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Impact of Oil Revenue and Exchange Rate Fluctuations on Economic Output Performance in Nigeria

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Abstract

This study utilized ex-post facto research design. *Secondary* data from annual time series *covering forty- three years (1981- 2023) obtained from CBN yearly publication (2024) and World Development Indicators (WDI, 2024). Predicted variable was the economic output performance measured using GDP, while exchange rate fluctuations and oil revenue represented the manipulated variable.* In the meantime, to prevent the issue of omission variable mistakes from ever occurring, *external debt and rate of inflation were adopted as control variables. Data sourced were evaluated using descriptive statistics for preliminary examination. ARDL was employed to assess the relationship between the variables, the empirical outcomes demonstrated that exchange rate fluctuations remarkably influenced output performance of the economy in Nigeria. Meanwhile, revenue from oil had adverse and statistically significant influence on economic output performance as measured by GDP. The study suggested a need for public authority to diversify the economy and consider effective management of exchange rate and oil revenue to promote sustainable output performance.*

Keywords: Economic Output Performance, Exchange Rate Fluctuations, Gross Domestic Product, Oil Revenue

1. Introduction

Nigeria as a nation is blessed with numerous natural resources. Rock oil is one of them and has been contributing visibly to foreign currency inflow (Adeolu, 2017). Nigerian economy for decades has relied so much on income from oil and this has been served as the basis for all budgeting and developmental projects.

Oil revenue is the term used to describe the income received by the public authority from the auction of rock oil and gas including taxes and royalties related to petroleum. Finding of commercially viable oil turned Nigeria to a monoculture economy. The discovery come with blessings as well as a course to the nation. The discovery enhanced government revenue, and this has led to developmental infrastructures, employment generation and increased foreign exchange earnings to mention few, meanwhile, other potential revenue sources are abandoned (Akinlolu & Nejo, 2020).

Crude oil is a major driving force of global economy and any drop in price adversely affect common masses and the economic performance as been experienced by Nigeria. Under normal circumstance, increase in the crude oil price ought to increases

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oil revenue and reflects positively on the economy as a whole. However, unstable currency exchange rate neutralizes the supposed economic implication of rising in oil price on stability and progress of the economy.

Fall in global oil price increases the already existing extreme poverty; collapse the infrastructures and even causes naira to fluctuate against foreign currency. The consequence of this on common people is increased living expenses and as a result low living standard. As rich as Nigeria is in term of resources, average of 47% still leave daily is abject poverty with average daily income of less than $2.29 compared to $17.53 in South Africa as at the end of 2024. It is not arguable that Nigeria as a nation depends on oil export for its revenue but a lot of the resources are expensed on importation of refined petroleum as well as other associated goods,

Rate of Exchange is the worth of one country's legal tender in relation to other (Mordi, 2022). It points out economic stability as well as competitiveness. The persistent unpredictable changes in monetary worth of one legal tender in relation to another in the international exchange market, driven by factors such as supply and demand, economic indicators, geopolitical events and market speculation is the ups and downs in the price of one currency when compared to another is used to describe exchange rate fluctuation.

Exchange rate fluctuations are of serious concern to policy makers in any nation, Nigeria inclusive because of the role it plays in the performance of the economy. Nation's endowment varies and there will be interaction among countries which results in movement of products and services across nations to see that economy runs smoothly, therefore, there is a need for exchange rate management policy.

One of the main reasons behind macroeconomic policy is to ensure stability in exchange rate to stabilize prices, increase foreign investment, attain full employment and achieve balance of payment equilibrium (Ozigbo et al., 2025). It is worthy of mentioning that Nigerian authority since independence has embraced various foreign exchange policy management strategies, all the strategies have not been able to profile solution to instability in the fluctuations. Independent, Political instability and microeconomic adjustments among other factors seem to render the strategies in effective (Ozigbo et al., 2025).

In 1993, Nigeria adopted double exchange rate strategy (Bank and parallel market rate), the bank rate was stabilized but market rate did not and dollars kept on rising over naira and rose to about 129 in 2005. Buhari Administration reverted back to double exchange rate in 2023 not minding its consequences on the economy, the exchange rate has experienced the worst shocks in the history of Nigeria to the disadvantages of Nigeria and Nigerians (Ozigbo et al., 2025). This persistent fluctuations in the exchange rate in spite of all government policies quarries the efficiency of the government exchange rate policy and raises question of when Nigeria will experience stability in exchange rate as a nation that will improve economic performance?

Both oil revenue and exchange rate are capable of influencing the output performance of the economy. Several empirical studies have been conducted in Nigeria separately on the influence income from oil exercised on output performance of the economy (Popoola et al., 2024: Rafiu, 2023: Dauda et al., 2023: Bernard et al., 2023) and the impact of exchange rate fluctuations on the economic output performance (Okereke et al., 2022,:Ngbomene et al., 2025,:Abass & Ibekwe, 2022)).Some studies also examined oil price shocks and exchange rate fluctuations on the performance of the output of the economy. (Kabiru et al., 2019: Ajagbe et al., 2019: Aminu et al.,2022). The problem is that the outcomes of the studies remain inconclusive. While some studies affirmed positive impact (Bernard, 2023: Okereke, 2023) some affirmed negative impact (Rafiu, 2023:, Dauda et al., 2023). This calls for a further investigation. In addition, the impact of oil revenue and exchange fluctuations on economic output performance has not been considered by previous researchers, this creates a gap which this study attempts to fill.

This study therefore examines how oil revenue and exchange rates fluctuations influence economic output performance in Nigeria. The particular goals consist of: to examine how rate of exchange influences economic output performance in Nigeria and to investigate how income from oil influences the performance of output within the economy in Nigeria.

2. Literature Review

In researching the literature for this study, three subheadings are explored. They are: Conceptual Review, Theoretical Framework and Empirical Review in that order.

2.1 Conceptual Review

2.1.1 Concept of Oil revenue

The money realized from the crude oil and other products trading and related activities to oil is called oil revenue (Ebimowobel, 2022). The history revealed that the larger proportion of Nigerian authority revenue is dominated by oil revenue (Dauda et al., 2023). Oil revenue discovery has contributed significantly to Nigerian economy output performance even though it does not go without its adverse implications.

Oil revenue according to Ebimowobel (2022**)** is the money realized on natural oil disposal and other products including other activities to oil. Nigeria government income according to records is highly dominated by money from oil (Uremadu et al., 2020). Discovery of oil has in no small way added to the expansion of the economy of Nigeria, for example it impacted foreign exchange earnings, generated employments, but it also came with its challenges for example it has caused environmental degeration for the host communities, depriving them of their surviving source and even created social and economic vices (Ebimowobel, 2022). This oil discovery turned Nigeria economy to a mono where other sources of income are not maximized. However, instability in the price of this oil which according to Ajagbe et al. (2024) is beyond the control of the Nigeria government has made revenue from oil as well as its contribution to economic growth inconsistent. Unstable nature of crude oil prices has a great implication on the growth of the economy (Musa et al., 2019) The instability in oil price is usually caused by many factors including exchange rate regulation due to unstable political environment (Rafiu, 2023). The decrease in oil production poses strong signal, to fund raising by the government and driving the activities of the economy (Aminu et al, 2022) what income from oil addeed to the government is reported at 29.9%, 44.2%, 56.5%, 19.2% and 27.72% in 2020, 2021,2022, 2023 and 2024 respectively, representing a decrease of 7.29 % between 2020 and 2024 while the contribution to the GDP was put at 8.89%, 8.3%, 5.95%, 5.4% and 5.51% in the same period representing a fall of 38.02% within the same time frame.

2.1.2. Exchange Rate Fluctuations

Exchange rate is the value of nation's legal tender expressed in relation to other (Mordi, 2022; CBN, 2021). Chen (2024) viewed exchange rate as the rate at which legal tender is substituted for another which impact buying and selling and the movement of money between countries. The rate of exchange influences international trade and economic stability through its implication on foreign and local goods and services prices and assets (Kabiru et al., 2024)

Changes in the worth of one legal tender relative to another as a result of market forces, economic indicators and geopolitical events is used to describe exchange rate fluctuations. Exchange rate fluctuations is a main hurdle to the advancing of the economy making planning complicated and investment more hazardous (Etale & Ikechukwu, 2024).

According to Segal (2025) interaction between demand and supply has been identified to be the primary cause of exchange rate fluctuations, because high demand for a currency will push its exchange rate up. Fluctuations in exchange rate affects several microeconomic units such as inflation, oil prices, foreign reserves, government expenditure, domestic interest rate, assets prices and international trades, rising oil price will increase foreign earnings for oil producing nations, leading to creation decrease in demand pressure in the foreign exchange market, a rise in the supply of foreign currency, and possibly increase in the value of the local legal tender. Meanwhile, a decline in oil price leads to a decrease in income from foreign exchange resulting in falling of supply of foreign exchange which result to too much request for foreign exchange market, subsequently forces the exchange rate to reduce the worth of local legal tender. (CBN, 2021). Depreciation or appreciation depends on level of reliance on oil and importation level of non-oil products (Abubakar, 2019). A weak currency encourages export which is good for economic performance, while a strong exchange rate discourages export competitiveness.

Exchange rate management policy therefore remains an important tool of microeconomic policy, however, its implementation in any economy has implications of restoring or harming external reserves balances, (CBN, 2021). The process by which monetary authorities select an appropriate foreign exchange regime to preserve external worth of the local legal tender, recording viable balance of payments and achieving stable price with intention of improving economic performance is known as Management of exchange rate. A stable exchange rate that aligns with prudent reserve management and the economy's growth potential is the ultimate goal of exchange rate management policy.

Nigeria public authority has made tremendous efforts to stabilize exchange rate through various policies including but not limited to fixed, managed float and more recently flexible exchange rate regime and government is still battling with the challenges hoping to get reasonable solutions to the problems with time.

2.1.3 Economic Output Performance

In economic terms, output performance describes the entire value of commodities manufactured and services rendered in a given economy. It is a popular means of identifying whether an economy is growing or not. Kabiru et al. (2019) saw output performance as identical with GDP. A period of several repeated quarters of positive GDP increase is an economy is termed an expansion (economic boom), whereas a period of consecutive quarters of decrease GDP is considered economic collapse.

2.2 Theoretical Review

2.2.1 Balance of Payment (BOP) Theory

The theory is from several theoretical approaches. The theory explains how income from oil, rates of exchange and output performance of the economy are interwoven. The theory demonstrates how changes in oil price affect the performance of the economy, balance of trade and current account which consequently affect exchange rate as well as stability of the economy.

In oil exporting nations such as Nigeria, increase in price of oil increases oil revenue and leads to currency appreciation, improves balance of trade and performance of the economy. On the other hand, lower prices have reversed effect. Meanwhile, this depreciation and appreciation however according to Abubakar (2019) is determined by the level of reliance on oil and level of bringing in to the country non-oil products respectively. Oil importing economies witness currency depreciation with increase in price in oil prices. According to the theory, for oil exporter like Nigeria, rise in oil price will boost earnings from export leading to a rise in earnings in foreign exchange which forces demand for local currency to rise thereby leading to local currency appreciation and local currency appreciation improves economy performance.

For nations that imports oil, higher oil prices indicate more expenditure on imports, worsening the balance of trade as well current account resulting to the depreciation of the importers currencies. Increase in prices of oil improves the terms of trade and stimulate economic performance of exporters nation. On the other hand, higher oil prices increase import costs for importer nation, causing inflation and slowing economic performance. Fluctuations in the prices of oil lead to fluctuations in exchange rate which discourage foreign investment and adversely affect economic output performance.

How earnings from oil, rate of exchange and output performance of the economy are interwoven is determined by oil prices as well as exchange rates with varying outcomes depending on whether an economy is oil exporter or importer.

2.3 Empirical Review

There are several empirical studies carried out by various scholars on how fluctuation in exchange rate combinedly affect economic output performance in Nigeria:

Ajagbe et al. (2024) investigated how exchange rate and crude oil price affect the expassion of the economy of Nigeria with the aid of annual time series information from 1990-2023 obtained from the appropriate statistical bulletins. The data was analyzed using descriptive analysis. The results showed that a rise in the rate of exchange will lead to a decrease in the growth rate of the economy.

Bernard et al. (2024) inquired in to the impication the crude oil prices change excert on how Nigeria economy grows. Secondary data for forty-one years 1981-2022 was processed using NARDL model considering oil price shocks and effect of lag as well as crude oil revenue and flunctuation of rate of exchange on the growth of the economy. It was revealed that there is vulnerability to oil price fluctuations, crude oil lagged influenced the growth of the economy significantly while lagged exchange rates do not. This is consistent with the study of Abubakar (2019) and argument of balance of trade theory.

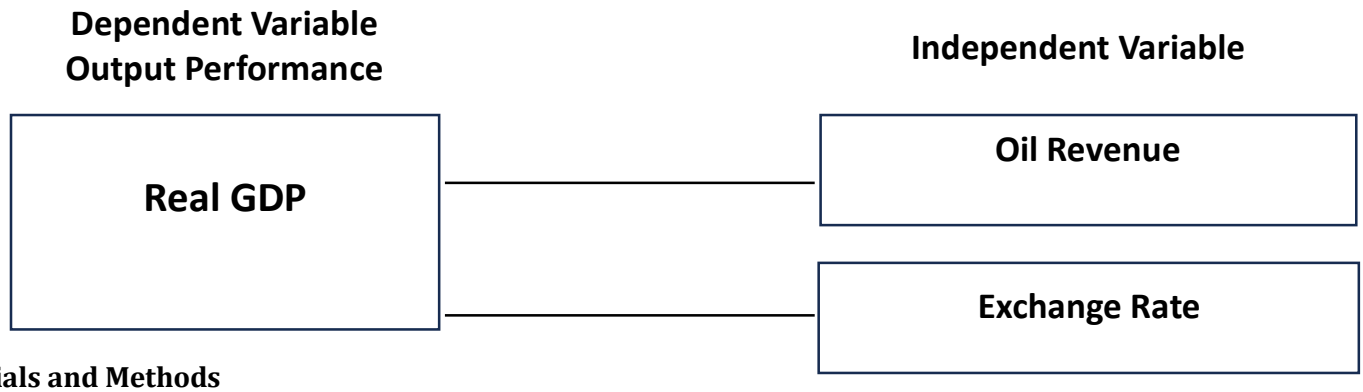
Okereke et al. (2023) probed exchange rate impact on how Nigerian economy grow in the interim as well as long run adopting ARDL and ECM techniques. It was realized from the outcome of the analysis that exchange rate is positively correlated with the growth of the economy affirming baance of payment theory.

Dauda et al. (2023) examined the conecction that exist between income from oil and its implication on the way economy expand in Nigeria forty years (1981-202) using various analysis techniques to evaluate secondary information generated from relevant publications and reports. The result showed that the earning from oil and economic growth interaction is casually and directional.

Rafiu (2023) examined the effect of oil earning revenue on the distribution of economic growth across different quartiles in Nigeria within thirty seven years (1981-2018). The study employed a quartile regression method. For robustness, the quartile regression results are compared to the OLS. The OLS results showed that earnings from oil positivively and significantly impacted economic growth in Nigeria validating balance of payment theory. However, the quartile regression showed that oil revenue effect on economic growth varies over the quartiles.

Aminu et al. (2022) probed oil price shocks and exchange rate volatility on the expansion of economy in Nigeria. Nonlinear Autoregressive Distributed Lag (NARDL) and Generalized Autoregressive Conditional Heteroscedasticity (GARCH) models to capture oil price shocks and exchange rate volatility for thirty-nine years (1980-2019). The outcome of NARDL revealed that rise in oil price hampers economic boom while drop in oil price will reduce growth in Nigerian economy, while the combined outcome of NARDL and GARCH models revealed that there is a high volatility in the rate of exchange for the period under consideration. The finding is in agreement with balance of payment theory.

Conceptual Framework



3. Materials and Methods

This study utilizes the *ex post facto* research methodology. Annual time series data covering forty- three years (1981 and 2023) for the empirical analysis. The annual time series datasets include real GDP, Naira/Dollar exchange rate, oil revenue, external debt and inflation rate. The data for the aforementioned set of variables were abstracted from CBN and World Bank publications (2024). The output variable is the output performance (using real GDP as a measure) while exchange rate and oil revenue represent the input variable. However, to prevent omission of variable errors, external debt and inflation rate are adopted as control variables. The research used the time series data approach in accordance with its empirical data structure. As a result, the stages of empirical data analysis include preliminary analysis (as the initial data evaluation), model estimation and post-diagnostic testing

Model Specification

Going by the goals of the investigation, the research employed output performance (using real GDP as gauge) as output variable while the input variables are Naira/Dollar exchange rate, oil revenue, external debt and inflation for the model. Both Oil revenue and exchange rate are treated as exogenous variables because they are determined by global market forces of policy decisions which are independent of the local economy's short term fluctuations. The model was adopted because it allows the estimation of both short-run and long-run relationships between the independent variables in the presence of unit root. It is also effective in analyzing time-series data when the variables are integrated at different order I(0) and I(1) processes. Thus, operational form of the model is:

$$GDP_t = f(EXCHR_t, REV_t, EXD_t, INF_t) \quad (3.1)$$

Where:

GDP_t represents Nigeria's Gross Domestic Product at time t

$EXCHR_t$ stands for Naira/Dollar exchange rate at time t

REV_t represents oil revenue at time t

EXD_t represents external debt at time t

INF_t represents inflation rate at time t

t = 1981 … 2023 (annual time series)

Following the pre-estimation test, the ARDL (p, q_1, q_2, q_3, q_4) Error Correction Model (ECM) specification is given as:

$$\Delta GDP_t = \theta + \sum_{i=1}^{p} \alpha_i \, \Delta GDP_{t-i} + \sum_{i=1}^{q_1} \beta_{1i} \, \Delta EXCHR_{t-i} + \sum_{i=1}^{q_2} \beta_{2i} \, \Delta REV_{t-i} + \sum_{i=1}^{q_3} \beta_{3i} \, \Delta EXD_{t-i} + \sum_{i=1}^{q_4} \beta_{4i} \, \Delta INF_{t-i} + \emptyset ECM_{t-i} + \epsilon_t \quad (3.2)$$

As shown in equations (3.2), the ARDL short-run coefficients are represented by α_i, β_{1i}, β_{2i}, β_{3i}, β_{4i}, at various lags ($i = 1, 2, 3, \ldots q$).

To captures the long-run form, equation (3.2) can be modified as follows:

$$\Delta GDP_t = \theta + \sum_{i=1}^{p} \alpha_i \, \Delta GDP_{t-i} + \sum_{i=1}^{q_1} \beta_{1i} \, \Delta EXCHR_{t-i} + \sum_{i=1}^{q_2} \beta_{2i} \, \Delta REV_{t-i} + \sum_{i=1}^{q_3} \beta_{3i} \, \Delta EXD_{t-i} + \sum_{i=1}^{q_4} \beta_{4i} \, \Delta INF_{t-i} + \psi GDP_{t-1} + \vartheta_1 EXCHR_{t-1} + \vartheta_2 REV_{t-1} + \vartheta_3 EXD_{t-1} + \vartheta_4 INF_{t-1} + \epsilon_t \quad (3.3)$$

As shown in equations (3.3), the ARDL long-run coefficients are given as $\vartheta_1, \vartheta_2, \vartheta_3, \vartheta_4$.

More specifically, the long-run specification is expressed as follows:

$$GDP_t = \phi_0 + \phi_1 EXCHR_t + \phi_2 REV_t + \phi_3 EXD_t + \phi_4 INF_t + \mu_t \quad (3.4)$$

In double-log specification, equation (3.4) is specified as follows:

$$\log(GDP_t) = \phi_0 + \phi_1 \log(EXCHR_t) + \phi_2 \log(REV_t) + \phi_3 \log(EXD_t) + \phi_4 \log(INF_t) + \mu_t \quad (3.7)$$

Based on the specification of equation (3.7), the estimates obtained are elasticity.
ϕ_0 = intercept coefficient
ϕ_1 = Partial slope elasticity coefficient of *GDP* with respect to *EXCHR*
ϕ_2 = Partial slope elasticity coefficient of *GDP* with respect to *REV*
ϕ_3 = Partial slope elasticity coefficient of *GDP* with respect to *EXD*
ϕ_4 = Partial slope elasticity coefficient of *GDP* with respect to *INF*

4. Results

4.1 Descriptive Statistics

The descriptive analysis provides the statistical properties of the variable as summarised in the Table 1. The variables include: exchange rate (EXCHR), oil revenue (OREV), external debt (EXD), inflation (INF) and (GDP) for output growth. The natural logarithms of the variables were utilized in the summary statistics computation and in the subsequent analysis.

Table 1-: Summary Statistics
Realization-: T = 43 (1981 – 2023)

	Variables				
Statistics	**GDP**	**EXCHR**	**REV**	**EXD**	**INF**
Obs.	43	43	43	43	43
Mean	10.445	3.724	6.424	6.629	2.699
Maximum	11.260	6.470	9.090	10.550	4.290
Minimum	9.690	-0.490	1.980	0.850	1.680
Std. Dev.	0.551	2.036	2.438	2.183	0.6658
Skewness	0.1861	-0.8073	-0.681	-0.7009	0.8113
Kurtosis	1.4326	2.4546	1.977	3.2254	2.9501
Normality Test:					
Jarque-Bera	4.6496	5.2032	5.1978	3.6114	4.7220
p-value	0.0978	0.0742	0.0744	0.1644	0.0943

***Source**: Researcher's computation (2025)*

Table 1 presents the summary statistics. It could be observed that GDP has a mean of 10.445, with a range of 9.690 to 11.260, suggesting a relatively stable growth pattern. The Exchange Rate has a mean of 3.724, with a wide range of -0.490 to 6.470, indicating significant fluctuations. OREV and External Debt have means of 6.424 and 6.629, respectively, with notable ranges, suggesting variability in these series. Inflation has a mean of 2.699, with a relatively narrow range of 1.680 to 4.290. The standard deviations measure the volatility of each series. GDP has a standard deviation of 0.551, signifying modest variability. The Exchange Rate and External Debt exhibit higher standard deviations (2.036 and 2.183, respectively), suggesting greater volatility. OREV has a standard deviation of 2.438, while Inflation has a relatively low standard deviation of 0.6658. The skewness values indicate the distribution's asymmetry. GDP is slightly positively skewed (0.1861), while Exchange Rate, OREV, and External Debt are negatively skewed (-0.8073, -0.681, and -0.7009, respectively). Inflation is positively skewed (0.8113). The kurtosis values measure the distribution's tail heaviness. GDP and OREV have platykurtic distributions (1.4326 and 1.977, respectively), while Exchange Rate, External Debt, and Inflation have leptokurtic or mesokurtic distributions. The Jarque-Bera test assesses if the variables are normally distributed. The test statistics and p-values indicate that none of the variables strongly reject normality at the 5% significance level. However, Exchange Rate and OREV have p-values close to 0.05 (0.0742 and 0.0744, respectively), suggesting potential non-normality.

4.2 Pre-Tests

4.2.1 Test of Unit Root

Using the Augmented Dickey-Fuller (ADF) unit root testing approach, the unit root test are reported by Table 2. It could be observed that all variables appear to be integrated of order one *i.e.* they follow *I(1)* ,while INF is integrated of order zero. The foregoing suggests that impulses or shocks to the variables may have short-term impact. Consequently, the outcomes of the test of unit root obtained for the models advocate the conditions for the use of bounds co-integration test, as suggested by Pesaran, Shin and Smith (2001), to examine the existence or otherwise of linear combination or long run relationship among the variables in the model.

Table 2-: Outcome of the Test of Unit Root
Realization-: *T* = 43 (1981 – 2023)

At Level						
Specification		**GDP**	**REV**	**EXCHR**	**EXD**	**INF**
Constant	*t*-stat.	-0.1890	-1.6843	-1.9576	-1.0688	-3.5182**
	p-value	**0.9318**	**0.4317**	**0.3038**	**0.7190**	**0.0123**
Constant & Trend	*t*-stat.	-1.9668	-0.7372	-1.6477	-1.8608	-3.4803*
	p-value	**0.5997**	**0.9634**	**0.7565**	**0.6563**	**0.0546**
None	*t*-stat.	2.6557	1.8062	2.2391	2.2169	-0.7092
	p-value	**0.9975**	**0.9813**	**0.9931**	**0.9927**	**0.4036**
First Difference Form						
Specification		**Δ(GDP)**	**Δ(REV)**	**Δ(EXCHR)**	**Δ(EXD)**	**Δ(INF)**
Constant	*t*-stat.	-4.0208***	-6.3549***	-5.4830***	-4.9109***	-7.2081
	p-value	**0.0032**	**0.0000**	**0.0000**	**0.0002**	**0.0000**
Constant & Trend	*t*-stat.	-3.9241**	-5.7369***	-5.7222***	-4.7444***	-7.1482
	p-value	**0.0198**	**0.0001**	**0.0001**	**0.0023**	**0.0000**
None	*t*-stat.	-2.3588**	-5.5038***	-4.2843***	-4.4112***	-7.3067
	p-value	**0.0195**	**0.0000**	**0.0001**	**0.0000**	**0.0000**
Order: *I*(*d*)		I(1)	I(1)	I(1)	I(1)	I(0)

***Source**: Researcher's computation (2025)*

*Note: ***, ** & * denote statistical significance at 1%, 5% and 10%* at levels. **Δ =** First difference operator

4.2.2 Cointegration Test

The Table 3 demonstrates outcome of the bounds test. Evidently, the variables demonstrate long-run interaction or linear combination in the presence of non-stationarity for the given model. Bounds test yielded a significant test statistics (F = 6.1713) exceeding the critical value at the upper bounds, *I(1)*, at 1% level of significance, thus, suggesting a strong linear combination of the variables. Hence, spurious relationship does not exist in the model.

Table 3-: Bounds Co-Integration Test Results

Model	***F*-stat.**	**Sig.**	**I(0)**	**I(1)**
GDP	6.1713***	1%	4.40	5.72
		5%	3.47	4.57
		10%	3.03	4.06

***Source;** Authors computation (2025)*

*Note: ***, ** & * denote statistical significance at 1%, 5% and 10%* at levels. I(0): lower bound; I(1): lower bound.

4.3 Estimation of the Model

Table 3 shows the outcome of the evaluation of the model. The optimum lags selected for the model estimation yielded the least AIC (Akaike information criteria) of -4.2665 at the lags of 3, 0, 0, 0 and 3 for each of *GDP*, *EXCHR*, *REV*, *EXD* and *INF* respectively. As shown in Table 3 the coefficients (γ = -0.2769, p = 0.0000) of the *ECT* term (error correction mechanism),

referred to speed of adjustment, is adverse and statistically notable. This simply connotes that about 58.18 percent of the deviation from the long-run equilibrium from past period was rectified in the present period

Table 4: Model Estimation Results
Sample: T = 43 (1981 – 2023)

Response Variable	**Ln(GDP)**
Model Selection Criterion	**AIC**
	-4.2665
Optimum Lags	(3,0,0,0,3)
Short-run Estimates	
Speed of Adjustment:	
ECT_{t-1}	-0.2769*** (0.0000)
Adjusted R-Squared (short-run)	0.5818
Long-run Estimates	
Ln(*REV*)	0.1213** (0.0197)
Ln(*EXCHR*)	-0.2959*** (0.0097)
Ln*(EXD)*	0.0262 (0.5177)
Ln(*INF*)	-0.1326*** (0.0015)
Model Diagnostics	
Serial Correlation Test (BG-LM)	
F-Stat.	1.3449 (0.2781)
LM Stat. (*T**R-squared)	3.7501 (0.1533)
Heteroscedasticity Test – ARCH (5)	
F-Stat.	0.3484 (0.5586)
LM Stat. (*T**R-squared)	0.3638 (0.5464)
Normality Test	
Jarque-Bera	1.5390 (0.4632)

***Source**: Researcher's calculation (2025).*

*Note: ***, ** & * denote statistical significance at 1%, 5% and 10%* at levels. Meanwhile, values in parentheses are *p-values* of the respective coefficients and statistics. Ln = natural logarithm operator.

4.3.1 Tests of Significance

As shown in Table 4 long-run estimation results show that changes in exchange rate (*EXCHR*: $\emptyset_1$ = 0.1213; p = 0.0197 < 0.05) exert positive statistically strongly notable impact on *GDP* (output growth) in Nigeria in the long-run when the economic agents are functioning at optimum capacity. The foregoing suggests that depreciation of Naira against the US Dollar adversely and significantly affect GDP in Nigeria. The statistical significance state of the foregoing empirical test suggests the rejection of the null hypotheses, *i.e.*, H_0: $\emptyset_1 = 0$ is rejected. Moreover, it could be observed that the partial slope coefficients ($\emptyset_1$ = 0.1213) indicates that the responsiveness of *GDP* is significantly inelastic with respect to *EXCHR* having partial

coefficients being below one. On the other hand, the results show that changes in oil revenue (*REV*: $\emptyset_2$ = -0.2959; p = 0.0097 < 0.01) exert negative statistically strongly significant effect on *GDP* (output performance) in Nigeria in the long-run when the economic units are functioning at optimum capacity. The statistical significance state of the foregoing empirical test suggests the rejection of the null hypotheses, *i.e.*, H_0: $\emptyset_2 = 0$ is rejected. Similarly, it could be observed that the partial slope coefficients ($\emptyset_2$ = -0.2959) indicate that the responsiveness of *GDP* is significantly inelastic with respect to *REV* having partial coefficients being below one. Meanwhile, external debt (*EXD*: $\emptyset_3$ = 0.0262, p = 0.5177 < 0.0) yielded positive, however, statistically insignificant effect on GDP in an inelastic fashion. On the other hand, inflation rate (*INF*, $\emptyset_4$ = -0.1326, p = 0.0015 < 0.01) yielded adverse and statistically significant effect on GDP in Nigeria. *GDP* appears to be inelastic with respect to *INF* having elasticity coefficients being above one.

4.3.2 Post-Estimation Tests

As shown in Table 4, the serial correlation test using the Breusch-Pagan LM test (F = 1.3449, p = 0.2781); heteroscedasticity using the autoregressive conditional heteroscedasticity [ARCH] test (F = 0.3484, p = 0.5586; LM-stat = 0.3638, p = 0.5464), normality test using Jarque-Bera statistic (stat = 1.5390, 0.4632) yielded insignificant results (*i.e.* p-values > 0.05), suggesting, respectively, the absence of serial correlation, presence of homoscedasticity and existence of normality in the residuals of the estimated model.

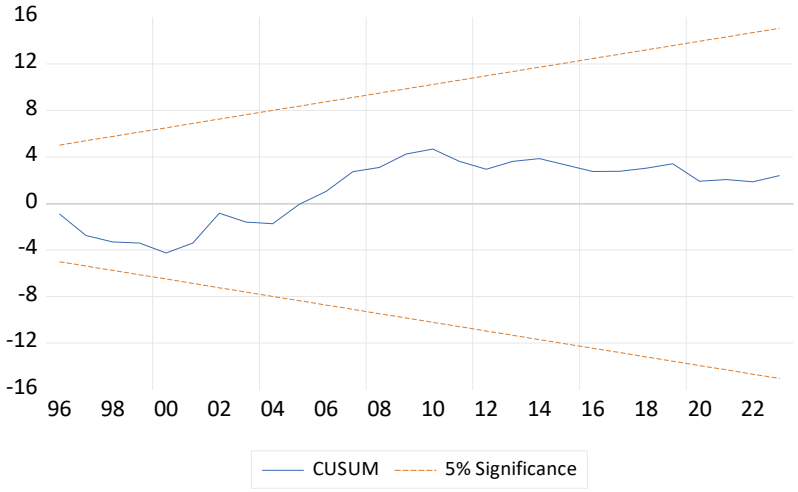


Fig. 1-: Model Plots of Cumulative Sum (CUSUM) of Recursive Residuals

Moreover, using CUSUM test criterion, Fig 1 displays the result of the stability test of the estimated model. Evidently, the plot falls within the critical bounds throughout the realization (sample period) at 5% level of significant. Thus, the estimated model is considered be structurally stable in the estimates over the sample period. In all, the post-diagnostic tests results suggest that the estimates obtained as regards the implication of exchange rate and oil revenue on Nigeria's output performance are efficient and valid for inferences and policy implication.

4.4 Discussion and Contribution

The empirical outcomes of the investigation reveal that exchange rate fluctuations have a noteworthy effect on output growth in Nigeria. Specifically, the long-run estimation results indicate that changes in exchange rate have a positive and statistically notable effect on GDP, indicating that a falling of the Naira against the US Dollar would lead to a decline in output growth. This finding is consistent with the notion that a reduction of the local currency can raise the importation expense, which can negatively impact domestic production. The responsiveness of GDP to exchange rate changes is also found to be inelastic, with a partial coefficient of less than one, indicating that the effect of fluctuations in the rate of exchange on output growth is limited.

Furthermore, the investigation revealed that changes in oil revenue have a negative and statistically noteworthy implication on GDP in Nigeria in the long-run. This suggests that a rise in revenue from oil may result to a reduction in output growth, possibly due to the Dutch disease phenomenon where a rise in oil revenue result to increase in the value of exchange rate, making the non-oil sector less competitive. This finding is consistent with resource course, this will automatically lead to long term structural economic decline. The responsiveness of GDP to oil revenue changes is also found to be inelastic, with a partial coefficient of less than one, indicating that the impact of oil revenue fluctuations on output growth is limited .The study provides a reference on the impact of oil revenue and exchange rate fluctuation on economic output performance for the policy makers which can serve as a basis for management of the dual together for better economic performance. In addition, it provides empirical literature for any researcher who might want to carry out further study on the topic or related topics.

5. Conclusion and Recommendation

The study concluded that both oil revenue and exchange rate fluctuations have positive impact on Economic output performance in Nigeria. Giving the outcomes of the investigation. The results is consistent with the submissions of Abubakar (2019), Rafiu (2023) and Okereke et al. (2024). It was suggested that government should consider diversification of the economy towards agriculture, manufacturing to reduce vulnerability to price shocks that can affect oil revenue, Implementing counter cyclical fiscal policies for effective volatility management, enhancing transparency in oil revenue management, investing in human capital and infrastructure and strengthening non-oil tax revenue streams. There should be continuity in policy even in the face of political instability to avoid setback for implementation of policies that are capable of boosting output performance of the economy.

The study provides empirical literature on the effect of oil income and exchange rate fluctuations on economic output performance in Nigeria, the area that has not been exploited by researchers to the best knowledge of the researcher.

5.1 Limitations and Suggestions for Future Studies

The study considered a considerable longer period of forty three years data, however, the impact of post subsidy removal was not factored in to the study, this is considered as a limitation. It is therefore suggested that the moderating effect of post subsidy restructuring should be factored in, in examining the impact of oil revenue and exchange rate fluctuations on economic growth by future researchers.

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