



Oil Price Fluctuations and All-Share Index in Nigeria

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Abstract: This study investigated the effect of oil price fluctuations on the Nigerian All-Share Index (ASI) using annual data covering the period of 1993-2024, a period marked by significant macroeconomic shifts, including the oil price collapse and naira devaluation between 2014 and 2016, the COVID-19-induced oil shock and market contraction in 2020, and finally, the 2023-2024 phase marked by the complete removal of fuel subsidy. An ex-post facto research design was adopted using secondary time-series data sourced from the Central Bank of Nigeria (CBN), Nigeria Exchange and World Federation of Exchanges. The study is grounded in the Arbitrage Pricing Theory. Unit root tests were conducted to determine stationarity, while cointegration was examined using the ARDL bounds testing approach. The Autoregressive Distributed Lag (ARDL) model was then estimated, followed by post-estimation diagnostic tests. Oil price fluctuations were measured using Brent spot oil price, while real interest rate and GDP growth were included as control variables. The results revealed that oil price fluctuations exert a statistically significant influence on the ASI in both the short and long run. It recommends sustained and coordinated macroeconomic policy alignment among key institutions, particularly the Central Bank of Nigeria and the Securities and Exchange Commission, with a focus on improving information disclosure, deepening risk mitigation frameworks, and broadening institutional investor involvement to enhance overall market stability.

Keywords: All Share Index, Autoregressive Distributed Lag, Nigerian Exchange Group, Oil Price Fluctuations, Stock Market

INTRODUCTION

From a theoretical perspective, the relationship between macroeconomic shocks and stock market performance is most coherently framed within the Arbitrage Pricing Theory (APT). APT posits that asset returns are driven by multiple systematic risk factors, rather than a single market portfolio. The stock market is widely regarded as a vital barometer of economic stability, capturing how macroeconomic shocks and policy choices shape investor confidence and corporate performance. Among the factors influencing stock markets, oil price fluctuations stand out due to oil's dual role as a production input and a critical revenue source. In oil-dependent economies, price swings reverberate through fiscal stability, currency values, and financial markets. For Nigeria, where crude oil accounts for over 90% of foreign exchange earnings, volatility in oil prices constitutes a central driver of market outcomes (Okere et al., 2021). The Nigerian All Share Index (ASI), which aggregates the performance of listed equities, provides a comprehensive measure of investor sentiment and market direction. Unlike sectoral indices, the ASI captures market-wide dynamics, making it a particularly suitable measure for analyzing the effects of oil price volatility.

Oil prices are inherently volatile, shaped by supply-demand imbalances, geopolitical tensions, technological shifts, and environmental policies (Amri-Asrami & Jamkhane, 2024). While volatility is global, its effects are uneven. In oil-importing economies, higher prices often increase costs and reduce stock valuations, while in oil-exporting economies they generate short-term fiscal windfalls. In Nigeria, these dynamics are especially complex. Oil price booms improve fiscal revenues and investor confidence but also raise inflationary pressures and borrowing costs. Conversely, price declines weaken fiscal capacity, erode the naira, and dampen investor sentiment, producing bearish trends in the ASI (Okorie, 2020). Thus, while oil price shocks are international phenomena, their destabilizing impact is uniquely acute in Nigeria's stock market.

Empirical research highlights the disruptive role of oil price fluctuations in oil-exporting nations. Inegbedion et al. (2020) observed that oil price booms typically generate short-lived growth in financial markets, while downturns lead to fiscal deficits, currency depreciation, and weakened stock indices. In Nigeria, rising oil prices have historically boosted government revenues and foreign reserves, translating into bullish ASI movements. Yet such gains are often offset by inflationary pressures that undermine corporate profitability (Alamgir & Amin, 2021). Falling oil prices, by contrast, reduce fiscal resources, weaken the exchange rate, and trigger investor flight, pushing the ASI downward. This evidence confirms that oil price volatility is a major source of instability in Nigeria's stock market.

Theoretical perspectives reinforce this linkage. Zhang et al. (2021) identified two principal transmission channels: production cost effects, where higher oil prices reduce productivity, and discount rate effects, where oil price expectations alter inflation and interest rates. While these mechanisms have been widely documented in advanced economies (Chen et al., 2022; Gao & Gao, 2022), their implications are more pronounced in emerging markets due to weaker buffers and structural vulnerabilities (Bagchi & Paul, 2023). In Nigeria, the dual role as an oil exporter and importer of refined products intensifies exposure. High oil prices increase export earnings but raise subsidy costs and consumer prices, while falling prices reduce fiscal space and foreign reserves. Both scenarios feed into the ASI, as investor sentiment and stock valuations shift with oil price movements.

Historical patterns illustrate this volatility. The early 2000s oil boom coincided with a surge in the ASI, supported by stronger reserves and increased investment inflows (Erhijakpor & Onerhime, 2024). In contrast, the 2014-2016 slump precipitated fiscal shortfalls, naira devaluations, and capital flight, resulting in a steep decline in the ASI. Similarly, the 2020 pandemic-induced collapse in oil prices exposed the fragility of Nigeria's stock market, as the ASI fell alongside dwindling revenues and heightened uncertainty (Obi et al., 2023). These episodes demonstrate that the ASI closely tracks Nigeria's exposure to oil price shocks.

Exchange rate dynamics further underscore this vulnerability. In principle, rising oil prices strengthen the currency and support stock performance, while falling prices weaken both. In Nigeria, this pattern has been evident. For example, in 2024 an OPEC oil price of \$80.04 per barrel corresponded to an exchange rate of ₦1,600-₦1,700/\$1, compared to ₦1,254/\$1 when oil averaged \$82.95 in 2023 (Statista, 2024). Such sharp currency swings feed directly into corporate performance and trading activity, reinforcing the ASI's role as a mirror of oil price instability (Raifu & Oshota, 2022).

Although the relationship between oil price fluctuations and stock market performance in Nigeria has been widely examined, existing evidence remains fragmented and, in many cases, sensitive to model specification, sample period, and choice of market indicator. Much of the Nigerian literature focuses on market capitalization, sectoral indices, or turnover ratios, while relatively limited attention has been given to the All-Share Index (ASI) as a comprehensive benchmark capturing aggregate investor sentiment and market-wide price movements.

Moreover, prior studies such as Aberu (2025) and Akachukwu et al. (2022) interpret the oil and stock market linkages as structurally stable, despite Nigeria's exposure to repeated macroeconomic, policy, and oil-market regime shifts over the past three decades. As a result, findings reported in earlier periods are frequently generalized to more recent contexts without sufficient scrutiny of whether the underlying transmission mechanisms remain intact.

The study contributes to the literature in three ways. First, it provides updated empirical evidence using a longer dataset that captures major structural episodes in Nigeria's oil and financial markets. Second, by focusing on the All-Share Index rather than alternative stock market indicators, the analysis captures broad investor sentiment and aggregate stock market behaviour. Third, the application of the ARDL framework allows simultaneous estimation of short-run dynamics and long-run equilibrium relationships between oil price fluctuations and stock market performance in Nigeria.

In doing so, the paper provides updated empirical insight into the relevance of oil price movements for Nigeria's primary stock market benchmark. The contribution lies not in introducing new techniques or data, but in offering a disciplined re-evaluation of a widely studied relationship, with particular attention to coherence, transmission interpretation, and the evolving structure of Nigeria's stock market.

The remaining parts of this article are divided into four as follows; Section 2 presents the empirical literature; Section 3 gives the methodology; Section 4 discusses the empirical results and discuss findings and Section 5 concludes and give policy recommendations.

LITERATURE REVIEW

Stock Market Performance

Stock market performance refers to the overall movement and behaviour of stock prices within a particular market or exchange over a specified period of time. It is typically measured by various stock market indices, such as the S&P 500, Dow Jones Industrial Average, or specific sector indices (Abubakar & Abdullahi, 2021). The performance of the stock market is influenced by a multitude of factors, including economic indicators, company earnings reports, geopolitical events, investor sentiment, and government policies. When stock prices rise over time, it is generally seen as an indication of positive market performance, while declining prices may suggest negative performance (Erhijakpor & Onerhime, 2024). Investors often assess stock market performance to evaluate the returns on their investments, make investment decisions, and gauge the health of the economy. Financial analysts and policymakers also closely monitor stock market performance as an indicator of economic trends and overall market sentiment (Agbo, 2021).

In effect, stock market performance refers to the movement and behaviour of stock prices within a market or exchange, reflecting the collective actions and perceptions of investors and market participants (Echchabi & Azouzi, 2017). The performance of a stock market, particularly in comparison to other stock markets and its anticipated role in fostering economic development, is contingent upon several factors. One of the most important of these is the efficiency and depth of the capital market.

All-Share Index

Central to the Exchange's performance measurement is the All-Share Index (ASI), which tracks price movements of all listed equities. As a broad-based capitalization-weighted index, the ASI consolidates market dynamics into a single indicator of market direction, providing investors and policymakers with a comprehensive view of stock market performance (Thomas et al., 2023). Market indices play a critical role in reflecting aggregate market behavior, as individual stock price movements are often divergent and do not easily signal the overall trajectory (Kanu et al., 2017). By weighting components according to capitalization, the ASI offers a representative gauge of market trends and investment opportunities, calculated on a daily basis to capture fluctuations. This makes the ASI not only a benchmark for market activity but also a key tool for diagnosing systemic risks and assessing how external shocks—such as oil price fluctuations—reverberate through Nigeria's stock markets (Kanu et al., 2017).

Oil Price Fluctuations

Oil price fluctuations remain one of the most influential external shocks affecting Nigeria's economy and financial system. Crude oil, as a globally traded commodity, is inherently vulnerable to instability driven by supply-demand imbalances, geopolitical events, and speculative pressures. Kilian (2013) categorizes oil price shocks into supply shocks, usually stemming from geopolitical or OPEC-related disruptions; aggregate demand shocks, reflecting global economic cycles; and speculative shocks, linked to expectations rather than fundamentals. Regardless of their origin, these shocks destabilize financial markets by altering government revenues, foreign reserves, and investor sentiment (Salisu et al., 2022; Al-hajj et al., 2018; Nasreen et al., 2020).

For Nigeria, where crude oil accounts for the majority of export revenues and fiscal resources, price movements have profound macro-financial consequences. High oil prices, as observed between 2000 and 2008, strengthened fiscal balances, boosted foreign reserves, and supported stock market growth. Conversely, sharp downturns in 1998, 2008, and 2014 triggered fiscal crises, currency depreciation, and stock sell-offs. The COVID-19 pandemic amplified this vulnerability: collapsing global oil demand drove prices to historic lows, pushing Nigeria into recession. Even subsequent rebounds, such as those during the Russia-Ukraine conflict in 2021-2022, provided only temporary relief, as structural weaknesses—overdependence on oil exports, limited refining capacity, and weak diversification—sustained systemic exposure (Behera, 2023). Thus, oil price fluctuations remain a central determinant of Nigeria's fiscal health, exchange rate stability, and ASI performance.

Real Interest Rate

Another macroeconomic factor shaping the oil-stock market nexus is the real interest rate (RINT), defined as the nominal lending rate adjusted for inflation. RINT captures the true cost of borrowing and the real return to saving, directly influencing portfolio choices between equities and fixed-income assets (World Bank, 2023). Higher real rates increase discount factors applied to future earnings, lowering stock valuations, while simultaneously incentivizing investors to shift funds toward less risky, interest-bearing instruments (EIB, 2024). In emerging economies such as Nigeria, where capital markets are relatively shallow, these effects are pronounced. Recent episodes of monetary tightening, aimed at curbing inflation and stabilizing the currency, highlight how rising real interest rates constrain credit, reduce market liquidity, and depress stock market performance (IMF, 2024; Smith, 2024). As such, RINT is expected to exert a negative influence on the ASI, moderating the impact of oil price-induced capital inflows and outflows.

Gross Domestic Product

Finally, gross domestic product growth rate (GDPGR) provides an overarching measure of economic performance and a vital determinant of stock market dynamics. Stronger GDP growth signals improved earnings potential for firms, increased investor confidence, and heightened demand for equities (World Bank, 2024). Evidence from Nigeria underscores a close co-movement between stock market development and growth trends, with expansions fostering capital market activity and downturns dampening liquidity and performance (Abere, 2025; RSIS International, 2025). In oil-dependent economies, GDPGR is itself closely tied to oil price cycles and exchange rate volatility, yet as a control variable it helps distinguish the independent role of real economic activity from commodity-driven shocks (IMF, 2024). By capturing underlying growth momentum, GDPGR is anticipated to exert a positive influence on the ASI, reinforcing the dual importance of macroeconomic fundamentals and commodity cycles in shaping Nigeria's stock market trajectory.

Theoretical Review

The theoretical foundation of this study is anchored on the Arbitrage Pricing Theory (APT) developed by Stephen Ross. APT posits that the expected return on financial assets is determined by a linear combination of multiple systematic risk factors. Unlike the single-factor structure of the Capital Asset Pricing Model, APT allows asset returns to respond to several macroeconomic forces simultaneously. This flexibility makes the theory particularly suitable for analysing financial markets in commodity-dependent economies where macroeconomic variables play a significant role in shaping investor expectations.

Within the APT framework, stock market performance reflects the sensitivity of asset prices to underlying economic risk factors. Changes in macroeconomic variables such as commodity prices, interest rates, and economic growth influence firms' expected cash flows, discount rates, and investor sentiment, thereby affecting stock market valuation. For an oil-dependent economy like Nigeria, fluctuations in global oil prices represent a major external shock capable of influencing macroeconomic stability and financial market behaviour.

Oil price fluctuations affect the Nigerian economy through several channels. Since crude oil exports account for a large share of government revenue and foreign exchange earnings, changes in oil prices influence fiscal policy, exchange rate stability, and investment conditions. These macroeconomic adjustments can ultimately affect stock market performance by altering corporate profitability expectations and investor confidence.

In addition to oil price fluctuations, real interest rates and economic growth represent key macroeconomic factors influencing stock market dynamics. Real interest rates reflect the cost of capital and opportunity cost of investment in financial assets. Higher real interest rates tend to reduce stock market attractiveness by increasing borrowing costs and offering alternative returns through fixed-income instruments. Conversely, economic growth captures overall productive activity in the economy and is generally associated with improved corporate earnings and stronger investor confidence. The APT equation can be represented as:

$$E(R_i) = r_f + \beta_1 F_1 + \beta_2 F_2 + \dots + \beta_k F_k + \varepsilon_i$$

Where:

- $E(R_i)$: Asset's expected rate of return
- r_f : the risk-free rate
- β_k : Sensitivity of stock i to factor k (factor loadings)
- F_k : Factor k (e.g., oil price fluctuations, exchange rates)
- ε_i : Idiosyncratic risk (unsystematic risk)

Within the APT framework, oil price fluctuations, real interest rate, and GDP growth represent systematic macroeconomic risk factors capable of influencing asset prices. Oil price fluctuations capture commodity-driven macroeconomic shocks, real interest rate reflects monetary conditions affecting investment decisions, while GDP growth captures underlying economic activity influencing corporate profitability. In this study, these variables are treated as observable risk factors whose changes may influence stock market returns represented by movements in the Nigerian All-Share Index.

In Nigeria, oil price fluctuation is a critical macroeconomic factor. The APT framework allows modelling how these systematic risks impact the stock market, as they are external shocks influencing the entire economy. Nigeria is an oil-dependent economy, so changes in oil prices significantly affect government revenue, foreign exchange reserves, and investor confidence. Volatility in exchange rates impacts import/export costs and foreign investments, which are crucial for stock market dynamics. Using APT, it is possible to estimate the sensitivities (β_k) of stock returns to oil price changes and exchange rate fluctuations. This helps quantify the extent to which these factors drive stock market performance. For example, a high β_k for oil prices indicates that stock returns are highly sensitive to oil price changes. APT assumes that unsystematic risk can be diversified away in a well-diversified portfolio (Adejumobi, 2017). This aspect is essential for understanding the broader implications of oil price and exchange rate risks on investors' portfolios in Nigeria.

Overall, the ARDL modelling strategy operationalizes the central propositions of Arbitrage Pricing Theory by explicitly linking stock market performance to multiple macroeconomic risk factors while allowing for both long-run equilibrium relationships and short-run adjustments. This integration ensures that the theoretical framework is not merely descriptive but is directly embedded in the econometric specification, thereby strengthening the analytical foundation of the study.

Empirical Review

Olayungbo et al. (2024) investigated the impact of oil price fluctuations on stock markets, particularly considering their subsequent effects on oil-producing countries and European nations. Utilizing daily closing data, the authors analyzed the relationship between oil prices and stock market returns. They employed the Generalized Autoregressive Conditional Heteroskedasticity (GARCH) process for estimation and applied both static and dynamic Markov Switching models to evaluate the interplay between oil prices and the stock market, facilitating an examination of transitions between the COVID-19 pandemic and the Russia-Ukraine conflict periods. The findings from the static model during the COVID-19 era revealed a positive and significant correlation between stock price returns in Italy, Germany, and the United States and oil price returns. In contrast, during the Russia-Ukraine conflict, a significantly positive correlation was observed only for the United States. Furthermore, the study noted a substantial transmission of fluctuations from the stock market to the oil market in Nigeria, whereas a reverse effect was observed in Saudi Arabia. Additionally, during the COVID-19 period, there was a two-way transmission of fluctuations for the United States, Italy, and Germany.

Osah and Mollick (2023) investigated the responsiveness of stock returns to fluctuations in oil prices by utilizing monthly data spanning from 1990 to 2020 across 12 prominent economies, which were divided into six oil-producing and six oil-dependent nations. Through the application of both short- and long-term empirical methodologies in country-specific evaluations, they identified diverse short-term effects of oil price returns, alongside adverse consequences for stock markets stemming from heightened volatility, fluctuations in the VIX, and geopolitical uncertainties. Their long-term analysis, employing Dynamic OLS (DOLS) estimators, demonstrated positive influences of oil prices on the stock markets of oil-producing countries, while indicating relatively milder negative impacts for oil-dependent nations. Additionally, increases in interest rates were found to exert significant negative effects over the long term. Complementary panel analyses further elucidated these findings, revealing both positive and negative correlations among oil prices, bond yields, market volatility, and stock market performance.

Also, Jiang (2023) utilized the Vector Autoregression (VAR) model to investigate the interrelations among the Brent crude oil index, the West Texas Intermediate (WTI) crude oil index, and China's Clean Energy Theme Index (CET). Furthermore, the Autoregressive Moving Average Generalized Autoregressive Conditional Heteroskedasticity (ARMA-GARCH) model was employed to examine the influence of international oil prices on China's clean energy sector in the context of the Russia-Ukraine conflict. The empirical results indicate that fluctuations in international crude oil prices exert a short-term, oscillatory effect on the

returns of China's Clean Energy Theme Index, thereby providing significant insights for investors.

Bagchi and Paul (2023) examined the ramifications of a substantial escalation in crude oil prices, referred to as an oil price shock, on the stock price returns and currency exchange rates of G7 nations in the context of the Russia-Ukraine conflict. Employing daily data spanning from January 2, 2017, to June 29, 2022, they implemented the Fractionally Integrated GARCH (FIGARCH) model to assess the impact of the oil price shock and performed the Breakpoint unit root test to detect structural breaks within the dataset. Structural breakpoints were identified in the dataset for both stock price returns and exchange rates, particularly during the interval from the last week of February 2022 to the last week of March 2022. Interestingly, except for TSX, NASDAQ, and USD, significant long memory effects were detected from Brent crude oil price to all stock price returns and currency exchange rates across all G7 countries.

Ogbulu (2018) examined the impact of petroleum prices and forex movements in connection to share prices in Nigeria, along with the volatility pass-through between these factors. Monthly data from January 1985 to August 2017 were analyzed, utilizing various tests including ADF unit root tests, Johansen co-integration tests, ECM technique, Granger causality tests, variance decomposition, and GARCH(1,1) modeling. Results indicated a long-run dynamic co-integrating relationship among the Nigerian Stock Exchange All-Share Index (ASI), Dollar price of Nigerian Crude Oil (DPO), and Official Forex (FXR) conversion. The study found that DPO significantly impacts stock market prices, with a bi-directional causality relationship between ASI and DPO and a unidirectional causality from FXR to ASI. ARCH-GARCH analysis revealed stock market price volatility's dependence on previous month's volatility, and the transmission of DPO and FXR volatility to stock market prices.

Similarly, Kanu et al. (2017) explored the impact of global oil price variations on the Nigerian Stock Exchange All Share Index, using data from January 2006 to December 2015. Their analysis indicated a lack of co-integration among the variables; however, they noted that the All Share Index exhibited responsiveness to shifts in global oil prices. Variance decomposition analysis revealed that a substantial proportion of the variance in the All-Share Index was attributed to its own shocks. The study advised prudence in investment decisions within the Nigerian stock market, given the inconclusive test results, and emphasized the necessity of integrating global oil price considerations into stock price forecasting.

Ojikutu et al. (2017) examined the correlation between crude oil prices, foreign exchange rates, and the performance of the stock market in Nigeria. They employed ordinary least squares (OLS) estimation, utilizing the all-share index (ASI), crude oil prices (COP), and exchange rates (EXC) as independent variables. The analysis utilized annual time series data spanning from 1985 to 2014, revealing a co-integrating relationship among ASI, COP, and EXC. However, the study found COP to be statistically insignificant, suggesting that fluctuations in oil prices do not have a direct impact on stock market performance, especially all-share index. The authors recommended the inclusion of Nigerian oil companies in the stock market to amplify their economic influence, providing critical insights for policy development.

METHODOLOGY

To examine the combined effects of fluctuations in crude oil prices and exchange rate on the performance of the stock market (all-share index) in Nigeria, this research adopted Arbitrage Pricing Theory (APT), a multifactor technical model that describes how sensitive stock market performance indicators such as how oil price fluctuations and exchange rates are utilized, which serves as one of the fundamental theoretical frameworks for this research. The multiple regression model (as modified with moderating variable that was held constant) was deemed appropriate and has been used in the research works of Oke et al., 2023; Tabash et al., 2022; Adenekan et al., 2020; Ogbebor et al., 2019, to examine how independent and moderating variables relate to a dependent variable. As a result, the model fits into the theoretical foundation put forth.

Data Sources

The study utilizes annual secondary data covering the period 1993-2024. Data for the Nigerian All-Share Index were obtained from the Nigerian Exchange Group (NGX). Oil price data were sourced from the Central Bank of Nigeria Statistical Bulletin and complemented with international crude oil price series from the World Federation of Exchanges database. Real interest rate and GDP growth rate were obtained from the Central Bank of Nigeria and the World Bank World Development Indicators. All variables were transformed where necessary to ensure comparability and consistency across the dataset.

Measurement of Variables

In this research, performance of the stock market, exchange rates, and fluctuations in oil prices were assessed through their respective indicators. All Share Index is the dependent variable, while Crude Oil Price Fluctuations is the independent variable, respectively, while Real interest rate and GDP growth are included as control variables because macroeconomic conditions influence stock market performance through investment cost, liquidity conditions, and corporate earnings expectations. Previous empirical studies (Oke et al., 2023; Okere et al., 2021) identify these variables as important determinants of stock market dynamics in emerging economies. These are defined in Table 1 below:

Table 1: Measurement of Variables

Dependent Variable - Stock Market Performance			
Measure	Abbreviation	Variable Measurement	Existing Literatures
All-Share Index	ASI	Number of shares in issue multiplied by price of each share	Kanu et al. (2017); Thomas et al. (2023)
Independent Variables - Oil Price Fluctuations			
Oil Price Fluctuations	OPF	Oil price fluctuation is proxied by the annual percentage change in international crude oil prices, computed as the logarithmic difference of real oil	Okere et al. (2021); Nguyen et. al (2020); Mokni (2020)

		prices. This measure captures medium-term fluctuations in oil prices rather than high-frequency volatility and is consistent with the use of annual data in the study.	
Control Variables			
Real interest rate	RINT	Measured as difference between nominal interest rate and inflation rate	Lukasz & Smith (2017).
Gross Domestic Product growth rate	GDPGR	Current year's GDP minus previous year's GDP, divided by previous year's GDP multiply by 100	Umoh (2025).

Source: Researchers' Compilation (2025)

Model Specification

As a result, the model listed below were specified based on this study's objective in order to evaluate the effect of oil price fluctuations on NGX all-share index in Nigeria. All the datasets were gathered for the period between 1993 and 2024, which is primarily driven by data availability. Also, the research utilized *ex post facto* research design and secondary data were sourced from the Central Bank of Nigeria (CBN), World Federation of Exchange and Nigeria Exchange Group. This dataset encompassed the period from 1993 to 2024, considering several reform initiatives, including the global financial meltdown crisis of 2008-2009, the Covid-19 Pandemic of 2020, the demutualization of the Nigerian Stock Exchange in 2021 and the Petroleum Industry Act of 2022 as well as the removal of fuel subsidy in 2023.

In order to obtain the long-run and short-run estimates of the effects of oil price fluctuations on all share index in Nigeria, it followed the study by Pesaran et al. (2001), where the unrestricted Error Correction form of the ARDL models with the error correction term which captures the speed of adjustment parameter are expressed in equation 1 outlined below:

Model to Determine the Effect of Oil Price Fluctuations on All-Share Index

Following the specification of model 1, it follows similar pattern of Thomas et al. (2023) to examine the effect of oil price fluctuations on all-share index, the function and structural relationship are specified in equations (1) and (2)

$$ASI = f(OPF, RINT, GDPGR) \dots\dots\dots(1)$$

Where ASI is all-share index, OPF is the oil price fluctuations, RINT is the real interest rate, and GDPGR is the gross domestic product growth rate. The structural form of equation (3.4) is specified in equation (3.5).

$$ASI_t = \alpha_0 + \alpha_1 OPF_t + \alpha_2 RINT_t + \alpha_3 GDPGR_t + \mu_t \dots\dots\dots(2)$$

Where the variables ASI, OPF, RINT, and GDPGR are as explained earlier in equation (1). α_0 is the constant term and μ_t is the disturbance term. The parameters α_i ($i= 1, 2, 3$) are the coefficient of the respective variables.

To obtain the estimable ARDL model, short run and the long run parameters of equation (2) is specified below in equation (3).

$$\Delta ASI_t = a_0 + a_1 ASI_{t-1} + a_2 OPF_{t-1} + a_3 RINT_{t-1} + a_4 GDPGR_{t-1} + \sum_{i=0}^k \alpha_5 \Delta ASI_{t-1} + \sum_{i=0}^k \alpha_6 \Delta OPF_{t-1} + \sum_{i=0}^k \alpha_7 \Delta RINT_{t-1} + \sum_{i=0}^k \alpha_8 \Delta GDPGR_{t-1} + \varphi ECT + \varepsilon_t \dots(3)$$

Where:

- Δ is the first difference operator used to handle non-stationarity;
- ASI is All Share Index;
- OPF is Oil Price Fluctuations (main explanatory variable);
- RINT is Real Interest Rate (control variable);
- GDPGR is Gross Domestic Product Growth Rate (control variable);
- a_0 is the Intercept (constant);
- a_1 to a_4 are Long-run coefficients, showing how lagged values of ASI, OPF, RINT, and GDPGR affect all share index;
- a_5 to a_8 are short-run coefficients for the differenced variables;
- Σ (summation terms) are the short-run dynamics, capturing the effect of changes (first differences) in ASI, OPF, RINT, and GDPGR over k-lags;
- ECT (Error Correction Term) captures the speed at which deviations from long-run equilibrium are corrected;
- φ (phi) is the speed of adjustment coefficient expected to be negative and significant, indicating convergence to equilibrium;
- ε_t is the error term (random disturbance at time t);
- $t, t - 1$ is the subscripts for time; $t-1$ represents lagged values (previous period).

To analyze the effect of oil price fluctuations on all share index in Nigeria, while controlling for real interest rate and gross domestic product growth rate, the method of analysis was based on the outcome of the unit root test. The method of the Autoregressive Distributed Lag (ARDL) model was applied because the unit root result showed a mixed order of integration of $I(0)$ and $I(1)$ (Pesaran, 1997; Sharif and Nor, 2015).

While a substantial literature documents nonlinear, asymmetric, and regime-dependent effects of oil price movements on financial markets, the present study adopts a linear ARDL framework for two reasons. First, the objective is not to model asymmetry per se, but to reassess the average relationship between oil price fluctuations and stock market performance over a long historical horizon. Second, the ARDL approach provides a transparent framework for examining both short-run dynamics and long-run equilibrium relationships in the presence of mixed integration orders, which is appropriate given the annual frequency and sample size of the data.

Estimation Techniques

This section explains the pre-estimation diagnostic that informed the choice of the appropriate analytical models and the estimation procedures. The pre-estimation

diagnostics were unit root and cointegration tests, while post estimation diagnostic comprises heteroscedasticity, normality, autocorrelation, linearity and stability test.

DATA ANALYSIS, RESULT AND DISCUSSION

Table 2: Descriptive Statistics of Oil Price Fluctuations, Real Interest Rate and Gross Domestic Product growth rate and All share index

	ASI	OPF	RINT	GDPGR
Mean	27796.17	2.02	3.22	4.09
Std Dev	21957.75	16.84	9.43	3.73
Kurtosis	3.48	2.13	5.09	1.33
Skewness	1.54	-1.04	-1.78	0.53
Minimum	1543.80	-46.78	-31.45	-2.04
Maximum	102926.40	34.52	18.18	15.33
N	32	31	32	32

Source: Authors' Computation (2025) from EViews 12 where All Share Index (ASI) while the explanatory and control variables are Oil Price Fluctuations (OPF), Real Interest Rate (RINT) and Gross Domestic Product growth rate (GDPGR), respectively.

The descriptive data indicate that the mean value for ASI was 27,796.17. The minimum and maximum values are 1,543.80 and 102926.40, with a standard deviation of 21,957.75. The skew value is positive indicating ASI in Nigeria has remained a positively inclined. The mean value for OPF exhibited a value of 2.02, with a minimum value of -46.78 and a maximum value of 34.52. The skewness was calculated to be -1.04, which indicated that the oil price fluctuation is negatively dominant. The RINT exhibited an average value of 3.22, with a minimum value of -31.45 and a maximum value of 18.18. The standard deviation is 9.43, revealed a wide volatile and negatively skewed. The GDPGR had an average value of 4.09, with the minimum and maximum values being -2.04 and 15.33 respectively. The standard deviation is 3.73, revealed cluster about the mean.

Correlation Matrix

Table 3 presents the correlation coefficients among the variables used to analyze the effect of oil price fluctuations on all-share index in Nigeria. The matrix shows the direction and strength of relationships between variables, with correlation values ranging from -1 to +1.

Table 3: Correlation Matrix of Oil Price Fluctuations and All-Share Index

	ASI	OPF	RINT	GDPGR	VIF
ASI	1				
OPF	0.013	1			3.12342
RINT	0.212	-0.305	1		1.224571
GDPGR	0.046	0.040	0.291	1	1.122140

Source: Author's Computation from Eviews 12

Table 3 revealed the nature and strength of linear relationships among the variables, particularly between the dependent variable (ASI) and the explanatory variables (OPF, RINT, and GDPGR). The results indicated that OPF exhibits a very weak positive correlation with ASI ($r = 0.013$), suggesting that oil price fluctuations have a negligible direct linear association with stock market performance as proxied by ASI. Similarly, GDPGR shows a weak positive correlation with ASI ($r = 0.046$), implying that economic growth exerts only a minimal contemporaneous influence on stock market performance. In contrast, RINT demonstrates a modest positive correlation with ASI ($r = 0.212$), indicating that interest rates have a relatively stronger—though still limited—association with stock market movements.

Further examination of the interrelationships among the independent variables shows that OPF and RINT are negatively correlated ($r = -0.305$), suggesting an inverse relationship between oil price fluctuations and interest rates. Meanwhile, GDPGR is weakly positively correlated with both OPF ($r = 0.040$) and RINT ($r = 0.291$), indicating mild co-movements among macroeconomic indicators. Importantly, the Variance Inflation Factor (VIF) values for OPF (3.12), RINT (1.22), and GDPGR (1.12) are all below the conventional threshold of 10, confirming the absence of multicollinearity among the explanatory variables. This implies that the independent variables do not exhibit excessive linear dependence, thereby enhancing the reliability and stability of the regression estimates. The VIF values range from 1.22 to 3.12, all below the conventional threshold of 10 (and even the stricter threshold of 5), indicating the absence of multicollinearity among the explanatory variables. This suggests that the estimated regression coefficients are reliable and not distorted by excessive linear dependence. This further indicates that multicollinearity is not present and does not pose a serious threat to the reliability of the regression estimates.

Pre-estimation Test

Stationarity Test

To confirm the adequacy and absence of spurious and biased outcomes in the data utilized for analysis, the following pre-analysis tests were conducted: unit root test, cointegration, and lag length assessment. The results are displayed in the following manner:

Table 4: ADF Unit Root Test Results for Oil Price Fluctuations and All-Share Index in Nigeria

Variables	At Level On constant P-value	1 st Difference On Constant P-value	Order of integration
ASI	0.9900	0.0100**	I(1)
OPF	0.0001**	0.0100**	I(0)
RINT	0.0100**	0.0100**	I(0)
GDPGR	0.2334	0.0100**	I(1)

Source: Authors' Computation (2025) using EViews 12

Table 4 displayed the outcome of the unit root analysis for the variables employed in this study. The P-values for ASI, OPF, RINT, and GDPGR at intercept level are 0.9900, 0.0100**, 0.0100** and 0.2334. It revealed that OPF and RINT are stationary at level. While ASI and GDPGR became stationary at first difference. The order of integration for these

variables are I(0) and I(1). This means that these variables have a mixed order of integration and required that it is necessary to use the ARDL technique of estimation.

Cointegration Test

Table 5: Bounds test of Co-integration for Oil Price Fluctuations and All-Share Index in Nigeria

	F-statistic	Df	Critical level	I(0)	I(1)
Model 1	24.37461	3	5%	3.23	4.35

Source: Authors' computation (2025) using EViews 12

The ARDL bounds testing approach proposed by Pesaran et al. (2001), as displayed in Table 5, was employed to determine the existence of a long-run relationship among the variables. The computed F-statistic of 24.37461 exceeds the upper critical bound value of 4.35 at the 5% significance level, indicating rejection of the null hypothesis of no cointegration. This confirms the existence of a stable long-run relationship between oil price fluctuations, real interest rate, GDP growth, and the All-Share Index.

Table 6: Autoregressive Distributed Lag Modelling for Oil Price Fluctuations and All-Share Index in Nigeria

Variables	Coefficient	P-value
<i>SHORT-RUN</i>		
Δ ASI(-1)	-1.515064	0.0100**
Δ (OPF)	-636.0365	0.0388**
Δ (RINT)	765.3733	0.2368
Δ (GDPGR)	4701.256	0.0408**
ECM(-1)	1.676778	0.0041*
<i>LONG-RUN</i>		
OPF	2802.596	0.0051*
RINT	5744.572	0.0134**
GDPGR	-3058.419	0.0059*
R ²	0.820699	
F-stat	48.37277	0.020442**

Dependent variable: D(ASI), * 1% ** 5% *** 10%

Table 6 presents the outcomes of the ARDL analysis, showcasing the Error Correction Model (ECM) as well as the short-term and long-term effects. According to the error correction equation, it is anticipated to have a negative value, be less than one, and be statistically significant at a 5% level. But the ECM result only satisfied one conditions; significant but positive instead of negative and more than 1. The ECM value in this investigation is 167.68%, indicating a positive, statistically significant result that is more than one. This mean that the ECM is deviating from equilibrium instead of converging and leading to instability. This implies that the oil price fluctuation created a strong deviation and instability in the capital market. The preceding year's ASI has a negative and significant

effect on the present ASI in Nigeria. This shows that in Nigeria, past events of ASI negatively and significantly affect current ASI.

The short-run analysis reveals that the coefficients of oil price fluctuation (OPF) are $\beta = -636.0365$ with a corresponding p-value of 0.0388. The findings indicated that oil price fluctuation has a negative and statistically significant effect on All-Share Index (ASI), with a significance level of 5%. The coefficient value of oil price fluctuation (OPF) did not align with the anticipated a priori expectation, which was supposed to be positive and significant. The steady rise in oil price fluctuation (OPF) led to a significant decrease in All-Share Index (ASI) in Nigeria. In the long run, the oil price fluctuation (OPF) has a coefficient of $\beta = 2802.596$ and a p-value of 0.0051. The findings also demonstrate that the oil price fluctuation (OPF) has a positive and significant influence on All-Share Index (ASI). This aligns with the a priori expectation, which was expected to be positive and significant.

The effect of the control variables Real interest rate (RINT) and Gross Domestic Product growth rate (GDPGR) on All-Share Index (ASI) were found to have positive effect with coefficients of -765.3733 and 4701.256 in the short-run respectively. But GDPGR was found to be significant. The implication is that real interest rate and economic growth enhanced All-Share Index (ASI) in Nigeria. Thus, stable economic growth and low real interest rate supported the performance of All-Share Index (ASI). However, in the long-run, the effect of the control variables on the All-Share Index (ASI) were also reversed. Real interest rate (RINT) and Gross Domestic Product growth rate (GDPGR) revealed a positive and negative significant effect respectively. This may justify the failure of policies in Nigeria that do not have long-run life-span in Nigeria.

The coefficient of determination, $r^2 = 0.820699$, indicates that 82.1% of the variation in All-Share Index (ASI) can be attributed to changes in oil price fluctuations (OPF), Real interest rate (RINT) and Gross Domestic Product growth rate (GDPGR). The ARDL model in this investigation was determined to be properly stated, as evidenced by the F-statistic's p-value of 0.020442.

Table 7: Harvey Heteroscedasticity, Auto-correlation and Stability Tests for Oil Price Fluctuations and All-Share Index in Nigeria

	Heteroscedasticity F-statistic	P-value	Autocorrelation F-statistic	P-value	Remark	Stability Test
Model 1	7.291332	0.1275	31.09887	0.1130	No violation	Stable

Source: Author's Computation (2025) using EViews 12 where All Share Index (ASI) while the explanatory and control variables are Oil Price Fluctuations (OPF), Real Interest Rate (RINT) and Gross Domestic Product growth rate (GDPGR), respectively.

Table 7 showed the result of the Harvey Heteroscedasticity, Auto-correlation and Stability tests. The result revealed that model 1 have no problem of heteroscedasticity given that the p-value of 0.1275 is greater than 0.05.

The Auto-correlation test result is displayed in Table 7, revealed that model 1 have no problem of auto-correlation. The p-value of 0.1130 is more than the level of significance of 0.05. In the case of model stability, the result showed that model 1 is stable.

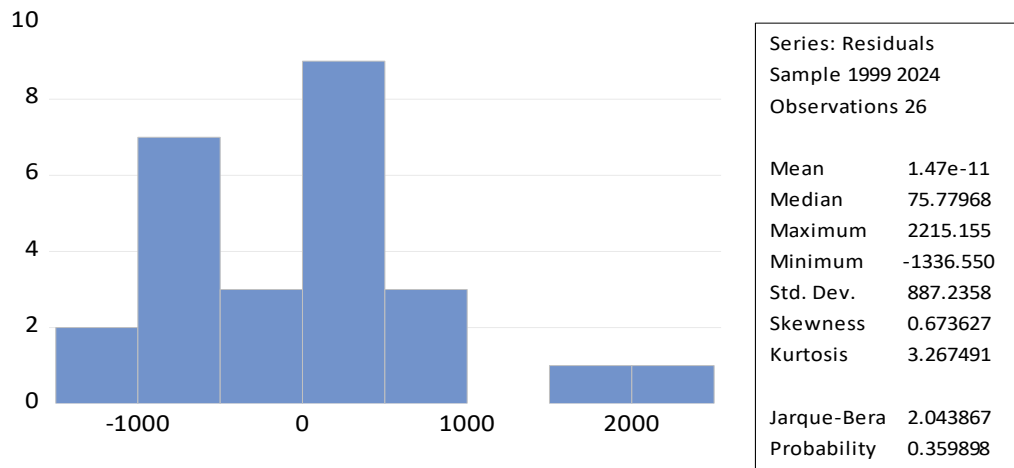


Diagram 1: Histogram of Oil Price Fluctuations and All-Share Index in Nigeria

Source: Author's Computation (2025) using EViews 12 where All Share Index (ASI) while the explanatory and control variables are Oil Price Fluctuations (OPF), Real Interest Rate (RINT) and Gross Domestic Product growth rate (GDPGR), respectively.

Diagnostic Test: Table 7 showed the result of the Harvey Heteroscedasticity, Auto-correlation and Stability tests. The result revealed that model 1 has no problem of heteroscedasticity given that the p-value are 0.1275. The Auto-correlation test result is displayed in Table 7, revealed that model 1 has no problem of auto-correlation. The p-value is 0.1130 and in the case of model stability, the result showed that model 1 is stable.

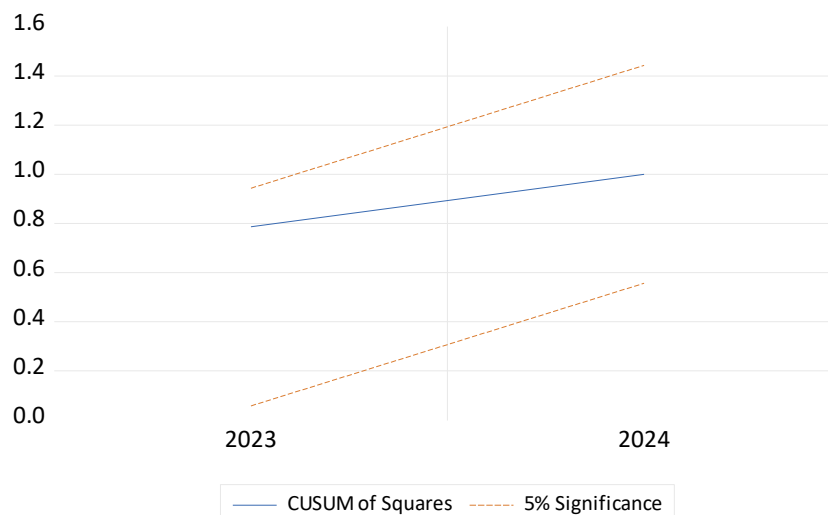


Figure 1: CUSUM Test for Oil Price Fluctuations and All-Share Index in Nigeria

Source: Author's Computation (2025) using EViews 12 where All Share Index (ASI) while the explanatory and control variables are Oil Price Fluctuations (OPF), Real Interest Rate (RINT) and Gross Domestic Product growth rate (GDPGR), respectively.

The stability of the estimated ARDL model was evaluated using the CUSUM of Squares test to ensure the constancy of parameters over the sample period. As illustrated in Figure 1 above, the cumulative sum of squared residuals remained within the 5% significance

boundaries from 2008 through 2022, signifying that the model parameters were largely stable and the estimated coefficients reliable. This stability indicates that the dynamic relationship between oil price fluctuations and all share index in Nigeria maintained structural consistency during the study period. The marginal deviation of the CUSUM of Squares line observed towards 2023-2024 may be attributed to recent volatility in global oil prices and domestic macroeconomic adjustments following post-pandemic and exchange rate reforms. Despite this slight movement, the overall pattern confirms that the ARDL model remains robust and suitable for both policy interpretation and empirical validation.

DISCUSSION OF FINDINGS

The H_0 posits that there is no significant effect of oil price fluctuation on all-share index in Nigeria. The findings, however, revealed that oil price fluctuations exert a statistically significant effect on Nigeria's All-Share Index (ASI), reinforcing the role of crude oil prices as a dominant systematic risk factor in an oil-dependent economy. Consistent with the Arbitrage Pricing Theory (APT), the result suggests that oil price movements function as a pervasive macroeconomic factor influencing expected stock returns through channels such as government revenue, exchange-rate dynamics, and investor expectations.

This evidence aligns with recent studies including Jiang (2023), as well as international findings by Osah and Mollick (2023) and Bagchi and Paul (2023), which document strong oil and stock market linkages in resource-driven economies. In contrast to earlier Nigerian studies that reported weak or insignificant relationships, the present result highlights the evolving nature of the oil-stock market nexus, suggesting that methodological differences, structural breaks, and macroeconomic distortions may temporarily weaken transmission mechanisms. This is supported by Ogbulu (2018). Overall, the evidence supports the APT proposition that asset prices respond to multiple systematic risk factors, with crude oil prices remaining a critical determinant of aggregate stock market performance in Nigeria, particularly during periods of heightened economic uncertainty.

CONCLUSION AND RECOMMENDATIONS

The main objective of this study assessed the effect of oil price fluctuations on all share index in the Nigerian stock market. Therefore, using the ARDL model to test the hypothesis, the study found that fluctuations in oil prices had a significant effect on all share index in the Nigerian stock market. The study therefore concluded that oil price fluctuations is a significant factor influencing changes in all share index in the Nigerian stock market.

Focusing on the Nigerian stock market, this study investigated the connection between the oil price fluctuations and all share index. The findings imply that Nigeria's stock market remains sensitive to external commodity price shocks. Policymakers should therefore strengthen macroeconomic stabilization mechanisms to reduce excessive dependence of financial markets on oil revenue cycles. Regulatory institutions such as the Securities and Exchange Commission and the Nigerian Exchange Group should also promote diversification of listed sectors and encourage institutional investment strategies that reduce concentration in oil-sensitive industries. In addition, improving macroeconomic policy coordination between monetary authorities and fiscal authorities could help mitigate the transmission of oil price volatility to financial markets.

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