria.

[15] Examine the relationship between exchange-rate regime and growth by paying attention on two aspects: exchange-rate-regime classification and differentiation between developing and developed economies. The study uses 12 developing Asian countries and 18 advanced European economies over the period 1976-2001. It utilizes descriptive statistics and regression variables such as per capita growth, financial crisis; openness; government consumption; initial GDP; fertility rate; secondary school enrolment ratio; and exchange rate dummies. Findings suggest that the exchange-rate regime matters for developing economies: fixed and managed floating regimes outperform the others in terms of growth. However, for advanced economies, no significant regularity is discovered.

[7] Carried out an empirical analysis of the consequences of the foreign exchange rate reforms on the performances of private domestic investment in Nigeria adopting the ordinary least square multiple regression analytical method. The multiple regression results showed a significant but negative relationship between floating foreign exchange rate and private domestic investment in Nigeria. The findings and conclusion of the study support the need for the government to dump the floating exchange regime. [14] Carried out a quantitative analysis of the impact of exchange rate policies on Nigeria's economic growth: a test of stability of parameter estimates using the Chow test procedure to determine the structural stability of the relationship between exchange rate and output of goods and services. Their study revealed that, apart from government expenditure (GEX), both exchange rate (EXR) and money supply (M2) are highly significant in the determination of Nigeria's economic growth performance. Also, the conducted Chow test showed that the relationship between exchange rate and economic growth performance in Nigeria have not undergone any significant structural changes. The implication is that no matter the exchange rate regime,

whether fixed or flexible, what matters is the effectiveness of the management. Nigeria can substantially improve on its economic growth performance through improvements in the overall management of its exchange rate policy.

2.1 Conceptual Framework
The Nigeria's Foreign Exchange Market is discussed within the structure of exchange rate Management Policies and regimes since the Nigeria's independence to date in figure 1.0 below:
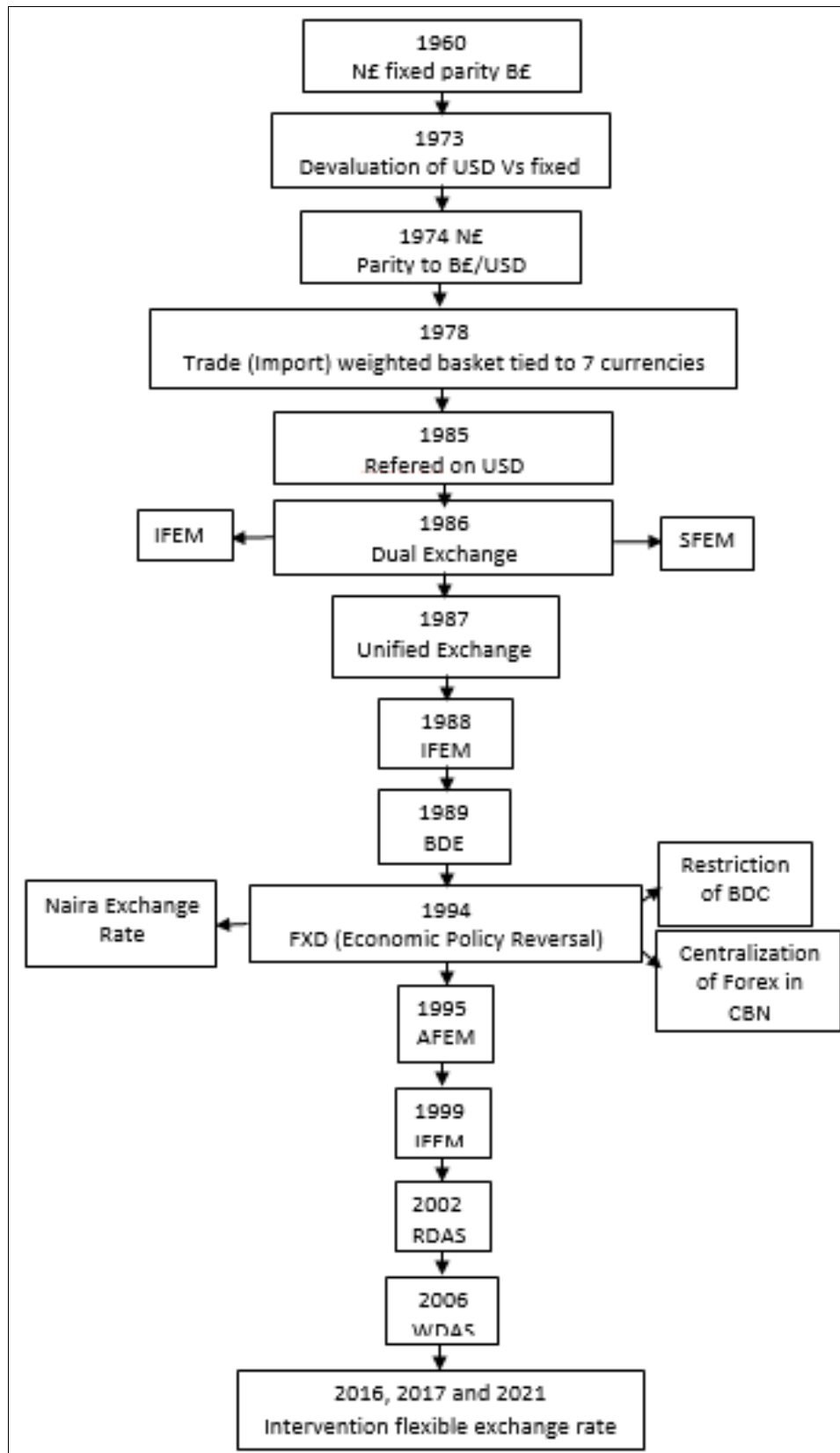
Source: author's Design

Fig 1: Structure of Nigeria's Foreign Exchange Market Management Policies

The Nigerian foreign exchange market has seen a great deal of transformation since the 1960's when Nigerian pound was pegged to British pound and later to US dollar in 1973. This continued to the extent that whichever currency pegging favors the naira from 1994 up to 1978 when Nigeria's import trades were tied to seven currencies. However, from 1985 to the introduction of structural adjustments program (SAP) and flexible exchange rate regime the Naira was referred to US dollar when the first and second tier foreign exchange market were introduced to provide exchange rate at official and market rate to public and private transactions respectively. The dual exchange markets were brought into a unified exchange system in 1987. In order to reduce the tedious processes involve in official foreign exchange market in 1988 and 1989 the interbank and bureau de change foreign exchange markets were officially established. Yet, the instability in the exchange rate attracted the need fixed exchange rate policy reversal which restricted the activities of BDCs and consequently centralized the foreign exchange in the CBN in 1994 [27]. Later in 1995, Autonomous foreign exchange market was introduced up to 1999 when the interbank replaced it in order to provide easy access foreign exchange to end users through authorize dealers at market determined rates [16]. However, the CBN introduced the Retail Dutch Auction Sales in 2002 and later Wholesales Dutch Auction Sales in 2006 in order to minimize the gap between all market rates and to supply foreign exchange to remove restrictions in the foreign exchange markets. Until June, 2016 the CBN provided foreign exchange at officially subsidized rates through the Dutch Auction Sales. Contrary to these, the CBN reintroduced flexible exchange rate system which brought the system into a single foreign exchange market policy structure in June 2016 because of the persisted declining foreign reserve which was used to defend the Naira and the subsequent depreciating value of the Naira against other currencies among others. However, this policy structure proved abortive because until the intervention mechanism in February, 2017 to date the Naira continued to depreciate against major currencies. Though, many argued that the intervention has still not proven a success. For instance, the value of the Naira against USD at official interbank market rate and the parallel market rate are about N411.477 and N522 / 515 respectively in now in July, 2021. These rates are the least when compared with the rates between October, 2016 N314./\$1 and February, 2017((N525)/ \$1 it continues till date. However, prior to 13th June, the official interbank market rate was about N 440 while the parallel rate was about N500/525 to \$1 (one USD). Accordingly, the major participants in these markets include the CBN, Federal Ministry of Finance, commercial banks, brokers, exporters, importers, investors, tourists, immigrants corporate bodies, end users residents and nonresidents.

3. Material and Methods
To model and compare the impact of exchange rate regimes we apply vector error correction model (VECM) using annual series data from 1980 to 2016. In order to achieve the objective of the study, we incorporate various economic policies affecting foreign exchange market in Nigeria to serve as proxies for exchange rate fluctuations and real GDP

to serve as proxy for economic growth of Nigeria.

3.1 Data and Model Specification
All the data are gathered from the world development indicators, statistical bulletin of Central Bank of Nigeria of various issues, and National Bureau of Statistics (NBS).
Accordingly, the study specifies the relationship between exchange rate management policies and economic growth of Nigeria as:

$$RGDP = \alpha + \beta_1 REER + \beta_2 OPR + \beta_3 RIR + \beta_4 INF_{CPI} + \varepsilon_t \quad ....(1)$$

Where:
RGDP: Index of Gross Domestic Product (Real GDP) expressed in constant local currency, REER: Nominal effective exchange rate divided by a price deflator, OPR: Bonny Light International annual average price expressed in U.S Dollar, RIR: Annual average lending interest rate (Bank rate) adjusted for inflation as measured by GDP deflator, INF_{CPI}: Inflation computed based on consumer price index.

3.2 Estimation Techniques
The study employs unit root test based on the Augmented Dickey-Fuller (ADF) test at first difference to examine the stationary properties of the time series variables and to avoid problem of spurious regression. The ADF determines whether the estimates of coefficients are equal to zero. It provides cumulative distribution of statistic when the value of α is less than the critical value from the fuller, then stationarity is attained 1(1) for Johansen test for cointegration of long run relationship.
Then, vector error correction model (VECM) as specified by Engle and Granger (1987) will be applied to examine the comparative analysis on the impact of fixed and flexible exchange rate management policies on economic growth of Nigeria.
Accordingly, the ECM is expressed as follows:

$$\Delta Y_t = \alpha + \sum_{i=1}^{p} \beta \Delta Y_{t-1} + \pi ECT_{t-1} + \varepsilon_t$$

$$.... (2)$$

Where,
Δ: is the first difference operator, Y_t is a P*1 vector of variables that are integrated of I(1), Y_{t-1} is one period lag of the integrated variables, ECT_{t-1}: is one period lag of the residual term (disequilibrium) from the long run relationship, ε_t is white noise error term While the coefficients of VECM α: Intercept, β: short run coefficient and π: long run coefficient of the period lag of the disequilibrium which should theoretically be negative (i.e. π ‹ 0) and significant if disequilibrium is to be restored in the next period as well as to restore the long run equilibrium. Therefore, the coefficient of the error term indicates the speed of adjustments to the long run equilibrium. This explains the extent that any deviation from the long run relationship is corrected in each period.

4. Results and Discussion
This chapter presents and discusses the empirical results of the study in a step by step approach which include unit root

test results, co-integration test results and VECM. In addition, the empirical results for Granger causality test and variance decomposition test are also analyzed. The study critically discusses these results as well as compares and contrasts the results with the previous empirical studies reviewed in this study.

4.1 Unit Root Test Results

In order to ascertain the correct order of integration and to avoid the problem of spurious result and autocorrelation, Augmented Dickey-Fuller (ADF) unit root test has been carried out which shows that all the variable s are integrated of order one 1(1) at both linear trend and intercept after taking first difference as shown in Table 1.

Table 1: Presents Augmented Dickey Fuller (ADF) Unit Root Test below

| Variables | Level | | | First difference | | | Remark |
| | Trend & Intercept | | | Trend & Intercept | | | |
	T- Statistics	Critical value 5%	Prob.	T-statistics	Critical value 5%	Prob.	
RGDP	-1.475218	-3.540328	0.8197	-5.327536	-3.544284	0.0006*	I(1)
REER	-1.905747	-3.540328	0.6309	-4.062321	-3.544284	0.0155*	I(1)
OPR	-1.993967	-3.540328	0.5848	-6.127689	-3.544284	0.0001*	I(1)
RIR	-1.595943	-3.574244	0.7698	-9.533775	-3.544284	0.0000*	I(1)
INF CPI	-.344449	-3.544284	0.0500	-5.486463	-3.544284	0.0004*	I(1)

Source: Researcher's computation using Eviews 9.5

Note: * I (I) stands for 'Stationary', I (0) stands for 'Non stationary'. The rejection of null hypothesis (series is non stationary) is based on the Mackinnon critical values (1991). From table 1, we can observe that all the variables are non-stationary at level but become stationary after taking the first difference using trend and intercept. However, at first difference all the variables became stationary in both

intercept and linear trend with the same order I (1).

4.2 Lag Order Selection Criteria

The cointegrating vectors requires lag with the lowest value for the optimal lag length selected to have influence on the outcome of the study. The choice for an optimal number of lag depends on the recommendation of each criteria. However, the order of lag selection is presented in Table 2.

Table 2: Lag order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1666.077	NA	6.64e+37	101.2774	101.5041	1013537
1	-1542132	202.8191*	1.68e+35*	95.28072*	96.64118*	9573847*
2	-152a002	25.50670	2.69e+35	95.63647	98.13065	96.47569
3	-1510.816	12.55474	7.99e+35	96.41311	100.0410	97.63379
4	-148a265	20.03723	1.39e+36	96.25849	101.0201	97.86063

Source: Authors' Computations Using Eviews 9.5

However, from table 2 all the five (5) criterions selected 1 lag with no exception. Therefore, this study will use 1 lag as recommended by the entire criterion.

4.3 Cointegration Test

The Johansen test for Co-integration is conducted to check the presence of a long-run relationship first difference 1(1) order variables as presented in Table 3

Table 3: Unrestricted Johansen Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigen value	Trace Statistic	0.05 Critical Value	Prob.
None *	0.692283	84.91365	69.81889	0.0020*
At most 1	0.457128	43.66356	47.85613	0.1172
At most 2	0.333592	22.28267	29.79707	0.2831
At most 3	0.201975	8.077818	15.49471	0.4571
At most 4	0.005166	0.181266	3.841466	0.6703
Trace test indicates 1 cointegrating eqn (s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				

Source: Authors' Computations Using Eviews 9.5

The results of the cointegration test show that there Trace test indicates 1 cointegrating equation. However, this

indicates the presence of a long-run relationship between the variables.

Table 4: Unrestricted Johansen Cointegration Rank Test (Maximum Eigen value)

Hypothesized No. of CE(s)	Eigen value	Max –Eigen Statistics	0.05 Critical Value	Prob.
None *	0.692283	41.25009	33.87687	0.0055*
At most 1	0.457128	21.38089	27.58434	0.2539
At most 2	0.333592	14.20485	21.13162	0.3485
At most 3	0.201975	7.896551	14.26460	0.3893

At most 4	0.005166	0.181266	3.841466	0.6703
Maximum Eigen value test indicates 1 cointegrating eqn (s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				

Source: Authors' Computations Using Eviews 9.5

The results of the cointegration test show that the Maximum Eigen value test indicates 1 cointegrating equation. However, this indicates the presence of a long-run relationship between the variables.

4.4 Vector Error Correction Model Result
Given that the study variables are integrated of 1(1) and cointegrated for VECM estimation, the study presents the estimation of the vector error correction model (VECM) in table 5 below

Table 5: Vector Error Correction Model Result

Variables	Coefficient	Std. Error	Prob
Constant	9.266380	4.02711	0.1301
$RGDP_{t-1}$	0.417139	0.16341	.055271
$REER_{t-1}$	3.873541	5.44895	0.0108
OPR_{t-1}	1.630820	2.73843	0.59553
RIR_{t-1}	1.244731	2.42779	0.51270
INF_CPI_{t-1}	2.117882	2.43770	0.86880
ECM_{t-1}	-0.019595	0.02364	0.00894

Source: Authors' Computations Using Eviews 9.5

The VECM allows the long run behavior of the endogenous variables to restore to their long run dynamics. The coefficient of the ECT shows a negative sign and statistically insignificant at five percent (5%) with speed of adjustment to equilibrium at 0.019 percent. This implies that equilibrium is restored (adjusted) by 2% of the past year's deviation from equilibrium in Nigeria. This means that the low absolute value is a sign of a slow speed of adjustment of the impact of fixed and flexible exchange rate management policies towards equilibrium in the past years in Nigeria.

As a result, the restoration to equilibrium path will take a longer time unless equilibrium agents (government and monetary authorities) make active policies that will speed up the adjustment.

In other words, Masih and Masih (1996) cited in Faisal (2016) identified another long run causality showing that ECT can be determined by using the significance of T-statistics. Therefore, the t- statistics shows a value of -0.82894 and is statistically insignificant because is less than 2%. This indicates that it has no effect on the system. These insignificant values indicate that the authorities need to revise their exchange rate management policy guidelines given the current economic condition in Nigeria.

However, the short run positive relationship is in line with the recent managed floating exchange rate intervention policy in Nigeria that has been used to correct the shocks and distortions to meet the objective of maintaining exchange rate and price stability to achieve economic growth in Nigeria. Accordingly, it implies that the behaviors of the variables are controlled by the monetary authorities in Nigeria.

4.5 Granger Causality Tests
Granger (1988) maintains that if there is evidence of cointegration among the estimated variables, then a bidirectional or unidirectional causality exist(s). The granger causality is tested to capture dynamics of the models using the first difference of the variables interest as shown in Table 6

Table 6: Pair-wise Granger Causality Tests Results

Null Hypothesis:	Obs	F-Statistic	Probability
REER does not affect RGDP	36	5.08027	0.0310*
RGDP does not affect REER		0.00820	0.9284
OPR does not affect RGDP	36	0.15302	0.6982
RGDP does not affect OPR		0.68954	0.4123
RIR does not affect RGDP	36	0.05595	0.8145
RGDP does not affect RIR		3.04456	0.0903
INF_CPI does not affect RGDP	36	0.28199	0.5990
RGDP does not affect INF_CPI		1.18663	0.2839
OPR does not affect REER	36	0.20604	0.6529
REER does not affect OPR		0.80819	0.1879
RIR does not affect REER	36	1.26240	0.2693
REER does not affect RIR		1.8E-06	0.9989
INF_CPI does not affect REER	36	2.45193	0.1269
REER does not affect INF_CPI		2.20565	0.1470
RIR does not affect OPR	36	0.02047	0.8871
OPR does not affect RIR		4.22498	0.0478*
INF_CPI does not affect OPR	36	0.01178	0.9142
OPR does not affect INF_CPI		1.66345	0.2061
INF_CPI does not affect RIR	36	3.64455	0.0650
RIR does not affect INF_CPI		0.17539	0.6781

Source: Authors' Computations Using Eviews 9.5

From the table 6, the result of pair-wise Granger causality test reveals that the null hypothesis of REER does not affect RGDP is rejected, the fact that the probability value of the REER is less than 5% (0.0310) critical value. On the one hand, all the other null hypotheses were accepted with the exception of the null hypothesis of OPR does not affect RIR which again is rejected because its probability value is less than 5% (0.04650).

However, the existence of a long run relationship among the variables was established by the cointegration test while the VECM coefficient of the cointegrating equation shows that the speed of adjustment has a very low effect on the system. While the result of granger causality shows that REER affects economic growth of Nigeria and also RIR affects OPR, while exchange rate granger caused inflation. This implies that exchange rate, oil price, real interest rate are significant variables in explaining economic growth in Nigeria and also significant variables in explaining inflation through their combined effect. From the foregoing empirical analysis, the results have shown positive and long run impact of exchange rate management policies on economic growth of Nigeria. Accordingly, this is in line with the finding of Yeyati (2005) [11] which reveals that countries with more flexible exchange rate grow faster than those without it. Using VECM technique in Nigeria, Aliyu SUR (2009) finds a positive impact of exchange rate fluctuation policies on economic growth of Nigeria. Similarly, Amassoma (2016) [5] also confirms the long run positive relationship of exchange rate with economic growth of Nigeria. In all, Ajekwe (2013) [4] finds that both fixed and

flexible exchange rates management policies positively affect economic growth in Nigeria.

5. Conclusion
The significance of exchange rate stability in achieving sustainable economic growth and development in an economy cannot be over emphasized. Accordingly, monetary authorities have a major role to prevent divergence among the official, interbank/autonomous and parallel foreign exchange rates in the economy. This paper investigates the comparative analysis of the impact of fixed and flexible exchange rates management policies on economic growth of Nigeria using vector error correction model (VECM) between 1980A to 2016A. However, the empirical results findings indicated evidence of a long run relationship among the variables of interest from the cointegration test of 1(1). Accordingly, the result of the vector error correction model (VECM) showed a negative sign for the error correction term and is statistically insignificant. This indicates that the speed of adjustment has a low effect on the system. In another finding, the results of granger causality test show that REER affects economic growth economic growth of Nigeria and also RIR affects OPR while exchange rate granger caused inflation. This implies that exchange rate, oil price, real, real interest rate are significant variables in explaining economic growth and inflation in Nigeria through their combined effects.

Therefore, it can be concluded in all that exchange rate management policies can be used positively to stimulate economic growth of Nigeria. In addition, the short run positive relationship among the variable of interest in the (VECM) results is in line with the recent central bank of Nigeria's exchange rate policy intervention in February, 2017. This has been carried out to restore stability in the foreign exchange market operation considering its key role in the process of achieving economic prosperity and growth. Accordingly, the study reveals that the choice of exchange rate regime has a significant influence in formulating growth policies. The fact is that until February, 2017 the Nigerian foreign exchange market had not been adequately investigated overtime. As such, various exchange rate management policies and regimes failed to achieve the goals and objectives of their establishment as a result of distortions and irregularities in the foreign exchange market in Nigeria.

These findings call for the need of some form of intervention to review, manage and reduce distortions and irregularities of the operators of the foreign exchange market who are interested in widening the margins and profits in all the foreign exchange market segments in respective of the current official's rates. In addition, a standard should be set for economic diversification from the mono cultural export of crude oil. In all, Nigeria has a lot of opportunities for economic growth when the country breaks away from the negative past for a positive economic future as a united economy.

6. Areas for Further Researches
This study encourages and recommends the future studies to narrow this study to the impact of flexible exchange rate in attracting foreign direct investment in Nigeria. In addition, a comparative analysis of the impact of free floating and

manage floating on the level of domestic price in Nigeria is highly recommended.

7. References
1. Abraham Terfa W. Exchange rate policy and falling crude oil prices: Effect on the Nigerian stock market, CBN Journal of Applied Statistics, ISSN 2476-8472, The Central Bank of Nigeria, Abuja 2016;7(1):111-123.
2. Adekanye F. Elements of Banking in Nigeria; F& A Publishers Ltd. Lagos: Central Bank of Nigeria Annual Reports and Statements of Accounts (various) 2010.
3. Ahmed HI, Zarma A. The Impact of Parallel Market on the Stability of Exchange Rate: Evidence from Nigeria. NDIC Quarterly Publication 1997;7(2):42-61.
4. Ajekwe T, Korna JM, Idyu IA. A comparative Analysis of the Impact of the Fixed and Flexible Exchange Rate Systems on the Nigerian Economy, Journal of Business Management 2013;14(3):73-92. www.iosrjournals.org.
5. Amassoma D. The Nexus between Exchange Rate Variation and Economic Growth in Nigeria. Journal of Entrepreneurship, Business and Economics 2016;5(1):1-40.
6. Arnold RA. Macroeconomics, Ohio: Thomson/south-western 2005.
7. Bakare AS. The Consequences of Foreign Exchange Rate Reforms on the Performances of Private Domestic Investment in Nigeria. International Journal of Economics and Management Sciences 2011;1(1):25-31.
8. Blanchard O. Macroeconomics, Massachusetts Institute of Technology. Pearson Education Inc., Upper Saddle River, New Jersey 2006;7458:442-444.
9. Canare TA, Ang A, Mendoza RU. Ease of Doing Business: International Policy Experience and Evidence Central Bank of Nigeria Brief, 2016. https://www.cbn.gov.ng/)
10. Faisal F, Muhammad PM, Tursoy T. Impact of Economic Growth, Foreign Direct Investment and Financial Development on Stock Prices in China: Empirical Evidence from Time Series Analysis. International Journal of Economics and Financial 2017, 7(1).
11. Edwards S, Yeyati EL. Flexible exchange rates as shock absorbers. European Economic Review 2005;49(8):2079-2105.
12. Eminike KO. Comparative analysis of bureau de change and official exchange rates volatility in Nigeria. Intellectual Economics 2016;10(1):28-37.
13. Fasakin IJ. Assessment of real exchange rate through vector error correction model (VECM) in Nigeria. Int. J Agric. Extension. Social. Dev. 2019;2(2):28-35. DOI: 10.33545/26180723.2019.v2.i2a.29
14. Huang H, Malhotra P. Exchange Rate Regimes and Economic Growth: Evidence from developing Asian and Advanced European Economies. IMF Working paper series 2004, 1-32.
15. Iloye MI. Foreign Exchange market in Nigeria: The Journey so Far, Pyrex Journal of Business and Finance Management Research 2016;2(2):012-016. http://ww.pyrexjournals.org/
16. Kamal Y, Haq HU, Ghani U, Khan MM. Modeling the exchange rate volatility, using generalized autoregressive conditionally heteroscedastic (GARCH)

type models: Evidence from Pakistan. African Journal of Business Management 2012;6(8):2830-2838.

17. Kenneth OO, Jonathan OO, Kenneth UN. The Impact of Exchange Rate Regimes on Economic Growth in Nigeria. Journal of Economic and Sustainable Development 2016;7(12):2222-1700 (paper) 2222-2855(Online)

18. Ojo AT. The Nigerian Financial System, University of Wales Press 1976.

19. Okorontah CF, Odoemena IU. Effects of Exchange Rate Fluctuations on Economic Growth of Nigeria 2016.

20. Iloye MI. Foreign Exchange Management in Nigeria: The Journey So Far. Journal of business and finance Management Research 2016.

21. Olowe AR. Modeling Naira/Dollar Exchange Rate Volatility: Application of GARCH and asymmetric models. International Review of Business Research Papers 2009;5(3):377-398.

22. Sanusi JO. Exchange Rate Mechanism: The Current Nigerian Experience, a paper presented at the Nigerian British chamber of commerce 2004.

23. Sanusi LS. Growth Prospects for the Economy, convocation lecture delivered: Nigeria Igbinedion University Okada, Edo state. Central Bank of Nigeria Research Department 2010.

24. Solmon LC. Macro-Economics, Addison-Wesley Publishing Company 1980.

25. Stephen AG. Econometric Analysis of Exchange Rate and Export performance in Developing Economy. Asian Journal of Economics and Review 2017;7(4):334- 348.

26. Rodrick D. The real exchange rate and economic growth: theory and evidence. Harvard University 2007.

27. Eze, Okpala. Quantitative Analysis of the Impact of Exchange Rate Policies on Nigeria's Economic Growth: a Test of Stability of Parameter Estimates. International Journal of Humanities and Social Science 2014;4(7):265-272.