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MODERATING EFFECT OF OIL PRICE VOLATILITY ON EXCHANGE RATE IN POST DEREGULATION PERIOD: A NIGERIAN PERSPECTIVE

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ABSTRACT

Crude oil is an essential natural resource that boost economic growth, little wonder Nigeria's recent removal of petroleum subsidy exacerbate manifold economic constraint across various frontiers. Due to these constraints, Nigeria, as petroleum exporting country witnessed unprecedented retardation in economic growth. This paper therefore examines the effect of oil price volatility on exchange rate in Nigeria in a post deregulation period. The study adopts the ex-post factor research design and uses proxies to explain the dependent and independent variables. Data were sourced from secondary sources and the Eviews (8.0) statistical tool was employed in testing. From investigations made, the unit root test shows that exchange rate (EXCHR), oil price (OILP), Inflation rate (INFLR), Foreign direct investment (FDI) and Gross domestic product (GDP) are Integrated in order I(1) considering their t- statistics of (-5.008496, -4.953198, -5.234856, -4.597649 and -7.788585) which is higher than their critical values of (-3.004861). The study found the existence of cointegration, suggesting that the economic equations will adjust with a speed of 71% (0.71407) in the long run. The ECM result revealed that OILP, INFLR AND GDP are significant predicators of exchange rate given their t- statistics of (8.89414, 1.69577 and 1.17843) which is more than their significant values at 5% (0.005) while FDI has a negative and insignificant relationship with oil prices with t-statistics of -0.03782 at 5% significant level. The study therefore recommends private and public partnership with newly established local refineries for the manufacturing of refined oil; while ensuring transparency and accountability in deregulation activities.

KEYWORDS: *Exchange rate, Oil prices, Balance of payment, GDP, Inflation Rate, Deregulation.*

1.0. INTRODUCTION

The Nigerian oil and gas sector is the largest in the west African bloc of countries producing oil. It contributes significantly to the growth and development of the ECOWAS region. Looking backward from the inception of oil discovery in Nigeria, oil has been the mainstay and means of economic sustenance in Nigeria. It contributes more than 85% to the gross domestic product, thus serves as the major source of foreign exchange for the country. Mordor and Intellegence (2021) assert that the Nigerian oil and gas sector is one of the most important sectors in the country's economy, accounting for more than 90% of the country's net exports and 80% of the federal government's earnings. Nigeria and many other oil producing state that are developing in nature depend heavily on oil production to meet its foreign exchange obligation; forgetting that since oil is an international commodity, it influences the stability or otherwise of exchange rate and domestic currencies. Developing countries like Nigeria gifted in natural resources heavily depend on international commodity prices which make their domestic economic activities tied to the vagaries of the commodities prices (Osigwe 2015). Given the peculiarity in the Nigerian economy as a mono dependent economy coupled with her unstable exchange rate condition, the oil and gas sector will witness unprecedented retardation in growth rate. This slow growth rate majorly influenced by macroeconomic instability calls for diversification of economic product and government intervention through monetary and fiscal means to stabilize the

economy. In the study of Osigwe (2015), he expressly opined that since it is generally recognized that commodity prices can be a source of macroeconomic instability in developing countries, Nigeria's dependency on petroleum resource glaringly insinuate the possibility of instability in the economy because of the fluctuation that may arise in the price of such commodities in the international market. Likewise, Friedman (1953), observed that instability in exchange rate is a symptom of instability in the underlying economic structure. He argued that a flexible exchange rate system does not necessarily have to be unstable, but where it is unstable, it is primarily because there is an underlying instability in the economic conditions.

Before the discovery of oil in Nigeria, the Nigerian economy majorly thrived on agricultural produce and export. The wealth of inflows gained are remitted to the national treasury to boost infrastructural and economic development. The advent of crude oil brought about a rapid increase in foreign exchange earnings, however, the problem of capital flight is seen as majority of revenue gained from the sales of crude oil is exchanged for refined oil. The study of Ilu (2019) brought to limelight this phenomenon. He opined that the fortunes of high forex inflows realized through the export of crude oil are substantially slashed away through importation of petroleum products (refined oil) which is made imperative due to the inability of Nigeria's refineries to meet local demand.

Presently, The Nigeria economy is faced with series of macroeconomic instability and consistent dwindling of the exchange rate, a plague that has eaten deep into the Nigerian economy and have caused a surge in the prices of commodities with high rise in the standard of living. These phenomenon of exchange rate volatility is one that has a multiplier effect on interest rate, inflation rate, and balance of payment (BOP) and other macroeconomic variables. In the short run, it has proved a positive impact on micro economic variables. From empirical evidence, it has been discovered that an appreciation of exchange rate downplay export and encourages import. Also, when exchange rate depreciates, export shoot up while import will be at its low ebb. This is evident in the work of Ozturk (2008) who argued that depreciation of exchange rate leads to an increase in exports and decrease in imports while appreciation of exchange rate would tend to discourage exports and encourage imports. At the macro-economic level, an increase in input cost and cost of production usually occurs as a result of oil price hike. It also influences the forces of demand and supply. At micro economic level, oil price hike also affects those within the micro chain level such as consumers and household and individual. Ilu (2019) assert that at micro level, oil price hike affects individual consumers through tempering with their purchasing power where they might not be able secure same amount of goods and services at pre inflation period.

Since oil price volatility are indicator of macroeconomic instability, they play a significant role in increasing economic growth; and a shift in oil price will apply to the inability of macroeconomic variables to withstand unprecedented economic shock. The CBN statistical bulletin (2011) uncovers that oil receipts accounted for 82.1% of the nation's foreign exchange earnings in 1974 giving credence to the ability of oil prices to positively or negatively affect exchange rate.

Oil price shocks and exchange rate volatility have been a topic of debate and nesting ground among researchers and policy makers. While many authors focus on the modeling macroeconomic variables using the GARCH techniques, other investigations carried out are in the pre-deregulation and deregulation period. This study therefore adopts the standard procedures for testing by employing a recent statistical data from 2013-2024, obtained from secondary sources to test for the extent of relationship between oil prices and selected macroeconomic variables in a post deregulation era, the gap covered is in the duration of data collected making the study to be recent and provide current trends within the oil industry as it relates to oil prices and exchange rate fluctuation. This study therefore raises the bar by asking the question in order to determine the effect of oil price volatility on exchange rate with the gross domestic product and other selected macroeconomic variables as mediating vectors.

1.1 Problem Statement

Oil sector deregulation implies that the government will reestablish its stand by removing all restrictions in the oil industry thereby creating a free and open market system where the interplay of demand and supply is the deciding factor for petroleum pricing. A policy that promotes economic growth and market competition. The recent removal of petroleum subsidy by the Nigerian government brought a swerve in the Nigerian economy. Instantly, the price of market commodity skyrocketed causing a free fall of the naira. Likewise, the intermittent oil price fluctuation caused by the Russian-Ukraine war and most recently the Iran-Israel feud obstructed the deregulation policy to yield much benefit. Since Nigeria is highly dependent on oil for her foreign exchange earnings, a distort in global oil price will

cause a direct volatility of exchange rate resulting in petroleum price fluctuations. It is the view of the authors that a tentative monitoring of global oil prices and a pre-planned action by government to curb the rippled effect of oil volatility will reduce the impact on exchange rate fluctuations. Based on this backdrop, the authors examine the moderating effect of oil price volatility and its impact on exchange rate.

2.0. BRIEF HISTORY OF OIL DISCOVERY IN NIGERIA

The discovery of oil dates back to 1903 during the colonial era when the exploration of bitumen element was the order of the day. The colonial administrators granted licenses to deserving companies for the exploration of bitumen. In 1908, the Nigerian bitumen corporation began exploration of bitumen substance in large quantity paving way for other corporate titans to share concessionary rights in bitumen production and exploration. As time passed, the Shell petroleum development company became the only company with the right to harness bitumen at the Araromi field in Nigeria. In 1951, the shell-BP began drilling activities in Eket, which led to the revelationary discovery of crude oil in non-commercial quantity. From the operations of Shell-BP in Oloibiri, larger quantity of petroleum liquid was soon discovered ushering in a full-scale export production of the black gold. By 1965, more oil fields were discovered in the shallow water ways in the South-East axis of Warri, Ikot-Ekpene and many coastal areas. This discovery led to the displacement of agricultural export while making the Nigerian economy to be a mono dependent economy. Many of the foreign exchange earnings came in through crude dealings. With the crude oil as Nigeria's major export commodity, there was a boom in the economy leading to massive infrastructural development. Presently, even with the call for diversification, the crude oil still accounts for more than 90 percent of Nigeria's foreign exchange earnings.

2.1.1. The Petroleum Industry Act (PIA)

The petroleum industry Act 2021 is a legal framework which guides the operations and activities of the Nigerian petroleum industry. It encompasses the governance structure, administration and licenses approval, development of host communities and the formation of extensive fiscal framework in the petroleum industry. The act was assented to by the president with the aim to restructure and transform the petroleum industry. Before the establishment of the PIA Act, several oil and gas laws have been in operation and derived their powers from the Act establishing them. Notable among these acts is the Association Gas Injection Act, Hydrocarbons Oil and Refinery Act, Motor Spirit (return) Act, Petroleum Equalization Fund Act, Petroleum Profit Tax Act, Nigerian National Petroleum Corporation Act and the Petroleum Products Pricing Regulatory (establishment) Act. The introduction of the PIA Act in 2021 repeals the aforementioned Acts; placing the minister of petroleum resources as the sole administrator for the implementation of the Act. The Act allows the federal government of Nigeria to retain the property and ownership of petroleum within Nigeria and its territorial waters with powers to exercise and supervise the operations of the petroleum industry. With effect from 2021, the Act directs the minister to incorporate a limited liability company known as the Nigerian National Petroleum Limited (NNPC Ltd), under the Companies and Allied Matters Act (CAMA) to run as a commercial company in Nigeria with its shares floated at a fair market price. The Acts also allows for the exploration and exploitation of petroleum resources with the objective to promote sustainable and infrastructural development in the oil industry for the benefit of the Nigerian people. With transparency and accountability as the watch word, the PIA embraces the development of host communities, providing direct and social benefits that promotes peace and tranquility, and, co-existence between host communities and licensees. A major objective of the PIA is the establishment of the petroleum industry fiscal framework. A policy that embraces investment in the petroleum sector, provides clarity and enhances revenue for the federal government. The establishment of the PIA is expected to reduce the bottlenecks in the petroleum industry, modernizing and aligning it with international best practices for competitiveness and economic growth.

2.1.2 Oil and The Global Economy

All across the world, crude oil and its bye product still remain a vital commodity in the production of certain goods. Also, not forgetting its usage by the aviation industry, it is pertinent to state that the use of crude oil cannot be phased out entirely anytime soon. Oil still remains an important commodity traded in the international market, the Organization of Petroleum exporting countries (OPEC) has predicted that in the coming years, there will be no peak in oil demand and the production per barrel per day is expected to surpass 120million (BPD) by 2050. Recent trends in the global economy also suggest that the demand of crude oil is expected to increase despite the emergence of green energy.

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2.2. Theory Underpinning the study

For the exchange of economic commodity across international boundaries, two things exist, an occurrence of favorable balance of payment or an unfavorable balance of payment. In the former, payment and receipt is equal to zero while the latter depicts a higher payment or a higher receipt. Conversely, since oil is an international commodity traded in dominating currencies, a change in oil price values will affect exchange rate and the purchasing power for oil product, instigating a balance of payment disequilibrium. The balance of payment (BOP) theory as propounded by Harry Gordon Johnson and built upon by Anne Krueger (1969) have been adopted for this study to justify the approach of exchange rate effect and oil prices; which serve as a source of foreign exchange earning for petroleum exporting countries. A rise in exchange rate values reduces the purchasing power of domestic currencies resulting to fewer exchange earnings. At most, the balance of payment (BOP) diminishes (deficit balance). Otherwise, the purchasing power increases for domestic currencies when there is a downward review of exchange rate prices at least the BOP increases (surplus balance). The BOP therefore provides a mechanism for balancing international trade by a determined exchange rate adjustment.

2.3. Review of Empirical Studies

James (2019), empirically examined the effect of oil price volatility on exchange rate in Nigeria. The Autoregressive Distributed Lag (ARDL) Bounds testing procedures were used for the study. It was observed that the variables were integrated of order I(0) and I(1) and granger causality test were used to estimate the exchange rate and causality models respectively. The results showed that money supply (M2), gross domestic product (GDP) and lending interest rate are important determinants of exchange rate in Nigeria in the short and long run. The study recommends diversification of the Nigerian economy integrating agricultural and solid mineral export. **Alagbe, Jimoh and Jimoh (2021),** empirically investigate the effect of exchange rate changes on financial performance of Listed oil and gas companies in Nigeria. An ex post facto research design was employed. The study analyzes time series data throughout 2011-2020 for 12 listed companies in the Nigerian Capital Market. Partial Least Squares Structural Equation Modeling (PLS-SEM) was used for the data analysis. Their investigation revealed that exchange rate possesses no significant and direct relationship with financial performance of listed oil and gas firm in Nigeria. They recommended that the management of oil and gas companies in Nigeria should concentrate on other factors that can affect their organization's financial performance. **Osigwe (2015),** empirically investigates exchange rate fluctuations, oil prices and economic performance. He employed the ordinary least square and the two stage least squares estimation techniques. The study found that real exchange rate has a positive effect on the Nigeria's economic performance. Also, it was revealed that 1% increase in oil price leads to 4% variations in economic performance insinuating a positive and significant relationship. The study recommends that the government should diversify the economy through judicious investment in the real sector so as to guide the economy against external shocks such as the international oil price. **Dickson (2012),** investigates exchange rate volatility and economic growth In Nigeria. The Augmented Dickey-Fuller (ADF), followed by the co-integration test was employed. The unit root test results show that all variables except exchange rate volatility were integrated at order one, while exchange rate volatility is integrated at order zero. Also, the co-integration test suggest that variables are co-trending. Employing the GARCH technique to generate exchange rate volatility, the relationship between exchange rate volatility and economic growth was estimated. Investigations shows that economic growth is positively responsive to exchange rate volatility on short run basis while it exhibits a negative relationship in the long run. The study recommends a greater diversification of the economy though safe heaven investment in key productive sectors and absolute control of both private and public expenditures. **Osuji (2019),** empirically examine international oil prices and exchange rate in Nigeria using the ordinary least squares (OLS) model and a vector autoregression (VAR) model. Findings show a significant relationship between oil prices and exchange rate on relative basis compared to imports. Also, there is evidence of unidirectional Granger causality from oil prices to exchange rate and from oil prices to foreign reserves. The study recommends change in the current structure of international trade to reduce and gradually eliminate import dependence in order to enhance the ability of the monetary authorities to manage both exchange rate and foreign reserves. **Aliyu (2009),** empirically examined the impact of oil price shock and exchange rate volatility on economic growth in Nigeria. He employed the Johansen VAR-based cointegration technique to examine the sensitivity of real economic growth to changes in oil prices and real exchange rate volatility in the long-run. The short run dynamics was checked using a vector error correction model. Results shows the presence of unit root while the granger causality test revealed a one directional causality from oil prices to real GDP and a two directional causality from real exchange rate to real GDP and vice-versa. The study recommends greater diversification of the economy through investment in key productive sectors of the economy to guard against the vicissitude of oil price shock and exchange rate volatility. **Englama, Duke and Ismail (2010),** empirically investigate oil prices and exchange rate volatility in Nigeria, they utilized the cointegration technique and vector error correction model

(VECM) for the long-run and the short-run analysis, respectively. The results showed that a 1.0 per cent permanent increase in oil price at the international market increases exchange rate volatility by 0.54 per cent in the long-run, while in the short-run by 0.02 per cent. They recommend that demand for foreign exchange should be closely monitored and exchange rate should move in tandem with the volatility in crude oil prices bearing in mind that Nigeria remains an oil-dependent economy. **Igbinovia and Igiemudia (2021),** empirically investigate oil price and exchange rate volatility in Nigeria. They employed the simultaneous equation modeling of Granger causality test and Vector Error Correction Model (VECM) in testing. Findings show that oil price, interest rate, inflation rate and external reserve have a significant relationship with exchange rate volatility in Nigeria. They recommend government interference through implementation of formidable macroeconomic policies that will tackle the menace of exchange rate volatility in Nigeria. **Ogundipe, Ojeaga and Ogundipe (2014),** empirically examined oil price and Exchange Rate Volatility in Nigeria. They adopt the Johansen Co-integration technique and the Vector Correction mechanism in their analysis. It was observed that a proportionate change in oil price instigate a more than proportionate change in exchange rate volatility in Nigeria. They recommend a diversifying from oil sector to other productive sectors of the economy thereby reducing the impact of crude oil price fluctuations.

3.0 METHODOLOGY

Methodology highlights the techniques employed in data analysis. In this paper, the ex-post facto research design is employed. This research design aims at establishing and measuring the relationship of one variable over the other (Onwumere 2009). It is used to explore possible causal relationship that cannot be controlled by the researcher. The time series data where subjected to the unit root test, the cointegration test and the ordinary least squares multiple regression analysis incorporating the error correction model. Since most time series data contains some stochastic trends, the unit root test was employed first in other to check the stationarity level of the dependent and independent variable. The Augumented Dicky Fuller (ADF) and the phillip perron (PP) test was employed as observed by (phillip and perron 1988). The Johasen Jeselius co-integration test was also employed to check for cointegration between variables; and why variables wander arbitrarily. The result from the cointegration test necessitate the Error correction model (ECM) analysis.

The study adopts proxies in defining the dependent and independent variables. Economic growth serves as the mediating vector, represented by the Gross domestic Product (GDP) while the dependent variable is Exchange rate (EXCHR). The independent variables where proxied by Oil price (OLIP), Inflation rate (INFR) and Foreign direct investment (FDI) respectively. Thus, the econometric simulation would be:

$EXCHR=\alpha0+\alpha1OILP+\alpha2INFLR+\alpha3FDI+\alpha3GDP$……..……..……..Equation (i)

$EXCHR = \beta0 + \beta1\ OILP + \beta2\ INFLR+ \beta3\ FDI+ \beta4\ GDP$ ……..……..……..Equation (ii)

Incorporating the stochastic variable, the equations become:

$EXCHR= \alpha0 + \alpha1\ OILP +\alpha2\ INFLR +\alpha3\ FDI+\alpha4\ GDP + u1$…...…..……..….. Equation (iii)

$EXCHR =\beta0+ \beta1\ OILP + \beta2\ INFLR+ \beta3\ FDI + \beta4\ GDP + u2$ ..……Equation (iv)

The log linear of the model becomes:

$Log\ (EXCHR) = \beta0 + \beta1log\ (OILP) + \beta2log\ (INFLR) + \beta3log\ (INFLR) + \beta4log\ (GDP) + \mu$.... (iii)

Where:

EXCHR = Exchange Rate
OILP = Oil Prices
INFLR = Inflation rate
FDI = Foreign direct investment
GDP = Gross domestic product
μ =Stochastic Disturbance (Error Term)
$\beta0$ = Intercept of relationship in the model/constant
$\beta1$ - $\beta3$ = coefficients of each of the independent variables

Since, The ECM model will be tested, the econometric simulation in time series form will be adjusted as thus:

$EXCHR=\alpha0+\alpha1OILP+\alpha INFLR+\alpha3FDI+\alpha3GDP +\alpha4ECMt\text{-}1$ ……..……. Equation (v)

$EXCHR=\beta0+\beta1OILP+\beta2INFLR+\beta3FDI+\beta4GDP+\beta6ECMt$…….……..Equation (vi)

The α shows show that there exists relationship between variables. When α is greater than zero ($\alpha>0$), it is expected that there is positive relationship between the dependent and independent indicators. However, if α is less than zero ($\alpha<0$), the opposite functions apply. For this case, all variables are expected to admittently show a negative relationship. The study therefore adopts the following apriori expectation:

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β1>0, β2>0, β3>0, β4>0.

4.0. PRESENTATION AND INTERPRETATION OF RESULT

As earlier discussed in section (3) of this paper. The unit root test is first conducted to test for the stationarity level of the variables. Then the Johasen and jeseluis co-integration test is employed taking into consideration the maximum likelihood and Eigens values of the unconstrained indicators. The ECM is used as adjustment for the error trends experienced. The result is summarized below.

Table 4.1. Augmented Dicky-Fuller Unit Root Test at Level and Second Difference.

Variables	ADF test @ Levels	ADF Critical Values @ 5% levels	ADF Test @ Second Difference	ADF Critical values @ 5% level	Remark
EXCHR	2.011487	-3.029970	4.182416	-3.029970	I(2)
OILP	3.4675383	-3.0044861	-11.23540	-3.012354	I(2)
INFLR	0.694651	-2.998064	-12.66005	-3.012363	I(2)
FDI	-1.758504	-3.029970	-3.773503	-3.040391	I(2)
GDP	-3.557912	-3.004861	-5.624878	-3.012363	I(2)

Source: Eviews (8.0) computation 2025.

Table 4.2 Phillip-Perron Unit Root Test at Level and First difference.

Variables	PP test @ Level	PP Critical values	PP test @ first difference	PP Critical values	Remark
EXCHR	1.585729	-2.998064	-5.008496	-3.004861	I(1)
OILP	1.765749	2.998064	-4.953198	-3.004861	I(1)
INFLR	0.904212	-2.998064	-5.234856	-3.004861	I(1)
FDI	-1.064938	-2.998064	-4.597649	-3.004861	I(1)
GDP	-2.73987	-2.99864	-7.788586	-3.004861	I(1)

Source: Eviews (8.0) computation 2025.

Table 4.3. Unrestricted co-integration Rank test (Trace)

Eigen Value	Trace Statistics	5% Critical Value	Prob.**	Hypothesized No. of CE(s)
0.983934	129.2795	47.85613	0.0016	None*
0.653646	38.39617	29.79707	0.0040	At most 1
0.431999	15.06968	15.49471	0.0579	At most 2
0.112506	2.625779	3.841466	0.1051	At most 3

Source: Eviews (8.0) computation 2025.

Table 4.3. Unrestricted co-integration Rank test (maximum Eigen value)

Eigen Value	Max-Eigen Statistics	5% Critical Value	Prob.**	Hypothesized No. of CE(s)
0.983934	90.88337	27.58434	0.0000	None*
0.653646	23.32648	21.13162	0.0242	At most 1
0.431999	12.44390	14.26460	0.0951	At most 2
0.023068	2.625779	3.841466	0.1051	At most 3

Source: Eviews (8.0) computation 2025.

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Table 4.4. Vector Error Correction Model (VECM)

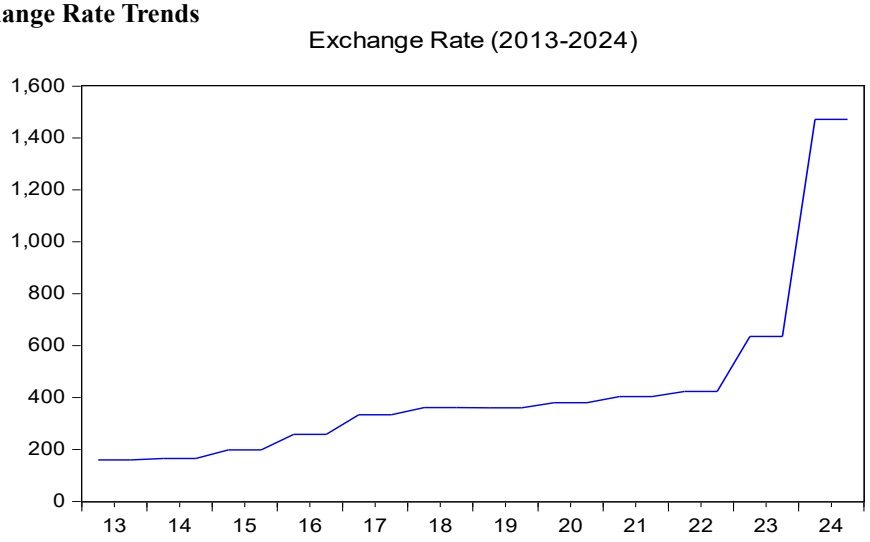
Variable	Coefficient	Std. Error	T-Statistics
ECM1(-1)	0.71407	0.17622	4.50767
D(EXCHR(-1))	0.16593	0.78793	-2.16060
D(OILP(-1))	0.000574	0.00624	-8.94122
D(INFLR(-1))	-2.883426	16.9860	-1.69577
D(FD1(-1))	2.24194	7.2833	-3.30762
D(GDP(-1))	-6.0366	3.3832	-1.17843
C	31.98347	21.0613	1.51859

R-Square	0.975687	Mean dependent var	429.1578
Adjusted R-Squared	0.974029	S.D. dependent var	342.3692
S.E of Regression	55.17423	Akaike info criterion	10.93852
Sum quared resid	133944.6	Schwarz criterion	11.09446
Log liklihood	-258.5246	Hannan-Quinn criter	10.99745
F-statistics	0.066976	Durbin-Watson stat	0.268917

Source: Eviews (8.0) Computation 2025.

DISCUSSION OF FINDINGS.

Graph 4.1. Exchange Rate Trends



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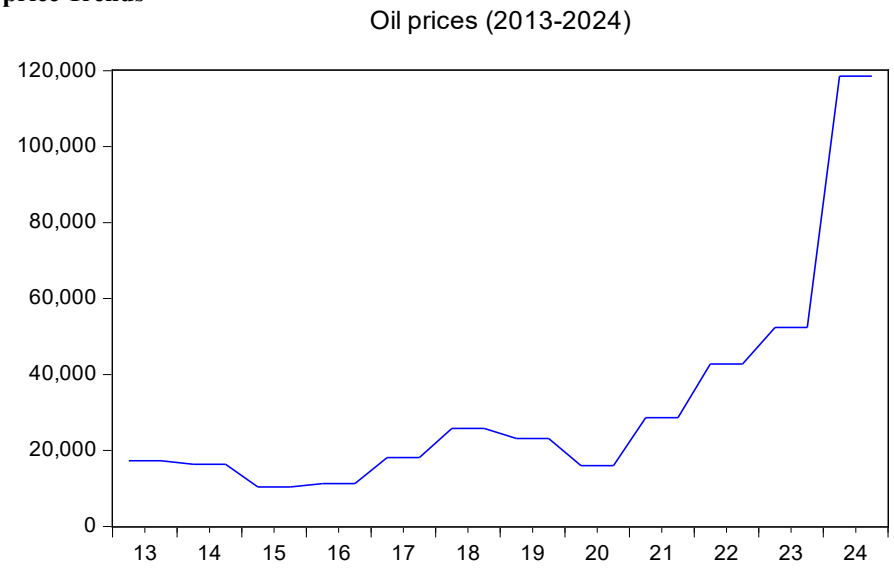
Graph 4.2. Oil price Trends



Graph 4.1 and 4.2 above explains the relationship that exist between oil price fluctuations and exchange rate. From a wholistic view of the graphs pattern, it can be deduced that oil price shocks affect exchange rate and a shift in exchange rate may likely affect oil price. The trends as witnessed portrays a non-linear movement of both oil prices and exchange rate in a deregulation period. The deterministic trends are expected and are in line with the aproiri expectation of the study. This further explains why our result in the Augmented Dicky- Fuller test (ADF) test and Phillip-Perron (PP) test depicts a non-stationarity of data, which is now corrected by differencing the dependent and independent variables.

Unit Roots Test Result.

In order to determine the stationarity of the time series data, we conducted the Augmented Dicky Fuller test alongside the Phillip-perron test. The ADF statistics test revealed that EXCHR (4.182416), OILP (11.23540), INFLR (12.66005), FDI (3.773503) and GDP (5.624878) are stationary at second difference I(2), since the ADF statistics is greater than their critical values of (3.029970, 3.012363, 3.012363, 3.040391 and 3.012363) respectively at 5% (0.05) significant level. However, EXCHR P-values (1.0000) is greater than the significant level at 1%, 5% and 10%; insinuating a non-stationarity of data even at order (2). Based on this, the Phillip-Perron unit root test is adopted. The result from the PP unit root investigation reveals that Exchange rate (EXCHR), Oil price (OILP), Inflation Rate (INFLR), Foreign direct investment (FDI) and The moderating vector, GDP portrays a deterministic trends and are stationary at First difference I(1). This is because their probability values of (0.0006, 0.0007,0.0004,0.0016 and 0.0000) is less than the assumed significant values at 5% (<0.05), therefore we accept the null hypothesis that the variables have a unit root. Likewise, given the PP test statistics values of EXCHR (5.008496), OILP (4.953198), INFLR (5.234856), FDI (4.597649) and GDP (7.788586) which is greater than their critical values of (3.004861), we can quantitatively assert that all vectors are stationary at first difference I(1).

Co-integration Test Result.

An occurrence of single economic event, may cause a lasting effect on time series data. Where variables commonly have a trended pattern and short run relationship, economic shocks can cause no relationship to exist. However, there seems to exist a long run relationship of the variables in the future. The cointegration test conducted above is quite revealing. From table 4.3 and 4.4, the trace and maximum Eigen cointegration result depicts a long run relationship between Exchange rate and the explanatory variables, since the trace statistics figure (60.18622) and max-eigen values (32.05563) is more than the critical values 0f (47.85613) and (27.58434) at 5% (0.05) significant leve l. Therefore, we reject the null hypothesis.

Error Correction Model (ECM) Test Result.

The result from the ECM model reveals that the error estimates of the equations with T-statistics of 4.50216 will adjust in the future with a speed of 71% (0.71407), suggesting that the model equations are significant in determining oil

prices. This implies that, though the equations may not move in same directions in the short run. However, EXCHR, OILP, INFLR, FDI and GDP tends to have sharp cointegration movement in the long run. Furthermore, the result shows that OILP, INFLR and GDP have a mechanism of impact on itself and they are desirable indicators for predicting Exchange rate because their respective T-statistics of (-0.08941, -0.16975 and -1.51859) is more than 5% (0.05) significant level. Therefore, they are considered significant variables in determining Exchange rate in Nigeria. On the other hand, FDI is not a significant variable in determining oil prices in Nigeria since their T-statistics of (-0.03782) is less than the significant level at 5% (0.05). this implies that even if FDI nosedives, it will have no significant effect exchange rate in Nigeria. Considering the outcome of this investigation, a variation in Oil price, inflation rate and GDP will account for 97% (0.975687) changes in Exchange rate, which affect individuality purchasing power in pre and post deregulation period.

Conclusion and Recommendation

Deregulating the Nigerian oil and gas sector evidently deepens economic responsiveness. However, its impact is mild in predicting oil price and exchange rate volatility. Macro-variable fluctuations create macroeconomic instability and causes a protracted decline on oil sector development. The concept of exchange rate volatility rises even as Nigeria struggle to attain it apex in economic productivity, thus, impacting heavily on purchasing power leading to a decline in standard of living. This study arrived at a conclusion that oil prices and inflation rate is a valid determinant of exchange rate in Nigeria. In essence, oil prices influence economic goods in the international market. For Nigeria, a proportionate increase in oil price glaringly insinuate a proportionate increase in exchange rate, since Nigeria is more of a price taker in the oil market. Based on these findings, the study recommends the total overhaul of refined oil importation with emphasis on renovating the oil refinery in Nigeria. Also, the study recommends private and public partnership with newly established local refineries for the manufacturing of refined oil. This reduces capital flight and promotes infrastructural development in the oil sector.

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