

Exchange Rate Volatility and Oil Export Revenue in Nigeria

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Abstract

This study examines the impact of oil price volatility on economic growth in Nigeria over the period 1990–2024. Real exchange rate, nominal exchange rate, exchange rate volatility and inflation rate as a stand in for exchange rate volatility while oil export revenue serves as the dependent variable. Data were sourced from the World Banks World Development Indicator (WDI), and Central Bank of Nigeria) statistical Bulletin 2024. The empirical result revealed that exchange rate volatility had a long-run relationship with oil export revenue in the long-run according to the bound test. Further findings showed that both the real exchange rate and nominal exchange rate exert a negative but statistically significant effect on oil export revenue, while exchange rate volatility and inflation rate exhibit a positive but statistically insignificant relationship with oil export revenue in the long run. Based on these findings, the study concludes that exchange rate volatility plays a significant role in influencing oil export revenue in Nigeria. It was recommended amongst other that the Central Bank of Nigeria should prioritize policies that promote exchange rate stability. This can be achieved through managed float regimes, adequate foreign reserve management, and timely interventions in the foreign exchange market to reduce excessive depreciation of the naira.

Keywords: Real Exchange Rate, Nominal Exchange Rate, Exchange Rate Volatility and Inflation Rate, Export Revenue

JEL Classification Code: F31 F38, F41.

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INTRODUCTION

In an increasingly globalized and financially integrated world, the stability of exchange rates has emerged as a pivotal determinant of international trade performance, particularly for resource-dependent economies whose external earnings are highly susceptible to currency fluctuations. Therefore, exchange rate volatility refers to the degree of fluctuation or instability in the value of a country's currency relative to other currencies over time and is widely conceptualized as the unpredictable movement in exchange rates that introduces uncertainty into international transactions and economic decision-making. International Monetary Fund (2018) describes it as persistent fluctuations in currency values that significantly affect export performance through changes in relative prices and competitiveness, while World Bank (2020) view it as a macroeconomic disturbance that discourages international trade participation due to heightened uncertainty and transaction risks. Theoretically, exchange rate volatility influences export revenue through several channels. While currency depreciation may enhance export competitiveness by lowering the relative price of domestic goods, excessive

volatility creates uncertainty, discourages long-term contracts, and increases transaction and hedging costs, thereby reducing export earnings.

Empirical evidence largely supports the argument that unstable exchange rates exert a negative effect on export performance, particularly in developing economies with weak financial systems. This situation is evident in Nigeria, where exchange rate instability has persisted due to structural imbalances, overdependence on oil exports, and frequent policy interventions by the Central Bank of Nigeria. Nigeria's export base is highly concentrated in crude oil, making export revenue particularly sensitive to exchange rate movements and external shocks.

It is imperative to note that recent statistical data underscore this vulnerability. Take for instance, crude oil exports account for between 70 percent and 90 percent of total export earnings and over 80 percent of foreign exchange inflows (CBN, 2024). Oil export earnings declined from approximately 36 billion US dollars in 2024 to about 31.54 billion US dollars in 2023, reflecting both global oil price dynamics and exchange rate

instability (OPEC, 2024). Although total exports increased from about 40.29 billion US dollars in 2024 to 44.06 billion US dollars in the first three quarters of 2023, export earnings declined by about 5.25 percent in the fourth quarter of 2023, largely due to reduced crude oil shipments (NBS, 2024). At the same time, the naira depreciated sharply from about 460 naira per US dollar in 2023 to over 1,300 naira per US dollar in 2024, indicating significant exchange rate volatility (Central Bank of Nigeria, 2024). External reserves, estimated at about 33.2 billion US dollars in 2024, also reflect vulnerability to fluctuations in oil receipts and exchange rate pressures (Central Bank of Nigeria, 2024). Empirical evidence supports these trends, as Okogor *et al.*,(2023) found that exchange rate volatility significantly affects Nigeria's export performance, while Olu *et al.*,(2022) confirmed its significant impact on trade transactions using a GARCH framework.

Despite these insights, exchange rate volatility continues to pose serious challenges in Nigeria. The persistent depreciation of the naira has created uncertainty in export earnings, particularly in the oil sector. For instance, foreign exchange related revenue declined by about 73 percent to 589.45 billion naira in the first half of 2024 from 2.199 trillion naira in the same period of 2023, highlighting the instability of exchange rate driven revenues (CBN, 2024). Similarly, fluctuations in exchange rates have contributed to inconsistent export performance, as seen in declining export earnings despite periods of trade surplus (NBS, 2024). Exchange rate volatility also complicates fiscal planning and undermines the reliability of oil revenue as a stable source of government income, especially in an economy heavily dependent on oil exports (United Nations Framework Convention on Climate Change, 2021). Furthermore, the structural weakness of Nigeria's export base limits the gains from exchange rate movements. Although currency depreciation has occasionally increased export values in domestic currency terms, such gains are largely driven by crude oil, while non-oil exports remain below 20 percent of total exports (CBN, 2024; Tekedia, 2024). This indicates that exchange rate adjustments alone cannot guarantee sustainable export growth without economic diversification.

Existing studies have largely focused on aggregate or non-oil exports, leaving a gap in understanding the specific relationship between exchange rate volatility and oil export revenue in Nigeria. In addition, recent foreign exchange reforms and heightened market volatility necessitate updated empirical analysis. It is on this premise that the present seek to address the following questions, the extent real exchange rate has impacted oil export revenue? How has nominal exchange rate impacted oil export revenue? To what extent has exchange rate volatility affected oil export revenue? And how has inflation rate impacted oil

export revenue? The rest of the paper after the introduction is structured as, section 2 is literature review, section 3 is methodology, section 4 is result and discussion while section 5 is conclusion and recommendation

LITERATURE REVIEW

Conceptual Literature, Exchange Rate Volatility

Exchange rate volatility remains one of the most critical and widely debated phenomena in international macroeconomics, particularly in the context of increasing global financial integration and the growing exposure of economies to external shocks. Its relevance has intensified in recent years as fluctuations in currency values continue to shape trade outcomes, investment decisions, and overall economic stability, especially in developing and export-dependent economies. According to Gelle *et al.*,(2024) exchange rate volatility as persistent fluctuations in the value of a currency over time that significantly influence trade performance and economic growth through changes in relative prices and competitiveness. This definition underscores the dynamic and continuous nature of exchange rate movements and highlights their direct transmission into the real sector of the economy. The implication of this view is that volatility is not merely a statistical occurrence but a structural factor that shapes export outcomes and macroeconomic stability.

Similarly, Adams and Uchema (2024) conceptualize exchange rate volatility as the degree of variability in a country's exchange rate over a specified period, which can be modeled and forecasted using econometric techniques such as the Exponential Generalized Autoregressive Conditional Heteroskedasticity framework. Their definition emphasizes the measurable and predictable components of volatility, suggesting that exchange rate instability can be quantitatively analyzed and anticipated for policy and investment purposes. The study's perspective implies that volatility is both a statistical property and a decision-making variable relevant to investors and policymakers. In another contribution, Oladutire, et al (2024) describe exchange rate volatility as a complex phenomenon characterized by frequent and unpredictable changes in currency values that introduce uncertainty into international trade and financial transactions. They further argue that such volatility affects pricing strategies, profit margins, and planning decisions of firms engaged in cross-border trade. This definition extends the concept beyond mere fluctuations by emphasizing its uncertainty and risk dimensions, particularly in relation to business operations.

Oil Export Revenue

Oil export revenue is a fundamental driver of economic growth, fiscal stability, and external sector performance, particularly in countries that rely heavily on international trade and primary commodity exports. It

represents the earnings a nation generates from the sale of crude oil to foreign markets and serves as a critical source of foreign exchange, government revenue, and investment capital. Its significance is heightened in developing economies where export proceeds finance infrastructure, social programs, and industrial development, thereby linking trade performance directly to broader economic development. According to Adegbite and Okafor (2023), oil export revenue is the total oil foreign income earned from the sale of a country's crude oil abroad, reflecting both the quantity and value of exports in international markets. Their view emphasizes the direct relationship between export earnings and trade performance, suggesting that higher oil export revenue contributes to increased foreign exchange availability and improved balance of payments.

In contrast, Bello *et al.*, (2024) define oil export revenue as the aggregate value of all oil related revenue generated from sales of crude oil. They stress the role of global market prices, exchange rates, and trade policies in determining the magnitude of export earnings. This perspective implies that export revenue is not only a function of trade volume but also highly sensitive to external price shocks and macroeconomic conditions, highlighting its vulnerability to global market volatility. Likewise, Nwankwo and Adesina (2024) conceptualize oil export revenue as a key determinant of national income that is highly responsive to both internal policy measures and external economic shocks. They highlight that export revenue is instrumental in stabilizing foreign exchange markets, supporting fiscal budgets, and mitigating external imbalances, making it a core metric for policymakers and economic planners. In general terms, oil export revenue can be understood as the total inflow of funds a country receives from its international trade activities, encompassing. It is influenced by global demand, commodity prices, exchange rate movements, and domestic production capacity. In developing economies like Nigeria, where crude oil and primary commodities dominate exports, export revenue plays a central role in sustaining macroeconomic stability and funding government expenditures.

Relationship between Exchange Rate Volatility and Oil Export Revenue

The relationship between exchange rate volatility and oil export revenue has been a central concern in international trade and macroeconomic studies, particularly for economies heavily reliant on commodity exports. Exchange rate volatility introduces uncertainty into cross-border transactions, affecting the pricing, volume, and profitability of exports. Fluctuations in currency values can either enhance or reduce oil export revenue depending on the direction and stability of the exchange rate, making it a critical determinant of external sector performance. According to Ajayi and Akinola (2023), exchange rate volatility

negatively affects oil export revenue by increasing the risk associated with international trade contracts. They argue that firms facing unpredictable currency movements often delay or reduce oil export activities to avoid potential losses, which translates into lower foreign exchange inflows.

Similarly, Chukwu *et al.*, (2024) conceptualize the relationship as a dual effect, whereby moderate depreciation can temporarily boost oil export revenue in domestic currency terms, but excessive and unpredictable volatility undermines trade performance. Their study, which analyzed quarterly data from 2010 to 2023, revealed that oil export revenue from oil and non-oil sectors declined during quarters marked by extreme exchange rate fluctuations, even when global commodity prices were stable. They noted that the variability of the naira against major currencies increased transaction costs, disrupted payment flows, and discouraged long-term export contracts, leading to an average 12 percent reduction in total export revenue during volatile periods.

Consequently, recent literature establishes that the relationship between exchange rate volatility and oil export revenue is largely inverse and context-dependent. While moderate and stable depreciation may enhance competitiveness in foreign markets, high and unpredictable volatility tends to reduce oil export performance by raising transaction costs, discouraging exporters, and creating macroeconomic uncertainty. For Nigeria, where crude oil accounts for approximately 70–90 percent of total export earnings (CBN, 2024), this relationship is particularly significant. Statistical trends indicate that fluctuations in the naira, especially between 2020 and 2024, corresponded with declines in oil export revenue by as much as 10–15 percent annually during periods of extreme volatility, illustrating the tangible economic impact of currency instability on national earnings (CBN, 2024; NBS, 2024).

Theoretical Literature

Risk Aversion and Hedging Theory

The Risk Aversion and Hedging Theory was propounded by Bartram, *et al.*, in 2019, The theory posits that economic agents, including firms, investors, and exporters, are inherently risk-averse and seek to minimize potential financial losses in uncertain environments. In the context of international trade, fluctuations in exchange rates introduce significant uncertainty in pricing, profit margins, and contractual obligations, prompting exporters to adopt risk management strategies such as forward contracts, futures, and currency diversification to protect revenue. The theory assumes that economic agents prefer predictable outcomes over uncertain ones that exchange rate volatility presents a real financial risk affecting profitability, and that agents have at least partial access to hedging instruments, even though these may be limited in developing economies. It further presumes a

direct relationship between perceived risk and economic behavior; whereby higher uncertainty compels more conservative strategies and reduced exposure to volatile markets (Bartram *et al.*, 2019).

Proponents of the theory argue that it offers a practical framework for understanding the behavior of exporters and investors in volatile currency environments. Ajayi and Akinola (2023) observed that Nigerian oil exporters often limit long-term export commitments during periods of high naira volatility, relying on short-term contracts to maintain stable revenue streams. Chukwu *et al.*, (2024) also emphasized that hedging and other risk management tools are essential in stabilizing export earnings and ensuring predictable foreign exchange inflows in economies experiencing frequent currency fluctuations. Opponents of the theory argue that it overemphasizes risk aversion and underestimates the adaptive capacity of firms. Gokmen and Kose (2022) contend that some exporters in emerging markets can strategically benefit from exchange rate volatility through pricing adjustments, market diversification, or innovative financial instruments, which can offset the adverse effects of currency instability. Similarly, Olufemi and Adeoye (2021) argue that the theory's reliance on the availability of hedging mechanisms limits its applicability in developing economies, where financial markets are often underdeveloped and firms cannot fully mitigate currency risks.

The theory is relevant to the study because fluctuations in the naira-dollar exchange rate create uncertainty in revenue inflows, affecting government budgets, foreign reserves, and trade performance. By anchoring the study on this theory, it becomes possible to explain not only the statistical relationship between exchange rate volatility and oil export revenue but also the behavioral responses of Nigerian oil exporters to currency instability. The theory was selected as the anchor because it addresses both the macroeconomic impact of exchange rate volatility and the decision-making behavior of exporters. Unlike other theories that focus solely on price mechanisms or trade flows, the theory provides a comprehensive framework for understanding how currency uncertainty directly affects export revenue, particularly in Nigeria, where limited access to sophisticated hedging tools amplifies the negative effects of exchange rate fluctuations on oil earnings.

Purchasing Power Parity Theory,

The Purchasing Power Parity Theory postulated Cassel in 1918. The theory posits that the exchange rate between two currencies adjusts to equalize the purchasing power of each currency in terms of a common basket of goods and services. In other words, identical goods should cost the same in different countries when prices are expressed in a common currency. The theory

assumes that goods are tradable across borders, that there are no significant transaction costs or trade barriers, and that price levels are flexible enough to adjust to market conditions (Cassel, 1918; Dornbusch, 1976). Proponents of the Purchasing Power Parity theory argue that it provides a fundamental basis for understanding the long-term relationship between exchange rates and relative price levels. Rogoff (1996) emphasized that deviations from Purchasing Power Parity are often temporary and that exchange rates tend to converge toward values consistent with relative price differentials over time. Studies by Taylor and Taylor (2021) support the view that Purchasing Power Parity can help explain the real value of exports and imports, particularly in economies exposed to external shocks, by indicating how currency misalignments affect international trade competitiveness

Opponents, however, argue that the theory has limitations in explaining short-term exchange rate movements. Obstfeld and Rogoff (2000) noted that factors such as capital flows, speculative behavior, and government interventions often cause prolonged deviations from Purchasing Power Parity, making it less reliable for analyzing short-term revenue fluctuations. Additionally, Goldberg and Knetter (2020) highlighted that non-tradable goods, transportation costs, tariffs, and market imperfections prevent strict adherence to the PPP principle in many developing economies, including Nigeria. The theory is relevant to the study because it provides a framework for understanding how changes in the naira's value against major currencies can influence the domestic currency value of oil earnings. Since oil exports are denominated in foreign currencies, significant depreciation of the naira can affect the purchasing power of export revenues and the competitiveness of Nigerian oil in global markets.

Empirical Literature

Tasneem and Sawkut (2024) examines the extent to which exchange rate volatility (ERV) is crucial for small island economies. These economies by their very nature and size tend to be net importers and highly dependent on trade for their economic survival. The island of Mauritius is used as a case study. Design/methodology/approach – A GARCH model has been utilized using yearly data for the period 1993–2022. The ARDL bounds cointegration approach has been used to determine the long run relationship between exchange rate volatility and the performance of exports. The ECM-ARDL model has been used to estimate the short-run relationships that is the speed of adjustments between the variables under consideration. The findings reveal that exchange rate volatility has a positive and significant effect on exports in the short run as well as in the long run. The study also finds that export has a long-term relationship with GDP per capita. Both the presence and degree of exchange rate volatility are important aspects for consideration in policymaking.

Musa *et al.*, (2023) examined the impact of exchange rate volatility on Nigeria's exports for the period 2008 to 2021 using the ARDL Error Correction Model and Bounds testing approach. The study used variables such as: parallel market exchange rate volatility, interbank exchange rate volatility, real effective exchange rate volatility, nominal exchange rate volatility, and total export revenue. The results showed that all four volatility measures had negative short-run effects on exports, indicating that high volatility reduced export performance. In the long run, only real effective exchange rate volatility was statistically significant and negatively affected export revenue. Additionally, Okogor *et al.*, (2023) analyzed the effect of exchange rate volatility on Nigeria's exports to top trading partners over 1995 to 2020 using ARDL techniques. Variables included exchange rate volatility, GDP of trading partners, population of trading partners, and relative prices of Nigerian exports. The results revealed that exchange rate volatility had a negative impact on exports to some markets (China, USA) but could increase exports to others (France, Spain). GDP and population were positively significant, while relative prices often reduced competitiveness. The study highlighted that volatility effects depend on trading partner characteristics and relative pricing.

Okogor *et al.*, (2023) examined the effect of exchange rate volatility on Nigeria's exports to top trading partners from 1995 to 2020 using ARDL modeling. Their variables were exchange rate volatility, GDP of partner countries, population, and relative export prices. The study revealed heterogeneous effects: volatility negatively affected exports to the USA and China, while increasing exports to France and Spain. GDP and population exerted positive and significant influence, whereas relative prices reduced competitiveness. Likewise, Musa *et al.*, (2023) investigated how exchange rate volatility influenced Nigeria's export flows from 2008 to 2021 using ARDL and Bounds testing techniques. The study incorporated variables such as parallel market exchange rate volatility, interbank rate volatility, nominal exchange rate, real effective exchange rate, and total export revenue. Their findings revealed that all volatility indicators dampened short-run export earnings, highlighting the vulnerability of exporters to exchange rate fluctuations. Interestingly, in the long run, only real effective exchange rate volatility exhibited a statistically significant negative impact, emphasizing that structural currency instability undermines sustained export growth. The error correction term suggested gradual return to equilibrium whenever shocks occurred.

Umaru *et al.* (2023) examined the impact of exchange rate volatility on export in Nigeria. The specific objectives of the study were to evaluate the individual impacts of parallel market-, interbank, real and nominal-exchange rate volatilities on Nigeria's

export. The study employed the ARDL-Error Correction Model and Bound Test using secondary data sourced from the Statistics Database of the Central Bank of Nigeria. Bounds test results for each of the four models, showed long-run relationship among the variables. The results showed that in the long-run, all the exchange rate volatility measures showed negative sign as expected but only the real effective exchange rate volatility was statistically significant in the long run. In the short-run, the average impact of exchange rate volatility was negative in all the four models as expected. However, volatility in real effective exchange rate and nominal effective exchange rate were statistically significant. Finally, if the Nigeria's export deviates from its long-run path due to short-run perturbations, the tendency for it to return to long-run equilibrium from the four models lied between 25% and 39%.

Duru *et al.*, (2022) examined exchange rate volatility and exports in Nigeria for the period 2005 to 2020 using ARCH, GARCH, TAR, EGARCH, and ARDL methods. Variables included nominal effective exchange rate, total exports, and various volatility measures. The results showed that exchange rate volatility negatively affected exports, although the effect was statistically insignificant in both short and long run. Still, Uruakpa (2021) applied VAR, VECM, ARCH, and GARCH models to assess Nigeria's export response to exchange rate volatility for 2000 to 2020. Variables included total exports, exchange rate changes, exchange rate volatility measures. It was found that exchange rate volatility negatively influenced export performance in both short and long run. The VECM results indicated that deviations from equilibrium corrected at 25% per year, showing gradual adjustment. The GARCH results revealed high volatility periods were associated with declining exports, emphasizing the need for stable exchange rate policy.

Lateef (2020) examined the effect of exchange rate volatility on Nigerian crude oil export to its trading partners (UK, USA, Italy, France, Spain, Canada and Brazil) using monthly data from the first month in 2006 (M01) to the last month in 2019 (M12). The volatility of the exchange rate was estimated using GARCH and the effect of exchange rate volatility on crude oil export was estimated using ARDL. The GARCH result shows that the exchange rates of the trading partners are volatile. The ARDL result shows that the volatility of the exchange rate of Nigeria's trading partners is statistically significant for all the trading partners but with different magnitudes which means the volatility of exchange rate between Nigeria and its trading partners is very imperative in determining the volume of crude oil exportation made by Nigeria to its trading partner. The real exchange rate of the trading partners is statistically significant for all the trading partners while the income of Nigeria's trading partners is statistically significant for 4 out of the 7 countries.

Yakub *et al.*, (2020) employed GARCH and ARDL methods to study the impact of exchange rate volatility on Nigeria's crude oil exports for 2000 to 2019. Variables included crude oil export volumes, exchange rate changes, and exchange rate volatility. The result showed that in the short run, volatility significantly reduced crude oil export volumes, lowering export earnings. However, in the long run, adaptation occurred, mitigating the negative impact.

Dania and Ogedengbe (2019) investigated the impact of exchange volatility on non-oil export performance in Nigeria. The objectives of the study are to determine the impact of exchange rate (naira/dollar) volatility to Nigeria non-oil export performance and the speed of adjustment using error correction method (ECM). The study used annual data from 1981 to 2017. The Augmented Dickey Fuller test was used to check for the presence of a unit root in the variables, and the cointegration was used to check if long-run relationship exists among the variables in the model and was carried out using the Johansen technique. The Arch test was used to test for the Arch effect (volatility) in the exchange rate. The ECM was used to determine the speed of adjustment. From the results, it was found that exchange rate has an ARCH effect on non-oil export performance in Nigeria and more so, significantly and negatively on it. It was recommended that the managers of the economy should apply policies that can stabilize the exchange rate as the sector has the capability to generate jobs and reduce extreme poverty in the land.

Rasaq (2013) analyses the impact of exchange rate volatility on Macroeconomic variables and with the help of Correlation Matrix, Ordinary Least Square (OLS) and Granger Causality test, the findings of the study shows that exchange rate volatility has a positive influence on Gross Domestic Product, Foreign Direct Investment and Trade Openness, but with negative influence on the inflationary rate in the country. It was suggested by the author, that the need country to improve their revenue base in term of increasing number of items meant for export and reduce over reliance on petroleum sector and also to reduce the importation of non-essential items, so as improve their term of trade. Also increase in domestic production will reduce the problem caused by exchange rate volatility. Consequently, a concise review of the empirical literature reveals a substantial but narrowly focused body of evidence on exchange rate volatility and external sector performance. Tasneem and Sawkut (2024), using GARCH and ARDL for Mauritius, find that exchange rate volatility positively influences exports in both the short and long run, suggesting that structural factors may condition outcomes. However, Nigerian-based studies including Musa *et al.*, (2023), Umaru *et al.*, (2023), and Duru *et al.*, (2022) largely report that exchange rate volatility exerts a negative effect on export performance, especially in the short run,

with limited long-run significance often restricted to real effective exchange rate volatility.

Similarly, studies such as Okogor *et al.*, (2023) and Lateef (2020) show that the effects of exchange rate volatility vary across trading partners, highlighting external heterogeneity but shifting attention away from domestic macroeconomic interactions. Other contributions, including Uruakpa (2021), Yakub *et al.*, (2020), and Dania and Ogedengbe (2019), using ARCH/GARCH, VAR/VECM, and ECM techniques, reinforce the predominance of negative volatility effects on exports, though their focus remains largely on aggregate or disaggregated export measures. Despite these insights, key gaps persist. Conceptually, most studies emphasize exchange rate volatility while neglecting oil price volatility, a critical determinant in Nigeria's oil-dependent economy. In terms of variables, there is limited integration of real exchange rate, nominal exchange rate, exchange rate volatility, and inflation within a unified framework. Additionally, prior studies largely focus on total or non-oil exports, with little attention to oil export revenue as a distinct dependent variable.

Scope-wise, many studies are restricted to shorter timeframes, failing to capture long-term structural dynamics. Methodologically, although ARDL and GARCH techniques are widely applied, few studies combine them to simultaneously capture volatility and long-run relationships involving oil price movements. Therefore, this study addresses these gaps by examining oil price volatility alongside exchange rate dynamics which were proxied by real exchange rate, nominal exchange rate, exchange rate volatility, and inflation—on oil export revenue in Nigeria over an extended period (1990–2024), providing a more comprehensive and policy-relevant analysis.

METHODOLOGY

This paper basically relied on secondary data which were obtained from World Banks World Development Indicator (WDI), and Central Bank of Nigeria (CBN) statistical Bulletin 2024 was the primary source of information for this research paper. Real Exchange Rate, (RER), Nominal Exchange Rate (NER), Exchange Rate Volatility (ERV), and Inflation Rate (IFR), were used to proxy Exchange Rate Volatility while Oil Export Revenue Stands as the dependent variable. 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 for this study is a modification of Lateef (2020), when investigating the impact of

Exchange rate volatility and Nigeria crude oil export market. Their model is specified below;

$$EX = f(IIP, RER, VOL) \quad 1$$

Where

EX= crude oil export, IIP = Index of Industrial Production, RER = real exchange rate, VOL = volatility of real exchange rate

However, to better capture the objective of the study the model is extended by disaggregating exchange rate volatility into real exchange rate movement, nominal exchange rate, exchange rate volatility and inflation rate

The new modified model is specified below

$$OER = f(RER, NER, ERV, IFR) \quad 2$$

The mathematical model could be symbolically expressed as;

$$OER = \beta_0 + \beta_1 RER + \beta_2 NER + \beta_3 ERV + \beta_4 IFR \quad 3$$

$$OER = \beta_0 + \beta_1 RER + \beta_2 NER + \beta_3 ERV + \beta_4 IFR + e \quad 4$$

Where:

OER = Oil Export Revenue, RER = Real Exchange Rate, NER = Nominal Exchange Rate, ERV = Exchange Rate Volatility. IFR= Inflation Rate, f = functional relationship β_0 = Intercept of relationship in the model/constant β_1 - β_4 = Coefficients of each independent or explanatory variable e= Stochastic or Error term.

Description of Variables in the Model

Oil Export Revenue (OER):

This refers to the income a country earns from selling crude oil and petroleum products to foreign markets. It is usually measured in monetary terms, such as U.S. dollars or the local currency.

Real Exchange Rate (RER):

This measures the relative price of domestic goods to foreign goods, adjusted for inflation differences between countries. makes domestic goods more expensive internationally, potentially reducing competitiveness and lowering oil export revenue. Real

exchange rate is hypothesized to have a negative relationship with oil export revenue and is used to proxy exchange rate volatility. Real exchange rate is measured in US\$. Hence, $\beta_1 < 0$.

Nominal Exchange Rate (NER):

This is the rate at which one currency can be exchanged for another in the foreign exchange market. An increase in the nominal exchange rate means the domestic currency is weaker relative to foreign currencies. A weaker domestic currency increases the local currency value of oil revenue, resulting in a positive relationship with oil export revenue. Therefore, this paper assumed that nominal exchange rate will be positively related with oil export revenue. Nominal exchange rate is used to proxy exchange rate volatility and is measured in US\$. Thus, $\beta_2 > 0$

Exchange Rate Volatility (ERV):

This refers to fluctuations or uncertainty in the value of the domestic currency relative to foreign currencies over a period of time. Higher volatility increases risk for exporters because it creates uncertainty about the local currency value of foreign earnings. For oil exporters, higher exchange rate volatility typically reduces investment and export revenue. Accordingly, this paper posit that exchange rate volatility will have a negative relationship with oil export revenue. Exchange rate volatility is used as the independent variable and is measured in %. Therefore, $\beta_3 < 0$

Inflation Rate (IFR):

This is the rate at which the general price level of goods and services in an economy rises over time, reducing purchasing power. High domestic inflation can make oil-related production and operational costs more expensive. Consequently, this paper supposed that inflation rate will have a negative relationship with oil export rate venue. Inflation rate is used in this study as a control variable. Inflation rate is measured in %. Accordingly, $\beta_4 < 0$

Empirical Data Analysis

THE GRAPHICAL ANALYSIS



Figure 1: Trend Specification for Oil Export Revenue in Nigeria for the Period spanning from 1990 to 2024

Source: Central Bank of Nigeria (CBN), Statistical Bulletin 2024.

Fig 1: Trends of Oil Export Revenue (OER) (1906 to 2024)

Fig 1. Shows a graphical presentation of Oil Export Revenue (OER). The trend of Oil Export Revenue (OER) over the study period exhibits significant fluctuations characterized by phases of expansion, contraction, and volatility, reflecting Nigeria's dependence on the global oil market. Between 1990 and 1994, OER increased moderately from ₦106,626.50 thousand to ₦200,710.20 thousand, indicating gradual growth in oil earnings. However, a sharp surge is observed in 1995 and 1996, where OER rose dramatically to ₦927,565.30 thousand and ₦1,286,215.90 thousand respectively, suggesting a possible oil boom driven by favorable international crude oil prices and increased production capacity. The period 1997–1998 recorded a decline, with OER falling

to ₦717,786.50 thousand, reflecting adverse external shocks such as global oil price volatility. From 1999 onward, OER resumed an upward trajectory, peaking intermittently, notably reaching ₦9,861,834.43 thousand in 2008 before declining in 2009 due to the global financial crisis. A sustained growth phase is evident from 2010 to 2013, with OER surpassing ₦14 million thousand, indicating improved oil market performance. However, a downturn occurred between 2014 and 2016, coinciding with the global oil price crash. From 2017 onward, OER rebounded significantly, reaching its peak of ₦32,502,384.29 thousand in 2023, before declining slightly in 2024. Conclusively the trend suggests that OER is highly volatile and sensitive to external shocks, particularly international oil price dynamics, underscoring the vulnerability of an oil-dependent economy.

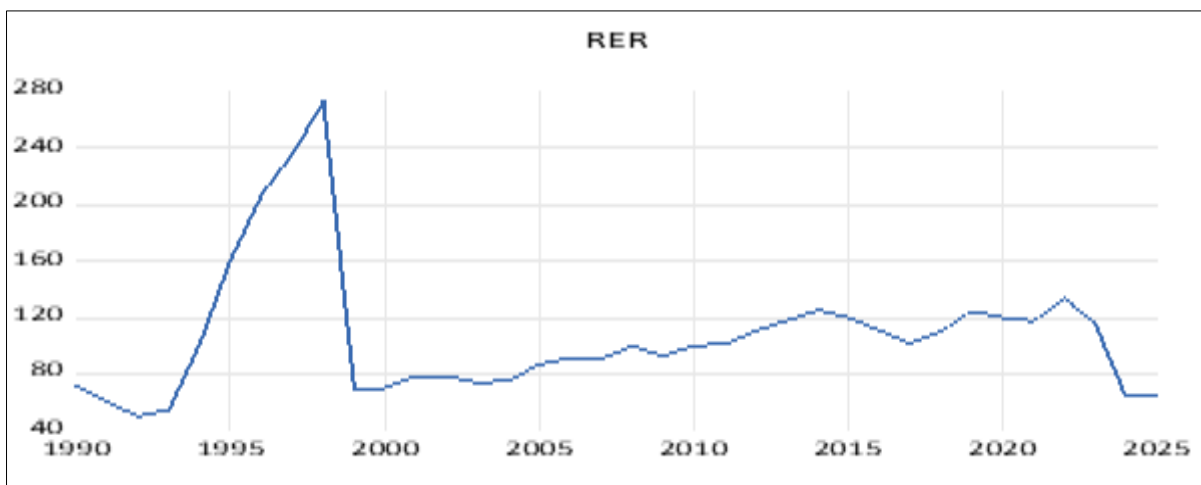


Figure 2: Trend Specification for Real Exchange Rate in Nigeria for the Period spanning from 1990 to 2024
Source: World Banks World Development Indicator (WDI), 2024.

Fig 2: Trends of Real Exchange Rate (RER) (1990 to 2024)

The Real Exchange Rate (RER) reflects the competitiveness of the domestic currency relative to foreign currencies after adjusting for inflation differentials. The trend indicates considerable instability over the study period. From 1990 to 1993, RER declined from 71.06 to 54.44, suggesting an appreciation of the domestic currency in real terms. However, in 1994, a sharp increase to 100.63 indicates significant real depreciation, possibly due to macroeconomic adjustments or exchange rate policy shifts. Between 1995 and 1998, RER increased steadily, reaching

273.00, indicating persistent real depreciation and declining international competitiveness. This trend reversed sharply in 1999, where RER dropped to 69.20, reflecting a major appreciation episode. From 2000 to 2014, RER exhibited moderate fluctuations within a relatively stable band, suggesting some degree of exchange rate management. However, from 2015 onward, the RER shows increased volatility, peaking at 133.28 in 2022 before declining sharply to 63.92 in 2024. In general, the RER trend highlights episodes of both real appreciation and depreciation, indicating macroeconomic instability and frequent exchange rate adjustments.

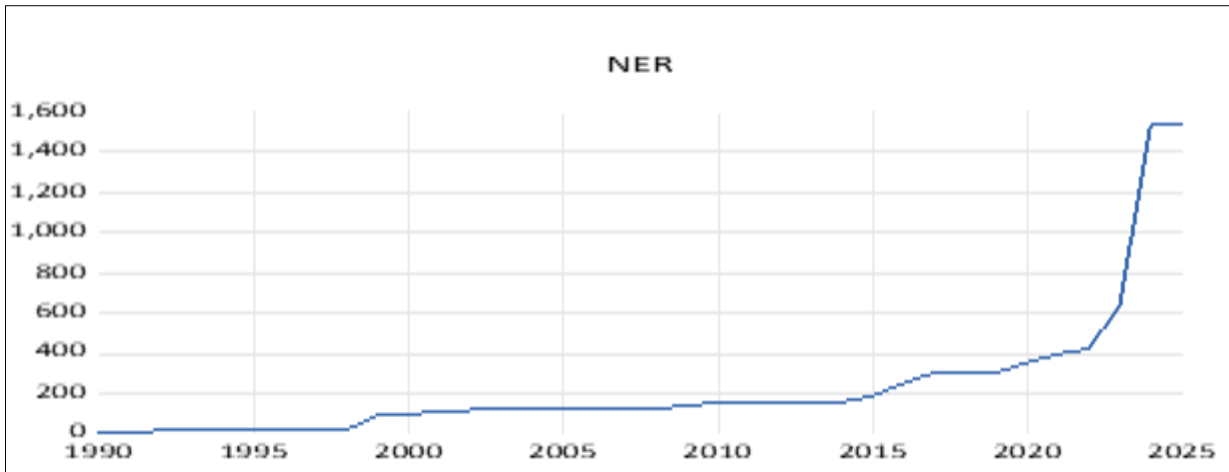


Figure 3: Trend Specification for Nominal Exchange Rate in Nigeria for the Period spanning from 1990 to 2024
 Source: World Banks World Development Indicator (WDI), 2024.

Fig 3: Trends of Nominal Exchange Rate (NER) (1990 to 2024)

The Nominal Exchange Rate (NER) represents the value of the domestic currency relative to the US dollar. The trend shows a persistent depreciation of the Naira over time. From 1990 to 1998, the NER increased from ₦8.04/\$ to ₦21.89/\$, indicating gradual depreciation. A major structural break is observed in 1999, where the exchange rate jumped sharply to ₦92.60/\$, reflecting policy changes such as exchange rate liberalization. Between 2000 and 2014, the NER continued to depreciate steadily, rising from ₦102.11/\$

to ₦158.55/\$. This suggests sustained pressure on the Naira due to factors such as inflation differentials and external imbalances. A more pronounced depreciation occurred from 2015 onward, with the NER rising sharply from ₦193.28/\$ in 2015 to ₦645.19/\$ in 2023, and further to ₦1,535.04/\$ in 2024. This reflects severe exchange rate pressures, likely driven by foreign exchange shortages, declining oil revenues, and macroeconomic instability. Conclusively, the NER trend clearly indicates a long-run depreciation of the Naira, highlighting structural weaknesses in the external sector

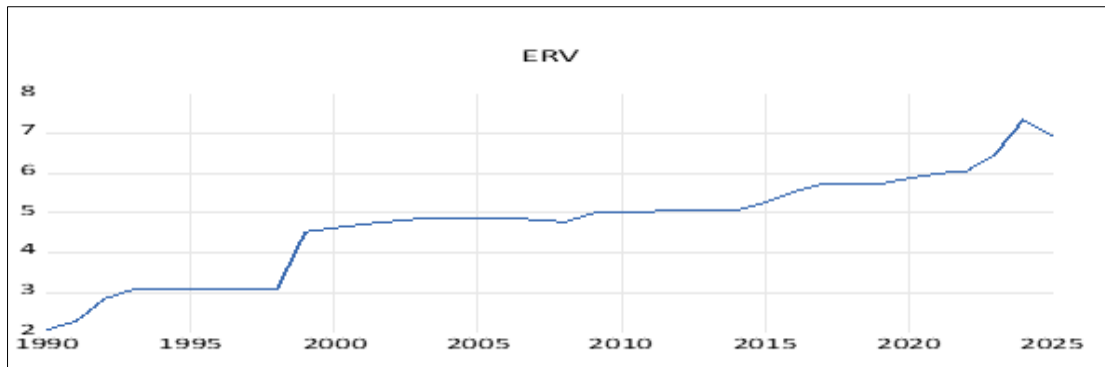


Figure 4: Trend Specification for Exchange Volatility in Nigeria for the Period spanning from 1990 to 2024
 Source: Authors Computation 2024.

Fig 4: Trends of Exchange Rate Volatility (ERV) (1990 to 2024)

Exchange Rate Volatility (ERV) measures fluctuations in the exchange rate over time, reflecting uncertainty in the foreign exchange market. The trend shows a gradual but consistent increase in volatility. From 1990 to 1998, ERV rose from 2.08% to 3.09%, indicating relatively low but increasing volatility. A noticeable jump occurred in 1999, with ERV increasing to 4.53%, followed by a steady rise through the 2000s.

Between 2000 and 2014, ERV remained relatively stable within the range of 4.6% to 5.1%, suggesting moderate exchange rate fluctuations. However, from 2015 onward, ERV increased significantly, reaching 6.47% in 2023 and peaking at 7.34% in 2024. This indicates heightened uncertainty and instability in the foreign exchange market in recent years. In summary, the ERV trend reflects increasing exchange rate uncertainty, which may adversely affect investment, trade, and overall macroeconomic stability.

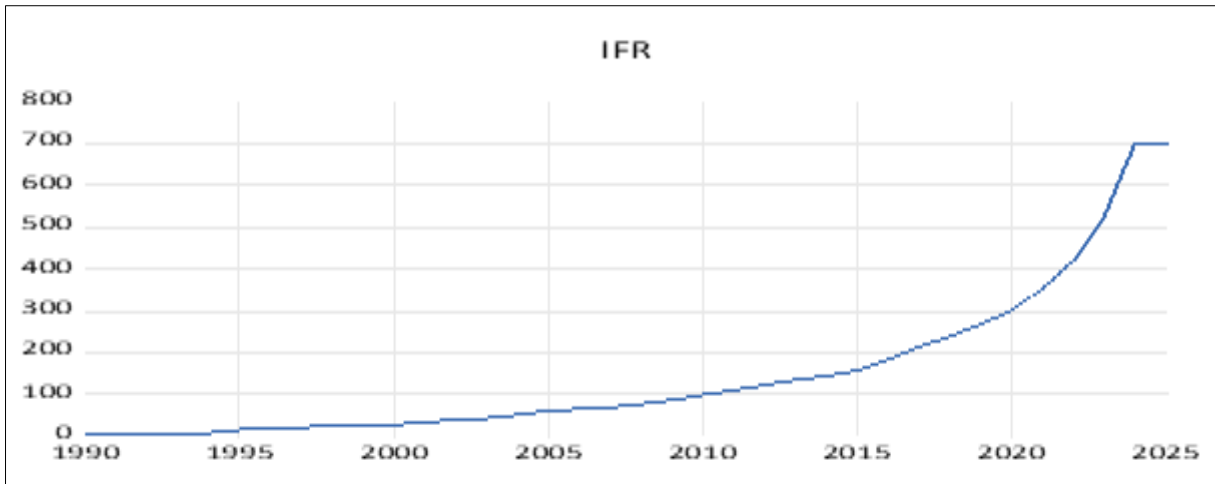


Figure 5: Trend Specification for Oil Export Revenue in Nigeria for the Period spanning from 1990 to 2024
 Source: World Banks World Development Indicators (WDI), 2024.

Fig 5: Trends of Inflation (IFR) (1990 to 2024)

The Inflation Rate (IFR), measured as an index, captures the general price level dynamics in the economy. From 1990 to 1998, IFR increased steadily from 2.4 to 26.0, indicating rising inflationary pressures. This upward trend continued into the early 2000s, with inflation reaching 45.3 in 2003 and 78.1 in 2008. Although there were slight moderations in certain years, the overall trend remained upward. From 2010 onward, IFR increased significantly, reaching 145.8 in 2014 and

accelerating further to 302.9 in 2020. The most pronounced increase occurred between 2021 and 2024, where IFR surged from 354.3 to 699.4, indicating severe inflationary pressures, possibly driven by exchange rate depreciation, supply-side constraints, and macroeconomic imbalances. It is imperative to note that the IFR trend demonstrates a persistent and accelerating rise in the general price level, reflecting chronic inflationary tendencies in the economy.

Table 1: Descriptive Statistics

	OER	RER	NER	ERV	IFR
Mean	9223702.	106.9725	237.6306	4.733056	149.6917
Median	8107978.	100.2500	132.8250	4.885000	74.05000
Maximum	32502384	273.0000	1535.050	7.340000	699.4000
Minimum	106626.5	49.77000	8.040000	2.080000	2.400000
Std. Dev.	9020634.	47.87936	348.0818	1.270768	184.5000
Skewness	1.039637	1.860168	2.977655	-0.335051	1.777934
Kurtosis	3.075309	6.640943	11.45069	2.590808	5.449564
Jarque-Bera	6.696361	40.64606	160.3198	0.924711	27.96684
Probability	0.035148	0.000000	0.000000	0.629798	0.000001
Sum	3.32E+08	3851.010	8554.700	170.3900	5388.900
Sum Sq. Dev.	2.85E+15	80235.16	4240632.	56.51976	1191408.
Observations	35	35	35	35	35

Source: Author Computation 2024

The descriptive statistics provide important insights into the distributional characteristics of the variables over the study period. The analysis shows that the variables exhibit varying degrees of dispersion around their respective mean values, indicating differences in stability and variability. Oil Export Revenue measured in thousands of Naira records a mean value of 9,223,702 with a corresponding standard deviation of 9,020,634, suggesting substantial deviation from its mean and reflecting the highly volatile nature of oil earnings. Similarly, the Nominal Exchange Rate measured in Naira per United States dollar has a mean of 237.63 and a standard deviation of 348.08, which

exceeds the mean and indicates pronounced fluctuations and significant instability over time. Inflation Rate measured as an index also demonstrates considerable variability, with a mean of 149.69 and a standard deviation of 184.50, implying persistent deviations from the average due to sustained inflationary pressures. In contrast, the Real Exchange Rate measured in United States dollar index shows moderate dispersion, with a mean of 106.97 and a standard deviation of 47.88, indicating relatively stable movements compared to other variables. Exchange Rate Volatility measured in percentage terms exhibits the least dispersion, with a mean of 4.73 and a standard deviation of 1.27,

suggesting minimal deviation from its mean and relative stability over the study period.

The skewness statistics, when considered collectively, reveal that Oil Export Revenue with a value of 1.0396, Real Exchange Rate with 1.8602, Nominal Exchange Rate with 2.9777, and Inflation Rate with 1.7779 are all positively skewed. This indicates that their distributions are characterized by long right tails and are influenced by extreme high values. Exchange Rate Volatility, however, records a skewness value of negative 0.3351, indicating a slight negative skewness and a mild concentration of observations above the mean. These results suggest that the majority of the variables are asymmetrically distributed. The kurtosis results further highlight the distributional nature of the variables. Oil Export Revenue with a kurtosis value of 3.0753 is approximately mesokurtic, indicating a distribution that is close to normal in terms of peakedness. Real Exchange Rate with 6.6409, Nominal Exchange Rate with 11.4507, and Inflation Rate with 5.4496 are leptokurtic, reflecting highly peaked distributions with heavy tails and the presence of extreme observations. In contrast, Exchange Rate Volatility with a kurtosis value of 2.5908 is platykurtic, suggesting a relatively flat distribution with thinner tails.

This implies that most of the variables are characterized by the presence of outliers and deviations from normal distribution.

The Jarque Bera statistics provide further evidence on the normality of the variables. Oil Export Revenue with a probability value of 0.035, Real Exchange Rate with 0.000, Nominal Exchange Rate with 0.000, and Inflation Rate with 0.000001 all have probability values less than the conventional significance level of 0.05, leading to the rejection of the null hypothesis of normal distribution. Conversely, Exchange Rate Volatility with a probability value of 0.6298 exceeds the threshold of 0.05, indicating that the variable is normally distributed. Based on this, the result would be subjected unit testing. This is because unit root tests such as the Augmented Dickey Fuller test do not impose strict normality assumptions but rather focus on the stationarity properties of the time series.

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		
LOER	-2.020697	-2.948404	-5.493228	-2.954021	I(1)	0.0001
LRER	-2.443422	-2.948404	-5.024201	-2.951125	I(1)	0.0002
LNER	-0.774859	-2.948404	-5.364524	-2.951125	I(1)	0.0001
ERV	-1.273910	-2.948404	-5.657264	-2.951125	I(1)	0.0000
LIFR	-3.221230	-2.948404			I(0)	0.0271

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 LOER, LRER, LNER, and ERV, stationary, whereas LIFR 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	9.086060	4

Significance	I (0)	I(1)
10%	2.52	3.56
5%	3.05	4.22
1%	4.28	5.84

Source: Authors computation 2024

From table 3 the bound test result indicates that there exist long run relationships amongst the variables as the F-statistic value of 9.086060 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 Exchange Rate Volatility and Oil Export Revenue in Nigeria.

Table 4: ARDL Long-Run Estimation Results for the Model

Variables	Coefficient	Std. error	t-Statistic	Prob-Value
LRER	-0.306682	0.119784	-2.560296	0.0097
LNER	-0.544028	1.160721	-2.468699	0.0029
ERV	0.534882	1.157776	0.461998	0.6477
LIFR	0.514269	0.358362	1.435055	0.1623

Source: Authors computation 2024

The Autoregressive Distributive Lag (ARDL) Long run result in Table 4 shows that the logarithm value of real exchange rate t (LRER) showed a negative (-0.306682) relationship with the log value of export revenue (LOER). This implies that a unit increase in the log value of real exchange rate (LRER) will lead to about a 31% fall in the logarithm value of export revenue (LOER) in Nigeria. The p-value of 0.0097 indicates that there is a statistically significant relationship between the logarithm value of real exchange rate t (LRER) and the log value of export revenue (LOER).

Furthermore, the log value of nominal exchange rate (LNER) showed a negative (-0.544028) relationship with the log value of export revenue (LOER). This implies that a unit increase in the log value of nominal exchange rate (LNER) will lead to about a 54% fall in the logarithm value of export revenue (LOER) in Nigeria. The p-value of 0.0029 indicates that there is a statistically significant relationship between the logarithm value of nominal exchange rate t (LNER) and the log value of export revenue (LOER). Earlier studies by Musa *et al.*, (2023) and Okogor *et al.*, (2023) are in agreement with the findings of this study and assert that exchange rate volatility had a negative impact on exports

Also, exchange rate volatility (ERV) showed a positive (+0.534882) relationship with the log value of export revenue (LOER). This implies that a unit increase in the value of exchange volatility (ERV) will lead to about a 53% fall in the logarithm value of export revenue (LOER) in Nigeria. The p-value of 0.6477 indicates that there is no statistically significant relationship between the logarithm value of exchange rate volatility (ERV) and the log value of export revenue (LOER). However, earlier studies by Okogor *et al.*, (2023) are not in agreement with the findings of this study and reported in there study that exchange rate volatility had a negative impact on exports.

Finally, the log coefficient of inflation (LIFR) showed a positive (+0.514269) relationship with the log value of export revenue (LOER). This implies that a unit increase in the log value of inflation rate (LIFR) will lead to about a 51% increase in the logarithm value of export revenue (LOER) in Nigeria. The p-value of 0.1623 indicates that there is no statistically significant relationship between the logarithm value of inflation rate (LIFR) and the log value of export revenue (LOER).

Table 5: ARDL Short -Run Estimation Results for the Model

Variable	Coefficient	Std. Error	t-Statistics	Prob
C	0.366360	0.149714	2.447067	0.0090
D(LRER)	-0.722452	0.183018	-3.947440	0.0008
D(LRER (-1))	-0.446244	1.149804	-0.388104	0.7020
DLRER (-2)	-0.570983	0.436704	-1.307483	0.2059
D(LNER)	-0.838099	0.284645	-2.944368	0.0080
D(LNER (-1))	0.520295	0.274655	1.881379	0.0746
D(LNER(-2))	0.612325	0.579193	1.057205	0.3030
D(ERV)	0.490607	0.379259	1.293594	0.2105
D(ERV(-1))	-0.492040	0.256385	-1.919146	0.0693
D(ERV(-2))	-0.660467	0.560303	-1.178768	0.2523
D(LIFR)	0.798727	0.379885	2.102551	0.0484
D(LIFR (-1))	0.633861	0.694546	0.912627	0.3723
D(LIFR(-2))	0.576835	0.208157	2.771154	0.0018
Ecm (-1)*	-0.515435	0.174865	-2.947622	0.0080
Adj R ² = 0.357770, F-statistics = 2.485533 (0.000695), DW = 1.875731				

Source: Authors computation 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 0.52% every year. This means that a yearly adjustment speed of 0.52% may fix the mistake from the previous year. The independent variables (LRER, LNER, ERV, & LIFR) explain 36% of the total variance in the dependent variable (LOER), according to the corrected 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 1.875731, which is close to 2.

Table 5 displays the model's short-run outcome. A negative log value of real exchange rate (LRER) of -0.722452 was seen in the most current year periods when the log value of oil export revenue (LOER) was used as a surrogate for the dependent variable in Nigeria. This means that the log value of oil export revenue (LOER) would decrease by approximately 0.73% for every unit increase in the log value of real exchange rate (LRER) in Nigeria. Real Exchange Rate and Oil export revenue log values correlate statistically ($p=0.0008$). Economic theory did not predict this outcome. The log value of oil export revenue is likely to rise in response to an increase in the value of real exchange rate.

Using the log value of oil export revenue (LOER) in Nigeria over current year, the value of nominal exchange rate (LNER) of -0.838099 was seen in the most current year periods when the log value of oil export revenue (LOER) was used as a substitute for the dependent variable in Nigeria. This means that the log value of oil export revenue (LOER) would decrease by approximately 0.84% for every unit increase in the log value of nominal exchange rate (LNER) in Nigeria. Nominal Exchange Rate and Oil export revenue log values correlate statistically ($p=0.0080$). Economic

theory did not predict this outcome. The log value of oil export revenue is likely to rise in response to an increase in the value of nominal exchange rate. Previous studies by Musa *et al.*, (2023) and Okogor *et al.*, (2023) are in agreement with the findings of this study and assert that exchange rate volatility had a negative impact on exports

Furthermore, as a stand-in for explanatory variable exchange rate volatility (ERV) had a negative value of -0.492040 in the previous year periods when the log value of oil export revenue (LOER) was used as a surrogate for the dependent variable in Nigeria. This means that the log value of oil export revenue (LOER) would decrease by approximately 0.49% for every unit increase in exchange rate volatility (ERV) in Nigeria. Exchange Rate Volatility and Oil export revenue log values do not correlate statistically ($p=0.0693$). Economic theory did not predict this outcome. The log value of oil export revenue is likely to decline in response to an increase in the value of exchange rate volatility. Studies done by Okogor *et al.*, (2023) are in line with the findings of this study and reported in there study that exchange rate volatility had a negative impact on exports.

Finally, inflation rate as a stand-in for control variable (LIFR) had a positive value of +0.576835 in the second year periods when the log value of oil export revenue (LOER) was used as a surrogate for the dependent variable in Nigeria. This means that the log value of oil export revenue (LOER) would increase by approximately 0.58% for every unit increase in inflation rate (LIFR) in Nigeria. Inflation Rate and Oil export revenue log values correlate statistically ($p=0.0018$). Economic theory did not predict this outcome. The log value of oil export revenue is likely to decline in response to an increase in the value of inflation rate.

Diagnostic Test

Table 6: Ramsey Reset Test, Serial Correlation LM Test and Homoscedasticity Test Results

	F-Statistic	Prob-Value
Ramsey Reset Test	7.081885	0.0786
Breusch-Godfrey Serial Correlation LM Test	1.038286	0.0920
Breusch-Pagan-Godfrey Heteroskedasticity Test	3.138539	0.1155

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 (7.081885) with computed p-value of 0.0786 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 1.038286, with a Chi-Square probability value is 0.0920. This indicates that the probability value of about 9 percent (0.0920) is greater than 9 percent

(0.05) critical value; hence the study confirms no serial correlation in the model. The result of the heteroscedasticity test using Breusch-Pagan-Godfrey test shows that the f-statistic is 3.138539 with a Chi-Square probability value of 0.1155 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.

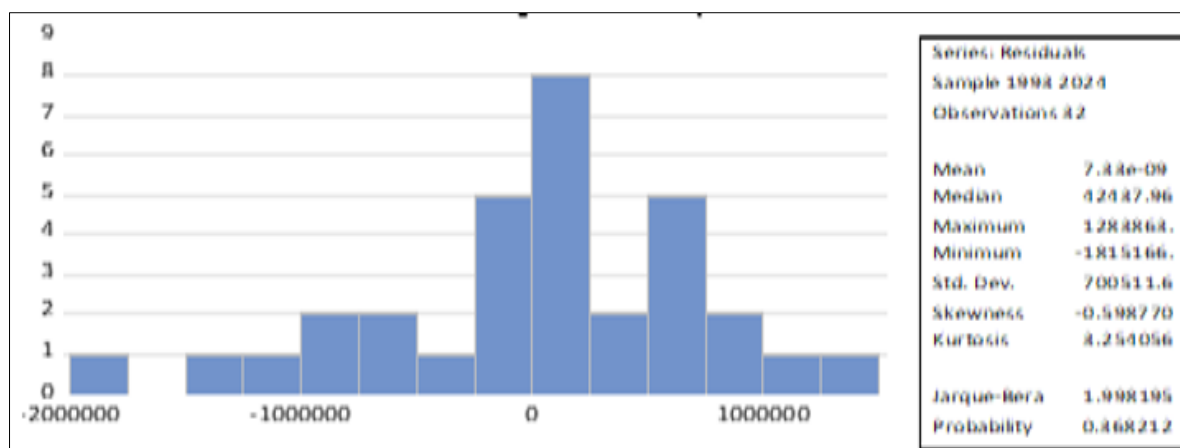


Figure 6: Normality Test

Figure 6, shows summary of the normality test with Jarque-Bara value of 1.998195 and a corresponding probability value of 0.368212 more than 0.05 level of significance, indicating that the residuals are normally distributed

CONCLUSION AND RECOMMENDATION

Conclusion

This paper is on exchange rate volatility and oil export revenue in Nigeria. Based on the analysis it was revealed that both the real exchange rate and nominal exchange rate exert a negative but statistically significant effect on oil export revenue, indicating that currency fluctuations adversely impact export earnings. In contrast, exchange rate volatility and inflation rate exhibit a positive but statistically insignificant relationship with oil export revenue in the long run. Based on these findings, the study concludes that exchange rate volatility plays a significant role in influencing oil export revenue in Nigeria.

Recommendation

- i. The Central Bank of Nigeria should prioritize policies that promote exchange rate stability. This can be achieved through managed float regimes, adequate foreign reserve management, and timely interventions in the foreign exchange market to reduce excessive depreciation of the naira.
- ii. Additionally, the government, through the Federal Ministry of Finance and monetary authorities, should enhance coordination in exchange rate policy formulation. This includes reducing multiple exchange rate windows and ensuring transparency in the foreign exchange allocation system to improve investor confidence and oil revenue inflows.
- iii. Furthermore, the Nigerian National Petroleum Company Limited and oil exporters should adopt hedging instruments and risk management strategies to cushion against unpredictable exchange rate movements in the international market.

- iv. Finally, the National Bureau of Statistics and monetary authorities should support policies aimed at controlling inflation through prudent monetary policy, improved supply-side measures, and enhanced productivity to maintain a stable economic environment conducive for export growth.

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