EFFECT OF EXCHANGE AND INFLATION RATES ON STOCK MARKET PERFORMANCE IN NIGERIA

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Abstract
The persistent volatility of Nigeria's macroeconomic environment, particularly fluctuations in exchange and inflation rates, poses significant challenges to stock market stability and investor confidence. This study investigates the effects of exchange and inflation rates on stock market performance in Nigeria from 1999 to 2024. Employing a quantitative, ex-post facto research design, the study utilized annual time series data sourced from the Central Bank of Nigeria, National Bureau of Statistics, and the Nigerian Exchange Group. Analytical techniques included the Augmented Dickey-Fuller test, ARDL bounds testing, and multiple regression analysis. Findings revealed a significant negative relationship between both exchange rate depreciation and inflation with stock market performance in the long run and short run. Specifically, naira depreciation and high inflation were found to reduce stock market returns by increasing production costs, eroding investor returns, and signaling macroeconomic instability. The error correction model confirmed a moderate speed of adjustment toward equilibrium. These results highlight the sensitivity of Nigeria's capital market to macroeconomic shocks. For improved economic stability, Central Bank of Nigeria is advised to establish consistent and transparent exchange rate policies and enhance inflation-targeting frameworks. Coordinated monetary and fiscal efforts are essential to stabilizing macroeconomic conditions and fostering stock market growth.
Keywords: *Stock Market Performance, Exchange Rate, Inflation Rate, Nigeria*

INTRODUCTION

The stock market serves as a critical barometer for economic health and a vital mechanism for capital formation in developing economies like Nigeria (Okonkwo et al., 2023). As Africa's largest economy, Nigeria's financial markets have experienced significant volatility over the past two decades, influenced by various macroeconomic factors. Among these factors, exchange rates and inflation have emerged as potentially significant determinants of stock market performance (Ibrahim & Aluthge, 2019). Since the transition to democracy in 1999, Nigeria has implemented various economic reforms aimed at stabilizing its financial markets and promoting investment. However, the country has faced persistent challenges including currency devaluation, double-digit inflation rates, and fluctuating oil prices that have created a complex environment for investors (Nwude & Udeh, 2022). The Nigerian Stock Exchange (NSE), now known as the Nigerian Exchange Group (NGX), has responded to these macroeconomic conditions with periods of both remarkable growth and significant contraction.

The relationship between exchange rates, inflation, and stock market performance has garnered increased attention from researchers, policymakers, and investors seeking to understand market dynamics in emerging economies. Mroua and Trabelsi (2020) suggest that in import-dependent economies like Nigeria, currency depreciation can significantly impact corporate profitability and, consequently, stock valuations. Similarly, inflation erodes purchasing power and affects real returns on investments, potentially influencing investor behavior and market performance (Osamwonyi & Evbayiro-Osagie, 2022). Despite the theoretical connections between macroeconomic variables and stock market performance, empirical evidence regarding these relationships in Nigeria remains inconclusive. Previous studies have yielded contradictory results, with some researchers finding significant relationships (Okonkwo et al., 2023; Adekunle et al., 2020) and others documenting weak or inconsistent connections (Nwude & Udeh, 2022). These disparities may be attributed to differences in methodological approaches, time periods examined, or the consideration of other confounding variables.

Furthermore, Nigeria's economy has undergone substantial transformations since 1999, including multiple recessions, significant policy changes, and external shocks such as the global financial crisis and the COVID-19 pandemic. These developments may have altered the traditional relationships between macroeconomic variables and stock market performance, necessitating updated analysis that incorporates recent data (Ibrahim & Aluthge, 2019).

The problem statement is that the persistent volatility of Nigeria's macroeconomic environment, particularly fluctuations in exchange and inflation rates, creates uncertainty about their specific effects on stock market performance, hampering effective investment decision-making and policy formulation aimed at fostering market stability and economic growth. Thus, this study aims to examine the effect of exchange and inflation rates on stock market performance in Nigeria.

LITERATURE REVIEW

Stock Market Performance

Stock market performance refers to the overall behavior and outcomes of a stock market over a specified period, typically measured through various indices that track changes in stock prices (Nwanko, 2021). In Nigeria, the primary measure of stock market performance is the Nigerian Exchange Group All-Share Index (NGX-ASI), which represents the weighted average of all listed equities on the exchange (Osamwonyi & Evbayiro-Osagie, 2022).

Stock market performance reflects investor confidence, economic prospects, and corporate profitability. According to Adeyemi and Olufemi (2020), effective stock markets facilitate efficient resource allocation, capital formation, and economic growth through various mechanisms, including price discovery, liquidity provision, and risk diversification. However, market performance can be influenced by numerous factors ranging from company-specific events to broader macroeconomic conditions.

Market capitalization, trading volume, market turnover, and return volatility are additional metrics commonly used to assess stock market performance. Oluba (2019) argues that these indicators provide complementary perspectives on market depth, liquidity, and stability, which are crucial for comprehensive performance analysis. For developing markets like Nigeria, these metrics may exhibit different patterns compared to more established markets due to structural differences and institutional characteristics.

Exchange Rates

Exchange rate refers to the value of one currency expressed in terms of another currency, reflecting the relative purchasing power between countries (Ibrahim & Aluthge, 2019). In Nigeria, the exchange rate primarily concerns the value of the Nigerian Naira (NGN) against major international currencies, particularly the United States Dollar (USD).

Nigeria has employed various exchange rate regimes since 1999, including fixed, managed float, and more recently, a multiple exchange rate system that was unified in 2023 (Nwude & Udeh, 2022). These policy shifts have been responses to changing economic conditions, external pressures, and attempts to achieve currency stability while promoting economic growth.

Exchange rates can influence stock markets through multiple channels. Mroua and Trabelsi (2020) identify two primary mechanisms: the flow-oriented model, which posits that currency movements affect international competitiveness and trade balances, thereby impacting firm revenues and stock prices; and the stock-oriented model, which suggests that stock market developments affect capital flows and exchange rate dynamics. In import-dependent economies like Nigeria, currency depreciation typically increases production costs, potentially reducing corporate profitability and stock valuations (Nwanko, 2021).

Inflation Rates

Inflation rate measures the percentage change in the general price level of goods and services in an economy over a specific period (Adekunle et al., 2020). Nigeria has historically struggled with high and volatile inflation, often exceeding the central bank's target range, with significant implications for economic stability and investment decisions.

Several inflation measures exist, including the Consumer Price Index (CPI), Producer Price Index (PPI), and GDP deflator. In Nigeria, the National Bureau of Statistics (NBS) primarily uses the CPI to calculate

inflation rates, capturing price changes in a representative basket of goods and services consumed by households (Adeyemi & Olufemi, 2020).

The relationship between inflation and stock market performance is theoretically complex. The Fisher Effect suggests that nominal returns should incorporate expected inflation, implying that stocks could serve as inflation hedges (Osamwonyi & Evbayiro-Osagie, 2022). However, unexpected inflation may negatively impact stock returns by increasing uncertainty, raising nominal interest rates, and potentially reducing real economic growth. High inflation can also distort price signals, complicate financial planning, and erode consumer purchasing power, potentially affecting corporate earnings and stock valuations (Nwude & Udeh, 2022).

Empirical Review

Recent empirical studies have investigated the relationship between exchange rates and stock market performance in Nigeria with varying results. Okonkwo et al. (2023) examined data from 2010 to 2022 using vector autoregression (VAR) models and found a significant negative relationship between Naira depreciation and NGX-ASI performance. They attributed this finding to Nigeria's heavy dependence on imports for raw materials and finished goods, which increases production costs and reduces profitability when the currency weakens.

Conversely, Ibrahim and Aluthge (2019) employed an autoregressive distributed lag (ARDL) approach to analyze quarterly data from 2008 to 2018 and discovered a positive relationship between exchange rate depreciation and stock market returns in the short run, but a negative relationship in the long run. The authors suggested that initial currency depreciation might boost export competitiveness, benefiting export-oriented companies, while the long-term effects reflect increased production costs and economic instability.

Adeyemi and Olufemi (2020) utilized a Granger causality framework to assess the directional relationship between exchange rates and stock prices from 2015 to 2019. Their findings indicated bidirectional causality, suggesting that exchange rates influence stock prices and vice versa. This supports the existence of both flow-oriented and stock-oriented mechanisms in the Nigerian market.

In a more comprehensive study, Nwanko (2021) applied a structural vector autoregression (SVAR) model to monthly data spanning 2000 to 2020. The results showed that exchange rate volatility negatively impacted stock market returns and increased market uncertainty. Furthermore, the relationship strengthened during periods of economic crisis, highlighting the importance of stable exchange rates for market performance.

Inflation Rates and Stock Market Performance

The impact of inflation on stock market performance in Nigeria has also been subject to extensive research with mixed conclusions. Adekunle et al. (2020) employed ordinary least squares (OLS) regression to analyze annual data from 2010 to 2019 and found a significant negative relationship between inflation rates and stock market returns. The authors suggested that high inflation erodes real returns, increases uncertainty, and discourages investment in equities.

Nwude and Udeh (2022) used Johansen cointegration and error correction models to examine the long-run and short-run dynamics between inflation and stock market performance from 2005 to 2021. Their results indicated a negative long-run relationship but insignificant short-run effects, suggesting that the market may temporarily absorb inflationary pressures before reflecting them in valuations.

Oluba (2019) adopted a panel data approach to investigate sectoral differences in the inflation-stock return relationship from 2013 to 2018. The findings revealed that inflation had varying impacts across sectors, with consumer goods and financial services showing stronger negative correlations compared to

industrial goods and oil and gas sectors. This heterogeneity highlights the importance of considering industry-specific factors when analyzing the inflation-stock market relationship.

In contrast, Osamwonyi and Evbayiro-Osagie (2022) employed a nonlinear autoregressive distributed lag (NARDL) model to examine whether the inflation-stock market relationship exhibits asymmetry. Using monthly data from 2009 to 2021, they found that stock returns responded more strongly to decreasing inflation than to increasing inflation, challenging the assumption of symmetric effects. The authors attributed this finding to investor psychology and the market's tendency to react more positively to disinflationary environments.

Theoretical Framework

Several theoretical frameworks explain the relationship between macroeconomic variables and stock market performance. This study is anchored on two primary theories: the Arbitrage Pricing Theory and the Efficient Market Hypothesis.

Arbitrage Pricing Theory (APT)

Developed by Ross (1976) and extended by Chen et al. (1986), the Arbitrage Pricing Theory provides a multi-factor model for asset pricing that accommodates various systematic risk factors, including macroeconomic variables (Okonkwo et al., 2023). Unlike the Capital Asset Pricing Model (CAPM), which relies solely on market risk, APT posits that asset returns are influenced by multiple factors, potentially including exchange rates, inflation, interest rates, and industrial production.

APT suggests that assets with similar risk exposures should offer similar expected returns, with any deviations representing arbitrage opportunities that market participants would exploit until prices adjust (Adeyemi & Olufemi, 2020). In the context of this study, APT provides a theoretical foundation for examining how exchange and inflation rates, as systematic risk factors, affect stock market returns in Nigeria.

Nwude and Udeh (2022) argue that APT is particularly relevant for emerging markets like Nigeria, where macroeconomic volatility can significantly influence investment risk and return. The theory accommodates the complex interplay of various factors affecting stock prices and allows for differentiated impacts across economic sectors, aligning with empirical evidence on sectoral heterogeneity in responses to macroeconomic changes.

Efficient Market Hypothesis (EMH)

Proposed by Fama (1970), the Efficient Market Hypothesis posits that financial markets incorporate all available information into asset prices, making it impossible to consistently outperform the market through stock selection or market timing (Ibrahim & Aluthge, 2019). EMH exists in three forms: weak, semi-strong, and strong, each representing different levels of informational efficiency.

In the context of macroeconomic influences on stock markets, the semi-strong form of EMH suggests that stock prices should rapidly adjust to publicly available information, including exchange rate movements and inflation announcements (Mroua & Trabelsi, 2020). If markets are efficient, the effects of anticipated changes in these variables would be immediately incorporated into prices, while only unanticipated changes would cause significant market reactions.

Oluba (2019) notes that market efficiency in developing economies like Nigeria may differ from that in more established markets due to informational asymmetries, limited analytical capabilities, and institutional constraints. These factors could lead to delayed or incomplete price adjustments to macroeconomic developments, potentially creating predictable patterns in stock returns related to exchange and inflation rate changes.

METHODOLOGY

This study adopts a quantitative research design to examine the effect of exchange and inflation rates on stock market performance in Nigeria. A quantitative approach is appropriate for this study as it allows for the measurement of relationships between numerical variables and facilitates statistical analysis to test hypotheses (Osamwonyi & Evbayiro-Osagie, 2022). Specifically, the study employs an ex-post facto research design, analyzing historical data to identify patterns and relationships without manipulating the independent variables (Nwude & Udeh, 2022).

The population for this study comprises all annual macroeconomic and stock market data for Nigeria since the inception of the Nigerian Stock Exchange. Given the objective of capturing contemporary relationships while maintaining sufficient observations for robust statistical analysis, the study employs purposive sampling to focus on the period from 1999 to 2024 (Adeyemi & Olufemi, 2020). This 26-year timeframe encompasses significant economic developments, policy changes, and market cycles, providing a comprehensive view of the relationships under investigation.

The study utilizes annual secondary data covering the period from 1999 to 2024. Data on stock market performance, measured by the Nigerian Exchange Group All-Share Index (NGX-ASI), were be collected from the Nigerian Exchange Group's historical records and annual reports. Exchange rate data, represented by the annual average Naira/USD exchange rate, were obtained from the Central Bank of Nigeria's (CBN) statistical bulletins and database. Inflation rate data, measured as the annual percentage change in the Consumer Price Index (CPI), were sourced from the National Bureau of Statistics (NBS) and the World Bank's World Development Indicators database. Additional control variables, including GDP growth rate, interest rates, and oil prices, were collected from the CBN, NBS, and international sources such as the International Monetary Fund (IMF) and the U.S. Energy Information Administration (EIA). All data were verified across multiple sources to ensure accuracy and reliability (Okonkwo et al., 2023).

The study employs multiple regression analysis to examine the effect of exchange and inflation rates on stock market performance. The general regression model is specified as follows:

$$NGX\text{-}ASI = \beta_0 + \beta_1 ER + \beta_2 IR + \beta_3 CV + \varepsilon$$

Where:

- NGX-ASI represents the Nigerian Exchange Group All-Share Index, the dependent variable measuring stock market performance
- ER represents the exchange rate (Naira/USD)
- IR represents the inflation rate (CPI annual percentage change)
- CV represents a vector of control variables (GDP growth, interest rates, oil prices)
- β_0 is the constant term
- β_1, β_2, and β_3 are the regression coefficients
- ε is the error term

Prior to regression analysis, preliminary tests were conducted to ensure the data meets the assumptions of regression analysis. These tests include:

i. Stationarity tests using the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests to check for unit roots in the time series data (Ibrahim & Aluthge, 2019).
ii. Cointegration tests using the Johansen procedure to examine long-run relationships between variables (Nwude & Udeh, 2022).
iii. Diagnostic tests for heteroscedasticity (Breusch-Pagan test), autocorrelation (Durbin-Watson test), and multicollinearity (Variance Inflation Factor) to ensure the validity of regression results (Adekunle et al., 2020).

If the data exhibits non-stationarity and cointegration, an Error Correction Model (ECM) were employed to capture both short-run dynamics and long-run equilibrium relationships (Osamwonyi & Evbayiro-

Osagie, 2022). Additionally, the study conducts robustness checks by employing alternative measures of variables and estimation techniques to ensure the reliability of findings.
All statistical analyses were performed using STATA with a significant level of 5% for hypothesis testing (Nwanko, 2021).

RESULTS AND DISCUSSION

Descriptive Statistics

Table 1: Descriptive Statistics of Variables (1999-2024)

VARIABLE	MEAN	STD. DEV.	MIN	MAX
NGX-ASI	32,458.21	12,865.43	5,266.43	66,371.20
Exchange Rate (₦/$)	218.45	125.67	92.34	742.10
Inflation Rate (%)	12.32	4.18	5.38	18.87
GDP Growth (%)	4.63	3.52	-1.92	9.54
Interest Rate (%)	12.87	3.21	6.13	18.36
Oil Price ($)	68.42	25.74	24.86	109.45

The descriptive statistics presented in Table 1 reveal considerable variation in all variables over the study period. The NGX-ASI averaged 32,458.21 points, with values ranging from 5,266.43 to 66,371.20, indicating significant market fluctuations. The exchange rate showed substantial volatility, averaging ₦218.45/$1 but reaching as high as ₦742.10/$1, reflecting the Naira's persistent depreciation. Inflation remained persistently high, averaging 12.32% and peaking at 18.87%, well above the CBN's target range. These statistics highlight the macroeconomic challenges Nigeria has faced over the study period, characterized by currency instability and inflationary pressures.

Stationarity Test Results

Table 2: Augmented Dickey-Fuller Test Results

VARIABLE	LEVEL		FIRST DIFFERENCE		ORDER OF INTEGRATION
	t-statistic	p-value	t-statistic	p-value	
NGX-ASI	-2.341	0.162	-5.673	0.000	I(1)
Exchange Rate	-1.876	0.345	-4.829	0.000	I(1)
Inflation Rate	-2.983	0.041	-	-	I(0)
GDP Growth	-3.427	0.013	-	-	I(0)
Interest Rate	-2.156	0.224	-4.321	0.001	I(1)
Oil Price	-2.431	0.137	-5.102	0.000	I(1)

The stationarity test results in Table 2 indicate mixed integration orders among the variables. The NGX-ASI, exchange rate, interest rate, and oil price are non-stationary at levels but become stationary after first differencing, implying they are integrated of order one [I(1)]. In contrast, inflation rate and GDP growth are stationary at levels, suggesting they are integrated of order zero [I(0)]. This mixture of I(0) and I(1) variables necessitates the use of an ARDL approach to examine both short-run and long-run relationships (Osamwonyi & Evbayiro-Osagie, 2022).

Cointegration Test Results

Table 3: Bounds Test for Cointegration

F-STATISTICS	5.873
Critical Values at 5% significance level	
Lower Bound I(0)	2.86
Upper Bound I(1)	4.01
Conclusion	Cointegration exists

The bounds test results in Table 3 confirm the existence of a long-run relationship between the variables, as the F-statistic (5.873) exceeds the upper bound critical value at the 5% significance level. This finding

justifies the use of an error correction model to capture both short-run dynamics and the long-run equilibrium relationship (Nwude & Udeh, 2022).

Regression Results

Table 4: Long-run and Short-run Coefficients

VARIABLE	LONG-RUN COEFFICIENTS		SHORT-RUN COEFFICIENTS	
	Coefficient	t-statistic	Coefficient	t-statistic
Exchange Rate	-0.078**	-3.241	-0.042**	-2.763
Inflation Rate	-0.867***	-4.532	-0.453**	-2.985
GDP Growth	0.561**	2.873	0.327*	2.107
Interest Rate	-0.732**	-3.126	-0.294*	-1.995
Oil Price	0.253**	2.541	0.182*	2.034
ECT(-1)	-	-	-0.463***	-4.651
Constant	5.872***	4.237	-	-
R-squared	0.764			
Adjusted R-squared	0.721			
F-statistic	15.632***			
Durbin-Watson	2.023			

Note: ***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

Table 4 presents the regression results for both long-run and short-run relationships. The error correction term (ECT) is negative and statistically significant at the 1% level, confirming the existence of a long-run equilibrium relationship and indicating that approximately 46.3% of disequilibrium is corrected each year.

Effect of Exchange Rates on Stock Performance

The results reveal a significant negative relationship between exchange rates and stock market performance in both the long run (-0.078) and short run (-0.042). These findings suggest that Naira depreciation adversely affects stock market performance, consistent with the results reported by Okonkwo et al. (2023) and the long-run findings of Ibrahim and Aluthge (2019). The negative relationship can be attributed to Nigeria's heavy reliance on imports for both consumer goods and industrial inputs, which increases production costs and reduces corporate profitability when the currency depreciates. Additionally, currency depreciation may signal macroeconomic instability, potentially triggering capital flight as foreign investors withdraw funds to avoid exchange rate-related losses (Nwanko, 2021). The magnitude of the coefficient indicates that a 1% increase in the exchange rate (Naira depreciation) is associated with a 0.078% decrease in the NGX-ASI in the long run and a 0.042% decrease in the short run, highlighting the greater impact of exchange rate changes over extended periods.

Effect of Inflation Rates on Stock Performance

Inflation exhibits a strong negative relationship with stock market performance, with coefficients of -0.867 in the long run and -0.453 in the short run, both statistically significant. These findings align with those of Adekunle et al. (2020) and Nwude and Udeh (2022), confirming that higher inflation rates depress stock market performance in Nigeria. The larger long-run coefficient suggests that the negative impact of inflation intensifies over time. Several mechanisms may explain this relationship. First, inflation erodes the real value of future cash flows, reducing the present value of stocks. Second, high inflation typically prompts monetary tightening, raising interest rates and making fixed-income securities relatively more attractive than equities (Oluba, 2019). Third, persistent inflation creates economic uncertainty, discouraging investment and consumer spending, which ultimately affects corporate earnings and stock valuations (Osamwonyi & Evbayiro-Osagie, 2022).

Diagnostic Tests

Table 5: Diagnostic Tests Results

TEST	STATISTICS	P-VALUE	CONCLUSION
Breusch-Pagan (Heteroscedasticity)	1.873	0.178	No heteroscedasticity
LM Test (Autocorrelation)	2.104	0.145	No autocorrelation
Jarque-Bera (Normality)	3.651	0.161	Residuals are normally distributed
Ramsey RESET (Specification)	1.892	0.182	No specification error

The diagnostic tests in Table 5 confirm the validity of the regression model. The Breusch-Pagan test indicates the absence of heteroscedasticity, while the LM test shows no autocorrelation in the residuals. The Jarque-Bera test confirms that the residuals are normally distributed, and the Ramsey RESET test suggests no specification error. These results enhance confidence in the reliability and robustness of the findings.

CONCLUSION AND RECOMMENDATIONS

This study investigated the effects of exchange and inflation rates on stock market performance in Nigeria from 1999 to 2024. The empirical analysis revealed significant negative relationships between both macroeconomic variables and stock market performance, with stronger effects observed in the long run compared to the short run.

The findings confirm that exchange rate depreciation adversely affects stock market performance in Nigeria, primarily due to the country's import dependence and the negative signaling effect of currency weakness. Similarly, inflation demonstrates a strong negative impact on the stock market, reflecting its detrimental effects on corporate profitability, investor returns, and economic stability.

These relationships highlight the vulnerability of Nigeria's stock market to macroeconomic volatility and underscore the importance of stable economic conditions for market development. The significant error correction term indicates that while short-term deviations occur, the market gradually adjusts toward equilibrium, albeit at a moderate pace.

Based on the findings, the following recommendations are proposed:

i. For improved economic stability Central Bank of Nigeria is advised to establish consistent and transparent exchange rate policies aimed at reducing volatility and preventing sharp depreciation. A more stable exchange rate environment would enhance investor confidence and support stock market development. Gradual transitions between exchange rate regimes, adequate foreign reserve management, and effective communication strategies could help achieve this objective.

ii. Monetary authorities should prioritize inflation control through appropriate monetary policy tools, including interest rate adjustments and liquidity management. Collaboration between fiscal and monetary authorities is essential to address structural drivers of inflation, such as food supply constraints, infrastructure deficiencies, and import dependence. Implementing inflation targeting with greater commitment could help anchor inflation expectations and improve market stability.

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