FOREIGN EXCHANGE RATE AND ECONOMIC GROWTH IN NIGERIA: ANY CAUSAL LINK

Ingokonyo Jim-Bob
University of Port Harcourt Business School, Port Harcourt Nigeria

ABSTRACT
The purpose of this research was to determine if and how the Nigerian economy's development is related to the country's exchange rate. The Statistical Bulletin of the Central Bank of Nigeria (CBN) and the United Nations Conference on Trade and Development (UNCTAD) were mined for annual data covering the years 1981 to 2021. Foreign exchange rate was measured using the official naira/dollar exchange rate, and real GDP was utilised as an indicator of economic growth. Toda and Yamamoto's non-granger causality test was used to examine the relationship between the value of the dollar and economic expansion. No causal relationship between the exchange rate and economic expansion was found in the empirical data. This may be because of how the Nigerian economy is set up, which is predicated on the export of crude oil. The research demonstrated a one-way causation between FDI and the currency exchange rate. Expansion in the economy was found to granger induce expansion in the financial sector, lending credence to the demand-following concept. The report concludes that increasing exports and stabilising the value of the naira may be achieved via diversifying the Nigerian economy away from its reliance on crude oil.
KEYWORDS: *Foreign Exchange Rate, Economic Growth, Real Gross Domestic Product.*

1. INTRODUCTION

The objective of policy makers, particularly fiscal and monetary authorities, among others, is the achievement of economic growth. The importance of stable economic growth is drawn from the many benefits that could emanate from steadily increasing the output scale of an economy. According to An, Binh and Cam (2020) economic growth is a necessary condition for the achievement of reduction in poverty, improving living standard, creating jobs and reducing unemployment level. This has led to policy makers determining a reasonable economic growth rate and ensuring such is realized through coordination of policy strategies.

In the recent years from 2015 to 2021, Nigeria has experienced fluctuating economic growth which has threatened the achievement of other macroeconomic goals such as maximum employment level, balance of payment equilibrium, reduction of poverty and closing the inequality gap. Despite growth enhancing programmes such as NEEDS, Transformation Agenda of President Goodluck Jonathan and the Economic Recovery and Growth Plan (ERGP) of 2017 launched by President Muhammadu Buhari to achieve economic growth of about 4 – 7 percent annually, output growth has been below the targeted rate (Uche, 2019; Kyarem and Ogwuche, 2017).

Available data from the National Bureau of Statistics (NBS) revealed slowing level of economic growth as economic activities slumped to -0.66 percent in Q2 of 2016. Output further contracted to -1.48 percent in Q3 of 2016, leading to an economic recession in 2016. Economic recovery was sluggish as output grew from 0.716 percent in Q1 2017 to 1.870 percent in Q1 2020. This growth in output was short-lived as Nigeria slipped into recession in 2020, as output contracted by -6.104 percent in Q2 2020 and by -3.40 percent in Q3 2020. In the fourth quarter of 2020, there was improvement in output level as real gross domestic product grew by 0.11 percent, sustaining the growth to 5.01 percent in Q2 2021. Output began declining to 3.98 percent in Q4 2021 and 3.11 percent in Q1 2022, before improving slightly to 3.54 percent in Q2 2022 (NBS, 2022).

Several potential causes have been proposed to explain Nigeria's slowing and erratic economic growth. Some research implies that Nigeria's economic development may have been harmed by the Central Bank of Nigeria's (CBN) incapacity to maintain exchange rate stability, which in turn may have been caused by fluctuations in exchange rates. Supporters of this view point to the significant decline of the naira versus the dollar and claim that this has raised investment risk for Nigerian businesses, which would be better off with a more stable currency rate (Anyanwu, Ananwude, & Okoye, 2017). This analysis sought to determine whether or not alterations to Nigeria's exchange rate might be used as a reliable predictor of the country's economic development.

2. LITERATURE
2.1 Theoretical Framework
This study was grounded in the "Purchasing Power Parity Theory (PPPT)" and the "Balance of Payments Theory (BPT)" To begin, the PPPT states that the par value paper theory (PPPT) determines the equilibrium rate of exchange by assuming that the buying power of two paper currencies are equal. According to the PPPT, the value of one paper currency relative to another depends on the level of domestic prices in both nations. The absolute version defines the rate of exchange as the ratio between the amount of money needed to purchase a basket of goods at home and the amount of money needed to make the same purchase in a foreign country; the relative version calculates the equilibrium rate of exchange for the current period based on the base period's rate of exchange (R1) and the difference between the current and base price indices in each country.

Second, the BPT suggests that rate of exchange of the currency of one country with the other is determined by the factors which are autonomous of internal price level and money supply. It emphasizes that the rate of exchange is influenced, in a significant way, by the balance of payments position of a country.
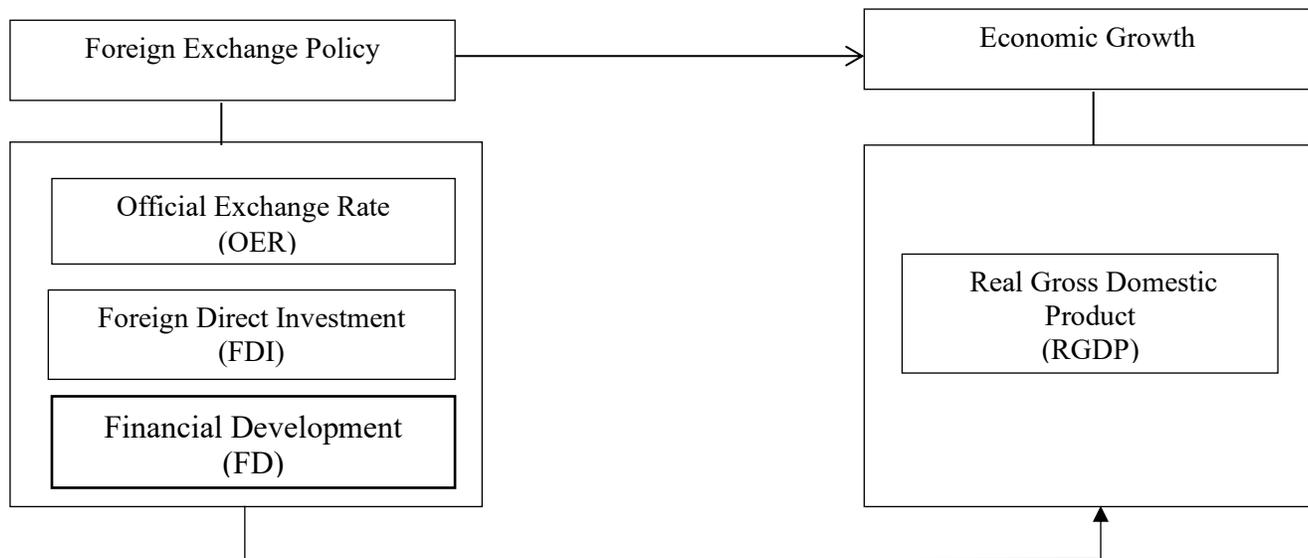
2.2 Conceptual Framework

Fig. 2.1: Conceptual Framework of the Research
Source: Research Desk, 2023; as adopted from Anyanwu, Ananwude and Okoye, 2017.

2.2.1 Foreign Exchange Policy
The value of one country's currency as measured in terms of that of other countries is known as the foreign exchange rate. It establishes the competitiveness of domestic goods and the extent to which foreign companies participate in domestic commerce. Economics that view trade liberalisation as essential for economic progress (Obansa, Okoroafor, Aluko, & Eze, 2003) continue to discuss the pros and cons of various exchange rate regimes and interest rates. The value of one country's currency expressed in terms of another currency's value against that of a fixed basket of

currencies. It measures how much a country's currency is worth on a global market. It is usually the basis of international payment between countries. In a typical economy, certain factors affects foreign exchange rate. In highlighting this factors, Bergen (2017) argued that it is affected by differential in inflation, differential in interest rate, current account deficits, public debts, balance of trade, political stability and economic performance.

2.2.2 Economic Growth

Economic growth refers to an economy's progress as a result of favorable circumstances, such as the progress made by the United Kingdom during the Industrial Revolution. In developed economies, increasing income levels is referred to as "economic growth," while in developing countries, it is referred to as "economic development" (Momodu, 2012). In this regard, Mordi, (2006) expressed that the problems of developing countries are related to the development of unused resources even though their uses are well-known, whereas the problems of developed countries are related to growth, with the majority of their resources already known and developed to a large extent. When comparing one period of time to the next, economic growth is defined as a rise in an economy's capacity to generate products and services. It can be expressed in nominal or real terms, with the latter factoring in inflation. Although alternative metrics are sometimes employed, aggregate economic growth is traditionally quantified in terms of Gross National Product (GNP) or Gross Domestic Product (GDP). The percentage change in the quantity of goods and services produced from one year to the next is the economic growth rate. It is the same as the actual GDP growth rate.

2.3 Empirical Review

Ogunjimi (2020) was focused on the symmetric and asymmetric relationship between exchange rate and sectoral output in Nigeria, examining if the agricultural, industrial and service sector output respond differently to appreciation and depreciation of exchange rate. Data were analysed using ARDL and non-linear ARDL techniques, and the study covered the years 1981-2016. The result from the symmetric analysis revealed that exchange rate promoted performance of the agricultural and service sectors of the Nigerian economy. Depreciation and appreciation of the naira vs the US dollar were shown to have a favourable effect on the agriculture and service sectors.

The generalised autoregressive conditional heteroscedasticity (GARCH) model and the vector error correction model (VECM) were employed by Moses, Victor, Uwawunkonye, Fumilade, and Nathaniel (2020) to demonstrate the detrimental impact of exchange rate fluctuation on Nigeria's GDP growth. Using monthly data from 2003-2017 and a VAR causality test, they demonstrated that the granger causality between the exchange rate and economic growth.

Zoramawa, Ezekiel, and Kiru (2020) study the relationship between the exchange rate and economic development in Nigeria using data from 1980 to 2019 within the context of the error correction model (ECM). The regression analysis revealed that the exchange rate significantly contributed to GDP expansion. On the other hand, trade liberalisation severely damaged Nigeria's economy.

The impact of fluctuating currency rates on Nigeria's GDP was examined by Ehikioya (2019). From January 1980 to December 2017, monthly series data was analysed using the generalised autoregressive conditional heteroscedasticity (GARCH) model and the generalised method of moments (GMM) approach. The study revealed that the period's persistent exchange rate volatility had a major negative impact on GDP growth. It was also shown that inflation significantly hampered economic expansion. During the time period under review, increases in the price of crude oil boosted the economy of Nigeria.

Patel and Mah (2018) examined the connection between the real exchange rate and economic development using data from South Africa covering the years 1980 through 2015. The VEC granger causality test, the impulse response function, and the variance decomposition were used to analyse the data for the connection studied within the VECM framework. The empirical results indicated that the real exchange rate was significantly affected positively by FDI and money supply and significantly negatively by GDP growth and export liberalisation. According to the causality result, neither changes in economic growth nor changes in real exchange rate impact each other. The real exchange rate is only affected by shifts in the export granger.

To study the impact of the exchange rate on the economies of 18 sub-Saharan African nations, Agbugba, Iheonu, and Onyeaka (2018) combined data from 1981 to 2015. We utilised each country's official exchange rate against the dollar

as an index of exchange to determine GDP per capita and the size of the economies. Gross capital creation, FDI, and labour were employed with other factors as independent variables. Despite having a negative effect in the short term, the pooled mean group (PMG) result showed that exchange rate depreciation boosted economic growth in sub-Saharan nations in the long run. Growth was spurred by capital, but the sub-Saharan economies were hit hard by both cheap labour and direct investment from outside.

Oloyede and Fapetu (2018) used the generalised autoregressive conditional heteroscedasticity (GARCH) and generalised method of moments (GMM) techniques to investigate the effect of exchange rate volatility on economic development in Nigeria. The study found that there is a strong correlation between actual exchange rate volatility and economic growth.

The influence of exchange rate policy on economic expansion in Nigeria was studied by Anyanwu, Ananwude, and Okoye (2017). From 1986 to 2015, they focused on how changes in real exchange rate affected GDP (as a proxy for economic growth) and industrial capacity utilisation. Using the Pairwise granger causality technique, they took a causal approach. The Johansen cointegration approach verified the cointegration of the exchange rate and GDP growth. The impact of the exchange rate on GDP growth and factory utilisation was found to be positive and statistically insignificant in an ordinary least squares (OLS) analysis. Exchange rate has a direct and inverse relationship with GDP growth and capacity utilisation in manufacturing.

Bangladesh's exchange rate's effect on GDP growth was empirically evaluated by Razzaque, Bidisha, and Khondker (2017). The study used the fully modified ordinary least square (FMOLS) approach to estimate a model of real GDP that relied on real exchange rate, government spending, terms of trade, and lending to the private sector. A higher real exchange rate was shown to have a positive impact on economic growth in Bangladesh, according to the estimations. The terms of trade had a considerable negative influence on economic development, whereas increases in government spending and private sector lending both contributed to expansion.

The relationship between the exchange rate and economic development in Bangladesh was studied by Uddin, Rahman, and Quaosar (2014), who looked at data from 1973 to 2013. The study's methodology used a number of econometric techniques, including the unit root, cointegration, and Granger causality tests. One cointegrating vector, suggesting a long-run link between the exchange rate and economic growth, was validated using the Johansen cointegration approach. Researchers showed that the exchange rate may affect growth in both directions.

3. MATERIALS AND METHODS
3.1 Data
The study utilised yearly data spanning the years 1981 to 2021 to investigate the association between the exchange rate and economic expansion. The data included Real GDP (RGDP) (a measure of economic growth), the official exchange rate (EXR) (the value of the naira against the United States dollar), foreign direct investment (a proxy by net FDI inflows as a percentage of GDP), and financial development (a measure of economic growth) in the form of credit to the private sector. The Central Bank of Nigeria (CBN) statistical bulletin was consulted for the real GDP, official exchange rate, and financial development data, while the UN Conference on Trade and Development (UNCTAD) was consulted for the FDI data.

3.2 Methods
The investigation of the causal link between foreign exchange rate and economic growth in Nigeria was carried out using the Toda and Yamamoto (1995) granger non-causality test. This method was used over the traditional Granger (1969) approach as the testing of causality relationship between variables is possible whether the series have unit root, are non-stationary and/or cointegration. The traditional causality proposed by Granger (1969) breaks down or give biased results when dealing with non-stationary variables and requires the series to be stationary. Also, the Toda and Yamamoto (1995) approach to causality help overcome unit root bias that could emanate from employing the various unit root test procedures. This is because, the Toda and Yamamoto framework accommodates series that are non-stationary and integrated of order I(1), stationary or I(0) series, mixed order of I(0) and I(1), or series that are second difference stationary, that is I(2). With the method, causality can be performed in level form and the modified Wald

test is valid even when the series are non-stationary (Toda and Yamamoto, 1995; Amiri and Ventelou, 2012; Yii and Geetha, 2017; Bah and Azam, 2017).

To conduct causality tests within the framework established by Toda and Yamamoto (1995), a standard VAR model with k lags is expanded to a VAR (k+d) model by adding the maximum order of integration, d_max. Here, k represents the best lag length for the vector autoregression system, which is not chosen at random but rather based on a set of criteria designed to reduce the risk of collinearity in the errors and the loss of degrees of freedom. Based on the outcome of the unit root test (Inusah, 2018; Amiri and Ventelou, 2012; Alimi and Ofonyelu, 2013), d_max is used to indicate the greatest order of integration of the variables in the VAR system.

3.3 Integration Test

The study used univariate analysis to look at variables such nominal GDP, the official exchange rate, FDI, and the state of the economy's finances. This was done so that their integration process could be traced and their stability criteria understood. The Augmented Dickey-Fuller (ADF) and Kwiatkowski, Phillips, Schmidt, and Shin (KPSS) (1992) tests were performed to determine if the utilised variables were level, first difference, and/or second difference stationary. The study verified the outcome of the Augmented Dickey-Fuller test with the Kwiatkowski, et al., method since the maximum order of integration, d_max, is essential for analysing causality within the Toda and Yamamoto (1995) framework (1992, KPSS) test.

The Toda and Yamamoto (1995) framework for testing for causality between official exchange rate and economic growth involve estimating this vector autoregression (VAR) system:

$$lnRGDP_t = \vartheta^1 + \sum_{i=1}^{k} \gamma_{1i} lnRGDP_{t-i} + \sum_{j=k+1}^{dmax} \gamma_{2i} lnRGDP_{t-j} + \sum_{i=1}^{k} \theta_{1i} lnEXR_{t-i} + \sum_{j=k+1}^{dmax} \theta_{2i} lnEXR_{t-j}$$
$$+ \sum_{i=1}^{k} \phi_{i1} FDI_{t-i} + \sum_{j=k+1}^{dmax} \phi_{2i} FDI_{t-j} + \sum_{i=1}^{k} \lambda_{1i} FD_{t-i} + \sum_{j=k+1}^{dmax} \lambda_{2i} FD_{t-j} + \epsilon_{1t} \qquad (1)$$

$$lnEXR_t = \vartheta^2 + \sum_{i=1}^{k} \gamma_{1i} lnRGDP_{t-i} + \sum_{j=k+1}^{dmax} \gamma_{2i} lnRGDP_{t-j} + \sum_{i=1}^{k} \theta_{1i} lnEXR_{t-i} + \sum_{j=k+1}^{dmax} \theta_{2i} lnEXR_{t-j}$$
$$+ \sum_{i=1}^{k} \phi_{i1} FDI_{t-i} + \sum_{j=k+1}^{dmax} \phi_{2i} FDI_{t-j} + \sum_{i=1}^{k} \lambda_{1i} FD_{t-i} + \sum_{j=k+1}^{dmax} \lambda_{2i} FD_{t-j} + \epsilon_{2t} \qquad (2)$$

$$FDI_t = \vartheta^3 + \sum_{i=1}^{k} \gamma_{1i} lnRGDP_{t-i} + \sum_{j=k+1}^{dmax} \gamma_{2i} lnRGDP_{t-j} + \sum_{i=1}^{k} \theta_{1i} lnEXR_{t-i} + \sum_{j=k+1}^{dmax} \theta_{2i} lnEXR_{t-j}$$
$$+ \sum_{i=1}^{k} \phi_{i1} FDI_{t-i} + \sum_{j=k+1}^{dmax} \phi_{2i} FDI_{t-j} + \sum_{i=1}^{k} \lambda_{1i} FD_{t-i} + \sum_{j=k+1}^{dmax} \lambda_{2i} FD_{t-j} + \epsilon_{3t} \qquad (3)$$

$$FD_t = \vartheta^4 + \sum_{i=1}^{k} \gamma_{1i} lnRGDP_{t-i} + \sum_{j=k+1}^{dmax} \gamma_{2i} lnRGDP_{t-j} + \sum_{i=1}^{k} \theta_{1i} lnEXR_{t-i} + \sum_{j=k+1}^{dmax} \theta_{2i} lnEXR_{t-j}$$
$$+ \sum_{i=1}^{k} \phi_{i1} FDI_{t-i} + \sum_{j=k+1}^{dmax} \phi_{2i} FDI_{t-j} + \sum_{i=1}^{k} \lambda_{1i} FD_{t-i} + \sum_{j=k+1}^{dmax} \lambda_{2i} FD_{t-j} + \epsilon_{4t} \qquad (4)$$

Note that the $RGDP_t$ is real gross domestic product; EXR_t represent official exchange rate; FDI_t denotes foreign direct investment and FD_t represent financial development, while ln is the logarithm operator. The null hypothesis of no causality is that:

$$H_0: \gamma_{1i} = 0 \; \theta_{1i} = 0 \; \phi_{1i} = 0 \; \lambda_{1i} = 0$$

While the alternative hypothesis is that:

$$H_1: \gamma_{1i} \neq 0 \; \theta_{1i} \neq 0 \; \phi_{1i} \neq 0 \; \lambda_{1i} \neq 0$$

4. RESULTS AND DISCUSSIONS

4.1. Descriptive Analyses

Table 1: Descriptive Statistics of Variables

	RGDP	EXR	FDI	FD
Mean	37710.48	108.1675	1.6300	11.4728
Median	26658.62	111.9433	1.6784	8.0902
Maximum	72393.67	399.9636	4.6207	22.7548
Minimum	16048.31	0.6100	0.0874	5.8061
Std. Dev	20309.83	109.9115	1.1373	5.5295
Skewness	0.5753	0.9729	0.5313	0.6876
Kurtosis	1.7045	3.1724	2.7721	1.7188
Jarque-Bera	5.1287	6.5192	2.0179	6.0357
Prob.	0.0769	0.0384	0.3645	0.0489
Observation	41	41	41	41

Source: Author's computation (2023)

The descriptive statistics as presented in Table 1 were analyse for each employed variable and covered statistics such as mean, volatility of the series, range, and normality, among other. The descriptive analysis was conducted for real gross domestic product (RGDP), official exchange rate (EXR), foreign direct investment (FDI) and financial development (FD), for the period of 41 years from 1981 to 2021. Economic growth during the period averaged N37,710.48 billion and total output produced in Nigeria during the period ranged between N16,048.31 billion (the lowest) and N72,393.67 billion (the highest over the 41 years). The average official exchange rate of the naira to the US dollar, during the period, was N108.16/US$. The value of the naira dropped from N0.61/US$ to N399.96/US$ during the period. This could have implicated for economic growth as Nigerian is an import dependent country, making manufacturing inputs expensive and resulting in soaring inflation level, as effective demand drops due to low purchasing power. Foreign direct investment inflow averaged 1.63 percent of gross domestic product, and rose from 0.08 percent of GDP to 4.62 percent of GDP during the period of investigation. The financial system, from the descriptive analysis, is less developed as credit to private sector averaged 11.47 percent of GDP. The maximum to which the financial system developed during the period was 22.75 percent of GDP from a dip of 5.80 percent of GDP. As observed from Table 1, real GDP, exchange rate and financial development were highly volatile during the period as shown by their respective standard deviation values of N20,309.83 billion, N109.91 and 5.52 percent. The implication of this is that, it may be difficult for Nigeria to achieve the average real GDP of N37,710.48 billion, an exchange rate of N108.16/US$ and financial development level of 11.47 percent of GDP. The skewness statistics revealed that there has been increase in real GDP, exchange rate of the naira against the dollar, foreign direct investment inflow into Nigeria and development of the financial system. Some of the employed variables, particularly, exchange rate and financial development, do not follow a normal distribution. Hence, the need for stationary test, among others.

4.2 Unit Root Test

The unit root test was carried out for three purposes. First is to understand the statistical properties of the employed series. Second, the unit root provides a guide in selecting the framework that is deemed appropriate or accommodates the features of the underlying series. Third, to determine the maximum order of integration of the underlying series. The unit root testing followed the Augmented Dickey-Fuller (ADF) and Kwiatkowski, et al., (1992, KPSS). Table 2 summarises the result of the test.

Table 2: Unit Root Test Results

Variables	Part I: ADF			Part II: KPSS			Decision I(d)
	Level	1st Diff.	CV (5%)	Level	1st Diff.	CV (5%)	
$lnRGDP_t$	-0.9504	-3.9793***	-2.9411	0.7526	0.2856***	0.4630	I(1)
$lnEXR_t$	-2.1379	-5.3693***	-2.9369	0.7355	0.3430***	0.4630	I(1)
FDI_t	-2.7147	-10.4212***	-2.9369	0.1688***	-	0.4630	I(0)
FD_t	-1.0747	-5.8508***	-2.9369	0.6376	0.4172**	0.4630	I(1)

Note: *, ** and *** denote significance at 10%, 5% and 1% level, respectively for ADF and KPSS. ADF = Augmented Dickey-Fuller. Null hypothesis of ADF: Series has unit root; KPSS: Series is stationary; CV = critical value.
Source: Author's Computation (2023)

The outcome of the unit root test using the ADF and KPSS procedures are summarized in Table 2. The ADF test is reported in Par I, and the result of the unit root test based on the KPSS procedure is reported in Part II. The critical values for the ADF and KPSS tests are reported in column 4 and 7, respectively. The study observed that both ADF and KPSS reported uniform integration process for real gross domestic product (RGDP), official exchange rate (EXR), and financial development (FD). Table 2 informed that at the level form, real gross domestic product (RGDP), official exchange rate (EXR), and financial development (FD) are non-stationary. This was the case following unit root testing using the ADF and KPSS methods. Howbeit, further test revealed that real gross domestic product (RGDP), official exchange rate (EXR), and financial development (FD) were stationary after first differencing. Conflicting result on the integration process of foreign direct investment was reported by ADF and KPSS test procedures. The ADF test for FDI showed that the series is not stationary but is integrated of order one (I(1)). However, when analysed with the KPSS technique, FDI was shown to be static in the form of a level. The analysis finds that FDI is an I(0) series due to the weak power of the ADF test and the higher order superiority of the KPSS. Based on the results of the unit test, it was determined that the employed series had varying order of integration (dmax = 1).

4.3 Granger Causality Test

Toda and Yamamoto's (1995) non-granger causality approach was utilised to analyse the relationship between the Nigerian currency exchange rate and GDP growth. Toda and Yamamoto's (1995) multivariate framework uses the maximum level of integration possible within a Vector Autoregression (VAR) model with k lags and dmax degrees of freedom. In order to ensure there are no loss of vital information and overcome the problem of serial dependence of the errors, the lag length for the VAR model, that is(k), was determined scientifically, rather than arbitrarily assigning lags to the model. The optimal lag length for the VAR model is reported in Table 3.

Table 3: VAR System Lag Length

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-216.6165	NA	0.9629	11.3136	11.4842	11.3748
1	-49.6288	291.1579	0.0004	3.5707	4.4238*	3.8767*
2	-32.4812	26.3808*	0.0004*	3.5118*	5.0474	4.0628

Note: * denote recommended lag by criterion
Source: Author's computation (2023)

Table 3 conveys the lag length for the VAR model. From the survey, the lag length of 2 was selected based on the Alkaike information criterion (AIC). This selection criterion was chosen because it imposes the largest penalty and is appropriate for small sample size. Following the determination of the optimal lag length, the VAR (2) model was estimated and stability of the VAR system determined using the AR Inverse Root method. Figure 1 shows that the VAR (2) model was stable as all the roots lie within the circle. The VAR (2) was then augmented with lag with d_{max}, that is 1, in line with the specification outlined by Toda and Yamamoto (1995). The result of the causality test based on the Toda and Yamamoto (1995) granger non-causality method is summarized in Table 4.
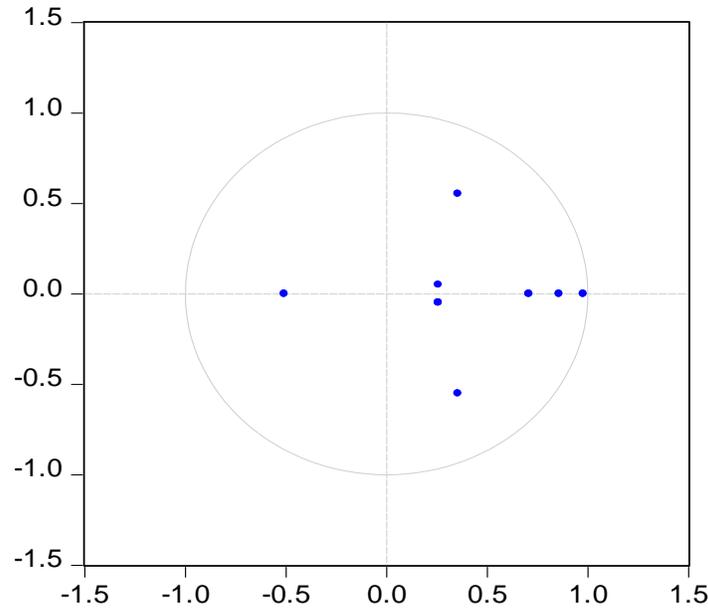
Figure 1: Stability of the $VAR\ (2)$ **Model**

Table 4: Toda and Yamamoto Causality Test Result

DF	Null hypothesis	Chi-sq.	Null hypothesis	Chi-sq.	Direction of causality
2	$lnEXR \nRightarrow lnRGDP$	0.2218	$lnRGDP \nRightarrow lnEXR$	1.3921	No causality
2	$FD \nRightarrow lnRGDP$	3.7304	$lnRGDP \nRightarrow FD$	9.7659***	$RGDP \rightarrow FD$
2	$FDI \nRightarrow lnRGDP$	3.1415	$lnRGDP \nRightarrow FDI$	0.1860	No causality
2	$FD \nRightarrow lnEXR$	0.7592	$lnEXR \nRightarrow FD$	0.0790	No causality
2	$FDI \nRightarrow lnEXR$	7.3207**	$lnEXR \nRightarrow FDI$	0.9790	$FDI \rightarrow EXR$
2	$FDI \nRightarrow FD$	0.3571	$FD \nRightarrow FDI$	1.8989	No causality

Note: *, ** and *** indicate significance at 10%, 5% and 1% respectively; Chi-sq. = Chi-Square WALD Statistics
Source: Author's computation (2023)

It is assumed for the sake of the causality test that the matched series are not causally related. Columns 2 and 4 of Table 4 detail the paired series and their respective null hypotheses. If the Wald statistic's probability value is greater than 0.05, the null hypothesis is rejected; otherwise, the investigation failed to reject the null hypothesis. According to Table 4, neither the expansion of the Nigerian economy nor the foreign exchange rate have any effect on one another. Therefore, the study could not rule out the possibility that there is no connection between the exchange rate and economic expansion. This study suggests that growth in the Nigerian economy does not effect changes in the official exchange rate and that growth in the Nigerian economy responds to other macroeconomic factors. In contrast to the findings of Anyanwu, Ananwude, and Okoye (2017) and Uddin, Rahman, and Quaosar (2014), who discovered evidence of a causal link between exchange rate and economic growth, the present finding is consistent with that of Patel and Mah (2018). There may not be a correlation between the exchange rate and economic growth in Nigeria because the country is so reliant on the oil and gas industry; changes in GDP would be much more responsive to shifts

in the international price of crude oil, supply-side variables like domestic oil production, and external shocks like shifts in demand for crude oil. In Nigeria, it was determined that economic expansion caused financial development, providing support for the demand-following concept. Also, there was evidence suggesting that foreign direct investment granger cause foreign exchange rate. This means that, changes in official exchange rate can be predicted by movement of foreign direct investment into Nigeria. Official exchange rate is expected to appreciation as foreign direct investment inflow in Nigeria increases.

5. CONCLUSION AND RECOMMENDATIONS

Using the non-granger causality paradigm developed by Toda and Yamamoto, this study analysed the association between the Nigerian currency's exchange rate and the country's GDP growth. The empirical estimation identified no causal relationship between the exchange rate and economic development in Nigeria, finding no evidence of causation in either direction between the two variables. Instead, it was determined that FDI was the granger cause of the currency exchange rate. The study supported the demand-side hypothesis by demonstrating a cause-and-effect relationship between economic expansion and financial progress. The report concludes that Nigeria should diversify its economy away from its reliance on crude oil by investing in "real sectors" including agriculture, manufacturing, and services. The value of the naira will increase as a result of the increased production and exports in such industries.

REFERENCES

1. Agbugba, I., Iheonu, C., & Onyeaka, K. (2018). Homogeneous and heterogeneous effect of exchange rate on economic growth in African countries. Int J Econ Commerce Manag, 6(9), 1-14.
2. Alimi, S. R., & Ofonyelu, C. C. (2013). Toda-Yamamoto causality test between money market interest rate and expected inflation: the Fisher hypothesis revisited. European Scientific Journal, 9(7), 23-34.
3. Amiri, A., & Ventelou, B. (2012). Granger causality between total expenditure on health and GDP in OECD: Evidence from the Toda–Yamamoto approach. Economics letters, 116(3), 541-544.
4. An, P. T. H., Binh, N. T., & Cam, H. L. N. (2020). The Impact of Exchange Rate on Economic Growth# x2013; Case Studies of Countries in the Asean Region. Global Journal of Management and Business Research, 20(B8), 13-20.
5. 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.
6. Bah, M. M., & Azam, M. (2017). Investigating the relationship between electricity consumption and economic growth: Evidence from South Africa. Renewable and Sustainable Energy Reviews, 80, 531-537.
7. Ehikioya, B. I. (2019). The impact of exchange rate volatility on the Nigerian economic growth: An empirical investigation. Journal of Economics and Management, 37(3), 45-68.
8. Granger, C. W. (1969). Investigating causal relations by econometric models and cross-spectral methods. Econometrica: journal of the Econometric Society, 424-438.
9. Inusah, N. (2018). Toda-yamamoto granger no-causality analysis of stock market growth and economic growth in ghana. Journal of Accounting, Business and Finance Research, 3(1), 36-46.
10. Kwiatkowski, D., Phillips, P. C., Schmidt, P., & Shin, Y. (1992). Testing the null hypothesis of stationarity against the alternative of a unit root: How sure are we that economic time series have a unit root? Journal of econometrics, 54(1-3), 159-178.
11. Momodu, A. A. (2012). Effect of debt servicing on economic growth in Nigeria. International Journal of Business and Finance, 4(3), 13-23.
12. Mordi, M. C. (2016). Challenges of exchange rate volatility in economic management of Nigeria, in the dynamics of exchange rate in Nigeria, CBN Bullion 30(30), 17 – 25.
13. Moses, T. K., Victor, O. U., Uwawunkonye, E. G., Fumilade, O. S., & Nathaniel, G. (2020). Does exchange rate volatility affect economic growth in Nigeria. Int J Econ Financ, 12, 1-54.
14. Obansa, S. A. J., Okoroafor O.K.D., Aluko, O.O., & Eze, M, (2003). Perceived relationship between exchange rate, interest rate and economic growth in Nigeria: 1970 -2010. American Journal of Humanities and Social Science 1(3), 116 – 124.
15. Ogunjimi, J. (2020). Exchange rate dynamics and sectoral output in Nigeria: A symmetric and asymmetric approach. American Journal of Social Sciences and Humanities, 5(1), 178-193.
16. Oloyede, J. A., & Fapetu, O. (2018). Effect of exchange rate volatility on economic growth in Nigeria (1986-2014). Afro-Asian Journal of Finance and Accounting, 8(4), 404-412.
17. Patel, D., & Mah, G. (2018). Relationship between real exchange rate and economic growth: the case of South Africa. Journal of Economics and Behavioral Studies, 10(1 (J)), 146-158.

18. Razzaque, M. A., Bidisha, S. H., & Khondker, B. H. (2017). Exchange rate and economic growth: An empirical assessment for Bangladesh. Journal of South Asian Development, 12(1), 42-64.
19. Toda, H. Y., & Yamamoto, T. (1995). Statistical inference in vector autoregressions with possibly integrated processes. Journal of econometrics, 66(1-2), 225-250.
20. Uddin, K. M. K., Rahman, M. M., & Quaosar, G. A. A. (2014). Causality between exchange rate and economic growth in Bangladesh. European Scientific Journal, 10(31).
21. Udeh, S. N., Ugwu, I. J., & Onwuka I. O. (2016). External debt and economic growth: The Nigeria experience. European Journal of Accounting Auditing and Finance Research 4, 33 – 48.
22. Yii, K. J., & Geetha, C. (2017). The nexus between technology innovation and CO2 emissions in Malaysia: evidence from granger causality test. Energy Procedia, 105, 3118-3124.
23. Zoramawa, L. B., Ezekiel, M. P., & Kiru, A. T. (2020). Exchange rate and economic growth nexus: An impact analysis of the Nigerian economy. Journal of Research in Emerging Markets, 2(4), 58-67.