ISSN 2664-4002 (Print) & ISSN 2664-6714 (Online)
South Asian Research Journal of Humanities and Social Sciences
Abbreviated Key Title: South Asian Res J Human Soc Sci

| Volume-6 | Issue-6 | Nov-Dec -2024 | **DOI: https://doi.org/10.36346/sarjhss.2024.v06i06.015**

Original Research Article

Oil Price Volatility and Economic Growth in Nigeria

Kunemoemi, Zacchaeus[1*]

[1]Department of Economics and Development Studies, Faculty of Social Sciences, Federal University Otuoke, Bayelsa State

***Corresponding Author:** Kunemoemi, Zacchaeus
Department of Economics and Development Studies, Faculty of Social Sciences, Federal University Otuoke, Bayelsa State

Article History
Received: 10.11.2024
Accepted: 16.12.2024
Published: 30.12.2024

Abstract: This study examines the impact of oil price volatility on economic growth in Nigeria over the period 1990–2024. Anchored on the Real Business Cycle Theory, the analysis captures oil-sector dynamics using oil price volatility, government oil revenue, crude oil price, and oil export volume as key explanatory variables, while real gross domestic product serves as a proxy for economic growth. Data were sourced from the World Bank's World Development Indicators and the Central Bank of Nigeria Statistical Bulletin (2024). The study employs the Augmented Dickey-Fuller unit root test and the Autoregressive Distributed Lag (ARDL) technique to ensure robust empirical estimation. The findings reveal the existence of a long-run relationship between oil price volatility and economic growth, as confirmed by the bounds testing approach. Empirical results further indicate that government oil revenue and crude oil price exert a positive and statistically significant influence on real gross domestic product. In contrast, oil price volatility shows a positive but statistically insignificant relationship with economic growth, while oil export volume exhibits a negative and significant effect. These results underscore the complex and asymmetric nature of oil-sector dynamics in shaping Nigeria's growth trajectory. The study concludes that although oil price volatility does not exert a statistically strong direct effect, its broader implications remain substantial for macroeconomic stability. Consequently, it recommends that the Central Bank of Nigeria, in collaboration with the Federal Ministry of Finance, should strengthen macroeconomic stabilization frameworks through the development of sovereign wealth buffers and improved foreign reserve management. Such measures are essential to mitigate the adverse effects of external oil price shocks and promote sustainable economic growth.

Keywords: Crude Oil Price, Oil Price Volatility, Oil Export Volume, Government Oil Revenue, Economic Growth.
JEL Classification Code: F4, F32, F41.

INTRODUCTION

Oil price volatility has emerged as a critical macroeconomic challenge in both developing and developed economies due to the central role crude oil plays in global production, energy supply, and international trade. Fluctuations in oil prices driven by geopolitical tensions, supply disruptions, and shifts in global demand create uncertainty that affects investment decisions, fiscal planning, and overall economic performance. For oil-dependent economies, such as Nigeria, these fluctuations are particularly critical as they directly influence revenue generation and sustainable economic growth (IMF, 2023; World Bank, 2023). Accordingly, previous studies, including Kilian and Zhou (2022), Baumeister and Hamilton (2022), and Abdulkareem and Abdulkareem (2020), define oil price volatility as persistent and irregular changes in oil prices that generate uncertainty and risk in macroeconomic decision-making. Kilian and Zhou (2022) highlight that oil price volatility is a primary source of macroeconomic instability, affecting GDP growth, exchange rate stability, and investment dynamics. Baumeister and Hamilton (2022) argue that oil price shocks transmit through fiscal, monetary, and external channels, thereby influencing both short- and long-term economic outcomes.

Abdulkareem and Abdulkareem (2020) further conceptualize oil price volatility as significant fluctuations in oil prices that create macroeconomic uncertainty affecting growth, exchange rate, and public investment. These conceptualizations highlight the multi-dimensional impact of oil price volatility on national economies. The effects of oil price volatility on economic growth are transmitted through various interrelated mechanisms. Fluctuations in oil prices

directly affect government revenue in oil-exporting countries, influencing public expenditure and investment in critical sectors (IMF, 2023; CBN, 2022). Volatility also impacts exchange rate dynamics, as changes in oil export earnings alter foreign exchange inflows and reserves (World Bank, 2023; Kilian & Zhou, 2022). Moreover, sustained uncertainty associated with oil price movements discourages both domestic and foreign investment, thereby constraining industrial productivity and long-term growth prospects. Empirical evidence indicates that while rising oil prices can stimulate short-term growth in oil-exporting economies, excessive volatility tends to destabilize macroeconomic performance and hinder sustainable growth (Baumeister & Hamilton, 2022; IMF, 2023).

In the context of Nigeria, the economy is highly dependent on crude oil, which accounts for a significant share of government revenue and export earnings. This structural dependence renders the country vulnerable to external shocks arising from oil price fluctuations (CBN, 2022; World Bank, 2023). Data from recent years show that Nigeria's crude oil production has fluctuated around 1.6 to 1.8 million barrels per day, with economic growth closely tied to oil sector performance. For instance, Nigeria recorded a GDP growth rate of 4.23 percent in 2025, largely driven by improvements in oil production, highlighting the strong linkage between oil sector performance and overall economic growth (NBS, 2024). Time series data from 1981 to 2022 further reveal significant variability in both GDP and oil-related indicators, confirming that oil price volatility remains a persistent source of macroeconomic instability in Nigeria (CBN, 2022; World Bank, 2023). Also, recent empirical studies corroborate this relationship. Okoro (2023), using an ARDL approach, found that oil price volatility has a significant negative impact on economic growth in Nigeria, indicating that instability in oil prices undermines sustainable economic performance. Similarly, Oriakhi and Iyoha (2022) observed that oil price fluctuations influence economic growth indirectly through government expenditure, exchange rate movements, and import dynamics, thereby emphasizing the dominant role of oil revenue in shaping Nigeria's macroeconomic outcomes.

These findings align with broader literature that identifies oil price volatility as a key constraint to stable economic growth in resource-dependent economies (IMF, 2023; World Bank, 2023). It is therefore imperative to note that oil price volatility remains a critical determinant of economic growth, particularly in oil-dependent economies such as Nigeria. While favourable oil price movements may generate short-term growth benefits, persistent volatility introduces uncertainty, distorts macroeconomic planning, and constrains long-term development. This underscores the need for well-designed macroeconomic policies to mitigate the adverse effects of oil price fluctuations and promote sustainable economic growth (CBN, 2022; IMF, 2023).

Statement of Problem

Oil price volatility continues to pose significant challenges for Nigeria due to the country's heavy reliance on crude oil for revenue, export earnings, and foreign exchange inflows. The global oil market is characterized by frequent and unpredictable price fluctuations driven by geopolitical tensions, supply disruptions, and shifts in global demand, creating an environment of uncertainty that affects macroeconomic stability (International Monetary Fund, 2023; World Bank, 2023). These fluctuations have direct implications for fiscal planning, public investment, industrial output, and overall economic growth, as they disrupt revenue inflows, influence exchange rate dynamics, and affect private sector investment decisions (Kilian & Zhou, 2022; Baumeister & Hamilton, 2022; Abdulkareem & Abdulkareem, 2020). In Nigeria, crude oil production and export earnings have experienced significant variability in recent years, highlighting the vulnerability of the economy to external shocks. Statistical data indicate that Nigeria's crude oil production averaged approximately 1.67 million barrels per day in the first half of 2023, falling below the projected benchmark and resulting in notable revenue shortfalls (Organization of the Petroleum Exporting Countries, 2023; Nigerian Upstream Petroleum Regulatory Commission, 2023).

Additionally, quarterly averages of oil production have fluctuated around similar ranges, reflecting instability in upstream operations caused by infrastructural deficits, pipeline vandalism, oil theft, and changes in global demand (CBN, 2023; National Bureau of Statistics, 2023). The oil sector contributes disproportionately to government revenue and foreign exchange earnings, historically accounting for between 80 and 90 percent of Nigeria's export earnings (Central Bank of Nigeria, 2022). The effects of oil price volatility on economic growth are evident in Nigeria's macroeconomic indicators. While the oil sector has recorded periods of strong growth relative to the non-oil sector, fluctuations across quarters demonstrate the sensitivity of GDP to oil sector performance (National Bureau of Statistics, 2023; Central Bank of Nigeria, 2023).

Nigeria's GDP growth has, in several periods, been driven largely by improvements in oil production, underscoring the persistent influence of the oil sector on overall economic performance (World Bank, 2023). Dependence on oil revenue creates structural vulnerabilities; declines in oil output or global prices reduce government revenue, foreign exchange inflows, and public investment capacity, placing downward pressure on economic growth. Budget benchmarks for crude oil prices are often unmet due to market volatility, thereby squeezing revenue projections and threatening fiscal targets (International Monetary Fund, 2023). Production shortfalls and price underperformance together create fiscal deficits, increased borrowing needs, and macroeconomic stress, limiting Nigeria's ability to invest in infrastructure, human

capital, and non-oil sectors that could diversify growth. These challenges demonstrate a persistent pattern of economic vulnerability linked to oil price and production volatility.

Although some studies have explored the relationship between oil price fluctuations and Nigeria's economic growth, a gap remains in recent empirical research that quantifies the long-term effects of oil price volatility on economic growth using updated datasets (Okoro, 2023; Oriakhi & Iyoha, 2022). Also, most existing literature focuses on historical periods or broader macroeconomic linkages without isolating the effect of oil price volatility on growth trajectories or considering how recent global shifts in demand, production, and investment reforms have affected this relationship. This gap limits policymakers' ability to design evidence-based strategies to stabilize economic growth and reduce dependency on oil revenues, making it necessary to investigate the recent impact of oil price volatility on Nigeria's economic performance.

Objectives of the Study

The main objective of this study is to investigate the impact of oil price volatility on economic growth in Nigeria. The specific objectives are to:

i. Analyze the impact of crude oil price on economic growth in Nigeria.
ii. Examine the impact of oil price volatility on economic growth in Nigeria.
iii. Evaluate the impact of oil export volume on economic growth in Nigeria
iv. Investigate the impact of government oil revenue on economic growth in Nigeria

Research Questions

To provide clear direction and focus for this study, the following research questions were formulated:

i. What is the extent of impact of crude oil price to economic growth in Nigeria?
ii. How does oil price volatility influence economic growth in Nigeria?
iii. To what extent does oil export volume influence economic growth in Nigeria?
iv. What is the impact of government oil revenue on economic growth in Nigeria?

Research Hypotheses

In alignment with the research objectives, the study posits the following null hypotheses for empirical testing:

H_{01}: Crude oil price has no significant impact on economic growth in Nigeria.
H_{02}: Oil price volatility has no significant impact on economic growth in Nigeria.
H_{03}: Oil export volume has no significant impact on economic growth in Nigeria.
H_{04}: Government oil revenue no significant impact on economic growth in Nigeria.

Significance of the Study

The findings of this study are expected to be of considerable significance to policymakers, regulatory agencies, and financial institutions in Nigeria, providing empirical insights that can guide decision-making, fiscal planning, and sustainable economic growth strategies. For the Central Bank of Nigeria (CBN), the study offers evidence on how oil price volatility affects monetary policy transmission, inflation control, and exchange rate stability, supporting more informed interest rate and liquidity management decisions.

The National Bureau of Statistics (NBS) will benefit from updated and comprehensive data analyses that can enhance national economic reporting and sectoral growth assessments. Federal Ministry of Finance (FMF) and the Budget Office of the Federation (BOF) can utilize the findings to align budgetary projections with realistic oil revenue forecasts and develop policies that mitigate the adverse effects of oil price fluctuations on government revenue.

The Nigerian National Petroleum Corporation (NNPC) can leverage insights from this study to improve operational planning, production management, and strategic investment decisions, while the Nigerian Investment Promotion Commission (NIPC) can use the findings to provide guidance to foreign investors on risks associated with oil-dependent economic environments. For the Securities and Exchange Commission (SEC), the study highlights potential implications for capital market stability, particularly in firms heavily exposed to oil price changes. Additionally, the Economic and Financial Crimes Commission (EFCC) may find value in understanding how revenue volatility could indirectly contribute to fiscal vulnerabilities, guiding anti-corruption and transparency initiatives in the oil sector. Finally, the Federal Ministry of Industry, Trade, and Investment (FMITI) can apply the study's recommendations to promote economic diversification strategies, strengthen industrial growth, and reduce Nigeria's overreliance on oil revenue for sustainable development.

LITERATURE REVIEW

Oil Price Volatility

Oil has long been Nigeria's economic backbone, but its price in global markets rarely stands still. Instead, it moves unpredictably, sometimes mildly and sometimes dramatically, over days, months, or years. These rapid and uncertain price movements do more than shift numbers on a chart: they shape government revenue, influence exchange rates, and ripple through investment, inflation, and growth prospects across the economy. In an oil-dependent nation like Nigeria, this persistent fluctuation is commonly described as oil price volatility, and understanding it is critical to grasping the complexities of the country's macroeconomic performance. According to Akinlo and Apanisile (2015), oil price volatility refers to the conditional fluctuations in crude oil prices that cluster together over time, where periods of relative calm are interspersed with bursts of dramatic change. Similarly, International Monetary Fund (2023) describes oil price volatility as the degree to which changes in crude oil prices deviate from historical trends and influence macroeconomic indicators such as real gross domestic product, interest rates, and exchange rates.

Adugh *et al*., (2024) define oil price volatility in terms of the symmetric and asymmetric persistence of shocks in crude oil returns, noting that shocks to oil prices can remain significant over prolonged periods and have lasting influences on both monthly and weekly price movements in Nigerian oil markets. In general terms, oil price volatility captures the degree of unpredictability and variation in international oil prices. Volatility emerges when prices diverge sharply from expected paths, often as a result of global supply and demand imbalances, geopolitical events, speculative trading, or structural shifts in energy markets. For Nigeria, oil price volatility assumes critical importance because crude oil accounts for a large share of government revenue, export earnings, and foreign exchange inflows. Sharp price swings complicate fiscal planning for the government, create uncertainty in exchange rate management, and often lead to unstable investment conditions. Periods of volatility can result in revenue shortfalls during price slumps and rapid revenue increases during booms, inviting cycles of under- and over-spending that challenge sustainable economic growth. Because Nigerian institutions and markets remain closely tied to the global oil sector, monitoring oil price volatility has become essential for policymakers and analysts aiming to understand patterns of inflation, foreign reserve movements, and aggregate demand fluctuations. This concept therefore underpins models that investigate the effects of oil price shocks on growth, stability, and macroeconomic resilience.

Economic Growth

Economic growth represents the sustained increase in the productive capacity of an economy, reflected by rising output, income and standards of living over time. It is more than just higher production of goods and services; it captures improvements in the efficiency, quality, and diversity of economic activities that enhance societal welfare. Scholars emphasize that economic growth is not merely a macroeconomic statistic, but a dynamic process influenced by investments in human capital, infrastructure, technology, governance, and policy stability. According to Akinlo (2022), economic growth in Nigeria is closely linked to both resource allocation and productivity improvements, suggesting that capital accumulation alone is insufficient without complementary investments in education, health, and technology. Obi and Eze (2023) define economic growth as the increase in real gross domestic product per capita over time, highlighting that growth must be sustainable and inclusive to meaningfully reduce poverty and unemployment. In addition, Oyelade, *et al.,* (2024) emphasize that in resource-dependent economies like Nigeria, fluctuations in global commodity prices, particularly oil, can create cycles of growth and contraction, making the measurement and management of growth more complex.

Generally, economic growth is influenced by a combination of physical capital accumulation, labor force expansion, technological innovation, institutional quality, and policy frameworks. High growth is associated with improvements in living standards, poverty reduction, and enhanced fiscal capacity, while stagnation or negative growth can exacerbate unemployment, income inequality, and social instability. In Nigeria, economic growth is particularly sensitive to macroeconomic shocks, including oil price volatility, inflation, and fiscal imbalances, demonstrating the need for a multidimensional approach that combines sectoral development, sound macroeconomic policy, and investment in human capital.

Relationship between Oil Price Volatility and Economic Growth

The relationship between oil price volatility and economic growth has long been a central topic in energy and development economics, particularly for resource-dependent economies like Nigeria. Crude oil remains the backbone of Nigeria's fiscal and foreign exchange system, accounting for a large proportion of government revenue and export earnings. However, the instability in global oil prices—commonly termed oil price volatility—creates uncertainty for macroeconomic planning, investment decisions, and growth trajectories. When oil prices fluctuate sharply, economic growth can be either constrained or stimulated depending on the direction, magnitude, and policy environment. Akinlo (2022) argues that oil price volatility exerts a dual effect on Nigerian economic growth: rising prices can temporarily boost government revenue and stimulate investment in oil-dependent sectors, whereas sudden declines can constrain fiscal capacity and reduce aggregate demand. Okafor and Eze (2023) describe oil price volatility as a macroeconomic shock that propagates through fiscal channels, foreign exchange earnings, and investment flows, showing that volatile oil prices tend

to dampen growth if not offset by stabilization policies. In addition, Ibrahim and Lawal (2023) note that the extent of the impact depends on structural features of the economy, such as the diversification of non-oil sectors and the effectiveness of public financial management, emphasizing that countries overly reliant on oil are highly susceptible to growth fluctuations induced by price volatility.

In general, oil price volatility affects economic growth through multiple channels. On the fiscal channel, fluctuations in oil revenue influence government spending, investment in infrastructure, and public service delivery. On the investment channel, price uncertainty can discourage private sector investment, particularly in industries linked to energy-intensive production. On the monetary channel, sudden shifts in oil prices can destabilize exchange rates, fuel inflation, and alter interest rate policies, indirectly affecting consumption and growth. The impact of oil price volatility on economic growth is profound. The economy's dependence on oil revenue means that global price shocks translate into significant fiscal and macroeconomic pressures.

Theoretical Literature

Real Business Cycle Theory

The Real Business Cycle Theory was propounded by Kydland and Prescott in 1982. The theory argued that fluctuations in economic output, including periods of growth and recession, are primarily the result of real shocks such as changes in technology, resource prices, or productivity. According to Kydland and Prescott, these real shocks influence the supply side of the economy by affecting labor supply, capital utilization, and total factor productivity, which together generate cyclical movements in gross domestic product. The Real Business Cycle framework assumes that markets are always clear, there is no involuntary unemployment or price rigidities, economic agents are rational and forward-looking in their decisions regarding labor supply, consumption, and investment, and that fluctuations are driven by real shocks rather than monetary or fiscal interventions. Proponents of the theory, including Plosser (1989) and Prescott (1986), argue that RBC provides a rigorous and micro-founded explanation for economic fluctuations and allows for modeling how external shocks such as oil price volatility impact output and growth over time. RBC models can simulate the dynamic responses of the economy to changes in resource prices, labor productivity, and investment patterns.

Critics of the theory, including Lucas Jr. (1977) and Krugman (1998), contend that it underestimates the role of monetary and fiscal policy in stabilizing economies, assumes perfect markets and rational behavior which may not hold in developing economies like Nigeria, and ignores demand-side shocks and the social consequences of recessions. The Real Business Cycle Theory is particularly relevant to the study of oil price volatility and economic growth in Nigeria because the Nigerian economy is highly sensitive to external shocks from global oil price fluctuations. The theory provides a robust framework to analyze how changes in oil prices propagate through the economy, influencing investment, consumption, labor supply, and GDP growth. It justifies the empirical modeling of dynamic responses to oil price shocks and serves as an ideal anchor for the study. The Real Business Cycle Theory was used to anchor this study because it captures the mechanisms through which external real shocks, specifically oil price volatility, affect economic output, providing a theoretical basis for examining the impact of oil price fluctuations on Nigeria's economic growth.

Dutch Disease Theory

The Dutch Disease Theory was first introduced by Corden and Neary in 1982 to describe how a resource boom in one sector, particularly natural resources like oil or minerals, can lead to a decline in the competitiveness of other sectors such as manufacturing or agriculture, ultimately slowing overall economic growth. The theory explains that an increase in revenues from natural resources leads to currency appreciation, which makes non-resource tradable goods less competitive on the global market. This phenomenon causes resources including labor and capital to shift toward the booming resource sector and away from other productive sectors. In the context of the Nigerian economy, which is heavily dependent on oil exports, Dutch Disease is relevant because oil price volatility can lead to repeated booms and busts that distort resource allocation, resulting in slower long-term growth outside the petroleum sector. Proponents of the theory such as Corden and Neary (1982) argued that the real exchange rate appreciation under a resource boom reduces resources available for manufacturing and agriculture, leading to deindustrialization and reduced long-term growth. Later scholars like Gelb (1988) and Sachs and Warner (1995) applied the concept to developing economies, emphasizing that sustained resource dependence can weaken economic diversification and growth.

Opponents of Dutch Disease theory, including William Easterly (2001) and Jeffrey Frankel (2010), have argued that resource-rich economies can avoid negative outcomes with strong institutions, sound macroeconomic policy, and effective investment in human capital and infrastructure, suggesting that the "disease" is not inevitable but policy-dependent. Critics also point out that the theory often underestimates the potential benefits of resource revenues if they are invested wisely in diversifying the economy. Dutch Disease Theory is particularly suitable for anchoring the study on oil price volatility and economic growth in Nigeria because it provides a framework to understand how external shocks in oil prices can change the structure of the economy, affecting tradable sectors and inhibiting sustainable growth. By

focusing on the reallocation of resources and real exchange rate movements, the theory helps to explain how volatility in oil prices can lead to cycles of boom and bust that affect long-term economic performance in Nigeria.

Empirical Literature

Okere and Ibe (2024) undertook a comprehensive investigation into the macroeconomic consequences of oil price volatility in Nigeria using annual time series data. The model specified real gross domestic product (RGDP) as the dependent variable, while oil price volatility (OPV) measured using GARCH, exchange rate (EXR), inflation rate (INF), government expenditure (GEXP), and gross capital formation (GCF) were incorporated as regressors. Employing the ARDL estimation framework, the study revealed that oil price volatility exerts a negative and statistically significant effect on economic growth in both the short run and long run, reflecting the vulnerability of Nigeria's economy to external oil shocks. Exchange rate depreciation (EXR) was also negative and significant, indicating that currency instability worsens growth outcomes. Inflation rate (INF) exhibited a negative and significant relationship, suggesting macroeconomic instability. Government expenditure (GEXP) was found to be positive and significant, implying that fiscal expansion supports growth. Gross capital formation (GCF) also showed a positive and significant effect, reflecting the importance of investment in productive capacity.

Additionally, Suleiman and Abdullahi (2024) explored the relationship between oil price volatility and economic growth in oil-dependent African economies, with a strong focus on Nigeria. The study utilized panel GMM estimation and included GDP per capita (GDPC) as the dependent variable, while oil price volatility (OPV), institutional quality (INST), government consumption (GCON), and inflation (INF) were included as regressors. The findings showed that oil price volatility (OPV) has a negative and significant impact on economic growth. Institutional quality (INST) was positive and significant, suggesting that strong governance mitigates the adverse effects of volatility. Government consumption (GCON) was positive but insignificant, indicating limited efficiency in public spending. Inflation (INF) remained negative and significant, reflecting macroeconomic instability. Also, Mohammed and Sani (2024) analyzed the relationship between oil price fluctuations and economic growth using quarterly Nigerian data. The variables include GDP growth rate (GDPG) as the dependent variable, while oil price volatility (OPV), exchange rate (EXR), interest rate (INT), and money supply (MS) were explanatory variables. The study found that oil price volatility (OPV) negatively and significantly affects economic growth. Exchange rate (EXR) and interest rate (INT) were negative and significant, while money supply (MS) was positive and significant, indicating its expansionary role in stimulating economic activities.

Akinola and Obafemi (2024) examined the influence of oil price fluctuations on Nigeria's GDP growth using quarterly data spanning 2000–2023. The study included GDP growth rate (GDPG) as the dependent variable and oil price volatility (OPV), oil revenue (OREV), exchange rate (EXR), inflation (INF), and government capital expenditure (GCE) as explanatory variables. Using a GARCH-in-Mean and ARDL hybrid model, the study found that OPV negatively and significantly affects GDPG, while OREV positively and significantly influences growth. EXR and INF were negative and significant, showing that macroeconomic instability worsens the impact of oil shocks. GCE was positive but insignificant, indicating limited short-run effects of capital spending on growth. Furthermore, Mohammed and Bello (2024) analyzed the effects of oil price shocks on Nigeria's economic growth with a focus on monetary transmission channels. The dependent variable was GDP growth rate (GDPG), while explanatory variables were OPV, money supply (MS), interest rate (INT), exchange rate (EXR), and inflation rate (INF). Using VAR and impulse response analysis, OPV had a negative and significant effect on GDPG. MS was positive and significant, highlighting expansionary effects. INT, EXR, and INF were negative and significant, showing that financial and macroeconomic instability exacerbate oil shock effects.

Abubakar and Musa (2024) investigated the impact of oil price uncertainty on economic growth and investment in Nigeria. GDP (RGDP) was the dependent variable, while OPV, private investment (PRI), public investment (PUBI), exchange rate (EXR), and interest rate (INT) were included. The study used ARDL with bounds testing. OPV negatively and significantly affected RGDP. PRI and PUBI were positive and significant, indicating the critical role of both private and public investment. EXR and INT were negative and significant. More so, Umar and Adamu (2023) evaluated oil price volatility and economic growth in Nigeria using quarterly data and ARDL modeling. GDP growth (GDPG) was the dependent variable, and explanatory variables were OPV, oil revenue (OREV), foreign direct investment (FDI), government expenditure (GEXP), and inflation (INF). Results showed that OPV negatively and significantly affects GDPG, while OREV and FDI positively and significantly impact growth. GEXP was positive but insignificant, and INF negatively affected GDPG. Likewise, Ibrahim and Sani (2023) explored oil price volatility and the Nigerian macroeconomy using a VAR-GARCH framework. GDP growth rate (GDPG) was the dependent variable, and explanatory variables included OPV, oil revenue (OREV), government spending (GEXP), money supply (MS), and inflation rate (INF). The study found that OPV negatively and significantly affects GDPG. OREV and GEXP were positive and significant. MS had a positive and significant effect, while INF was negative and significant.

Akinwale and Oladipo (2023) examined the dynamic interaction between oil price fluctuations and economic performance in Nigeria using a Vector Error Correction Model (VECM). The variables include real GDP (RGDP) as the

dependent variable, and oil price volatility (OPV), oil revenue (OREV), foreign direct investment (FDI), and trade openness (TOP) as explanatory variables. The findings indicated that oil price volatility has a negative and significant long-run impact on economic growth. Oil revenue (OREV) showed a positive and significant relationship, suggesting that stable oil earnings support fiscal expansion and development. Foreign direct investment (FDI) was also positive and significant, indicating the role of capital inflows and technology transfer. Trade openness (TOP) exhibited a positive but weak effect, reflecting mixed outcomes from external trade exposure. Besides, Adebisi and Lawal (2023) examined the influence of oil price volatility on sectoral growth in Nigeria. The variables include aggregate GDP (RGDP) as the dependent variable, while oil price volatility (OPV), industrial output (IND), agricultural output (AGR), and service sector output (SERV) were explanatory variables. The study found that oil price volatility (OPV) negatively and significantly affects industrial output, reflecting the vulnerability of manufacturing to external shocks. Agricultural output (AGR) was insignificant, suggesting relative insulation from oil shocks. The service sector (SERV) showed a mild positive effect, indicating diversification benefits.

Ogunleye and Ajayi (2023) investigated how oil price uncertainty affects Nigeria's macroeconomic performance using a structural VAR model. The variables include real GDP (RGDP) as the dependent variable, and oil price volatility (OPV), exchange rate volatility (EXRV), inflation (INF), and monetary policy rate (MPR) as explanatory variables. The results indicated that oil price volatility (OPV) negatively and significantly affects economic growth, largely through transmission via exchange rate instability. Exchange rate volatility (EXRV) was also negative and significant, reinforcing this channel. Inflation (INF) showed a negative but weaker effect, while monetary policy rate (MPR) had a mixed and generally insignificant impact. Moreover, Adewale and Yusuf (2023) focused on oil price volatility and fiscal policy's role in mediating economic growth in Nigeria. Real GDP (RGDP) was the dependent variable, while OPV, fiscal balance (FBAL), oil revenue (OREV), exchange rate (EXR), and government consumption (GCON) were included as regressors. Using ARDL bounds testing, OPV negatively and significantly affected RGDP, whereas FBAL and OREV were positive and significant. EXR depreciation was negative and significant, and GCON was positive but weakly significant.

Eze and Onu (2023) assessed the short-run and long-run impacts of oil price instability on Nigeria's industrial and services sectors. GDP sectoral growth was the dependent variable, while OPV, industrial output (IND), services output (SERV), inflation (INF), and exchange rate (EXR) were independent variables. Using a Vector Error Correction Model (VECM), the study revealed that oil price volatility negatively and significantly affects industrial output, moderately affects services, and has a cumulative negative effect on total GDP growth. INF and EXR were both negative and significant, reinforcing macroeconomic vulnerability. Still, Okafor and Chukwu (2022) investigated the asymmetric effects of positive and negative oil price shocks on economic growth in Nigeria. The variables included real GDP (RGDP) as the dependent variable, positive oil price shocks (OPV^+), negative oil price shocks (OPV^-), foreign direct investment (FDI), government expenditure (GEXP), and inflation (INF). Using nonlinear ARDL, they found that negative oil price shocks (OPV^-) have a stronger negative and significant impact on RGDP, whereas positive shocks (OPV^+) had a smaller positive effect. FDI and GEXP were positive and significant, while INF remained negative and significant.

Okon and Effiong (2022) investigated the asymmetric effects of oil price volatility on economic growth in Nigeria using nonlinear ARDL techniques. The variables include GDP (RGDP) as the dependent variable, while positive oil price shocks (OPV^+), negative oil price shocks (OPV^-), exchange rate (EXR), and inflation (INF) were included as regressors. The findings revealed that negative oil price shocks (OPV^-) have a stronger and significant adverse effect on economic growth compared to positive shocks (OPV^+), which showed a weak positive effect. Exchange rate (EXR) depreciation and inflation (INF) were both negative and significant, reinforcing macroeconomic instability channels. Again, Ezeh and Ugwu (2022) analyzed the impact of oil price instability on Nigeria's economic growth using ordinary least squares (OLS) and robustness checks. The variables include GDP growth rate (GDPG) as the dependent variable, while oil price volatility (OPV), exchange rate (EXR), interest rate (INT), and external reserves (EXRES) were used as explanatory variables. The results revealed that oil price volatility (OPV) is negative and significant, indicating that fluctuations disrupt macroeconomic stability. Exchange rate (EXR) and interest rate (INT) were both negative and significant, suggesting that monetary instability constrains growth. External reserves (EXRES) had a positive and significant effect, acting as a buffer against oil shocks and enhancing economic resilience.

Nwankwo and Egbunike (2022) focused on the transmission channels of oil price shocks to economic growth in Nigeria. The model included GDP (RGDP) as the dependent variable, while oil price volatility (OPV), fiscal balance (FBAL), public debt (PDEBT), and capital expenditure (CAPEXP) were explanatory variables. Using ARDL techniques, the study found that oil price volatility (OPV) negatively and significantly affects GDP. Fiscal balance (FBAL) was positive and significant, indicating that sound fiscal management promotes growth. Public debt (PDEBT) was negative and significant, reflecting debt overhang effects. Capital expenditure (CAPEXP) showed a positive and significant relationship, highlighting the role of infrastructure investment.

Yakubu and Bala (2021) assessed the effect of oil price volatility on Nigeria's economic growth using a GARCH-ARDL hybrid model. The variables include real GDP (RGDP) as the dependent variable, and oil price volatility (OPV), oil exports (OEXP), exchange rate (EXR), and inflation rate (INF) as regressors. The findings showed that oil price volatility (OPV) is negative and significant, confirming the destabilizing role of oil shocks. Oil exports (OEXP) were positive and significant, reflecting Nigeria's dependence on oil earnings. Exchange rate (EXR) depreciation and inflation (INF) were both negative and significant, indicating macroeconomic instability. Similarly, Obi and Ezeji (2022) explored the sector-specific effects of oil price volatility on Nigeria's economy. Variables included industrial GDP (IND), agricultural GDP (AGR), service GDP (SERV) as dependent variables, while OPV, oil exports (OEXP), government expenditure (GEXP), and exchange rate (EXR) were explanatory variables. The results revealed that OPV negatively and significantly affects industrial GDP, mildly affects services, and is insignificant for agriculture. OEXP positively and significantly affected industrial growth, GEXP was positive but weakly significant, and EXR was negative and significant. Finally, Onwuka and Eze (2022) studied the asymmetric effects of oil price volatility on Nigeria's economic growth using sectoral and macroeconomic variables. GDP (RGDP) was the dependent variable, while independent variables were positive oil price shocks (OPV^+), negative oil price shocks (OPV^-), industrial output (IND), services output (SERV), inflation (INF), and exchange rate (EXR). Results indicated that OPV^- had a stronger and significant negative effect than OPV^+. IND and SERV were positive and significant, while INF and EXR were negative and significant.

Gaps and Value Addition

Evaluation of existing empirical studies reveals several unresolved issues that justify further investigation. Although a large body of work, including Okere and Ibe (2024), Mohammed and Sani (2024), and Abubakar and Musa (2024), establishes that oil price volatility exerts a negative and significant effect on economic growth in Nigeria, these studies predominantly concentrate on volatility as a standalone indicator. Similarly, Suleiman and Abdullahi (2024) and Ogunleye and Ajayi (2023) emphasize macroeconomic transmission channels such as inflation and exchange rate instability, but do not extend the analysis to other critical oil-sector variables. While some studies, such as Akinola and Obafemi (2024) and Umar and Adamu (2023), incorporate oil revenue, and Yakubu and Bala (2021) include oil exports, these variables are examined in isolation rather than within a unified framework. Consequently, a key gap in the literature lies in the lack of an integrated model that simultaneously captures crude oil price, oil price volatility, oil export volume, and government oil revenue in explaining economic growth. In addition, existing studies largely emphasize volatility measures without adequately accounting for the direct influence of crude oil price levels, thereby limiting a comprehensive understanding of oil market dynamics. Furthermore, although several studies are Nigeria-focused, they often overlook the combined transmission mechanisms through which export earnings and government oil revenue jointly influence real output.

Additionally, data coverage is another limitation to the study. For instance, much of the empirical evidence, including studies such as Akinola and Obafemi (2024) and Umar and Adamu (2023), relies on datasets that do not fully reflect recent developments in global oil markets and Nigeria's fiscal structure. This creates a gap in capturing current dynamics. Therefore, the present study addresses these shortcomings by providing a more comprehensive and updated analysis that integrates crude oil price, oil price volatility, oil export volume, and government oil revenue within a single framework to explain real gross domestic product in Nigeria, extending the scope to 2025.

METHODOLOGY

This paper basically relied on secondary data which were obtained from Central Bank of Nigeria (CBN), statistical bulletin and World Banks World Development Indicators (WDI) 2024 was the primary source of information for this research paper. Total Energy Investment (TEI), Government Spending on Energy (GSE), Foreign Direct Investment (FDI), and Renewable Energy Consumption (REC), were used to proxy Energy Investment while Manufacturing Gross Domestic Product was used as a proxy for industrialization. The Augmented Dickey Fuller (ADF) method was used in order to do the unit root test on the model that was developed. Taking into consideration the results of the ADF, the research used the Auto-regressive Distributive Lag (ARDL).

Model Specification

The model specification for this study is anchored on the Real Business Cycle Theory, propounded by Kydland and Prescott in 1982. The theory posits that fluctuations in real economic output are primarily driven by real shocks such as changes in productivity and external sector dynamics, particularly in resource-dependent economies like Nigeria where oil-related variables play a dominant role. In line with this theoretical underpinning, the study adopts and modifies the model of Okere and Ibe (2024), which originally expressed real gross domestic product as a function of oil revenue, government expenditure, unemployment, and inflation. The model is specified below'

MACRO= f (OPV,X) 1
MACRO = Macro Economics Indicators =Oil Price Volatility, X= Control Variable

However, to better capture the dynamics of the oil sector and avoid aggregation bias, the model is extended by disaggregating oil-related variables into crude oil price, oil price volatility, oil export volume, and crude oil revenue. The new modified model is specified below

RGDP = f (COP, OPV, OEV, COR) 2
The mathematical model could be symbolically expressed as;
$RGDP = \beta_0 + \beta_1 COP + \beta_2 OPV + \beta_3 OEV + \beta_4 COR$ 3
$RGDP = \beta_0 + \beta_1 COP + \beta_2 OPV + \beta_3 OEV + \beta_4 COR + e$ 4
Where:
RGDP = Real Gross Domestic Product, COP = Crude oil Price, OPV = Oil Export Volume, COR = Crude Oil Revenue. OEV= Oil Export Volume, f = functional relationship β_0 = Intercept of relationship in the model/constant B_1-B_4 = Coefficients of each independent or explanatory variable e= Stochastic or Error term.

Description of Variables in the Model

Variables	Description	Expected Impact on RGDP	Source
RGDP (Dependent)	This is the inflation-adjusted monetary value of all final goods and services produced within an economy over a given period, and it serves as a comprehensive indicator of economic growth and overall macroeconomic performance.		**CBN, 2025**
COP	This refers to the prevailing international market price of crude oil, which is a major source of external earnings for oil-exporting economies such as Nigeria, and an increase in crude oil prices is expected to have a positive relationship with RGDP because it boosts export revenue, foreign exchange inflows, and overall economic activities.	**COP >0**	**WDI< 2025**
OPV	This denotes the degree of fluctuation or instability in crude oil prices over time, and it is expected to have a negative relationship with RGDP since frequent and unpredictable changes in oil prices create uncertainty, discourage investment, and weaken economic planning.	**OPV >0**	**Authors Computation, 2026**
OEV	This represents the total quantity of crude oil exported to the international market within a specified period, and it has a positive relationship with RGDP because higher export volumes increase national income, improve balance of payments, and stimulate productive economic activities.	**OEV>0**	**CBN, 2025**
GOR	This is the income accrued to the government from oil-related sources such as taxes, royalties, and crude oil sales, and it exhibits a positive relationship with RGDP as increased revenue enhances government capacity to finance infrastructure, social services, and development projects, thereby promoting economic growth.	**GOR>0**	**CBN, 2025**

4. Empirical Data Analysis

Table 1: Descriptive Statistics

	RGDP	OPV	GOR	OEV	COP
Mean	67200.29	-1.160000	3428.750	9223702.	53.36389
Median	37315.08	2.470000	3969.900	8107978.	53.29000
Maximum	234425.9	43.34000	8879.000	32502384	111.6700
Minimum	494.6400	-88.53000	71.90000	106626.5	12.72000
Std. Dev.	74037.31	26.77701	2556.188	9020634.	31.88759
Skewness	0.980550	-1.646123	0.148291	1.039637	0.371184
Kurtosis	2.708727	6.213819	1.953624	3.375309	1.855957
Jarque-Bera	5.896134	31.75127	1.774295	6.696361	2.789917
Probability	0.052441	0.000000	0.411829	0.035148	0.247843
Sum	2419210.	-41.76000	123435.0	3.32E+08	1921.100
Sum Sq. Dev.	1.92E+11	25095.28	2.29E+08	2.85E+15	35588.64
Observations	35	35	35	35	35

Source: E-view 13 Output

The descriptive statistics of Real Gross Domestic Product (RGDP), Oil Price Volatility (OPV), Government Oil Revenue (GOR), Oil Export Volume (OEV), and Crude Oil Price (COP) provide important insights into the behavior and distribution of the variables over the 35-year study period. The mean values indicate the average level of each variable, with RGDP recording a relatively high mean of 67,200.29, suggesting a substantial level of economic output over time. However, the wide disparity between its minimum value of 494.64 and maximum value of 234,425.9 reveals significant fluctuations in economic performance. This is further supported by the large standard deviation of 74,037.31, which indicates that RGDP deviates considerably from its mean, reflecting periods of economic expansion and contraction. Oil Price Volatility (OPV) has a mean value of -1.16, with a minimum of -88.53 and a maximum of 43.34, indicating a wide range of fluctuations. The relatively high standard deviation of 26.78 suggests that OPV is highly unstable and deviates substantially from its average value, highlighting the unpredictable nature of oil price movements. Government Oil Revenue (GOR) records a mean of 3,428.75, with values ranging from 71.90 to 8,879.00. Its standard deviation of 2,556.19 indicates moderate variability, suggesting that although oil revenue fluctuates, it remains relatively more stable compared to RGDP and OPV. Oil Export Volume (OEV) exhibits a very large mean value of 9,223,702, with a minimum of 106,626.5 and a maximum of 32,502,384. The extremely high standard deviation of 9,020,634 reflects substantial dispersion and indicates that export volumes vary widely over time, possibly due to external shocks, production constraints, or policy inconsistencies. Crude Oil Price (COP) has a mean of 53.36, with a minimum of 12.72 and a maximum of 111.67, while its standard deviation of 31.89 suggests moderate fluctuations in global oil prices.

The deviations of the variables from their respective means further highlight the level of stability within the series. RGDP and OEV exhibit very high standard deviations relative to their means, indicating that the data points are widely spread and not closely clustered around the average, which reflects instability and susceptibility to shocks. OPV also shows considerable dispersion, reinforcing the volatile nature of oil price movements. In contrast, GOR and COP display relatively lower dispersion, suggesting that their values are more concentrated around the mean and therefore more stable over the study period. The skewness statistics reveal the degree of asymmetry in the distribution of the variables. RGDP (0.98), GOR (0.15), OEV (1.04), and COP (0.37) are positively skewed, indicating distributions with longer right tails and a higher likelihood of extreme high values. Conversely, OPV (-1.65) is negatively skewed, implying a distribution with a longer left tail and the presence of extreme negative values, which reflects sharp downward movements in oil price volatility. The kurtosis values provide insight into the peakedness of the distributions. RGDP (2.71), GOR (1.95), and COP (1.86) are platykurtic, suggesting relatively flatter distributions with fewer extreme observations. OEV (3.38) is slightly leptokurtic, indicating a more peaked distribution with some extreme values, while OPV (6.21) is highly leptokurtic, reflecting a distribution with heavy tails and frequent extreme deviations.

The Jarque-Bera statistics further test for normality in the data. RGDP has a probability value of 0.052, which is marginally above the 0.05 threshold, suggesting that it is approximately normally distributed. OPV, with a probability value of 0.000, clearly deviates from normality, indicating a non-normal distribution. GOR (0.412) and COP (0.248) both have probability values greater than 0.05, implying that they are normally distributed. In contrast, OEV, with a probability value of 0.035, does not follow a normal distribution. Conclusively, the results indicate a mixture of normal and non-normal distributions among the variables. Therefore, the dataset is suitable for proceeding to unit root testing to determine the stationarity properties of the variables.

Unit Root Test

A unit root test known as the Augmented Dickey Fuller (ADF) test was used in the research project to determine the order of integration of the variables that were being investigated. This was done in order to pick the proper approach and prevent false regression**.**

Table 2: Unit Root Test Using Augmented Dickey Fuller (ADF)

Variables	Levels		First Difference		Order of Integration	P-value
	T. Statistics	5% Critical Value	T. Statistics	5% Critical Value		
LRGDP	-5.306867	-2.948404			I(0)	0.0001
OPV	-5.866898	-2.948404			I(0)	0.0000
LOVE	-2.020697	-2.948404	-5.493228	-2.954021	I(1)	0.0001
LGOR	-2.451875	-2.948404	-5.490412	-2.951125	I(1)	0.0001
LCOP	-1.245093	-2.948404	-5.339290	-2.951125	I(1)	0.0001

Source: Extracts from E-view 13. * Level of significance at 5%

We examined all of the research variables using Augmented Dickey Fuller (ADF) tests to see whether they were stationary or non-stationary series, following the guidelines provided by table. 2. At the initial difference I(1), the stationarity test indicated that LOEV, LGOR, and LCOP, stationary, whereas LRGDP and OPV is stationary at the level I(0). The variables show either mixed-order integration or stationarity of level and initial differences when we analyse their

stationarity. The Autoregressive Distributive Lag (ARDL) technique was used to analyse the data. Both the first difference (I(1)) and the stationary at level I(0) may be handled by this method. The ARDL test is the most appropriate analytical technique to utilise since it looks at the relationship between the independent and dependent variables in terms of both short-term and long-term trends.

Co-Integration Test

Table 3: ARDL Bound Test

Test Statistics	Value	K
F-statistics	**7.351311**	**4**

Significance	I (0)	1(1)
10%	2.75	3.90
5%	3.35	4.77
1%	4.76	6.67

Source: Authors computation 2024

From table 4.3 the bound test result indicates that there exist long run relationships amongst the variables as the F-statistic value of 7.351311 exceeds both the lower and upper bound critical values. Thus, we reject the null hypotheses of no long run relationship and accept its alternative. This means that there is a long-run relationship between Oil Price Volatility and Economic Growth in Nigeria.

Short and Long-Run Estimation Results for the Model

The results of the short and long-run dynamics association of the model are presented in table 4.4 below.

Table 4.4: ARDL Short and Long-run Result for the Model

Short Run Coefficient				
Variable	**Coefficient**	**Std. Error**	**t-Statistics**	**Prob**
D (() OPV (-1	-4.24E-06	0.000678	-0.006255	0.9951
D (LGOR)	0.187543	0.059982	3.126150	0.0009
D(LOEV)	0.164666	0.054272	3.034061	0.0068
D (LCOP (-1)	-0.070228	0.066590	-1.054625	0.3048
ECM (-1)	-0.318550	0.069144	-4.607056	0.0002
Long Run Coefficient				
Variable	**Coefficient**	**Std. Error**	**t-Statistics**	**Prob**
OPV	0.175206	1.533425	0.114258	0.9098
LGOR	0.761750	0.361652	2.106307	0.0001
LOEV	-0.279986	0.133324	-2.100043	0.0210
LCOP	0.913934	0.293952	3.109128	0.0009
C	0.266759	0.053012	5.032060	0.0001
Adj R^2 =0.719679, F-statistics = 7.319595 (0.000066), DW = 2.154560				

Source: *Authors computation using E-view 13 2024*

The coefficient estimate for the error correction term, ECM (-1) has a negative value and is significant at the 0.05 level. It suggests that the model will reach long-run equilibrium at a rate of 0.32% every year. This means that a yearly adjustment speed of 0.32% may fix the mistake from the previous year. The independent variables (OPV, LGOR, LOEV & LCOP) explain 31% of the total variance in the dependent variable (RGDP), according to the adjusted R-Square (R2) value. As a whole, the model is noteworthy since the F-statistic is significant at the 5% level of significance. Without serial correlation, the model would not work, according to the Durbin-Watson statistics of 2.154560 which is close to 2.

Table 3 displays the model's short-and long run outcome. The logarithm coefficient of government oil revenue (LGOR) and log value of oil expert volume (LOEV) had a positive and significant impact on real gross domestic product (RGDP) while oil price volatility (OPV) had a negative but significant impact on real gross domestic product (RGDP). However, the logarithm value of crude oil price (LCOP) showed a negative and insignificant relationship with real gross domestic product (RGDP) in the short-run. Equally, table 3, shows that the outcome of the long-run result that the log coefficient of government oil revenue (LGOR), and log value of crude oil price (LCOP) has a positive and significant impact on real gross domestic product (RGDP) while the log value of oil export volume (LOEV) had a negative but significant relationship with real gross domestic product (RGDP). However, oil price volatility (OPV) had a positive but insignificant relationship with real gross domestic product (RGDP).

Diagnostic Test

Table 5: Ramsey Reset Test, Serial Correlation LM Test and Homoscedasticity Test Results

	F-Statistic	Prob-Value
Ramsey Reset Test	1.594737	0.2273
Breusch-Godfrey Serial Correlation LM Test	2.898477	0.0910
Breusch-Pagan-Godfrey Heteroskedasticity Test	0.854105	0.6258

Source: Authors computation 2024

From Table 5, the results of the diagnostic test shows that the linearity test using Ramsey Reset test indicates that the f-statistic (1.594737) with computed p-value of 0.2273 which is greater than 5 percent (0.05) critical value, hence the study reject the null hypothesis and conclude that the model is correctly specified. The result of the Serial or Autocorrelation Test using Breusch-Godfrey Serial Correlation LM Test shows that the f-statistic is 2.898477, with a Chi-Square probability value is 0.0910. This indicates that the probability value of about 9 percent (0.0910) is greater than 5 percent (0.05) critical value; hence the study confirms no serial correlation in the model. The result of the heteroscedasticity test using Breusch-Pegan-Godfrey test shows that the f-statistic is 0.854105 with a Chi-Square probability value of 0.6258 The result suggests that there is no evidence of heteroskedasticity in the model since the probability Chi-square value is more than 5 percent (P >0.05). So, residuals do have constant variance which is desirable in regression meaning that residuals are Homoscedastic.

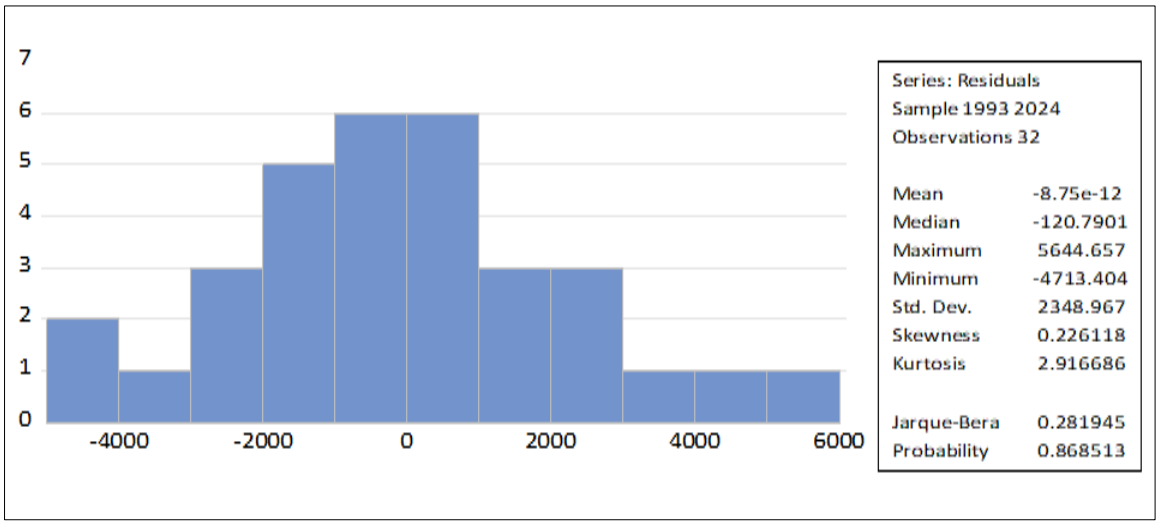

Figure 1: Normality Test

Figure 1, shows summary of the normality test with Jarque-Bara value of 0.281945 and a corresponding probability value of 0.537605 more than 0.05 level of significance, indicating that the residuals are normally distributed.

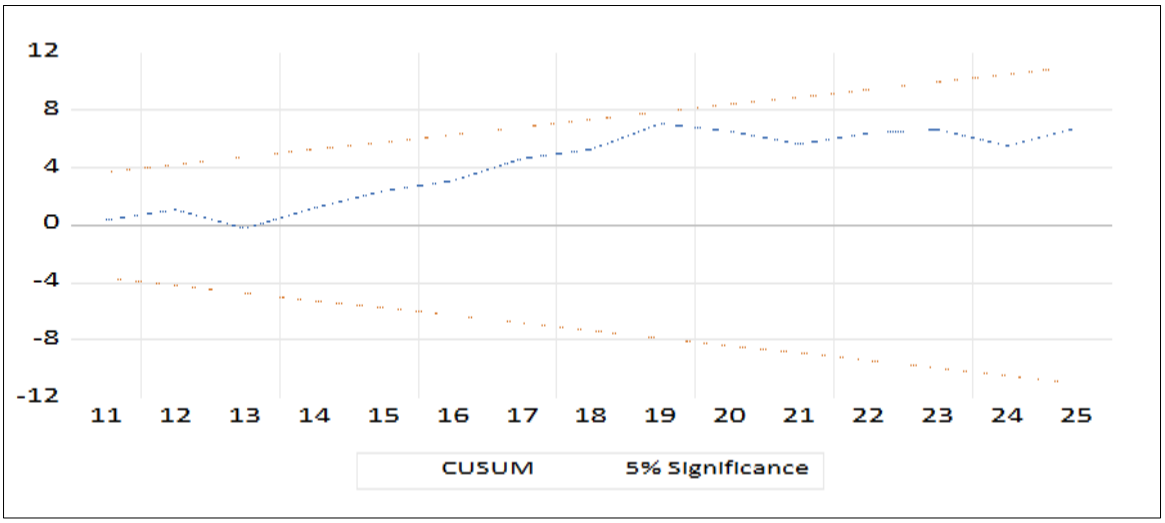

Figure 2: Stability Test

Figure 2 shows summary of the stability test, the result showed that the model is stable. This is evident to the fact that the blue line is in-between the two red (-5 & +5) or less than 0.05 level of significance.

DISCUSSION OF FINDINGS

Oil Price Volatility and Real Gr0ss Domestic Product in Nigeria

The inference drawn from the long-run using the Auto-Regressive Distributive Lag (ARDL) result revealed that Oil Price Volatility (OPV) exerts a positive (+0.175206) with Real Gross Domestic Product (RGDP). The positive relationship between Oil Price Volatility (OPV) and Real Gross Domestic Product (RGDP) do not conform to economic theory. It was expected that frequent and unpredictable changes in oil prices create uncertainty, discourage investment, and weaken economic planning. The p-value (0.9098) of the result indicates that Oil Price Volatility (OPV) is statistically insignificant to influence Real Gross Domestic Product (RGDP) in Nigeria. The study therefore accepts the null hypothesis that there is no significant impact between Oil Price Volatility (OPV) and Real Gross Domestic Product (RGDP). This implies that there is no statistically significant relationship between Oil Price Volatility (OPV) and Real Gross Domestic Product (RGDP). This result disagrees with earlier studies by Suleiman and Abdullahi (2024) and Mohammed and Sani (2024) who found that oil price volatility has a negative and significant impact on economic growth.

Government Oil Revenue and Real Gr0ss Domestic Product in Nigeria

The insinuation drawn from the long-run using the Auto-Regressive Distributive Lag (ARDL) result revealed that Government Oil Price (GOR) exerts a positive (+0.761750) with Real Gross Domestic Product (RGDP). The positive relationship between Government Oil Price (GOR) and Real Gross Domestic Product (RGDP) conform to economic theory. It was expected that increase in revenue enhances government capacity to finance infrastructure, social services, and development projects, thereby promoting economic growth. The p-value (0.0001) of the result indicates that Government Oil Price (GOR) is statistically significant to influence Real Gross Domestic Product (RGDP) in Nigeria. The study therefore reject the null hypothesis that there is no significant impact between Government Oil Price (GOR) and Real Gross Domestic Product (RGDP). This implies that there is a statistically significant relationship between Government Oil Price (GOR) and Real Gross Domestic Product (RGDP). This result is in agreement with Akinwale and Oladipo (2023) who found that Oil revenue had a positive and significant relationship, with economic growth suggesting that stable oil earnings support fiscal expansion and development.

Oil Export Volume and Real Gr0ss Domestic Product in Nigeria

The suggestion drawn from the long-run using the Auto-Regressive Distributive Lag (ARDL) result revealed that Oil Price Volume (OEV) exhibits a negative (-0.279986) with Real Gross Domestic Product (RGDP). The negative relationship between Oil Price Volume (OEV) and Real Gross Domestic Product (RGDP) do not conform to economic theory. It was expected that increase in national income, improve balance of payments, and stimulate productive economic activities. The p-value (0.0210) of the result indicates that Oil Price Volume (OEV) is statistically significant to influence Real Gross Domestic Product (RGDP) in Nigeria. The study therefore reject the null hypothesis that there is no significant impact between Oil Price Volume (OEV) and Real Gross Domestic Product (RGDP). This implies that there is a statistically significant relationship between Oil Price Volume (OEV) and Real Gross Domestic Product (RGDP).

Crude Oil Price and Real Gr0ss Domestic Product in Nigeria

The submission drawn from the long-run using the Auto-Regressive Distributive Lag (ARDL) result revealed that Crude Oil Price (COP) had a positive (+0.913934) with Real Gross Domestic Product (RGDP). The positive relationship between Crude Oil Price (COP) and Real Gross Domestic Product (RGDP) conform to economic theory. It was expected that increase in crude oil prices is expected to have a positive relationship with RGDP because it boosts export revenue, foreign exchange inflows, and overall economic activities. The p-value (0.0009) of the result indicates that Crude Oil Price (COP) is statistically significant to influence Real Gross Domestic Product (RGDP) in Nigeria. The study therefore reject the null hypothesis that there is a significant impact between Crude Oil Price (COP) and Real Gross Domestic Product (RGDP). This implies that there is a statistically significant relationship between Crude Oil Price (COP) and Real Gross Domestic Product (RGDP).

CONCLUSION AND RECOMMENDATION

Conclusion

The study on the effects of oil price volatility on economic growth suggest that government oil revenue and crude oil price had a positive and significant relationship with real gross domestic product. However, oil price volatility had a positive but insignificant relationship with real gross domestic product while oil export volume reported a negative but significant relationship with real gross domestic product. Hence, it was concluded that oil price volatility had a substantial impact on economic growth in Nigeria.

Recommendation

Based on your empirical findings, here are four well-targeted policy recommendations directed to key institutions and agencies in Nigeria:

Stabilization Mechanisms for Oil Price Volatility

i. The Central Bank of Nigeria in collaboration with the Federal Ministry of Finance should strengthen macroeconomic stabilization policies. This includes building robust sovereign wealth buffers and enhancing foreign reserve management to cushion the economy against unpredictable oil price shocks. This will help ensure that volatility does not translate into macroeconomic instability.
ii. Also, the Nigerian National Petroleum Company Limited and the Revenue Mobilization Allocation and Fiscal Commission should ensure transparency and efficiency in revenue generation and allocation. More oil revenues should be channeled into productive sectors such as infrastructure, education, and healthcare to sustain and amplify economic growth.
iii. Additionally, the Federal Ministry of Industry, Trade and Investment and the Nigerian Export Promotion Council should intensify export diversification policies. Promoting non-oil exports such as agriculture, manufacturing, and solid minerals will reduce overdependence on crude oil exports and improve the overall contribution of exports to economic growth.
iv. Finally, the Ministry of Petroleum Resources alongside the Nigeria Sovereign Investment Authority should adopt strategic savings and investment policies during periods of high oil prices. Windfall gains should be invested in long-term development projects and stabilization funds to ensure sustainable economic growth beyond oil price cycles.

REFERENCES

- Abdulkareem, A., & Abdulkareem, K. A. (2020). Analysing oil price and macroeconomic volatility in Nigeria. CBN Journal of Applied Statistics, 7(1), 1–23.
- Abubakar, M., & Musa, A. (2024). Oil price uncertainty and economic growth in Nigeria: Investment channels. Nigerian Journal of Economic and Social Studies, 66(1), 112–130.\
- Adebisi, T. A., & Lawal, A. I. (2023). Oil price volatility and sectoral growth in Nigeria. Journal of African Business, 24(2), 210–229.
- Adewale, T., & Yusuf, S. (2023). Oil price volatility, fiscal policy, and economic growth in Nigeria. CBN Economic and Financial Review, 61(4), 75–96.
- Adugh, D., Udoumoh, E. F., & Oche, D. (2024). Volatility analysis of crude oil prices in Nigeria. FUDMA Journal of Sciences, 8(1), 2212.
- Akinlo, A. E. (2022). Economic growth and structural transformation in Nigeria: Evidence from sectoral analysis. Nigerian Journal of Economic and Social Studies, 64(2), 215–238.
- Akinlo, A. E., & Apanisile, O. T. (2015). The impact of volatility of oil price on the economic growth in sub-Saharan Africa. British Journal of Economics, Management & Trade, 5(3), 338–349.
- Akinola, O., & Obafemi, T. (2024). Oil price fluctuations and GDP growth in Nigeria. Energy Economics Journal, 16(3), 88–105.
- Akinwale, A. A., & Oladipo, O. S. (2023). Oil price fluctuations and economic growth in Nigeria. Energy Economics Review, 15(1), 55–73.
- Baumeister, C., & Hamilton, J. D. (2022). Structural interpretation of oil price shocks. Journal of Applied Economics, 54(2), 101–125.
- Central Bank of Nigeria (CBN). (2022). Statistical Bulletin. Abuja: CBN.
- Corden, W. M., & Neary, J. P. (1982). Booming sector and deindustrialisation in a small open economy. The Economic Journal, 92(368), 825–848.
- Easterly, W. (2001). The Elusive Quest for Growth: Economists' Adventures and Misadventures in the Tropics. MIT Press.
- Eze, P., & Onu, R. (2023). Sectoral effects of oil price instability on Nigerian economy. International Journal of Energy Economics and Policy, 13(2), 45–62.
- Eze, U., & Nwokoro, E. (2024). Institutional quality and sustainable economic growth in Nigeria. Journal of Economic Policy Research, 18(2), 198–217.
- Ezeh, J. C., & Ugwu, C. I. (2022). Oil price instability and macroeconomic performance in Nigeria. Nigerian Journal of Economic Studies, 64(3), 120–139.
- Frankel, J. (2010). The Natural Resource Curse: A Survey. National Bureau of Economic Research (NBER) Working Paper No. 15836.
- Gelb, A. (1988). Oil Windfalls: Blessing or Curse? Oxford University Press.

- Ibrahim, H., & Sani, L. (2023). Oil price volatility and the Nigerian macroeconomy: VAR-GARCH evidence. Energy Reports, 11, 2456–2473.
- Ibrahim, T., & Adedayo, K. (2023). Inclusive growth in Nigeria: Role of agriculture and financial inclusion. Nigerian Economic Journal, 24(4), 410–429.
- International Monetary Fund (IMF). (2023). World Economic Outlook: Coping with Oil Market Volatility. Washington, DC: IMF.
- Kilian, L., & Zhou, X. (2022). Oil prices and economic growth: Evidence from major oil-exporting economies. Energy Economics, 106, 105–120.
- Krugman, P. (1998). What happened to Asia? (Comment). In S. Fischer (Ed.), International Perspectives on the Asian Financial Crisis. MIT Press.
- Lucas, R. E. Jr. (1977). Understanding business cycles. In K. Brunner & A. H. Meltzer (Eds.), Stabilization of the Domestic and International Economy (pp. 3–24). North-Holland.
- Mgbomene, C., Ashakah, F. O., Metieh, F. C., Okoro, E. N., Dim, H. C., & Opara, F. N. (2025). Crude oil price volatility and the Nigerian economy. International Journal of Energy Economics and Policy, 15(3), 390–402.
- Mohammed, A., & Sani, M. (2024). Oil price volatility and economic growth: Evidence from Nigeria. CBN Economic and Financial Review, 62(2), 88–110.
- Mohammed, F., & Bello, R. (2024). Oil price shocks and economic growth: Monetary transmission in Nigeria. African Journal of Economic Policy, 31(2), 59–78.
- National Bureau of Statistics (2023). GDP Reports and Oil Sector Statistics. Abuja: NBS.
- Nigerian Upstream Petroleum Regulatory Commission (2023). Oil Production Status Report. Abuja: NUPRC.
- Nwankwo, O., & Egbunike, C. F. (2022). Oil price shocks and fiscal performance in Nigeria. African Development Review, 34(4), 512–528.
- Obi, C., & Ezeji, J. (2022). Oil price volatility and sectoral GDP performance in Nigeria. Journal of African Economies, 31(5), 445–462.
- Obi, S. O., & Eze, C. C. (2023). Determinants of economic growth in Nigeria: An ARDL approach. African Journal of Economic Review, 11(1), 102–122.
- Ogunleye, E. K., & Ajayi, V. O. (2023). Oil price uncertainty and macroeconomic dynamics in Nigeria. Energy Policy, 176, 113512.
- Okafor, K., & Chukwu, I. (2022). Asymmetric oil price shocks and economic growth in Nigeria. Resources Policy, 77, 102750.
- Okere, P. A., & Ibe, I. G. (2024). Oil price volatility and economic growth nexus in Nigeria. Energy Reports, 10, 1450–1465.
- Okon, E. O., & Effiong, E. L. (2022). Asymmetric effects of oil price shocks on economic growth in Nigeria. Resources Policy, 78, 102873.
- Okoro, E. G. (2023). Oil price volatility and economic growth in Nigeria: Evidence from ARDL. Journal of African Economic Studies, 15(1), 45–67.
- Onwuka, A., & Eze, S. (2022). Positive and negative oil price shocks: Sectoral and macroeconomic effects in Nigeria. Energy Economics, 115, 106391.
- Organization of the Petroleum Exporting Countries (2023). Monthly Oil Market Report. Vienna: OPEC.
- Oriakhi, D. E., & Iyoha, D. O. (2022). Oil price fluctuations and macroeconomic performance in Nigeria. African Economic Review, 14(2), 88–105.
- Oyelade, A., Akintoye, T., & Musa, F. (2024). Oil price shocks and economic growth in Nigeria: A sectoral perspective. Journal of African Business and Development, 15(3), 305–322.
- Plosser, C. I. (1989). Understanding real business cycles. Journal of Economic Perspectives, 3(3), 57–77.
- Prescott, E. C. (1986). Theory ahead of business cycle measurement. Federal Reserve Bank of Minneapolis Quarterly Review, 10(4), 9–22.
- Sachs, J. D., & Warner, A. M. (1995). Natural Resource Abundance and Economic Growth. NBER Working Paper No. 5398.\
- Suleiman, L. A., & Abdullahi, S. (2024). Oil price volatility and growth in oil-dependent economies. Energy Economics, 118, 106502.
- Udom, J. B., Opaluwa, H. O., Ohore, O., & Ometoruwa, T. E. (2023). Resource dependence and macroeconomic adjustment: A VAR analysis of oil price shocks in Nigeria. FUDMA Journal of Sciences, 7(2), 4184.
- Umar, A., & Adamu, B. (2023). Oil price volatility and economic growth in Nigeria: ARDL evidence. Journal of African Business, 25(1), 77–95.
- World Bank. (2023). Global Economic Prospects: Commodity Prices and Economic Growth. Washington, DC: World Bank.
- Yakubu, M., & Bala, U. (2021). Oil price volatility and economic growth in Nigeria: A GARCH approach. International Journal of Energy Economics and Policy, 11(5), 340–350.