THE NEXUS BETWEEN EXCHANGE RATE AND ECONOMIC GROWTH IN NIGERIA

Eze Ifeanyi Sylvanus
Department of Social Sciences
Ifeanyieze100@yahoo.com
08036855367

Ugwu Moses Nnaemeka
Department of Science Laboratory Technology

Elom Sampson Omena (Ph.D)
Department of Social Sciences
Akanu Ibiam Federal Polytechnic, Unwana, Ebonyi State
Akputa Godwin
Department of Social Sciences

Abstract
The essence of this study is to ascertain the nexus between exchange rate and economic growth in Nigeria, covering the period 1981 to 2018. The main purpose of the study includes to ascertain the link between exchange rate and economic growth (RGDP9 and the way to achieve economic sustainability in Nigeria. time series secondary data was collected and the study employed descriptive research design. Ordinary least square (DLS) method was used and the results of the analysis showed that 6% increase in exchange rate will increase RGDP with 0.045%, 1% increase in interest rate will increase RGP with 1.112%, 1% increase in inflation will reduce RGDP with 0.041% and 1% increase in money supply will reduce RGDP with 0.0005%. Exchange rate and money supply are significant while inflation and interest rate are insignificant. The study concludes that there is link between exchange rate and economic growth and recommend that government should ensure stable exchange rate to enhance investment and economic growth of Nigeria.

Key words: Economic growth (RGDP), Exchange rate, Interest rate, Inflation rate and Money supply

Introduction
The major goal of any economy is to improve the standard of living of its masses. This can only be achieved by macroeconomic stability which is characterized by economic growth, full employment, exchange rate, interest rate, inflation stability and so on.

The work between economic growth and exchange rate have drawn attention of most policy makers and researchers of both developed and developing countries of the world. Exchange rate policy has been identified as one of the endogenous factors that can affect the economic performance of a nation (Jamela, 2010).

Exchange rate is the rate at which one country's currency is exchanged for the currency of another country (Dornbusch, 2004). It is the amount of currency which can be purchased by another (ie the unit of currency that can buy another unit of currency). It measure the domestic worth of an economy; especially in terms of the currencies of most industrialized countries such as united state of America Dollars (Akpan, 2009). In most developing countries like Nigeria the management of exchange rate is under taken by the central bank.

In Nigeria, the exchange rate regime has shifted from pegged to flooting overtime. The pegged regime is in a situation when the exchange rate is fixed due to oil 800m and agricultural contribution from 1973 to 1979. The flooting exchange rate regime is also a situation when the forces of demand and supply of currency determine exchange rate. This happened when the federal government introduced the Structural Adjustment Programme (SAP) in 1986.

Exchange rate policy remain one of the most indices that shapes economic growth, especially for developing countries. Thus, its management is of priority to government. This is because the external sector viability depends on the exchange rate of local currency against other currencies of the world (Anyanwu, Ananwide and Okoye, 2017).

Economic growth is the increase in the total output of a country over a specific period of time. It connotes a sustained increase in a country's national (Ihingan, 1997). It is by a country's Gross Domestic Product Income (GDP) at a particular time. Gross Domestic product (GDP) is the total goods and services produced in a country at a particular time. The GDP may be norminal GDP or real GDP. The norminal GDP is the GDP that do not take the effect of inflation while real GDP considers the effect of inflation.

Economic growth is determined by various macroeconomic which include exchange rate, inflation, government expenditure, per capita income, money supply etc. traditionally, exchange rate and economic growth positively correlated, depending on the domestic market. A low and stable exchange rate encourage investor and increase exportation. The reverse is the case if exchange rate is high and unstable. In the economies of most developing countries, a correct or appropriate exchange rate has been one of the most important factors for economic growth, whereas regular fluctuations or an inappropriate exchange rate have been a major impediment to economic growth in many African countries, including Nigeria (Ewubare and Ushie, 2022)

From the literature, the Nigerian government has undergo different exchange rate policies either depreciation or appreciation to ensure economic growth and sustainability but the economy remain undeveloped. Like Aliyu (2011) noted that appreciation of exchange are results in increased imports and reduced exports while depreciation would expand export and discourage imports. Also, depreciation of exchange rate tends to cause a shift from foreign goods to domestic goods. But the Nigeria case is difference. Both during depreciation and appreciation of exchange rate Nigeria embark on importation. Therefore, this paper try to ascertain the nexus between exchange rate and economic growth of Nigeria and the way to achieve economic stability.

Literature Review

There have been difference views and definition of exchange rate by researchers and authors in economic context. Thingan (2010) defined exchange rate as the rate at which one currency exchanged for another. Ibenta (2012) defined exchange rate as the price of the unit of one country's currency quoted in terms of another country's currency, it can also be defined as the domestic price of a unit of foreign currency and exchange rate can be called the conversion factor that determines the rate of change of currencies (Uddin, Rahman and Quaosa, 2014).

Empirically, Adelowoka, Adesoye and Balogun (2015) assess the effect of exchange rate volatility on investment and growth in Nigeria over the period of 1986 to 2014. The vector correction method, impulse responses function, co-integration and Augmented dickey fuller test for stationary were employed to capture the interactions between variables. The results confirm the existence of long run relationship between exchange rate, investment, interest rate, inflation and growth. It also show that exchange rate volatility has a negative effect with 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 rate on the Nigeria economy from 1975 to 2008. The study employs the ordinary least square (OLS) technique in the analysis but due to the fact that data are not stationary, a unit root test was employed; it further. Reported co-integration analysis which established the existence of a long relationship between the variable in the model. From the finding, 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 retard growth from 1975 to 2008.

Eichengreen and Lablang, (2003) carried out a research on twelve. Countries over a period of 120 years and found strong inverse relationship between exchange rate stability and economic growth. They concluded that the results of each estimates strongly depend in time period and the sample. Also, Carrera and Vuletin (2003) seek to analyze the relationship between exchange rate regimes and stort term volatility of the effective real exchange rate. They tried to set out the relative importance of these links specifically by analyzing the exchange rate regime influence on real exchange rate volatility using a dynamic panel data analysis. A sample of 92 countries for the period 1980 to 1999 was considered. The study revealed that other variables influences real exchange rate volatility and it also analyzed the persistence of shocks in real exchange rate. The study further evidence of more openness, acceleration in per capita Gross Domestic Product.

Ogunleye (2009) investigated the relationship between the exchange rate and foreign direct investment (FDI) inlow in Sub-Saharan Africa countries using Nigeria and South Africa as case study. By endognizing exchange rate volatility, the study used a two stage least square methodology. The study revealed that in Nigeria, there is a statistically significant relationship between the variable, with exchange rate volatility retarding FDI inflows and FDI inflows increasing exchange rate volatility. It also revealed that this relationship is weak for South Africa. In the work of Attah – Obeng, Enu, Osei –Gyimah and Opoku (2013), they examined the relationship between GDP growth rate and exchange rate in Ghana from the period 1980 to 2012.

The study employed the graphing of the scatter diagram for the two variables which are GDP growth rate and exchange rate establishes the correlation between GDP growth rate and exchange rate using the pearson's product moment correlation coefficient (PPMC) and finally estimates the simple linear regression using OLS. It confirms to the theory that undervaluation (High exchange rate) stimulates economic growth in the short run.

Ismaila (2016) examine exchange rate depreciation and Nigeria economic growth during SAP and post period. the study covers the period of 1986 to 2012, using Johasen co-integration test and error correction model analysis after conducting the stationary test, the results show that money supply, net export and total government expenditure have significant impact on real output performance in the long run while exchange rate has direct and in significant effect on Nigeria economic growth in both short and long run. This implies that exchange rate depreciation during SAP period has no robust effect on Nigerian economic performance Omoha (2014) also examined the impact of exchange rate variation and inflation on the economic growth of Nigeria in the period 1980 to 2010. Using OLS method, the study revealed that export, and import showed a positive relationship but not statistically significant at 3.4%, exchange rate showed a positive relationship but statistically significant at 3.4%. This implies a positive relationship between inflation and exchange rates, because an increase in the volatility of exchange rate will lead to increase in inflation. The study conclude that while high rate of inflation and inconsistent exchange rate is detrimental to economic growth, moderate and stable inflation rate supplements returns to savers, enhances investment and therefore economic growth of a country.

Ewubate and Ushang, (2022) examined the relationship between rate and economic growth in Nigeria between 1981 to 2020. In the analysis the study employed descriptive statistics, unit root as well as bounds cointegration tests and ARDL model. The unit root test result showed that the variables are mixed integrated. While inflation is stationary at levels, the other variables in the model were stationary at first difference. The bounds cointegration test showed that long run relationship exist/between GDP growth and underlying explanatory variables. Also, the study showed that exchange rate and inflation negatively impact on economic growth. An increase in exchange rate and price level is detrimental to the growth of Nigeria economy

From the review, it was discovered that exchange rate note only is an important variable but is the stimulant that regulate the internal and external relationship of any economy, and should be handle with care to achieve optimum degree of growth and development in a country like Nigeria.

Methodology

Research Design

The research design employed descriptive research design. Descriptive research design helps in gathering information about the existing status of the phenomena in order to describe what exists in respect to variables.

Model Specification

Based on the objective of study, the model to capture the link between exchange rate and economic growth in Nigeria are stated bellow with the independent variables as exchange rate, interest rate, inflation rate and money supply and dependent variable as Real Gross Domestic Product (RGDP). These are expressed functionally as;

RGDP - F (EXR, INT, INF MS)
Where RGDP - Real Gross Domestic Product
EXR - Exchange Rate
INT - Interest Rate
INF - Inflation Rate
MS - Money Supply

Transforming the equation into a linear function.

RGDP - Bot B, EXR + B_2 INF + B + MS + Ui
Where Bo - the Intercept
B_1, B_2, B_3, B_4 - Coefficient explanatory variables
Ui - Error Term

The error term (Ui) is used to capture other variables that are not included in the model.

Data Analysis

Ordinary Least Square Method

Table 1: Relationship between RGDP and the exchange rate fluctuations

Dependent Variable: RGDP
Method: Least Squares
Sample: 1981 2018
Included observations: 38
White heteroskedasiticity-consistent standard errors & convariance

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	3.412904	1.161705	2.937840	0.0057
EXCHRATE	0.009085	0.009654	0.941010	0.3530
R-squared	0.030353	Means dependent var		4.218421
Adjusted R-squared	0.003418	S.D dependent var		4.546864
S. E. regression	4.539087	Akaike info criterion		5.914525
Sum squared resid	741.7192	Schwarz criterion		6.000714
Log likelihood	-110.3760	Hannan –Quinn criter		5.945190
F-statistic	1.126901	Durbin –Watson stat		0.910348
Prob (F-statistic)	0.295507	Wald F – statistic		0.885499
Prob (Wald F-statistic)	0.352972			

Decision rule:

Since the probability value (0.3530) of the t statistic is greater than 0.05 level of significance, the null hypothesis is hereby accepted. Therefore, no significant relationship exists between RGDP and the exchange rate fluctuations.

Table 2: Relationship between RGDP and Inflation rate.

Dependent Variable: RGDP
Method: Least Squares
Sample: 1981 2018
Included observations: 38
White heteroskedasiticity-consistent standard errors & convariance

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	5.247619	0.988080	5.310926	0.0000
Infrate	-0.051305	0.025348	-2.024009	0.0504
R-squared	0.042747	Means dependent var		4.218421
Adjusted R-squared	0.016156	S.D dependent var		4.546864
S. E. regression	4.509984	Akaike info criterion		5.901660
Sum squared resid	732.2385	Schwarz criterion		5.987849
Log likelihood	-110.1315	Hannan –Quinn criter		5.932326
F-statistic	1.607604	Durbin –Watson stat		0.889831
Prob (F-statistic)	0.21968	Wald F – statistic		4.096614
Prob (Wald F-statistic)	0.050439			

Decision rules:

Since the probability value (0.0504) of the t statistic is greater than 0.05 level of significance, the null hypothesis is hereby accepted. Therefore, no significant relationship exists between RGDP and inflation rate.

Table 3: Relationship between RGDP and Interest rate

Dependent Variable: RGDP
Method: Least Squares
Sample: 1981 2018
Included observations: 38
White heteroskedasiticity-consistent standard errors & convariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.129634	3.296094	0.646108	0.5223
Intrate	0.159803	0.234166	0.682431	0.4993
R-squared	0.020732	Means dependent var		4.218421
Adjusted R-squared	-0.006470	S.D dependent var		4.546864
S. E. regression	4.561549	Akaike info criterion		5.924398
Sum squared resid	749.0783	Schwarz criterion		6.010586
Log likelihood	-110.5636	Hannan –Quinn criter		5.955063
F-statistic	0.762161	Durbin –Watson stat		0.901394
Prob (F-statistic)	0.388439	Wald F – statistic		0.465713
Prob (Wald F-statistic)	0.499334			

Decision rule:

Since the probability value (0.4993) of the t statistic is greater than 0.05 level of significance, the null hypothesis is hereby accepted. Therefore, no significant relationship exists between RGDP and interest rate.

Table 4: Relationship between RGDP and Money Supply

Dependent Variable: RGDP
Method: Least Squares
Sample: 1981 2018
Included observations: 38
White heteroskedasiticity-consistent standard errors & convariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.294387	0.995931	4.311932	0.0001
MS	-1.47E-05	8.39E-05	-0.175675	0.8615
R-squared	0.000597	Means dependent var		4.218421
Adjusted R-squared	-0.027164	S.D dependent var		4.546864
S. E. regression	4.608207	Akaike info criterion		5.944751
Sum squared resid	764.4804	Schwarz criterion		6.030939
Log likelihood	-110.9503	Hannan –Quinn criter		5.975416
F-statistic	0.021505	Durbin –Watson stat		0.874175

Prob (F-statistic)	0.861533	Wald F – statistic		0.030862
Prob (Wald F-statistic)				

Decision rule:

Since the probability value (0.8615) of the t statistic is greater than 0.05 level of significance, the null hypothesis is hereby accepted. Therefore, no significant relationship exists between RGDP and money supply.

Table 5: A multiple regression analysis of the predictors of RGDP

Dependent Variable: RGDP

Method: Least Squares

Sample: 1981 2018

Included observations: 38

White heteroskedasiticity-consistent standard errors & convariance

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	2.186668	3.270327	0.668639	0.5084
Excharate	0.044608	0.017897	2.492544	0.0179
Infrate	-0.041319	0.044676	-0.924865	0.3618
Intrate	0.112083	0.245232	0.457048	0.6505
MS	-0.000497	0.000182	-2.722104	0.0103
R-square	0.218126	Means dependent var		4.218421
Adjusted R-squared	0.123354	S.D dependent var		4.546864
S. E. regression	4.257201	Akaike info criterion		5.857180
Sum squared resid	5.98.0842	Schwarz criterion		6.072652
Log likelihood	-106.2864	Hannan – Quinn criter		5.933844
F-statistic	2.301576	Durbin –Watson stat		1.156241
Prob (F-statistic)	0.079328	Wald F – statistic		2.601301
Prob (Wald F-statistic)	0.053842			

Results

The multiple linear regression results show that only exchange rate and money supply were significant predictors of RGDP (P = 0.0179, B = 0.044608; and P = 0.0103, B = - 0.000497 respectively). The Coefficient of Determination (R^2=0.218) indicates that approximately 22% of the variations in RGDP is explained by the model.

Summary of the Findings

i. A1% increase in exchange rate will lead to 0.045%increase in RGDP

ii. A 1% increase in interest rate will lead to 0.42% increase in RGDP though not statistically significant.

iii. A % increase in inflation will reduce RGDP with 0.041% but also not significant
iv. A % increase in money supply will lead to 0.0005% decrease in RGDP.

Conclusion

This study tries to ascertain, the nexus between exchange rate and economic growth in Nigeria in period 1981 to 2018. Ordinary least square method was used and the result of the multiple regression analysis showed a positive relationship between exchange rate and RGDP. Interest rate also showed a positive relationship with RGDP, while inflation rate and money supply are negatively related with RGDP. Exchange rate and money supply are statistically significant while inflation and interest rate are significant in the results. The study here concludes that there is link between exchange rate and economic growth in Nigeria. And exchange rate among other variables must be stable to ensure a robust economic growth in Nigeria.

Recommendations

i. Based on the study, the work recommends that government should ensure a stable exchange rate to enhance investment and economic growth in Nigeria.
ii. Policy maker should embark on exchange rate depreciation to boost exports thereby improving economic growth.
iii. Government should promote manufacturing and agricultural sector to move the economy from consumption to production economy.

References

Adelowokan, O.A., Adesoyo, A.B. & Balogun, O.D. (2013). Exchange rate volatility on investment and growth in Nigeria: an empirical analysis. *Global Journal of Management and Business Research.* 13(10):21-30.

Akpan, P.L. (2009). Rethinking economic reforms and foreign exchange behaviour in an emerging economy: *Evidence from Nigerian global Journal of Humanities* 7(182):71-83.

Aliyu, S.R.U. (2011). "Impact of oil shock and exchange rate volatility on Economic growth in Nigeria: An empirical investigation, *Research Journal of International Studies.* 11:103-120.

Anyanwu, F.A., Ananwude, A.C. & Okoye, N.J. (2017). Exchange rate policy and Nigeria's economic growth: a granger causality impact assessment. *International Journal of Applied Economics, Finance and Accounting.* 1(1): 1-3.

Attah-Obeng, P. Enu, P., Osei-Gyimah, F., & Opoku, C.D. (2013). An econometric analysis of the relationship between growth rate and exchange rate in Ghana. Journal of Economics and sustainable Development. 4(9):1-8.

Carrera, J. & Vuletin, G. (2003). The effects of exchange rate volatility: A panel Data approach. Commercial Bank Research & Planning Unit.

Dornbusch, R. (2004). Expectation and exchange rate dynamic. *Journal of Political Economy.* 84 (6):461-1176.

Eichengreen, B. & Lablang, D. (2003). Exchange rate and cohesion: Historical perspective and political economy consideration. *Journal of Common Market Studies*. 41(1):797-822.

Ewubare, D.B. & Ushang, A.U. (2022). Exchange rate fluctuations and economic growth in Nigeria. *International Journal of Development and Economic Sustainability*. 10(1):41-55.

Ibenta, S.N.O. (2012). International Trade and Finance, Ezu Book, Enugu.

Imoisi, A.I., Uzomba, P.C. & Olatunji, L.M. (2010). An analysis of interest and exchange rates effect in the Nigerian economy. 1075-*2008 Asian Economic and Financial Review*. 2(6):648-657.

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

Jameela, O.Y. (2010). Exchange rate changes and output performance in Nigeria. Pakistan Journal of Social Sciences 7(5):380-387.

Jhingan, M.L. (1997). Macroeconomic theory, Vrinda Publication, Delhi.

Ogunleye, S.R. (2009). Exchange rate volatility and foreign direct investment (FDI) in sub-Saharan Africa: Evidence from Nigeria and South Africa. Applied Economics and Macroeconomic Modeling. University press Ibadan, Nigeria.

Onuoha, I.P. (2014). Impact of exchange rate variation and inflation on the economic growth of Nigeria: an empirical approach. *Research Journal of finance and Accounting* 5(22):166-176.

Uddin, K.M.K., Rahman, M.M. & Quaosar, G.M.A.A. (2014). Causality between exchange rate and economic growth in Bangladesh. *European Scientific Journal*. 10 (31):11-26.