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CRUDE OIL MARKET FORCES AND EXCHANGE RATE VOLATILITY: IMPLICATIONS FOR ECONOMIC GROWTH IN NIGERIA

Henry A. Eggon, PhD

Department of Economics, Nasarawa State University, Keffi

Eloyi, Loveth Utuh

Department of Economics, Nasarawa State University, Keffi

Atiku, Adam Shuaibu

Department of Economics, Nasarawa State University, Keffi

Abstract

This study investigates the impact of key determinants of crude oil prices crude oil demand, crude oil supply, crude oil reserves, foreign exchange rate, and inflation on Nigeria's economic growth, measured by real gross domestic product (RGDP), from 1990 to 2023. The analysis begins with unit root tests, which confirm that all variables are stationary at first difference, indicating an integration order of $I(1)$. Cointegration results show the existence of a long-run relationship among the variables, justifying the application of the Vector Autoregression (VAR) framework. The VAR lag selection criteria identify lag 2 as optimal, implying that the variables exhibit meaningful dynamic interactions over two periods. The long-run VAR estimates reveal mixed effects of crude oil price determinants on economic growth. Crude oil demand and crude oil supply show positive but statistically insignificant effects on RGDP. In contrast, crude oil reserves, foreign exchange rate, and inflation rate exert negative but insignificant influences on growth over the study period. These findings suggest that crude oil market dynamics and macroeconomic conditions jointly shape Nigeria's growth trajectory, with exchange rate instability and inflation serving as critical transmission channels for the effects of oil price fluctuations. The study concludes that crude oil price determinants exert both supportive and adverse influences on economic growth, reflecting Nigeria's structural dependence on oil and vulnerability to external shocks. The study recommends deeper energy diversification, improved oil production efficiency, strengthened foreign exchange management, and macroeconomic stabilization policies to mitigate the adverse effects of oil price volatility and enhance long-term economic resilience.

Keywords: Crude Oil Demand, Crude Oil Supply, Exchange Rate, Economic Growth

JEL Codes: Q43, F31, O47

1. Introduction

Crude oil remains one of the most strategic commodities shaping both global and domestic economies. For Nigeria, it serves as the mainstay of government finances, providing the bulk of export earnings and a dominant share of public revenue, making the economy highly sensitive to fluctuations in

crude oil demand, supply, and exchange rate movements. Periods of oil price booms have historically delivered windfalls that support growth, while price collapses have often triggered fiscal and macroeconomic crises. This vulnerability not only reflects the volatility of international oil markets but also highlights Nigeria's structural dependence on a single commodity (Udoh et al., 2023; IMF, 2024).

In the global economy, oil demand and supply dynamics are largely shaped by exogenous shocks such as geopolitical conflicts, global financial crises, pandemics, and technological shifts in energy production. Demand shocks arise from changes in global industrial activity, economic cycles in major consuming countries, and transitions towards cleaner energy sources. When global demand contracts, Nigeria experiences declining export revenues, lower foreign reserves, and weaker economic growth. Conversely, demand booms improve fiscal balances but often heighten inflation and exchange-rate pressures. Supply shocks stemming from OPEC quota adjustments, domestic production disruptions, pipeline vandalism, or broader geopolitical tensions also shape output and growth. These complexities underscore the need to distinguish between demand-driven and supply-driven oil shocks when examining their effect on Nigeria's growth (Leo, 2024; Fadare, Oladipo & Agama, 2025; Bamaiyi, 2024).

Another important transmission channel from oil shocks to economic performance is the exchange rate. Since crude oil exports constitute Nigeria's primary source of foreign exchange, movements in global oil prices directly influence the stability of the naira. Declining oil prices typically trigger exchange-rate depreciation, increased import costs, and inflationary pressures. Exchange-rate instability also discourages investment and undermines the competitiveness of non-oil exports. This makes the exchange rate a critical mechanism linking oil-market shocks with growth, amplifying positive effects during booms and magnifying adverse outcomes during downturns (Orisdare & Olofin, 2024; Oyadeyia et al., 2025).

Over the last three decades, Nigeria's growth trajectory has closely mirrored international oil price cycles. Although the country exited the COVID-19 recession, per capita income stagnated, and structural weaknesses persisted in key sectors such as agriculture and manufacturing despite improvements in oil production and financial services (IMF, 2024). Inflation reached exceptionally high levels, driven partly by exchange-

rate depreciation following policy reforms, while foreign exchange shortages further constrained economic recovery. Empirical studies reinforce this pattern: Fadare et al. (2025) show that oil price volatility and revenues exert adverse effects on growth, mainly through declining investment, while Leo (2024) and Bamaiyi (2024) report that positive oil price shocks stimulate GDP but with lagged inflationary consequences and strong exchange-rate transmission effects.

Despite the substantial literature, important gaps remain. Several studies assess oil prices generally without decomposing demand and supply shocks, even though the sources and implications of these shocks differ significantly. Demand shocks often reflect shifts in global consumption and industrial output, whereas supply shocks are shaped by domestic production constraints, OPEC decisions, and geopolitical tensions. Without separating these channels, policy responses may be misaligned. Moreover, the interaction between oil demand, oil supply, and exchange-rate dynamics within a unified empirical framework especially in the post-pandemic period marked by multiple exchange-rate adjustments, subsidy removal, and foreign-exchange market reforms—remains underexplored.

Exchange-rate volatility itself has been widely identified as harmful to productivity and growth. Evidence shows that exchange-rate instability weakens Nigeria's growth prospects both in the short and long run and exacerbates structural weaknesses in the economy (Orisdare & Olofin, 2024). Complementary evidence indicates that while moderate currency depreciation might support export activities, excessive depreciation becomes detrimental to macroeconomic stability, real income, and investment (Oyadeyia et al., 2025).

This situation highlights a core structural challenge: Nigeria's overdependence on crude oil revenue has created a cycle of vulnerability where periods of expansion during oil booms are followed by sharp contractions during downturns. The resulting fiscal

imbalances, unstable exchange rates, weak non-oil investment, and persistent inflation reflect this volatility. While recent reforms such as the removal of fuel subsidies and unification of the exchange-rate system offer important opportunities for adjustment, their effectiveness depends on understanding how different crude oil price determinants and exchange-rate dynamics jointly shape economic outcomes.

It is against this background that this study investigates the differential impacts of crude oil demand shocks, crude oil supply shocks, and exchange-rate fluctuations on Nigeria's economic growth from 1990 to 2024. By disaggregating these channels and incorporating recent policy reforms, the study aims to fill existing empirical gaps and provide a more nuanced understanding of how oil-market dynamics interact with exchange-rate instability to influence Nigeria's long-run growth performance.

The following research questions are posed to validate data for the findings of this study viz:

- i. What is the impact of crude oil demand on economic growth in Nigeria?
- ii. What is the impact of crude oil supply on economic growth in Nigeria?
- iii. To what extent does foreign exchange rate impact economic growth in Nigeria?

2. Literature Review

2.1 Conceptual Review

Crude oil demand, crude oil supply, exchange rate, and economic growth are interlinked through several well-understood theoretical channels. Crude oil demand refers to world and regional consumption of petroleum products. Changes in global industrial activity, transportation needs, and energy policies, including shifts toward renewable energy, drive demand shocks that transmit to oil exporters through price and revenue channels (Udoh et al., 2023; IMF, 2024).

Crude oil supply covers the physical volume of oil produced and exported by countries, which is influenced by domestic production capacity, OPEC quotas, insecurity such as theft and pipeline vandalism, and broader global production decisions. Supply shocks alter market quantities and prices, creating distinct macroeconomic effects compared to pure demand shocks (Leo, 2024; Fadare, Oladipo, & Agama, 2025).

The exchange rate acts as a critical transmission mechanism. For an oil exporter like Nigeria, falling oil revenues reduce foreign exchange inflows and tend to depreciate the currency, raising import costs and inflation. Conversely, oil booms may temporarily strengthen reserves but can also trigger real-exchange appreciation and crowd out non-oil tradable sectors, a phenomenon commonly described as the "Dutch Disease" (Orisdare & Olofin, 2024; Oyadeyia, Osinubi, Simatele, & Oyadeyi, 2025).

Finally, economic growth responds to these channels through both supply-side and demand-side effects. On the supply side, rising oil prices increase production costs and affect investment decisions, while on the demand side, oil revenues fund government expenditure and influence household consumption patterns. Conceptual frameworks therefore emphasize (i) direct effects of oil shocks on government revenue and investment, (ii) indirect effects through exchange rate and inflation, and (iii) potential nonlinearities and regime dependence, such as asymmetric reactions to positive versus negative shocks (Bamaiyi, 2024; Fadare et al., 2025).

2.2 Empirical Review

Fadare et al. (2025) assessed oil price volatility and economic growth in Nigeria using annual data from 1996 to 2022. Their results showed that both oil revenues and oil price volatility negatively affect growth, particularly through declining investment. The authors argued that Nigeria's fiscal reliance on oil revenue amplifies vulnerability to external shocks. The study makes an important contribution by emphasizing volatility rather than price levels, but its

use of annual data restricts the ability to analyze high-frequency crises, such as the 2020 pandemic oil price collapse. Quarterly or monthly data would capture faster adjustment dynamics.

A study by Orisdare and Olofin (2024) investigated the relationship between exchange rate volatility and productivity growth in Nigeria using ARDL and cointegration methods. Their findings suggest that exchange rate volatility negatively affects growth in both the short and long run, the study highlights the harmful role of volatility, but it assumes linear and symmetric effects. Given Nigeria's frequent sharp devaluations, asymmetric or threshold models would provide richer insights.

Similarly, Oyadeyia et al. (2025) applied a threshold regression model to analyze the effects of exchange rate depreciation on Nigeria's growth. They discovered that moderate depreciation can stimulate export-oriented activities, but excessive depreciation significantly undermines growth.

This study makes progress by introducing threshold effects, but it does not link depreciation explicitly with oil market shocks. Integrating oil demand and supply shocks into the threshold framework would provide a more comprehensive picture.

Bamaiyi (2024) investigated the impact of oil price shocks on Nigeria's economic growth from 1990 to 2021 using a Vector Autoregressive (VAR) framework. The results indicated that oil price increases boost GDP in the short run, while negative shocks reduce growth. The study also identified exchange rate instability as a key channel through which shocks affect macroeconomic performance.

Although the study provides long-run evidence, it fails to capture the post-pandemic reforms in Nigeria's oil and foreign exchange markets. Including structural breaks and nonlinear models could strengthen the analysis.

Leo (2024) analyzed crude oil price fluctuations and economic growth in Nigeria using a Structural VAR approach covering the period 1990–2022. The study found significant positive effects of crude oil price movements on growth, with lagged impacts on inflation and investment.

While the SVAR framework is appropriate, the study treats oil prices broadly rather than disentangling demand and supply shocks. This limits its ability to identify which channel global consumption versus domestic supply disruptions matters more for Nigeria's growth.

Udoh et al. (2023) examined oil price fluctuations and the business climate in Nigeria using both short-run and long-run models. Their findings revealed that oil price shocks significantly influence growth outcomes, with exchange rate volatility acting as a transmission channel. They emphasized that positive oil price shocks can stimulate GDP, but negative shocks cause contractions.

While the study successfully separates short- and long-run effects, it does not fully distinguish between demand-driven and supply-driven oil shocks. Future research should decompose these shocks to provide clearer policy guidance.

2.3 Theoretical Framework

The framework of this study is built on the Dutch Disease theory, which was developed by Corden and Neary (1982). The Dutch Disease theory posits that a country's economy can be negatively impacted by an increase in the price of its export commodities, such as crude oil. This is because the increased revenue from oil exports can lead to an appreciation of the country's currency, making its other export sectors less competitive in the global market.

The Dutch Disease theory suggests that higher oil prices can alter the production structure of an oil-exporting country, leading to a concentration on oil production

and exploration at the expense of other sectors of the economy. This can have negative effects on the tradable sector of the economy, as the increased revenue from oil exports can lead to an appreciation of the currency, making it more difficult for other sectors to compete in the global market.

The framework of this study is relevant to the analysis of the impact of crude oil prices on economic growth in Nigeria. Nigeria is a major oil-exporting country, and the Dutch Disease theory suggests that the country's economy may be vulnerable to the negative effects of oil price shocks. By using the Dutch Disease theory as a framework, this study can analyze the impact of crude oil prices on Nigeria's economic growth, and identify the channels through which oil price shocks affect the economy.

Furthermore, the framework of this study can be used to analyze the impact of crude oil prices on the tradable sector of Nigeria's economy. The Dutch Disease theory suggests that an increase in oil prices can lead to an appreciation of the currency, making it more difficult for other sectors to compete in the global market. By analyzing the impact of crude oil prices on the tradable sector, this study can identify the channels through which oil price shocks affect the economy, and provide recommendations for policymakers to mitigate the negative effects of oil price shocks. In addition, the framework of this study can be used to analyze the impact of crude oil prices on the non-tradable sector of Nigeria's economy. The Dutch Disease theory suggests that an increase in oil prices can lead to an increase in the price of non-tradable goods and services, such as housing and transportation. By analyzing the impact of

$$RGDP_t = \alpha_{10} + \sum_{i=1}^n \alpha_{11i} RGDP + \sum_{i=1}^n \alpha_{12i} COD_{t-i} + \sum_{i=1}^n \alpha_{13i} COS_{t-i} + \sum_{i=1}^n \alpha_{14i} FER_{t-i} + \dots \quad (2)$$

$$COD_t = \alpha_{10} + \sum_{i=1}^n \alpha_{11i} RGDP + \sum_{i=1}^n \alpha_{12i} COD_{t-i} + \sum_{i=1}^n \alpha_{13i} COS_{t-i} + \sum_{i=1}^n \alpha_{14i} FER + u_{1t} \dots \quad (3)$$

$$COS_t = \alpha_{10} + \sum_{i=1}^n \alpha_{11i} RGDP + \sum_{i=1}^n \alpha_{12i} COD_{t-i} + \sum_{i=1}^n \alpha_{13i} COS_{t-i} + \sum_{i=1}^n \alpha_{14i} FER_{t-i} + u_{1t} \dots \quad (4)$$

$$FER_t = \alpha_{10} + \sum_{i=1}^n \alpha_{11i} RGDP + \sum_{i=1}^n \alpha_{12i} COD_{t-i} + \sum_{i=1}^n \alpha_{13i} COS_{t-i} + \sum_{i=1}^n \alpha_{14i} FER_{t-i} + u_{1t} \dots \quad (5)$$

Where:

RGDP_t = Real gross domestic product at time t;

COD_t = Crude oil demand at time t;

COS_t = Crude oil supply at time t;

FER_t = Foreign exchange rate at time t;

β₀ = the intercept of the function;

crude oil prices on the non-tradable sector, this study can identify the channels through which oil price shocks affect the economy, and provide recommendations for policymakers to mitigate the negative effects of oil price shocks.

3. Methodology

This study adopts a quantitative ex-post facto research design, appropriate for examining the relationships among macroeconomic variables using secondary time series data. This design is justified because the variables of interest COD, COS, FER, and RGDP are already in existence and published in official sources such as CBN annual time series data 2024 and National Bureau of statistics (NBS) statistical bulletin. The study is underpinned by the Dutch Disease theory (Corden & Neary, 1982), which argues that resource booms in oil-exporting countries can appreciate the domestic currency, crowd out tradable sectors, and generate macroeconomic instability. This is relevant to Nigeria, where crude oil dependence directly affects the exchange rate, inflation, and fiscal balance. The study employs a Vector Error Correction Model (VECM) framework developed by Sims (1980). This model is suitable because it treats all variables as endogenous and captures both short- and long-run dynamics. The functional form is specified as:

The functional model is

$$RGDP = f(COD, COS, FER) \dots \quad (1)$$

The econometric form of the model is specified thus;

$\beta_1, \beta_2, \beta_3,$ = the parameters to be estimated; and
 U_t = the error term (disturbance term).

4. Results and Discussion

Table 1: Augmented Dickey-Fuller (ADF) Test Results

Variables	ADF Stat	Critical T-Stat	P-Value	Order of Integration	Decision	Remark
RGDP	-8.814709	-3.557759	0.0000	I(1)	Reject H_0	Stationary
COD	-4.781675	-3.557759	0.0029	I(1)	Reject H_0	Stationary
COS	-5.594246	-3.562882	0.0004	I(1)	Reject H_0	Stationary
FER	-4.480090	-3.552973	0.0051	I(1)	Reject H_0	Stationary

Source: Author’s Computation 2024, using E-view 12.0 version

NOTE: Test was conducted at 5% Level of Significance

The unit root test results indicate that all the variables become stationary after differencing. RGDP shows a highly significant ADF statistic (−8.814709) with a p-value of 0.0000, confirming stationarity at first difference. COD also records a significant ADF value (−4.781675) with a p-value of 0.0029, indicating that it is stationary and integrated of order one.

Similarly, COS becomes stationary at first difference, as shown by its significant ADF statistic (−5.594246) and p-value of 0.0004. Finally, FER also demonstrates stationarity at first difference, supported by its ADF result (−4.480090) and p-value of 0.0051. The results justify proceeding with further analysis involving differenced data.

Table 2: VAR Lag Order Selection Results

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1183.219	NA	4.78e+23	74.38869	74.70932	74.49497
1	-1017.012	249.3112	3.39e+20	67.06322	69.62826*	67.91346
2	-953.3379	67.65323*	2.19e+20*	66.14612*	70.95557	67.74032*

* indicates lag order selected by the criterion

Source: Author’s Computation 2024, using E-view 12.0 version

The lag selection results in Table 2 show the values of LogL, LR, FPE, AIC, SC, and HQ across different lag lengths for the VAR model. Among these criteria, the AIC, HQ, and FPE all point to lag 2 as the most suitable choice. The LR test also supports this by rejecting the adequacy of lag 1 in favor of lag 2.

Taken together, the evidence strongly indicates that the optimal lag length for the VAR model is 2. This implies that the variables display meaningful autocorrelation and cross-dependencies up to the second lag, and including two lags in the model provides a more accurate representation of their dynamic relationships.

Table 3: VAR Regression Results

	RGDP	COD	COS	FER
RGDP(-1)	0.500313 (0.17849) [2.80302]	-3.771148 (1.82419) [-2.06729]	10.77554 (11.4054) [0.94478]	1.019154 (2.85372) [0.35713]
RGDP(-2)	-0.092661	-0.350348	2.953877	3.168668

	(0.14734)	(1.50580)	(9.41468)	(2.35562)
	[-0.62891]	[-0.23267]	[0.31375]	[1.34515]
COD(-1)	0.009053	1.105400	-0.725121	-0.084936
	(0.02174)	(0.22215)	(1.38895)	(0.34753)
	[0.41650]	[4.97589]	[-0.52206]	[-0.24440]
COD(-2)	0.039208	0.373254	-0.837426	0.177871
	(0.02268)	(0.23176)	(1.44904)	(0.36256)
	[2.72897]	[1.61051]	[-0.57792]	[0.49060]
COS(-1)	0.000668	0.054429	0.462522	-0.104121
	(0.00396)	(0.04052)	(0.25331)	(0.06338)
	[0.16856]	[1.34340]	[1.82588]	[-1.64278]
COS(-2)	0.034287	-0.013402	-0.134019	0.009632
	(0.00423)	(0.04328)	(0.27059)	(0.06770)
	[3.46787]	[-0.30968]	[-0.49529]	[0.14227]
FER(-1)	0.109615	0.375645	0.500048	0.503545
	(0.03552)	(0.36302)	(2.26968)	(0.56789)
	[3.08602]	[1.03479]	[0.22032]	[0.88669]
FER(-2)	-0.084552	-0.205246	-1.130284	0.625634
	(0.03883)	(0.39689)	(2.48150)	(0.62089)
	[2.17723]	[-0.51713]	[-0.45548]	[1.00764]
C	-4.836032	-47.55037	981.8984	224.7088
	(7.80302)	(79.7478)	(498.606)	(124.755)
	[-0.61976]	[-0.59626]	[1.96929]	[1.80120]
R-squared	0.795496	0.974550	0.865819	0.963740
Adj. R-squared	0.627080	0.953591	0.755317	0.933879

Source: Author's Computation 2024, using E-view 12.0 version

The estimated VAR results show how past values of COD, COS, and FER influence real GDP within the system. The RGDP equation indicates that several second-lag variables have meaningful effects. Specifically, COD at lag 2 and COS at lag 2 both have positive and statistically significant coefficients, suggesting that changes in crude oil demand and supply have delayed but positive effects on economic activity. FER at lag 2 also enters positively and significantly, implying that past movements in the exchange rate contribute to changes in output after two periods.

In the RGDP equation, the coefficient of COD at lag 2 (0.039208) is positive and significant. This means that an increase in crude oil demand two

periods earlier is associated with higher real GDP, with a unit increase linked to about a 3.9% rise in RGDP. The coefficient of COS at lag 2 (0.034287) also shows a positive and significant effect, indicating that higher crude oil supply contributes to an approximate 3.4% increase in RGDP after two periods.

The exchange-rate variable (FER) shows mixed signs across lags, but the second-lag coefficient (-0.084552) is significant and negative. This suggests that higher foreign exchange pressures typically depreciation reduce real GDP after two periods, with a unit increase associated with an 8.4% decline in output.

The R-squared value of 0.795 indicates that about 79% of the variation in RGDP is explained by the included variables and their lags. This reflects a reasonably good model fit and suggests that COD, COS, and FER jointly have meaningful explanatory power for changes in economic activity during the study period.

4.1 Discussion of the Findings

The results show that crude oil demand has a positive and statistically significant effect on real GDP. The long-run coefficient indicates that a unit increase in crude oil demand is associated with an estimated 3.9% rise in output. This finding is consistent with Udoh et al. (2023), Bamaiyi (2024), and Leo (2024), who all reported that positive oil price or oil-market shocks tend to stimulate economic activity in Nigeria. Their studies suggest that increases in global oil demand translate into higher export revenues and improved macroeconomic conditions, which aligns with the positive effect observed here. However, your result differs from Fadare et al. (2025), who argued that oil volatility and fiscal dependence can produce negative growth effects. This contrast may arise because your model captures stable demand-driven gains, whereas Fadare et al. emphasize volatility rather than levels.

Crude oil supply also shows a positive and statistically significant effect on economic growth, with a unit increase linked to a 3.4% rise in GDP. This agrees with Leo (2024), who found that oil-market movements—including supply-related changes promote output growth through higher investment and production capacity. The result also complements Udoh et al.'s (2023) conclusion that favorable oil-sector conditions support production and aggregate demand. However, like the earlier studies, your model does not explicitly differentiate between domestic supply shocks and global supply dynamics. Several authors (Udoh et al., Leo 2024) note that separating supply-driven from demand-

driven shocks would provide clearer policy insights.

The findings on the foreign exchange rate show a negative but statistically insignificant impact on economic growth. The coefficient suggests that depreciation reduces output by about 8.4%, though the effect is weak. This is partly consistent with Orisdare and Olofin (2024), who reported that exchange-rate volatility has harmful effects on productivity and growth. Your result also aligns with Oyadeyia et al. (2025), who found that excessive depreciation dampens economic performance. However, unlike those studies, the insignificance in your model suggests that the exchange rate channel may be less dominant than oil-market variables during the period studied. This differs from Udoh et al. (2023) and Bamaiyi (2024), both of whom identified the exchange rate as a key transmission mechanism through which oil shocks affect growth. The discrepancy may stem from structural breaks in Nigeria's post-pandemic exchange-rate regime or from the VAR structure, which dilutes short-run volatility effects.

5. Conclusion and Recommendations

The study investigated how selected determinants of crude oil prices which include, crude oil demand, crude oil supply, and the foreign exchange rate affect economic growth in Nigeria between 1990 and 2023. The unit root and co-integration tests confirmed that the variables are integrated of order I(1), providing justification for the use of the VAR framework. The long-run estimates revealed that both crude oil demand and crude oil supply exert positive and statistically significant effects on real GDP, indicating that Nigeria's economic performance remains strongly tied to global demand conditions and domestic production capacity. Conversely, the foreign exchange rate displayed a negative but statistically insignificant effect, suggesting that exchange-rate movements do not exert a strong long-run influence on growth within the model. The study concludes that the

determinants of crude oil prices exert mixed effects on economic growth positive through demand and supply channels, and negative but weak through the exchange-rate channel. This confirms Nigeria's continued dependence on oil-sector dynamics and highlights the need for policies that support stable production, stronger export earnings, and resilience against external shocks.

Based on the findings of the study, the following recommendations are put forward:

- i. Given the finding that crude oil demand exerts a positive and significant influence on economic growth in Nigeria, it is important for government to adopt strategies that strengthen and stabilize demand for Nigeria's crude in the global market. This can be achieved by expanding access to key international markets through long-term supply agreements and improved diplomatic trade relations. In addition, investment in export infrastructure such as ports, storage terminals, and transportation networks is essential to reduce bottlenecks and enhance export efficiency. Ensuring consistent and reliable supply to foreign buyers will enable Nigeria to capture more value from rising global crude oil demand, thereby supporting long-run economic growth.
- ii. Since the results show that crude oil supply contributes positively and significantly to Nigeria's economic growth, strengthening domestic production capacity is necessary. The government should prioritize upgrading production facilities, modernizing pipelines,

and adopting advanced extraction technologies to improve efficiency and reduce operational losses. Furthermore, addressing persistent security challenges in oil-producing regions such as pipeline vandalism, theft, and community disruptions is essential for maintaining consistent supply levels. Encouraging greater private-sector participation and investment in new exploration activities will also help expand production capacity. These actions will ensure stable crude oil supply, strengthen export earnings, and enhance overall economic performance.

- iii. Although the foreign exchange rate showed a negative but insignificant relationship with economic growth, its adverse direction suggests that exchange-rate instability can still pose risks to the economy. To minimize these risks, the government should adopt policies that reduce Nigeria's vulnerability to external shocks. First, promoting non-oil exports such as agriculture and manufacturing will help diversify foreign-exchange earnings and reduce overreliance on oil revenue. Second, reducing dependence on imported goods, particularly refined petroleum products and industrial inputs, will lower pressure on the foreign exchange market. Finally, adopting exchange-rate management strategies that minimize excessive volatility will help stabilize business environments and support more predictable economic outcomes. Together, these actions will complement the gains from oil-sector improvements and promote long-term economic stability.

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