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Exchange Rate, Monetary Policy and Economic Performance in an Oil Dependent Economy

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Abstract
Amidst the seemingly conflicting results among researchers on the impact the duo of exchange rate and monetary policy has on the economy, an attempt was made to examine the impact of exchange rate and monetary policy on economic growth in Nigeria for the period spanning 1986 and 2020. To this end, a model was drawn and analysed using co-integration and error correction mechanism. Having conducted descriptive analysis, stationarity test and co-integration test, the estimates from ECM and long run shows that exchange rate negatively impact on economic growth while monetary policy positively impact on economic growth. The structural stability of the model was tested and affirmed using cumulative sum of recursive residuals-CUSUM. In the light of the empirical findings, it was recommended that concerted effort should be made to stabilize exchange rate for it to be positively responsive to growth and that for a more efficient and effective management of the economy, monetary authority should operate without undue influence from political office holders.

Keyword: Exchange Rate, Monetary Policy, Time Series Analysis, Nigeria
JEL Classification: F31, E52, C22, N37.

1. Introduction

Despite efforts aimed towards diversifying Nigeria economy, reports from National Bureau of Statistics [NBS], (2019) and Central Bank of Nigeria [CBN], (2020) shows that crude oil accounts for over 70 percent of Nigeria total export earnings for the past three decades. Also, a cursory look at data on crude oil price in the international market from Organization of Petroleum Exporting Countries [OPEC] (2020) shows that crude oil price rose from about $51 per barrel in 2005 to about $98 per barrel in 2008 before it fell to about $60 per barrel in 2009. It again rose in 2012 to about $117 per barrel before it again assume a downward trend to about $40 per barrel in 2016. The report showed further that from 2019 through the third quarter of 2020, crude oil price was low hovering around $20 per barrel. This seemingly fluctuations in crude oil

prices (main stay of Nigeria economy) has huge implications on economic performance (here after referred/captured by economic growth) and its economic wide management particularly exchange rate and monetary policy.

Exchange rate is an important concept in international affairs particularly in relation to imports and exports of countries through effects on relative prices of goods. It connects domestic economy and shows its competitiveness to the world markets (Ismaila, 2016). Since the introduction of the market-based exchange rate system in Nigeria in the mid-1980s, the naira exchange rate had being exhibiting features of continuous instability reflecting unidirectional depreciation in the official, bureau de change and parallel markets for foreign exchange (Obadan, 2006). In Nigeria persistence exchange rate fluctuation has led to continuous depreciation of the home currency amidst weak productive capacity. As stated by Osaka, Masha and Adamgbe (2003) the constant variations in the foreign exchange market framework in Nigeria which was ostensibly aimed at creating better market efficiency only succeeded in creating instability in the market and, by the 1990s, the exchange rate was becoming more and more divergent from economic realities.

Reports such as Central Bank of Nigeria [CBN], (2006) shows that exchange rate move from its level of N0.89 : US$1.00 in 1985 (a year before the introduction of market determined foreign exchange in Nigeria) to N2.02 : US$1.00 in 1986 and N17.30 : US$1.00 in 1992. As at 2002 and 2004, exchange rate moved to N121.0: US$1.00 and N133.5: US$1.00 respectively. This therefore means that between 1985 and 2004, the naira depreciated by 99.3 per cent. However, for the period 2005 and 2008 exchange rate exhibited some appreciation and stability-for example, exchange rate appreciated by 1.8 per cent in 2005. Also, between the period 2009 and 2015, exchange rate exhibited stability with relatively low degree of depreciation. This could be attributed to the huge foreign exchange inflows and external reserves owing to huge increase in price of crude oil in the international market. However, for the period 2016 to 2020, there was a phenomenon depreciation of the Naira wherein exchange rate stood between N305: US$1.00 and N380: US$1.00 on the average. This was largely attributed to the depletion of external reserves and drastic fall in the price of crude oil (main stay of Nigeria economy) in the international market. As stated by Devereux (2004), market based exchange rates could serve as an effective absorber in response to shocks; it however does not guarantee stability in exchange rate due the presence of nominal rigidities.

The need for monetary policy (regulation of money supply) is premised on the fact that there is a stable relationship between the quantity of money supply and economic activity and that if money

supply is not limited to what is required; it could result in undesirable effects such as high inflation. Though the execution of such role by monetary authority may be limited by the concurrent pursuit of other objectives, however, the concurrent target of intermediate goals has implications on the attainment of economic growth (Anowor & Okorie, 2016). Most Central Banks in developing country such as Nigeria often use intervention as a tool for macroeconomic stabilization in the context of monetary policies because it signals future changes in the policy rates (Vargas, Gonzalez & Rodriguez 2013).

CBN (2020) data on monetary policy and money supply for the period 1981 and 2019 shows that while the monetary policy rate exhibited a fluctuating trend for the period, the money supply as expected was in the upward direction. For example, in 1981, monetary policy rate increase from 6.0 percent to about 26 percent in 1993 before it was reduced to about 13.5 percent in 1994. Though it increases to about 20.5 in 2001, it gradually fell to the tune of 6.25 percent in 2010. However, between the period 2011 and 2019, monetary policy rate hovers around 12.5 percent. While a poorly managed exchange rate and monetary policy are inimical to growth, a well-managed exchange rates and monetary policy enhance growth. Though numerous research work had been undertaking on the impact exchange rate and monetary policy has on economic growth in Nigeria, there is still no consensus among researchers as empirical studies seem divided along two strands; those that upheld that exchange rate and monetary policy is significantly related to growth (Okotori, 2019; Habib, Mileva & Stracca, 2017) and those that stated otherwise (Ayodeji & Oluwele, 2018; Ismaila, 2016). With recent data, this study set out to re-examine the Nigeria case with a view of updating the literature and taking a position.

Following this introductory remark is a brief review of empirical literature. This is followed by theoretical framework and methodology in section three. Empirical result and it subsequent discussion is presented in section four while section five presents the conclusion and recommendations.

2. Brief Empirical Literature

We begin with the study by Habib, Mileva and Stracca (2017) which was based on the impact of movements in the real exchange rate on economic growth based on five-year average data for a panel of over 150 countries in the post-Bretton Woods period. It was found that there exist a positive relationship between exchange rate and economic growth, that is, real depreciation of exchange rate increased annual real GDP growth. Obansa et. al (2013) examined the impact exchange rate has on Nigerian economic growth for the period of 1970-2010. The result

revealed that exchange rate had a strong positive impact on economic growth. That is, real exchange rate depreciation is significantly associated with economic growth. Anyanwu, Ananwude and Okoye (2017) examined the impact of real exchange rate on gross domestic product and manufacturing capacity utilization of Nigeria from 1986 to 2015 with OLS estimation technique. It was found that real exchange rate has significant impact on real gross domestic product and that there is a positive but insignificant relationship between real exchange rate and real gross domestic product. It was recommended amongst others that CBN should put in place foreign exchange policy control to ensure that the value of Naira against other currency is properly determined.

Amassoma (2016) studied the impact of exchange rate fluctuation on the Nigerian economy for about 43 years (1970-2013). The study employed Cointegration test and ECM and it was found that there exists a positive but insignificant impact of exchange rate fluctuation on Nigerian economic growth in both the long run and short run. Other studies in this light includes: Missio, Jayme, Britto and Oreiro (2015); Bazlul, Sayema and Mohammad (2012); Tarawalie (2010).

On the other hand, Özcan (2020) examined the influence of exchange rate on the economic growth in the Turkish Economy using the quarterly data between 2002-Q1 and 2019-Q1. Empirical findings from innovation accounting techniques revealed that there is a negative causal relationship between exchange rates and economic growth. Çelik et al. (2017) investigated the transfer mechanism from exchange rate to economic growth via panel data analysis covering the period 1995 and 2014 for 12 transition economies in Eastern Europe and Middle Asia. The result showed that an increase in exchange rate resulted in an economic downturn. Ismaila (2016) ascertained exchange rate depreciation and Nigeria economic growth during the SAP and post SAP period: 1986-2012. The result from co-integration test and error correction show that broad money supply, net export and total government expenditure significantly impact on real output performance in the long run while exchange rate has direct and insignificant effect on Nigeria economic growth in both short and long run.

Adelowokan, Adesoye and Balogun (2015) examined the impact of exchange rate volatility on investment and growth in Nigeria for the period 1986 to 2014. The vector error correction method was employed and it was found that there exist a long run relationship between exchange rate, investment, interest rate, inflation and growth. The result specifically showed that exchange rate volatility has a negative impact on investment and growth while exchange rate volatility has a positive relationship with inflation and interest rate in Nigeria.

Imoisi, Uzomba and Olatunji (2010) examined the impact of interest and exchange rates on the Nigerian economy for the period 1975 to 2008. OLS estimation technique was adopted and it was found that an increase in interest rate retards investment and subsequently economic growth; and the lag one of exchange rate shows the expected positive sign, implying that depreciation in exchange rate retarded growth from 1975 to 2008. Other studies in this light are; Vaz and Baer (2014); Ribeiro et al (2019).

Similarly, Okotori (2019) examined the dynamics of monetary policy and inflation in Nigeria using monthly data for the period 2009-2017. The result from error correction model (ECM) showed that money supply, exchange rate, monetary policy rate, treasury bills rate, reserve requirement, and liquidity ratio have significant impact on inflation rate and by extension economic growth. Adodo, Akindutire and Ogunyemi (2018) examined the effectiveness of monetary policy in Nigeria with annual data from 1985 to 2016 using Vector Error Correction Model (VECM). The result showed that money supply and interest rate are statistically significant in explaining variation in inflation rate.

Fasanya, Onakoya and Agboluaje (2013) examined the impact of monetary policy on economic growth in Nigeria. The study employed ECM in a time-series data covering the period 1975 to 2010. It was found that long-run relationship exists among the variables and that inflation rate; exchange rate and external reserve are significant policy instruments that drive growth in Nigeria.

Onyeiwu (2012) examined the impact of monetary policy on the Nigerian economy using OLS for the period 1981 to 2008. The result shows that monetary policy exerts a positive impact on GDP growth and Balance of Payment. Other studies in this light includes: Okwori and Abu (2017); Amassoma, Nwosa and Olaiya (2011).

Ayodeji and Oluwele (2018) analyzed the impact of monetary policy on economic growth in Nigeria. The result from ECM shows that money supply and exchange rate did not significantly impact on economic growth. Ufoeze, Odimgbe, Ezeabalisi and Alajekwu (2018) investigated the effect of monetary policy on economic growth in Nigeria for the period 1986 to 2016 using OLS estimation technique. It was found that monetary policy rate, interest rate, and investment does not positively and significantly impact on economic growth in Nigeria.

Srithilat and Sun (2017) examined the impact of monetary policy on the economic development for the period 1989 to 2016. The result from co-integration and ECM shows that money supply, interest rate, and inflation rate negatively related to real GDP per capita in the long run while real exchange rate is positively related to real GDP per capita. Chukuigwe and Abili (2008) examined the impact of monetary and fiscal

policies on non-oil exports in Nigeria from 1974 to 2003 with OLS estimation technique. It was found that monetary policy and fiscal policy negatively impact on non-oil exports and by extension economic growth over time in Nigeria.

Udude (2014) examined the impact of monetary policy on the growth in Nigeria between the period 1981 and 2012 using VECM. The result indicates that money supply exhibited insignificant impact on economic growth. Gul, Mughal, Rahim (2012) examined how the decisions of monetary authorities influence macro variables such as GDP, money supply, interest rates, exchange rates and inflation for the period 1995-2000 in 187 observations. Result from least squares estimates shows that interest rate has negative and significant impact on output. That is, tight monetary policy in term of increase interest rate has a significant negative impact on output. Other studies includes; Nasko (2016); Hameed, Khalid and Sabit (2012).

3. Theoretical Framework and Methodology

3.1. Theory and Model

Solow growth model of 1956 provides the theoretical foundation on which this study is hinge on. The model holds that variation in output (Y) over time is subject to changes in inputs (capital (K) and labour (L)) with a provision for technical progress (A) which drives capital-labour ratio to converge to equilibrium ratio. The implication of this is that per capita growth rate depends on exogenous growth rate of technical progress.

The model is functionally stated algebraically as;

$$Y = f(A, K, L) \quad (1)$$

Where; Y = output; A = technical progress; K = capital stock; L = labour

Two assumptions form the pillar of the Solow growth model. The first is that there is positive and diminishing returns to private inputs. That is, for all $K > 0$ and $L > 0$, the production function exhibits positive and diminishing marginal productivity with respect to each input such that;

$df/dk, df/dl > 0$; $d^2f/d(lk) > 0$; and d^2f/dk^2, $d^2f/dl^2 < 0$

This shows that the model assumes that holding constant the levels of technology and labour, each additional unit of capital produces positive additions to output, but these additions decrease as the number of fixed factors rises. The same property is assumed for labour.

The second assumption is that as the marginal product of capital (or labour) approaches infinity, capital (or labour) tends toward 0 and as the marginal product of capital approaches 0, capital (or labour) tends towards infinity; that is,

$(\delta f/\delta k) = (\delta f/\delta l) = \infty$, *lim as* $k -> 0$

$(\delta f/\delta k) = (\delta f/\delta l) = 0$, *lim as* $k -> \infty$

Other basic features of Solow growth model includes; constant return to scale, diminishing marginal utilities, and capital and labour substitutability.

According to Iyoha, Ighodaro and Adamu (2012), assuming the Solow growth model is twice differentiable, subject it to constant returns to scale and that technical progress is Hicks-neutral, the differentiation of equation (1) with respect to time (t) and dividing through by output (Y) result in the equation (2) below;

$$\dot{Y}/Y = \dot{A}/A + (FKK/Y) * (\dot{K}/K) + (FLL/Y) * (\dot{L}/L) \quad (2)$$

Where; *Ý/Y* = continuous time rate of growth; *Á/A* = hicks-neutral rate of change of technological progress; *Ḱ/K* = growth rate of capital stock; *Ĺ/L* = growth rate of labour; *FK* = marginal products of capital; *FL* = the marginal products of labour.

The expression in equation (2) shows output growth rate as a function of growth of technical change, capital stock and labour.

Building on the work of Iyoha, Ighodaro and Adamu (2012), Solow growth model is augmented by bringing in other variables of interest. This is usually done through total factor productivity and thus implies that factor productivity helps to explain the growth process (Udah, 2010). Thus, from equation (2) this study states the functional form of the model as;

$$RGR = f(EXR, MOP, KST, SSR) \quad (3)$$

Where; RGR = Real GDP growth rate, EXR = exchange rate, MOP= monetary policy, KST = capital stock, SSR = secondary school enrolment rate, INF = inflation rate.

The explicit form of the model is stated as;

$$RGR_t = \beta_0 + \beta_1 EXR_t + \beta_2 MOP_t + \beta_3 KST_t + \beta_4 SSR_t + \varepsilon_t \quad (4)$$

The eschewing error correction specification is stated as;

$$RGR_t = \beta_0 + \beta_1 EXR_t + \beta_2 MOP_t + \beta_3 KST_t + \beta_4 SSR_t + \Omega ECT_{t-1} + \varepsilon_t \quad (5)$$

Where; β_0 = intercept term; β_1 - β_4 = parameter estimates; ECT_{t-1} = error correction term; Ω = error correction term coefficient; ε_t = error term. Other variables are as previously defined.

The *a priori* expectations are: $\beta_1, \beta_2, \beta_3, \beta_4 > 0$, $\Omega < 0$.

Theoretically, exchange rate is specified to be *a priorily* positively related to economic growth. Though since the mid-1980s, it has been characterized by frequent fluctuations in Nigeria which may not be unconnected to the weak productivity and often depletion of Nigeria external reserve amongst others (Obadan, 2006). The regulation of money supply is premised on the fact that there is a stable relationship between the quantity of money supply and economic activity and by

extension economic growth. Though regulation of money supply may be limited by the pursuit of other objectives, this has implications on the attainment of economic growth (Anowor & Okorie, 2016). This informed the *apriori* positive specification. The expected positive sign on coefficient of capital stock is attributed to growth theories such as Solow growth theory of 1956. The model hold that the long-term economic growth rate is attained through accumulation of factor inputs for example capital (K). This informs the *a priori* positive expectations.

Also, human capital (labour) is another critical factor that determines growth of an economy as explained in growth theories such as Solow growth model of 1956. However, one factor that is crucial to the development of human capital is the level of education. Education makes individual worker more productive and efficient in the production process (Larocque, 2008). Here a proxy of human capital development (secondary school enrolment rate) is expected to be *a priorily* positive. Lastly, besides a significant value that ranges between zero and one, error correction term (ECT) coefficient is expected to be negatively signed to perform its role in the model.

3.2. Analytical Technique and Data Sources

Co-integration and Error Correction Mechanism (ECM) is adopted for this study. Besides being amenable to times series analysis, ECM wide application in empirical analysis stems from the fact that it also correct for dis-equilibrium in the short run. This methodology involves three stages. The first step is testing for unit root (stationarity test). This is followed by co-integration test, that is, test of long run convergence. If variables are found to be co-integrated, that is, there exist long run convergence among the variables; we then carry out estimation of the error correction model. This therefore means that co-integration is a necessary condition for ECM. Data for all the variables such as real GDP growth rate, exchange rate, monetary policy, capital stock, and secondary school enrolment rate, are sourced from World Bank, World Development Indicator and Central Bank of Nigeria (2021).

4. Empirical Result and Discussion

Table 1: Descriptive Statistics of Variables

	RGR	**EXR**	**MOP**	**KST**	**SSR**
Mean	25.27	57.42	92.53	590.03	56.38
Median	23.12	21.89	92.20	112.36	56.40
Maximum	40.68	153.86	110.36	250.30	68.00
Minimum	13.11	0.55	76.43	139.15	50.10

Std. Dev.	7.24	59.83	9.35	832.76	3.85
Skewness	0.36	0.44	0.26	1.31	1.03
Kurtosis	2.11	1.38	2.18	3.25	4.12
Jarque-Bera	6.74	8.55	11.26	9.26	7.38
Probability	0.03	0.01	0.00	0.00	0.02
Sum	808.83	1837.75	2960.91	1888.09	1804.30
S.Sq. Dev.	16.31	11.4	27.52	2.15	46.80
Observations	33	33	33	33	33

Source: Authors Computations

Table 1 shows descriptive statistics of variables. From the Table, average real GDP growth rate (RGR) is 25 for the period. The relatively low standard deviation value of approximately 7 indicates that observations are not widely spread from the mean. The Skewness is positive indicating that RGR lie to the right of the mean. The J-B is statistically significant (at 5 percent) and this implies that the density function of the series is non-normally distributed. The mean and standard deviation values of exchange rate (EXR) are relatively high for the period. This indicates that observations are widely spread/disperse from the mean. The Skewness is positive showing that EXC lie to the right of the mean. The high J-B statistics passes the statistical significant test at 5 percent.

Also, the mean of monetary policy (MOP) is high (approximately 93) for the period while the standard deviation is relatively low. This also indicates that observations are not widely spread/disperse from the mean. The Skewness is positive showing that MOP lie to the right of the mean. The J-B statistics passes the statistical significant test at 1 percent. This once more shows that the density function of the series is non-normally distributed. Average of capital stock (KST) and it standard deviation values are high for the period. This shows that observations are widely spread from the mean. Skewness is positive indicating also that domestic debt lie to the right of the mean. Lastly, the average of secondary school enrolment rate (SSR) is high for the period. The relatively low standard deviation value of about 3.85 indicates that observations are not widely spread from the mean. The Skewness is positive indicating that SSR lie to the right of the mean. The J-B is statistically significant (at 5 percent) and this implies that the density function of the series is non-normally distributed.

Table 2: Stationarity Test

Variables	Levels		Ist difference		I (d)
	ADF Stat	ADF 95%	ADF Stat	ADF 95%	
RGR	-0.17	-2.97	-3.68	-2.97	I(1)
EXC	-1.81	-2.97	-3.71	-2.97	I(1)
MOP	-1.09	-2.97	-3.77	-2.97	I(1)
KST	-2.41	-2.97	-3.42	-2.97	I(1)
SSR	-2.13	-2.97	-3.01	-2.97	I(1)

Source: Author's Computation

This test helps to determine the stationarity status of the variables in the model and the method employed here is Augmented Dickey Fuller (ADF). From the result presented in table 2, variables were not statitionary at levels, however, they all attained stationarity at first difference as can be observed that the ADF test statistic are greater than the corresponding 95% critical ADF value. That is, variables are found to be integrated of order one (I(1)).

Table 3: Engle and Granger Residual Based Cointegration test

Null Hypothesis: ECM has a unit root		t-Statistic	Probality*
Augmented Dickey-Fuller test statistic		-5.73	0.00
Test critical values:	1% level	-3.67	
	5% level	-2.96	
	10% level	-2.62	

Source: Author Computation
**MacKinnon (1996) one-sided p-values.*

The result from Table 3 shows that there is a long run relationship among the variables in the model, that is, variables are co-integrated. As can be observed from the Table 3, this was affirmed at 1 percent level of statistical significance (stationarity of residual).

Table 4: Error Correction and Long Run Estimates

Error Correction Estimates				
Variable	Coefficient	Std. Error	t-Statistic	Probability
D(EXC)	-0.39	0.15	-2.45	0.02
D(MOP)	0.20	0.10	1.94	0.06

D(KST)	2.58	7.42	0.35	0.37
D(SSR)	0.47	0.62	0.75	0.45
ECM(-1)	-0.71	0.20	-3.55	0.00
R-squa	0.73	Mean dep var		0.16
Adj R-sq	0.71	S.D. dependent var		3.66
F-stat	4.47	Akaike info criterion		5.09
Prob(F-stat)	0.00	Durbin-Watson stat		1.87
Long run Estimate				
Variable	Coefficient	Std. Error	t-Statistic	Probability
EXC	-0.66	0.21	-3.12	0.00
MOP	0.47	0.07	6.70	0.00
KST	7.52	4.34	1.73	0.01
SSR	4.49	5.17	0.86	0.51
R-sq	0.82	Mean dependent var		25.16
Adj R-sq	0.78	S.D. dependent var		7.32
F-stati	23.37	Akaike info criterion		5.43
Prob(F-stat)	0.00	Durbin-Watson stat		2.08

Source: Author's Computation

From the result in Table 4, exchange rate is negatively and significantly (at 5 percent) related to economic growth in the short run. This was also the case in the long run as presented in Table 5.4. A one unit rise in exchange rate has a detrimental effect on economic growth to the tune of about 0.39 and 0.66 unit in the short and long run respectively. This therefore implies that the continuous depreciation of Nigeria currency (Naira) in relation to key currencies such as the US Dollar has a negative impact on growth. This could be attributed to the weak productivity of Nigeria economy. Also from the result as presented in Table 4 monetary policy impact positively and significantly on economic growth. This was the case in both the short run and long run estimates. The result shows that a one unit increase in monetary policy result in about 0.20 and 0.47 units rise in economic growth in the short and long run respectively. This tends to give credence to the monetary policy direction and attest to the efficient use of monetary instrument by monetary authority in Nigeria.

Capital stock was found to exhibit positive impact on economic growth. However, it was only statistically significant in the long run wherein a unit increase in capital stock leads to about 7.5 unit rise in economic growth. This implies that capital stock in Nigeria is positively

responsive growth of the Nigeria economy in the long run. Also, secondary school enrolment rate was found to exhibit positive impact on economic growth in both the short run and long run respectively. However, it was not statistically significant in both cases, that is, long and short run.

The error correction mechanism is negatively signed, between zero and one and statistically significant (at 5 percent). Its coefficient of 0.71 indicates a restoration to equilibrium to the tune of approximately 71 percent in the event of a temporary displacement thereof. The coefficient of determination and the adjusted coefficient of determination in both the short run and long run were relatively high hovering between 71 percent and 82 percent. This shows that the explanatory variables significantly account for variations in the dependent variable. The overall explanatory power of the model was affirmed by the F-statistics value of 4.5 and 23.4 units which was statistically significant (at 5 percent) in both the short run and long run respectively. The D-W statistics test which falls with the range of 2 indicate that there is absent of first order serial correlation in the model.

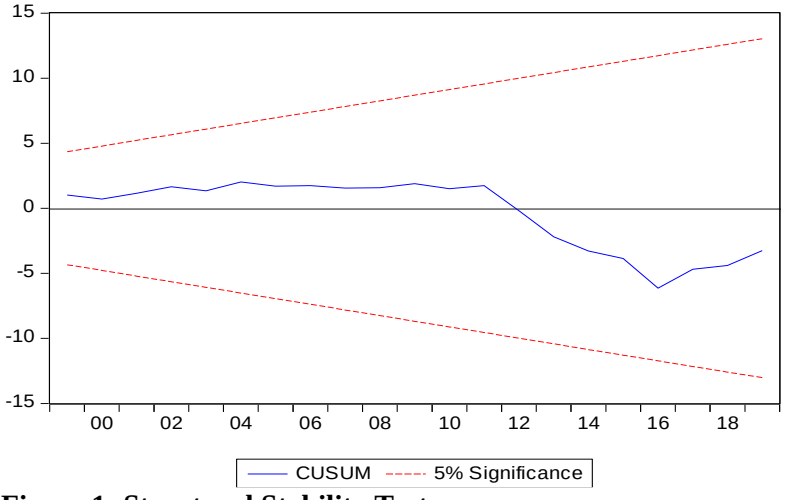

Figure 1: Structural Stability Test
Source: Author's Computation

Structural stability test is conducted to determine the stability of the model. This was captured by cumulative sum (CUSUM) test proposed by Borensztein, De Gregorio and Jong-Wha (1998). From Figure 1 above, it can be observed that the plots falls within the critical bounds at 5 percent significance level. This indicates that the model is structural stable and that findings and suggestions emanating thereof could be relied upon.

4.1. Summary of Key Findings

Exchange rate impact negatively on economic growth in Nigeria in tune with studies such as Ribeiro et al (2019); Vaz and Baer (2014). Similarly, monetary policy impact positively on economic growth in Nigeria also in affirmation to previous studies such as Okotori (2019); Fasanya, Onakoya and Agboluaje (2013).

5. Conclusion and Recommendations

Owing to the vital roles the duo of exchange rate and monetary policy plays in the maintenance of the internal and external economic affairs of a country, this study examined the impact exchange rate and monetary policy has on economic growth in Nigeria for the period spanning 1986 and 2020. A model was drawn based on Solow growth theory and thereafter subjected to empirical analysis. The model was initially subjected to descriptive analysis wherein the basic charateristics of the variables were analysed. This was followed by stationarity test and long run convergence test. Having carried out the above analysis, ECM and long run estimation were conducted wherein it was found that exchange rate negatively impact on economic growth while monetary policy positively impact on economic growth. The structural stability of the model was affirmed using CUSUM.

Based on the empirical analysis, the following recommendations are put forward;

i. Concerted effort should be made to stabilize exchange rate for it to be positively responsive to growth of the Nigeria economy.

ii. As follow up to (i) above, government should invest in critical sectors of the economy and put in place incentive that boost real sector investment. By so doing, makes the Nigeria economy more productive and competitive internationally.

iii. To ensure a more efficient and effective management of the Nigeria economy, monetary authority should be allowed to operate without interference by political office holders.

References

Adelowokan, O. A., Adesoye, A. B., & Balogun, O. D. (2015). Exchange rate volatility on investment and growth in Nigeria, an empirical analysis. *Global Journal of Management and Business Research, 15*(10), 21-30.

Adodo, F., Akindutire, O. & Ogunyemi, J. (2018). Monetary policy and control of inflation in Nigeria. *International Journal of Management, IT & Engineering, 8*(12), 154-170.

Amassoma, D. (2016). The nexus between exchange rate variation and economic growth in Nigeria. *SINGAPOREAN Journal of Business Economics, and Management Studies, 4*(12), 8-28.

Amassoma, D., Nwosa, P. I., & Olaiya, S.A. (2011). An appraisal of monetary policy and its effect on macroeconomic stabilization in Nigeria. *Journal of Emerging Trends in Economics and Management Sciences, 2*(3), 232-237.

Anowor, O. F., & Okorie, G. C. (2016). *A reassessment of the impact of monetary policy on economic growth: Study of Nigeria.*

Anyanwu, F. A., Ananwude, A.C., & Okoye, N .T (2017). Exchange rate policy and Nigeria's economic growth: A granger causality impact assessment. *International Journal of Applied Economics, Finance and Accounting, 1*(1), 1-13.

Ayodeji, A., & Oluwole, A. (2018) Impact of monetary policy on economic growth in Nigeria. *Open Access Library Journal*, 5(32), 1-13.

Bazlul, H. K., Sayema, H. B., & Mohammad, A. R. (2012). The Exchange Rate and Economic Growth: An Empirical Assessment on Bangladesh, International Growth Center (IGC): S-31019-BGD-1

Borensztein, E., De Gregorio, J., & Jong-Wha, L. (1998). How does foreign direct investment affect economic growth? *Journal of International Economics 45*, 115-35.

Çelik, T., Çelik B., & Barak, D. (2017). Real Exchange Rate and Economic Growth Relationship in Transition Economies. Suleyman Demirel University, The Journal of Faculty of Economics and Administrative Sciences, 22(3), 877-890.

Central Bank of Nigeria (2021). Report and account, Abuja.

Central Bank of Nigeria (2020). Annual report and statement of account, Abuja.

Central Bank of Nigeria (2006). Annual report and statement of account, Abuja.

Chukuigwe, E. C., & Abili I. D. (2008). An econometric analysis of the impact of monetary and fiscal policies on non-oil exports in Nigeria. *African Economic and Business Review, 6*(2), ISSN: 1109-5609

Devereux, M. B. (2004). Should the exchange rate be a shock absorber? *Journal of international Economics, 62*(2), 359-377.

Fasanya, I. O., Onakoya, A. B. O., & Agboluaje, M. A. (2013). Does monetary policy influence economic growth in Nigeria? *Asian Economic and Financial Review, 3*(5), 635-646.

Gul, H., Mughal, K., & Rahim, S. (2012). Linkage between monetary instruments and economic growth. *Universal Journal of Management and Social Sciences, 2*(5), 69-76.

Habib M. M., Mileva, E., & Stracca, L. (2017). The real exchange rate and economic growth: Revisiting the case using External Instruments. *Journal of International Money and Finance,* 73, 386-398.

Hameed, G., Khalid, M., & Sabit R. (2012). Linkage between Monetary Instruments and Economic Growth. *Universal Journal of Management and Social Sciences, 2*(5), 69-76.

Imoisi, A. I., Uzomba, P. C., & Olatunji, L. M. (2010). An analysis of interest and exchange rates effect on the Nigerian economy: 1975-2008. *Asian Economic and Financial Review, 2*(6), 648-657.

Ismaila, M. (2016). Exchange rate depreciation and Nigeria economic performance after structural adjustment programmes (SAP). *NG-Journal of Social Development, 5*(2). 122-132.

Iyoha, M. I., Ighodaro, C. A., & Adamu, P. A. (2012). Trade, foreign direct investment and economic growth: Evidence from countries of West Africa Monetary Zone. *The West African Economic Review, 1*(2), 9-32.

Larocaque, N. (2008). Comments on 'Inster-sectoral interfaces in higher education development: private and public in sync' by Daniel, C.L. In : "Higher Education and Development". Annual world Bank Conference on Development Economics- Regional, Justin Yifulin and Pleskovic, B. World Bank, Washington, D.C.

Missio, F. J., Jayme, G. F., Britto, G., & Oreiro, J. L. (2015). Real exchange rate and economic Growth: New empirical evidence. *Metroeconomica, 66*(4), 686-714.

Nasko, A. M. (2016). Impact of monetary policy on the economy of Nigeria. *Pyrex Journal of Business and Finance Management Research, 2*(10), 163-179.

National Bureau of Statistics (2019). Annual report and statistics. Abuja.

Obadan, M. I. (2006). Overview of exchange rate management in Nigeria from 1986 to date, research department, Central Bank of Nigeria, 30(3), 1-9.

Obansa, S. A. J., Okoroafor, O. K. D., Aluko, O. O., & Millicent E (2013). Percieved relationship between exchange rate, interest rate and economic growth in Nigeria: 1970-2010. *American Journal of Humanities and Social Sciences,* 1(3), 116-124.

Okotori, T. W. (2019). The dynamics of monetary policy and inflation in Nigeria. *IOSR Journal of Economics and Finance (IOSR-JEF), 10*(2), 37-49

Okwori, J., & Abu, J. (2017). Monetary policy and inflation targeting in Nigeria. *International Journal of Economics and financial management, 2*(3), 1-12.

Onyeiwu, C. (2012). Monetary policy and economic growth of Nigeria. *Journal of Economics and Sustainable Development, 3*(7), 62-70.

OPEC (2020). Data on crude prices, Geneva, Switzerland.

Osaka, G. C. I., Masha & Adamgbe, E. (2003). Issues in exchange rate policy: Economic and Political considerations. In: Nnnana, O. J., S. O. Alade and F.O Odoko, ed. Contemporary Economic Policy Issues in Nigeria" (Abuja: Central Bank of Nigeria).

Özcan, K. (2020). Influence of exchange rate on the Economic Growth in the Turkish Economy. DOI: 10.5817/FAI2020-1-2. [Accessed August 2021]

Ribeiro, R. S. M., McCombie, J. S. L., & Lima, G. T. (2019). Does real exchange rate undervaluation really promote economic growth? Structural change and economic dynamics, 50, 408-417.

Srithilat, K., & Sun, G. (2017). Impact of monetary policy on economic development: evidence from Lao PDR," MPRA Paper 79369, University Library of Munich, Germany.

Tarawalie, A. B. (2010). Real exchange rate behaviour and economic growth: evidence from Sierra Leone. *South African Journal of Economic and Management Sciences, 13*(1), 8-23.

Udude, C. C. (2014). Monetary policy and Economic Growth of Nigeria. *Journal of policy and development studies, 9*(1), 234-247.

Udah, E, B. (2010). Industrial development, elasticity crisis and economic performance in Nigeria. European Journal of Economics, Finance and Administrative Sciences, *18*(1), 105-121.

Ufoeze, L.O., Odimgbe, S. O., Ezeabalisi. V. N. & Alajekwu, U. B. (2018). Effect of monetary policy on economic growth in Nigeria: An empirical investigation. Annals of Spiru Haret University, Economics Series, ICCS, 1, 123-140.

Vargas, H., Gonzalez, A., & Rodriguez, D. (2013). Foreign exchange intervention in Columbia, a brief review of the Columbia Central Bank intervention in the Forex Market. Mimeo, Banco de la Republica.

Vaz, H. P., & Baer, W. (2014). Real exchange rate and manufacturing growth in Latin America. *Latin American Economic Review, 23*(2), 1-17.