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Oil Price Volatility and Stock Market Returns in Nigeria: Evidences from Recent Data-Sets

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Abstract:

This study examines the effect of oil price volatility on stock market returns using annual time series data spanning 1990 to 2024. The study is motivated by the persistent fluctuations in global oil prices and their implications for macroeconomic stability and financial market performance in oil-dependent economies. An Autoregressive Distributed Lag (ARDL) model is employed to analyze both short-run and long-run dynamics, incorporating key macroeconomic variables such as inflation, exchange rate, and interest rate. The results of the ARDL bounds test confirm the existence of a long-run relationship among the variables. Empirical findings reveal that oil price volatility exerts a negative but statistically insignificant effect on stock market returns in both the short run and long run. In contrast, inflation is found to have a positive and significant impact on stock market performance, while exchange rate and interest rate show weak but positive influences. The error correction model indicates a strong speed of adjustment toward long-run equilibrium, suggesting that short-term deviations are quickly corrected. Diagnostic and stability tests further confirm the robustness and reliability of the model. The study concludes that stock market returns are more responsive to domestic macroeconomic conditions than to oil price volatility. It therefore emphasizes the importance of maintaining macroeconomic stability and strengthening financial market structures to enhance resilience against external shocks.

Keyword— *Oil Price Volatility, Stock Market Returns, Inflation, Exchange Rate*
JEL Classification — *C32, G12, Q43*

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I. INTRODUCTION

The persistent volatility of crude oil prices remains one of the most crucial features of the modern global economy, with extensive implications for macroeconomic stability and the performance of financial market. In recent years, global oil prices have experienced pronounced volatility driven by post-pandemic recovery dynamics, geopolitical tensions, and supply-side disruptions. These developments have heightened uncertainty in energy markets and reinforced the vulnerability of oil-dependent economies to external shocks (International Energy Agency, 2023). Within financial economics, the stock market serves as a central mechanism for information transmission and capital allocation. Stock returns reflect expectations about future corporate earnings and broader economic conditions, making them highly responsive to external shocks such as oil price volatility. In the Nigerian context, Abdullahi (2018) demonstrates that macroeconomic instability particularly from oil price fluctuations significantly influences financial market performance through changes in investor expectations and firm valuation. Nigeria represents a typical oil-dependent economy where fluctuations in global oil prices have direct implications for fiscal sustainability and financial market outcomes. Oil remains the dominant source of foreign exchange earnings and government revenue, thereby exposing the economy to external shocks. According to the Central Bank of Nigeria (2023), this structural dependence facilitates the rapid transmission of oil price movements into domestic financial conditions, including liquidity, exchange rates, and investment flows. Recent developments in the Nigerian stock market further underscore this sensitivity. The Nigerian Exchange (NGX) recorded a historic rally in 2025, with the All-Share Index rising above 155,000 points and market capitalization exceeding ₦99 trillion, reflecting strong but uneven market performance. Despite this growth, the market continues to exhibit significant volatility, driven by macroeconomic uncertainty and sectoral imbalances (Sule-Iko & Nwoye, 2023).

Beyond macroeconomic relations, oil price volatility also influences stock market performance through uncertainty and behavioural channels. Periods of heightened oil price instability are typically associated with increased risk aversion, reduced investor confidence, and portfolio reallocation. Evidence from Nigeria suggests that such volatility can generate asymmetric responses in stock returns, particularly during periods of economic stress (Mgbemone et al., 2025). Despite the growing body of literature, empirical findings on the oil price–stock market nexus in Nigeria remain inconclusive and, in many cases, outdated. Many earlier studies rely on pre-2020 datasets and therefore fail to capture recent structural shifts, including the COVID-19 shock and evolving global energy dynamics. In addition, limited attention has been given to modelling oil price volatility explicitly, as opposed to price levels, thereby constraining a deeper understanding of risk transmission mechanisms (Ajakaiye et al., 2020).

Given the persistence of oil price volatility and Nigeria's constant dependence on oil revenues, there is a clear necessity for updated empirical analysis using recent data and appropriate econometric techniques. This study therefore examines the effect of oil price volatility on stock market returns in Nigeria, with a focus on capturing current dynamics and improving the robustness of empirical modelling. The findings are expected to provide relevant insights for policymakers and market participants in enhancing financial stability and economic resilience (Central Bank of Nigeria, 2023). Following this introductory section is the review of literature in section 2, methodology in section 3, discussion of results and findings in section 4 and section 5 which contains the summary and conclusion.

1.2 Statement of the Problem

Nigeria's economy remains highly susceptible to fluctuations in global crude oil prices due to its continued dependence on oil revenues for fiscal and external stability. Despite ongoing diversification efforts, oil still dominates export earnings and government revenue, exposing the economy to external shocks arising from oil price volatility. Recent evidence indicates that such volatility has intensified in the post-pandemic period, driven by geopolitical tensions and global supply uncertainties, thereby increasing macroeconomic instability in oil-dependent economies (Sule-Iko & Nwoye, 2023).

This vulnerability is increasingly reflected in the performance of the Nigerian stock market, which has exhibited strong growth alongside notable instability in recent years. Although the Nigerian Exchange recorded significant gains in 2025, with the All-Share Index surpassing 155,000 points, the market remains highly sensitive to external shocks and investor sentiment. Empirical findings suggest that oil price volatility contributes to fluctuations in stock returns by influencing firm performance, liquidity conditions, and investment decisions (Mgbemone et al., 2025). Furthermore, periods of sharp oil price movements such as the post-COVID recovery surge and subsequent corrections have introduced heightened uncertainty into financial markets, leading to increased risk aversion and volatility clustering in stock returns. This creates challenges for investors and policymakers, as unstable market conditions can distort asset pricing and weaken confidence in the financial system (International Energy Agency, 2023).

Despite these developments, existing empirical studies on the oil price–stock market relationship in Nigeria remain limited in scope and often fail to incorporate recent data or explicitly model oil price volatility. Many studies focus on earlier periods or rely on oil price levels rather than volatility measures, thereby constraining a comprehensive understanding of risk transmission mechanisms in the Nigerian context (Mgbemone et al., 2025). Given the persistence of oil price volatility and the evolving dynamics of the Nigerian stock market, there is a need for updated empirical analysis using recent datasets and appropriate econometric techniques. This study addresses this gap by examining the effect of oil price volatility on stock market returns in Nigeria, with a focus on capturing current market realities and improving the robustness of empirical evidence.

II. REVIEW OF LITERATURE

2.1 Theoretical Review

Arbitrage Pricing Theory (APT)

The Arbitrage Pricing Theory was developed by Stephen Ross in 1976 as a multi-factor asset pricing model. The theory posits that the expected return of a financial asset is influenced by several macroeconomic risk factors rather than a single market factor. Unlike the Capital Asset Pricing Model (CAPM), APT allows for multiple sources of systematic risk such as inflation, interest rates, exchange rate, and commodity prices. The model assumes that arbitrage opportunities will be eliminated as investors exploit mispricing, thereby restoring equilibrium in asset prices.

Mathematically, APT expresses expected return as a linear function of various risk factors and their sensitivities (betas). This makes it particularly useful in explaining how external shocks affect financial markets. In relation to this study, APT provides a strong theoretical foundation for linking oil price volatility to stock market returns in Nigeria. Oil price fluctuations represent a key macroeconomic risk factor that influences firms' earnings, investment decisions, and overall market performance. Given Nigeria's dependence on oil, changes in oil prices can significantly alter systematic risk, thereby affecting stock returns across sectors.

Efficient Market Hypothesis (EMH)

The Efficient Market Hypothesis was introduced by Eugene Fama in 1970. The theory asserts that financial markets are informationally efficient, meaning that asset prices fully and instantly reflect all available information. EMH exists in three forms: weak, semi-strong, and strong, depending on the level of information incorporated into prices. According to the theory, it is impossible for investors to consistently achieve abnormal returns because price changes follow a random walk pattern. However, in emerging markets, information asymmetry and market imperfections may limit full efficiency.

In this study, EMH implies that oil price volatility, as publicly available macroeconomic information, should be quickly reflected in Nigerian stock prices. However, due to structural inefficiencies in the Nigerian market, adjustments may be delayed or exaggerated. This helps explain why oil price shocks may lead to volatility clustering and temporary mispricing in stock returns.

Portfolio Theory

The Modern Portfolio Theory was developed by Harry Markowitz in 1952. The theory focuses on how investors can construct optimal portfolios by balancing risk and return. It assumes that investors are risk-averse and seek to maximize expected returns for a given level of risk through diversification. Portfolio theory emphasizes that total risk can be reduced by combining assets with low or negative correlations. It introduces key concepts such as expected return, variance, and efficient frontier. The theory also distinguishes between systematic and unsystematic risk.

In relation to this study, oil price volatility represents a major source of systematic risk that cannot be diversified away. For Nigerian investors, fluctuations in oil prices can affect multiple sectors simultaneously, thereby influencing overall portfolio performance. This makes it difficult to fully hedge against oil-related shocks, reinforcing the importance of understanding how such volatility impacts stock returns.

Discounted Cash Flow (DCF) Model

The Discounted Cash Flow Model explains that the value of a stock is equal to the present value of its expected future cash flows. The model, widely applied in finance and extended by researchers such as Huang R. D. (1996), links macroeconomic variables to stock valuation through their effects on cash flows and discount rates. According to the model, any factor that affects expected cash flows or the discount rate will influence stock prices. Oil prices, as a key production input, can increase or decrease firms' costs and profitability. Similarly, oil price changes can affect inflation and interest rates, thereby altering the discount rate applied to future earnings.

In the context of this study, oil price volatility impacts stock market returns in Nigeria through two main channels: firm cash flows and macroeconomic conditions. Rising oil prices may increase costs for oil-importing firms, reducing profitability, while also influencing interest rates and inflation. These combined effects ultimately translate into fluctuations in stock prices and returns.

2.2 Empirical Review

Recent empirical studies on the relationship between oil price volatility and stock market performance in Nigeria reveal mixed but insightful findings, largely reflecting the economy's dependence on crude oil and exposure to external shocks.

A recent study by Onipe Adabenege Yahaya (2025) examined the effect of macroeconomic variables on stock market performance in Nigeria using monthly data spanning 2003–2023. The study employed the Ordinary Least Squares (OLS) technique with Newey-West corrections, using inflation rate, interest rate, and exchange rate as explanatory variables, while stock market returns served as the dependent variable. The findings showed that inflation, interest rate, and exchange rate depreciation exert significant negative effects on stock market returns, indicating that macroeconomic instability weakens equity performance.

Similarly, Sesan Oluseyi Adeniji et al. investigated the relationship between oil price, oil price volatility, and stock price volatility in Nigeria using ARDL, Toda-Yamamoto causality, and frequency domain causality tests. The study identified a unidirectional causality running from oil price to stock price volatility in the long run, while a bi-directional relationship was observed in the medium term. The results further revealed that oil price volatility and stock market volatility are strongly interconnected, suggesting that fluctuations in oil prices play a dominant role in shaping stock market instability in Nigeria.

In another related study, Sanusi Yakubu Muhammad et al. (2023) analyzed the asymmetric relationship between oil prices and stock market performance using the Nonlinear Autoregressive Distributed Lag (NARDL) model with monthly data from 2014 to 2023. Oil price, interest rate, and exchange rate were used as independent variables, while stock prices were the dependent variable. The findings confirmed both short-run and long-run asymmetry, where increases in oil prices led to increases in stock prices, while decreases in oil prices resulted in declining stock prices. This highlights the sensitivity of the Nigerian stock market to oil price movements.

Extending beyond financial markets, Adaji Obaje et al. (2025) examined the impact of crude oil price volatility on Nigeria's balance of trade using the Dynamic Ordinary Least Squares (DOLS) technique with quarterly data from 2000 to 2023. The study incorporated oil price volatility and consumer price index as key variables. The findings revealed a significant long-run relationship, with oil price volatility negatively affecting trade balance, while inflation amplified this effect. This underscores the broader macroeconomic consequences of oil price shocks in Nigeria.

Furthermore, Ann Chinenye Effe-Nnamdi et al. (2025) evaluated the joint impact of oil price dynamics and exchange rate fluctuations on stock market volatility using high-frequency daily data (2024–2025). The study adopted Error Correction Model (ECM) and Exponential GARCH (EGARCH) techniques. Oil price and exchange rate served as independent variables, while stock market volatility was the dependent variable. The results indicated that oil price shocks have a significant and persistent effect on stock market volatility, whereas exchange rate effects were weak. The study also found evidence of volatility clustering and asymmetric effects, where negative shocks had stronger impacts than positive shocks.

In a related empirical investigation, Eze Solomon Ikemenogo examined the effect of oil price volatility on stock market returns in Nigeria using GARCH and ARDL techniques with data from 1986 to 2021. The study included oil price, exchange rate, inflation, GDP growth, and interest rate as explanatory variables, with stock market returns proxied by the All-Share Index. The findings revealed that oil price, inflation, and exchange rate exert significant positive effects on stock market performance, suggesting that macroeconomic factors play a crucial role in determining stock returns in Nigeria.

Similarly, Eloho Victoria Ozokede and Titus Olufemi Awogbemi (2025) investigated the impact of oil price volatility on economic growth using the ARDL approach with data from 1990 to 2023. The variables included crude oil price, inflation, interest rate, and exchange rate, with GDP growth as the dependent variable. The results showed that oil price volatility had an insignificant effect on economic growth, although inflation exerted a negative and significant impact. This suggests weak transmission of oil shocks to real sector performance.

Also, Chukunalu Mgbomene et al. (2025) analyzed crude oil price volatility and the Nigerian economy using the GARCH model with quarterly data from 1990 to 2023. The study found strong evidence of volatility clustering in oil prices and a significant negative effect on economic growth. However, oil price volatility positively influenced government revenue and foreign reserves, reflecting the dual nature of oil shocks in Nigeria.

Finally, Olabisi Rasheedat Oladipo et al. (2024) examined oil price shocks and human capital development using the Structural Vector Autoregression (SVAR) model. The study revealed that oil price volatility negatively affects secondary and tertiary education outcomes, despite increasing government spending on education. This highlights the broader structural implications of oil price instability beyond financial markets.

Overall, empirical evidence suggests that oil price volatility plays a significant role in shaping stock market performance and macroeconomic outcomes in Nigeria. While some studies report positive relationships between oil price increases and stock returns, others emphasize the destabilizing effects of volatility, particularly through inflation, exchange rate movements, and investor uncertainty. These mixed findings indicate the need for further investigation using recent data and robust methodologies to better understand the dynamics of oil price volatility and stock market returns in Nigeria.

III. METHODOLOGY

3.1 Model Specification

This study adopts the model specification of Eze Solomon Ikemenogo (2024), who examined the impact of oil price volatility on stock market returns in Nigeria using an Autoregressive Distributed Lag (ARDL) framework. The ARDL approach is considered appropriate because it captures both short-run and long-run dynamics and accommodates variables integrated of different orders, that is, I(0) and I(1).

However, the model is modified to suit the objective of this study, which focuses on the effect of oil price volatility on stock market returns in Nigeria, with key macroeconomic control variables included.

The functional form of the model is specified as:

$$SMR = f(OPV, INF, EXR, INT)$$

The econometric model is specified as:

$$\text{SMR}_t = \alpha_0 + \sum_{i=1}^{p} \beta_i \, LNSMR_{t-i} + \sum_{j=0}^{q} \gamma_j \text{OPV}_{t-j} + \sum_{k=0}^{r} \delta_k \text{INF}_{t-k} \sum_{m=0}^{S} \emptyset_m \, LNEXR_{t-m} + \sum_{n=0}^{u} \theta_n \, INT_{t-n} + \varepsilon_t$$

Where:
SMR = Stock Market Returns (dependent variable)
OPV = Oil Price Volatility
INF = Inflation Rate
LNEXR = Natural Log of Exchange Rate
INT = Interest Rate
α_0 = Constant term
β_i, γ_j, δ_k, φ_m, θ_n = Coefficients of explanatory variables
ε_t = Error term
p, q, r, s, u = Optimal lag lengths determined using Akaike Information Criterion (AIC)

3.2 Data and Sources

This study employs annual time series data covering the period 1990–2024. The data are sourced from reliable secondary sources including the Central Bank of Nigeria (CBN) Statistical Bulletin, the World Bank's World Development Indicators (WDI), and the Nigerian Exchange Group (NGX).
The variables include stock market returns, oil price volatility, inflation rate, exchange rate, and interest rate. The use of secondary data aligns with the ex-post facto research design, which allows for the analysis of economic relationships without manipulation of variables. This approach is widely used in financial and macroeconomic studies.

3.3 Variable Definition

Variable	Definition	Measurement	Type
SMR	Stock Market Returns	Logarithmic difference of All Share Index ($\ln ASI_t - \ln ASI_{t-1}$)	Dependent
OPV	Oil Price Volatility	Rolling standard deviation of log crude oil prices	Independent
INF	Inflation Rate	Annual percentage change in CPI	Independent
EXR	Exchange Rate	Log of official exchange rate (₦/USD)	Independent
INT	Interest Rate	Monetary policy rate (%)	Independent

3.4 Estimation Techniques

To ensure robust and reliable results, this study employs a comprehensive set of econometric techniques. Descriptive statistics are first used to summarize the distributional properties of the variables, including their mean, standard deviation, and overall behaviour. This is followed by a correlation analysis to examine the degree of association among the variables and detect possible multicollinearity.
To establish the stationarity properties of the variables, the Augmented Dickey–Fuller (ADF) unit root test is applied. This helps determine the order of integration of each variable and ensures that the regression results are not spurious. Given the possibility of mixed integration orders, the Autoregressive Distributed Lag (ARDL) bounds testing approach is employed to examine the existence of a long-run relationship among the variables. The ARDL model is particularly suitable for small sample sizes and provides both short-run and long-run estimates simultaneously.

Furthermore, the Error Correction Model (ECM) is utilized to capture short-run dynamics and measure the speed of adjustment toward long-run equilibrium following short-term shocks. Finally, diagnostic and stability tests are conducted to validate the model. These include the Breusch–Godfrey LM test for serial correlation, the Breusch–Pagan test for heteroskedasticity, and the CUSUM and CUSUMSQ tests for parameter stability. These tests ensure that the model is statistically reliable and structurally stable.

3.5 Result of Analysis

The results of the analysis are presented in section four. This includes the interpretation of descriptive statistics, correlation matrix, unit root test results, ARDL bounds test, long-run and short-run estimates, as well as post-estimation diagnostic and stability tests.

IV. DATA ANALYSIS AND INTERPRETATION

4.1 Descriptive Statistics

	SMR	OPV	INF	LNEXR	INT
Mean	0.163169	10.33084	18.70559	4.668805	18.85135
Median	0.226024	7.931316	13.00697	4.877289	17.79500
Maximum	0.836943	30.15965	72.83550	7.299098	31.65000
Minimum	-0.611872	0.700880	5.388008	2.084216	11.48313
Std. Dev.	0.304722	8.648865	15.86930	1.230081	4.220376
Skewness	-0.420195	0.889607	2.071452	-0.398049	0.944076
Kurtosis	2.945134	2.835055	6.495683	2.601314	4.110844
Jarque-Bera	1.034348	4.656184	42.85088	1.156055	6.998678
Probability	0.596203	0.097482	0.000000	0.561004	0.030217
Sum	5.710905	361.5795	654.6957	163.4082	659.7971
Sum Sq. Dev.	3.157092	2543.298	8562.376	51.44534	605.5935
Observations	35	35	35	35	35

The descriptive statistics indicate that oil price volatility (OPV) has a relatively high mean value (10.33) and exhibits considerable dispersion (standard deviation = 8.65), reflecting significant fluctuations in oil prices over the study period. Inflation (INF) also shows high variability (mean = 18.71; standard deviation = 15.87), indicating persistent price instability in the Nigerian economy. Stock market returns (SMR), on the other hand, display moderate volatility with a standard deviation of 0.30, suggesting relatively stable but fluctuating returns. Exchange rate (LNEXR) and interest rate (INT) exhibit moderate dispersion, indicating steady macroeconomic movements.

The Jarque–Bera statistics reveal that most variables are normally distributed except inflation (INF) and interest rate (INT), whose probability values are below 0.05. However, this does not invalidate the ARDL estimation given the sample size of 35 observations.

4.2 Correlation Matrix

	SMR	OPV	INF	LNEXR	INT
SMR	1.000000	-0.040470	0.391255	-0.114453	0.324396
OPV	-0.040470	1.000000	-0.312590	0.565062	-0.540126
INF	0.391255	-0.312590	1.000000	-0.309751	0.439479
LNEXR	-0.114453	0.565062	-0.309751	1.000000	-0.452891
INT	0.324396	-0.540126	0.439479	-0.452891	1.000000

The correlation matrix shows weak to moderate relationships among the variables. Stock market returns (SMR) exhibit a weak negative relationship with oil price volatility (–0.0405), suggesting that oil price fluctuations may not strongly influence stock returns contemporaneously.

SMR is positively correlated with inflation (0.3913) and interest rate (0.3244), implying that increases in these variables may be associated with higher stock returns. Oil price volatility (OPV) shows a strong positive correlation with exchange rate (0.5651) and a strong negative relationship with interest rate (–0.5401).

4.3 Unit Root Tests

To ensure valid estimation and avoid spurious regression, the stationarity properties of all variables were examined using the Augmented Dickey-Fuller (ADF) test. Results are summarized below.

Variable	Level (Prob)	1st Difference (prob)	Conclusion
SMR	0.0009	-	I(0)
OPV	0.0368	-	I(0)
INF	0.0856	0.0007	I(1)
LNEXR	0.8445	0.0009	I(1)
INT	0.0716	0.0002	I(1)

The Augmented Dickey–Fuller (ADF) test results indicate mixed orders of integration among the variables. Stock market returns (SMR) and oil price volatility (OPV) are stationary at level, implying they are integrated of order zero, I(0).
In contrast, inflation (INF), exchange rate (LNEXR), and interest rate (INT) become stationary after first differencing, indicating integration of order one, I(1). This combination of I(0) and I(1) variables satisfies the requirement for the application of the ARDL bounds testing approach in examining the long-run relationship among the variables.

4.4 ARDL Bounds Test

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	5.648395	10%	2.2	3.09
k	4	5%	2.56	3.49
		2.5%	2.88	3.87
		1%	3.29	4.37

The ARDL bounds test yields an F-statistic of 5.648, which exceeds the upper bound critical value at the 5% significance level (3.49). This result leads to the rejection of the null hypothesis of no long-run relationship, confirming the existence of a long-run equilibrium relationship between stock market returns, oil price volatility, inflation, exchange rate, and interest rate in Nigeria.

4.5 Long-Run ARDL Estimates

Levels Equation
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
OPV	-0.003289	0.011523	-0.285454	0.7779
INF	0.008123	0.003358	2.419313	0.0239
LNEXR	0.140377	0.071171	1.972379	0.0607
INT	0.036121	0.020238	1.784771	0.0875
C	-1.360720	0.563346	-2.415423	0.0241

The long-run results show that oil price volatility (OPV) has a negative coefficient ($\beta = -0.0033$) but is statistically insignificant ($p = 0.7779$), suggesting that oil price fluctuations do not have a meaningful long-run impact on stock market returns.

Inflation (INF) has a positive and statistically significant effect ($p = 0.0239$), indicating that rising inflation is associated with increased stock returns in the long run. Exchange rate (LNEXR) and interest rate (INT) both exhibit positive coefficients but are only marginally significant at the 10% level, implying weak long-run influence.
Overall, the results suggest that macroeconomic variables, particularly inflation, play a more important role than oil price volatility in explaining long-run stock market behaviour in Nigeria.

4.6 Short-Run Dynamics and Error Correction Model (ECM)

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.380787	0.541461	-2.550113	0.0179
SMR(-1)*	-1.014747	0.191834	-5.289726	0.0000
OPV(-1)	-0.003338	0.011829	-0.282156	0.7803
INF**	0.008243	0.003809	2.163900	0.0411
LNEXR(-1)	0.142447	0.073994	1.925121	0.0667
INT(-1)	0.036653	0.019500	1.879670	0.0729
D(OPV)	0.004622	0.008344	0.553933	0.5850
D(OPV(-1))	0.015471	0.007489	2.065870	0.0503
D(LNEXR)	0.425747	0.184968	2.301727	0.0307
D(INT)	-0.001373	0.016665	-0.082357	0.9351

The error correction term (SMR(-1)*) is negative and statistically significant ($\beta = -1.0147$, $p = 0.0000$), indicating a strong speed of adjustment toward long-run equilibrium. This implies that deviations from equilibrium are corrected rapidly within one period.
In the short run, inflation (INF) has a positive and statistically significant effect ($p = 0.0411$), suggesting that inflation shocks influence stock returns in the short term. Exchange rate (LNEXR) is also marginally significant, indicating some short-run responsiveness.
However, oil price volatility (OPV) and its lagged values are statistically insignificant, indicating that oil price fluctuations do not exert a significant short-run impact on stock market returns. In conclusion, the results indicate that stock market returns respond more to macroeconomic conditions than to oil price volatility in the short run.

4.7 Diagnostic and Stability Tests

Breusch-Godfrey Serial Correlation LM Test:
Null hypothesis: No serial correlation at up to 2 lags

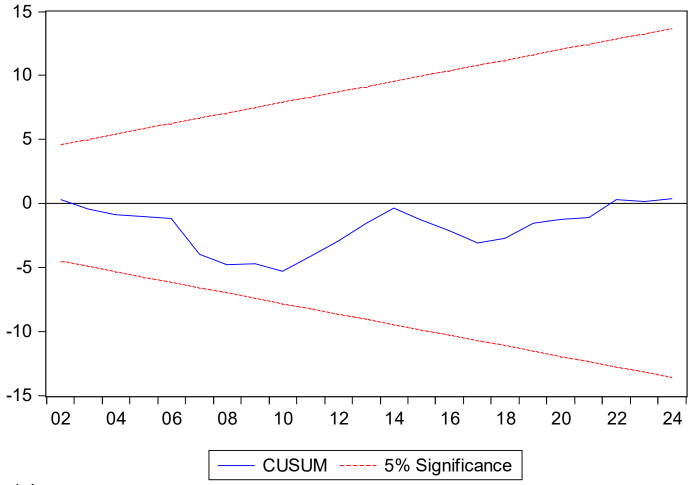
F-statistic	0.715503	Prob. F(2,21)	0.5005
Obs*R-squared	2.105263	Prob. Chi-Square(2)	0.3490

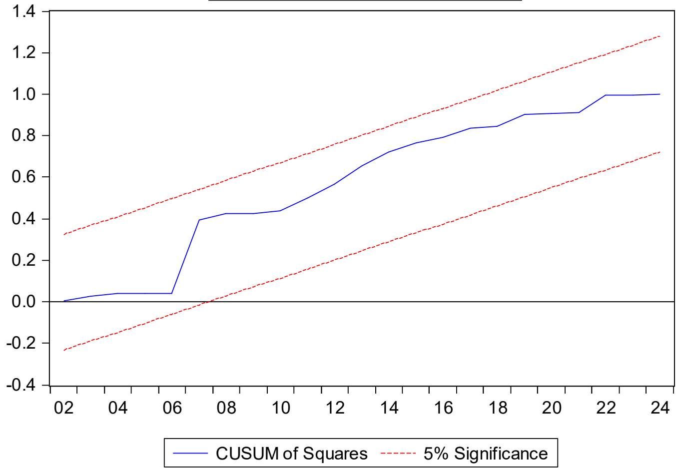
The Breusch–Godfrey LM test shows that the probability values exceed 0.05, indicating that the null hypothesis of no serial correlation cannot be rejected. This suggests that the model is free from serial correlation.

Heteroskedasticity Test: Breusch-Pagan-Godfrey
Null hypothesis: Homoskedasticity

F-statistic	1.272753	Prob. F(9,23)	0.3031
Obs*R-squared	10.97113	Prob. Chi-Square(9)	0.2777
Scaled explained SS	5.351192	Prob. Chi-Square(9)	0.8027

The Breusch–Pagan–Godfrey test indicates that the null hypothesis of homoskedasticity cannot be rejected, confirming that the residuals have constant variance.





The CUSUM and CUSUM of Squares plots remain within the 5% critical bounds throughout the sample period, indicating that the model is structurally stable and the estimated coefficients are reliable for policy interpretation.

V. SUMMARY OF FINDINGS

This study examined the effect of oil price volatility on stock market returns in Nigeria using annual data from 1990 to 2024 within an ARDL framework. The descriptive statistics revealed that oil price volatility and inflation exhibited high variability, reflecting persistent macroeconomic instability, while stock market returns showed moderate fluctuations. Correlation analysis indicated weak direct association between oil price volatility and stock returns but stronger relationships among macroeconomic variables.

The unit root test confirmed a mixed order of integration (I(0) and I(1)), justifying the use of the ARDL bounds testing approach. The bounds test result established the existence of a long-run relationship among stock market returns, oil price volatility, inflation, exchange rate, and interest rate.

Empirical results showed that oil price volatility has a negative but statistically insignificant effect on stock market returns in both the short run and long run. In contrast, inflation emerged as a significant determinant of stock returns, exerting a positive influence in both periods. Exchange rate and interest rate displayed weak but positive effects. The error correction model indicated a strong and rapid adjustment to long-run equilibrium, while diagnostic and stability tests confirmed that the model is robust and reliable.

5.2 Conclusion

The study concludes that oil price volatility does not play a significant direct role in determining stock market returns in Nigeria, despite the country's heavy dependence on oil. Instead, macroeconomic variables particularly inflation are more influential in shaping stock market performance. This suggests that the transmission of oil price shocks to the stock market occurs indirectly through broader macroeconomic conditions rather than through immediate or direct channels.

The findings also highlight that the Nigerian stock market responds more strongly to domestic economic conditions than to external oil price fluctuations. While oil remains central to the economy, its volatility alone is insufficient to explain variations in stock returns without considering its interaction with inflation, exchange rate, and interest rate dynamics. Overall, the Nigerian stock market exhibits sensitivity to macroeconomic instability rather than oil price volatility in isolation.

5.3 Policy Implications and Recommendations

1. **Strengthening Macroeconomic Stability:** Policymakers should prioritize controlling inflation, as it has a significant impact on stock market performance. Stable pricing conditions will enhance investor confidence and promote sustainable market growth.
2. **Economic Diversification:** Given the insignificant direct impact of oil price volatility, there is a need to reduce overdependence on oil by promoting diversification into non-oil sectors. This will minimize vulnerability to external shocks and improve financial market resilience.
3. **Monetary Policy Effectiveness:** The Central Bank should maintain prudent interest rate policies to stabilize financial markets. Effective monetary policy coordination can help manage inflation and exchange rate fluctuations.
4. **Exchange Rate Management:** Authorities should adopt policies that ensure exchange rate stability, as fluctuations indirectly affect stock market performance and investor decisions.
5. **Enhancing Market Efficiency:** Regulatory bodies should improve transparency, information dissemination, and investor protection in the stock market. This will ensure that macroeconomic information is efficiently reflected in stock prices and reduce market distortions.

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