Macroeconomic Dynamics and Stock Market Development in Nigeria: Evidence from ARDL and Granger Causality Analysis

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https://doi.org/10.56201/ijefm.v11.no10.2026.pg241.254

Abstract
This study examined Macroeconomic Dynamics and Stock Market Development in Nigeria over the period 2004–2025. Specifically, the study investigated the effects of economic growth, inflation and exchange rate on stock market development, measured by the market capitalization-to-GDP ratio. Annual data were analysed using descriptive statistics, the Augmented Dickey-Fuller unit root test, the Autoregressive Distributed Lag (ARDL) model, bounds testing and Granger causality analysis. The unit root results showed a mixture of I(0) and I(1) variables, supporting the use of the ARDL technique. The ARDL estimates revealed that exchange rate had a positive and statistically significant effect on stock market development, while economic growth and inflation had statistically insignificant effects at the 5% level. The bounds test indicated no significant long-run relationship among the variables. Granger causality results showed that inflation Granger-caused stock market development, while exchange rate Granger-caused inflation. The study concludes that exchange-rate movements and inflation dynamics are important considerations for stock market development in Nigeria and recommends greater macroeconomic stability and stronger capital-market institutions.

Keywords: *Economic Growth, Inflation, Exchange Rate, Stock Market Development, ARDL*

Introduction

Macroeconomic variables are key statistics that provide insights into the overall health and performance of an economy. These indicators help policymakers, businesses, and investors to understand the current economic situation, forecast future trends, and make informed decisions. Some common macroeconomic indicators are Gross Domestic Product (GDP), inflation rate, unemployment rate, and balance of trade. Macroeconomic indicators are essential tools for assessing the health of an economy and in guiding policy decisions (Shpak, 2022). Agwu and Haydar (2023) reported that macroeconomic factors, such as economic output, unemployment and employment rates, and inflation, are crucial factors of stock returns. Al-Kandari and Abul (2019) opined that macroeconomics factors affect the entire economy, including stock price levels, inflation, and fluctuations in unemployment, the production growth and income level of a nation. It was reported that variations in macroeconomic settings influences the stock's price and its returns. According to Masuduzzaman (2012), macroeconomic variables play an important role in the performance of a stock market. They can be a yardstick to the investors to forecast the performance of the stock market, as well as a perfect alternative to get additional information

about the behaviour of the stock market. Adverse fluctuations in most macroeconomic variables sometimes affect the purchasing power of the local currency. When the value of naira depreciates it affects trading in stock market in Nigeria by increasing cost of trading stocks. Macroeconomic variables have been widely recognized as fundamental determinants of stock market development, particularly in emerging economies where financial markets are still evolving (Ogunsakin& Awe, 2020). The stock market plays an essential role in achieving economic development with the provision of a platform for capital formation and investment. However, the unpredictability of the Nigerian stock market raises concerns about the extent to which key economic indicators impact market performance (Agunobi, Efionayi, &Akutson, 2024). In practice, macroeconomic stability is expected to enhance stock market development by reducing uncertainty and improving investor confidence, as stable macroeconomic conditions create a predictable investment environment that supports capital market growth (Yahaya& Bello, 2026). However, Nigeria has continued to experience persistent volatility in key macroeconomic variables, including inflation, exchange rate, interest rate, and output growth, which has been shown to significantly influence stock market performance (Akanbi, 2025). According to Malika (2021) macroeconomic variables are indicators or main signposts signaling the current trends in the economy. Globally, stock markets facilitate the transfer of capital from savers to investors, thereby enabling companies to expand operations, create jobs, and foster innovation (Efunlade and Efunlade, 2022. Economic growth encompasses various dimensions, including Gross Domestic Product (GDP) growth, wealth generation, and job creation, all of which are interlinked with the effectiveness of capital markets in optimizing resource allocation (Olusegun and Ajao, 2024). Demir (2025) emphasizes that well-functioning stock markets encourage innovation and technological advancement, leading to sustainable growth. Policymakers, central banks, and stakeholders in the industrial sectors across the globe closely monitor stock market activities, given their significant implications for economic stability and growth (Churchill et al., 2022). In contrast, Nigerian stock market, despite being one of the largest markets in Africa, faces unique challenges, such as low liquidity, weak investor participation, and limited integration with the broader economy, that hinder the full potential of its stock market in facilitating economic growth (Abu and Ibekwe, 2023).

Due to the role played by the capital market in providing investment opportunities and avenues for sourcing for capital, it is expected that the capital market should be efficient. The reason is that, the efficiency of the stock market has a role to play regarding the expected returns on stocks traded in the market However, the presence and volatility of macroeconomic variables provides an indication to stock market participants to anticipate a higher or lower return when investing in a stock. The variations in macroeconomic variables can significantly influence the stock market prices (Omodero&Mlanga, 2019).

Statement of the Problem

Despite the potential for stock market growth, the Nigerian market has been characterised by periods of instability and vulnerability to both domestic and international economic shocks. For instance, the 2008 global financial crisis led to a sharp decline in market capitalisation and eroded investor confidence, exposing the instability of the Nigerian financial system. Similarly, the COVID-19 pandemic disrupted global economic activities, resulting in capital flight and significant volatility in the Nigerian market. These challenges have been compounded by policy inconsistencies, weak regulatory enforcement, and political instability, which have undermined efforts to create a robust financial ecosystem (Oke,Adegoke, and Akosile, 2023).

Many empirical studies have come up with research on the relationship between Macroeconomic variables and stock market development. Udo, et al (2022) assessed the effect of macroeconomic variables on stock market performance in Nigeria using all-shares index as proxy for Stock market performance while the GDP growth, broad money supply, exchange rate, savings interest rate, and inflation rate as proxies for macroeconomic variables. The Autoregressive Distributive Lag (ARDL) estimation technique was adopted to establish the long run relationship amongst the variables, and the outcome revealed that a long run relationship exists amongst the variables in the estimated model. Also, Anyanwu and Ohurogu (2024) investigated effects of interest rate and money supply on stock market liquidity in Nigeria. Findings suggest that interest rate has a significant negative effect on stock market liquidity while money supply has significant positive effect on stock market liquidity in Nigeria. Similarly, Zeeshan and Asma (2022) examined the effect of macro-economic factors on Pakistan Stock Exchange returns. The authors considered the selected variables such as Interest Rate, inflation, Exchange Rate, Foreign Direct Investment, and Pakistan Stock Exchange returns (i.e., PSE 100 index). The study found that the foreign direct investment, Inflation rate, and exchange rate have positive association with the Pakistan stock market returns. Other empirical studies include that of Alzoub (2022) who conducted a study on the effect of consumer price index, interest rate, real economic activity, and domestic credit on the Amman Stock market return. The research found that the interest rate and consumer price index are significantly impacting the Amman stock market returns.

Idowu (2022) investigated the impact of macroeconomic factors (Crude Oil Price Index, Gross Domestic product, Money supply) on the Nigerian Stock Exchange. The results show that there is a positive and significant relationship between Crude oil price, Money supply and Nigeria stock market returns, also it concluded that the consumer price index have a negative association with stock market returns. Zhang and Wang (2023) explored the relationship between economic fundamentals and stock market valuation using the Cyclically Adjusted Price-to-Earnings (CAPE) ratio as a valuation metric. The study analyzed macroeconomic indicators such as GDP growth, inflation, interest rates, and corporate earnings to determine their impact on stock market valuation across different economic cycles. The findings revealed that GDP growth and corporate earnings have a significant positive effect on stock market valuation, while inflation and high interest rates exert a negative impact.

Ordue, et al (2024) examined the effect of macroeconomic indicators on stock market performance in Nigeria. The results indicated a strong positive relationship between stock market performance and lagged values of Gross Domestic Product (GDP) and Inflation Rate (INF) in the long run. Economic growth, as indicated by GDP and inflation rates played significant roles in driving stock market movements in Nigeria. Conversely, there is a negative relationship between stock market performance and lagged values of equity (EQUI) and interest rate (INTR), suggesting that changes in equity and interest rates may not have a long-term influence on stock market performance. The short-run analysis reveals short-term momentum in stock market performance, with past stock market returns and inflation rates positively affecting current stock market performance. Although many studies have been conducted on the effects of macroeconomic indicators on stock prices, the results of these studies do not overlap with each other. For this reason, there seems to be a conflicting finding on the nature of the relationship between macroeconomic variables and stock market performance. Therefore, this study tends to add to the body of research.

Research Objectives

The broad research objective is to examine Macroeconomic Dynamics and Stock Market Development in Nigeria. The specific objectives are to;

i. determines the effect of Inflation on market capitalization to GDP ratio
ii. evaluate the effect of exchange rate on market capitalization to GDP ratio
iii. assess the effect of Gross domestic product on market capitalization to GDP ratio

Research Hypotheses

The following hypotheses are stated in null (Ho) forms and are tested for accuracy in this study;

Ho_1: Inflation does not significantly affect market capitalization to GDP ratio
Ho_2: Exchange rate has no significant relationship with market capitalization to GDP ratio
Ho_3: Gross domestic product does not significantly affect market capitalization to GDP ratio

Conceptual Review

Macroeconomic Variables

Macroeconomic variables are economic indicators or measurable factors that describe the overall performance and conditions of an economy. They provide information about the broad economic environment in which households, businesses, governments, and financial markets operate. Macroeconomic variables include factors such as inflation, interest rates, exchange rates, money supply, unemployment, gross domestic product (GDP), and government expenditure.

Inflation

Inflation refers to a sustained increase in the general price level of goods and services in an economy over a period of time, resulting in a decline in the purchasing power of money. It is commonly measured using the Consumer Price Index (CPI) or the annual percentage change in the CPI. Inflation is an important macroeconomic variable because it affects both businesses and investors. An increase in inflation can raise the cost of raw materials, labour, transportation and other inputs, thereby increasing firms' operating costs and potentially reducing their profitability. At the same time, high inflation reduces consumers' purchasing power and may weaken demand for goods and services. From the perspective of investors, persistent inflation creates uncertainty about future earnings and reduces the real value of investment returns.Consequently, a high or unstable rate of inflation may adversely affect stock market performance as investors may reduce their holdings of equities or demand higher returns to compensate for increased economic risk. However, the relationship is not necessarily negative in all circumstances. Firms with strong pricing power may be able to pass increased costs to consumers, while moderate inflation may occur alongside economic expansion.

Exchange Rate

Exchange rate refers to the price of one country's currency expressed in terms of another country's currency. In the Nigerian context, it indicates the amount of naira required to purchase a unit of foreign currency, commonly the US dollar. Exchange rate movements therefore reflect changes in the external value of the domestic currency.Exchange rate fluctuations can influence stock market performance through several channels. A depreciation of the naira, for instance, increases the domestic-currency cost of imported goods, raw materials, machinery and other production inputs. Firms that depend heavily on imported inputs may consequently experience higher production costs and reduced profitability, which can negatively affect their share prices.

Conversely, companies that export goods or earn foreign-currency revenues may benefit from a weaker domestic currency because their foreign earnings translate into more naira.
Exchange rate changes can also affect investors' expectations and portfolio decisions. Significant currency depreciation may increase economic uncertainty and discourage both domestic and foreign investment, potentially putting downward pressure on stock prices. On the other hand, an exchange-rate improvement or greater exchange-rate stability can reduce uncertainty and support investor confidence. Thus, the effect of exchange rate movements on stock market performance may be positive or negative depending on the foreign-exchange exposure of firms and the broader economic environment.

Gross Domestic Product (GDP)

Gross Domestic Product (GDP) represents the monetary value of the final goods and services produced within a country's geographical boundaries during a specified period, usually a quarter or a year. GDP is widely used as an indicator of the size and level of economic activity in an economy. In empirical studies, GDP growth rate is often used to capture changes in economic performance. GDP is related to stock market performance because economic growth can influence corporate earnings and investors' expectations. When an economy experiences sustained growth, businesses generally benefit from increased production, consumption, investment and demand for goods and services. Higher economic activity can increase firms' revenues and profitability, improving their expected future cash flows. Investors may respond positively by increasing their demand for shares, resulting in higher stock prices and improved stock market performance. Conversely, weak or declining economic growth may reduce business activity, corporate earnings and investment opportunities. This can lead to lower investor confidence and reduced demand for equities, potentially resulting in declining stock prices and poorer stock market performance. Therefore, GDP is expected to have a positive relationship with stock market performance, although the actual relationship may vary depending on the economic structure and conditions of the country under investigation.

Stock Market development

Stock market performance refers to the extent to which the stock market changes or performs over a given period, usually measured through indicators such as stock market returns, stock price movements, market capitalization, trading volume, and stock market indices. It reflects the overall direction and condition of the equity market and provides an indication of how well stocks are performing within an economy.

Theoretical Framework

The Arbitrage Pricing Theory (APT), developed by Ross (1976), provides a theoretical foundation for explaining the relationship between macroeconomic variables and stock market performance. The theory posits that the return on an asset is influenced by a number of systematic factors that affect the overall economy and cannot be completely eliminated through diversification. In this context, macroeconomic variables such as inflation, interest rate, exchange rate, money supply and economic growth constitute important systematic factors capable of influencing investors' expectations and the valuation of financial assets.
The relationship between macroeconomic variables and stock market performance arises from the effect of changes in economic conditions on corporate profitability, investment decisions and investors' expectations. When macroeconomic conditions change, investors reassess the expected

future earnings and risks associated with financial assets. These changes influence their investment decisions, resulting in changes in the demand for and prices of stocks. Consequently, persistent changes in macroeconomic conditions can affect stock returns and overall stock market performance. Therefore, the APT provides a useful explanation for the relationship between macroeconomic variables and stock market performance because it recognises that stock returns are influenced by multiple systematic economic factors rather than by a single variable. The theory suggests that changes in macroeconomic conditions affect investors' expectations, corporate performance and perceived risk, which subsequently influence stock prices and stock market returns. This makes APT particularly appropriate for a study investigating the effect of multiple macroeconomic variables on stock market performance.

Empirical Review

Ghimire et al (2025) research focused on how some major macroeconomic factors affect the stock market capitalization in Nepal based on the annual observed data between 2000 and 2023. Using the Autoregressive Distributed Lag (ARDL) model, short-run and long-run relationships show the total stock market value performance in relation to six macroeconomic indicators which are the GDP, inflation, money supply, the private sector credit, remittance inflows, and the interest rate. The findings indicate that private sector credit and remittance significantly and positively influence the stock market capitalization in the long-run, indicating that financial deepening and external financial flows are conducive to the growth of Nepal capital market. Interest rate was discovered to be affected negatively in the short run whereas surprisingly the GDP had negative relation in the long run which means there is poor connection between the stock market and real economic growth. Inflation and money supply were statistically not supportive for stock market capitalization in Nepal.

Yusuf et al (2025) examined the key macroeconomic variables on stock market development in Nigeria using the Granger causality test from Nigeria from 1986 to 2019. The study relies heavily on secondary data (time series) sourced from the various institutions. Data on GDP, money supply (M2), interest rate, and exchange rate were sourced from the Central Bank of Nigeria (CBN). Data of all share indices was sourced from the Securities and Exchange Commission (SEC) and the Nigerian Stock Exchange (NSE). Data on inflation was sourced from the National Bureau of Statistics (NBS). The statistical properties of data were tested using the ADF and PP tests. The test indicated that interest rate and trade openness are stationary at level, while all share index, money supply, exchange rate, and inflation rate are stationary at first difference. The Granger causality test indicates that there is bi-directional causality among the variables except for the exchange rate.

Kalaycıoğlu (2024) investigated the effects of countries' main macroeconomic indicators on stock prices. A heterogeneous panel data model was created to determine the effect of the main macroeconomic indicators, which exchange rates, interest rates, inflation, and economic growth in 27 countries, on stock prices over the 22-year period between 2000 and 2021 and was analyzed with the help of the Extended Average Group Estimator (AMG). Although the results of the analysis differ in units, they show that economic growth has a positive and significant effect on stock prices across the entire panel. Other variables had no significant effect on the entire panel. The fact that the analysis results differ on the basis of all panels and units reveals the importance of country-specific factors.

Abu and Ibekwe (2023) analysed how macroeconomic variables affect the Nigerian stock market's performance. The All-Share Index is the dependent variable, while the independent

variables are the gross domestic product growth rate, interest rate, inflation rate, and exchange rate. The data analysis relied on the autoregressive distributed lag (ARDL) technique. The study found that interest and exchange rates did not significantly affect the Nigerian stock market's short- and long-term performance. In contrast, the inflation rate and gross domestic product growth rate significantly and negatively affected the Nigerian Stock Exchange's stock market performance in the short and long term.

Saviour et al (2022) investigated the effects of selected macroeconomic variables on stock market performance in Nigeria. Stock market performance was measured using the all-shares index while the identified macroeconomic variables included GDP growth, broad money supply, exchange rate, savings interest rate, and inflation rate. An Autoregressive Distributive Lag (ARDL) estimation technique was used to establish the long run relationship among the variables, and it was revealed that a long run relationship existed among the variables in the estimated model. The result shows that macroeconomic variables such as gross domestic product, broad money supply, exchange rate, and savings interest rate have a positive effect on stock market performance in Nigeria. On the other hand, the results showed that the inflation rate has a negative effect on stock market performance in Nigeria.

Methodology

This study adopts an ex-post facto research design. The design is considered appropriate because the study relies on historical data and these data cannot be manipulated by the researcher. Quantitative research is chosen to analyze the relationships between macroeconomics variables (inflation (INF), official Exchange rate (OER), Gross domestic product (GDP) and the stock market performance metric (market capitalization to GDP ratio (MCGDPR) of the Nigeria stock exchange market over the period 2004-2025.

Sources of data

The research will rely on secondary data from the Central Bank of Nigeria statistical bulletin 2025 and World Bank annual reports several issues.

Data analysis techniques

The study employs descriptive statistics as the baseline estimation technique. However, due to the time series nature of the data, Augmented Dickey-Fuller (ADF) unit root tests will be conducted to examine stationarity.

Unit Root Tests: Classical econometric theory requires that economic variables be stationary before estimating the model. However, most economic variables have been shown to be non-stationary (time variant). In other words, the means and variance are not constant. Therefore, it is an initial condition to test for unit root before we proceed with other econometric analysis. In this study, the stationary of the variables will be checked using the Augmented Dickey Fuller (ADF) unit root test at 5% level of significance.

This is necessary to avoid spurious regression results and to guide the appropriate econometric technique to be adopted. Based on the results of the unit root test, the study will adopt either Ordinary Least Squares (OLS), Co-integration/ECM, or ARDL model estimation.

Model specification

$$MCGDPR = \beta_0 + \beta_1 INF_t + \beta_2 EXR_t + \beta_3 GDP_t + \mu_t$$

Where;
β_0 = Constant term,
$\beta_1 - \beta_3$= Coefficients of independent variables,
μ = error term,
MCGDPR = market capitalization to GDP ratio
INF= inflation
EXR = exchange rate
GDP = gross domestic product

Table3.1Augmented Dickey-Fuller (ADF) Unit Root Test Results

Variable	Level ADF Statistic	Level p-value	First Difference ADF Statistic	First Difference p-value	Order of Integration
LGDP	-4.7969	0.0017	—	—	I(0)
LINF	-1.7615	0.3879	-4.8818	0.0011	I(1)
LOER	1.9662	0.9996	-3.2425	0.0323	I(1)
LMCGDPR	-1.7432	0.3964	-5.0528	0.0007	I(1)

Source: Author's computation using EViews 12.

The Augmented Dickey-Fuller (ADF) test was employed to determine the stationarity properties of the variables. The null hypothesis of the ADF test states that the variable has a unit root, implying non-stationarity. The decision to reject the null hypothesis is based on the 5% significance level.

Table 3.2 Descriptive Statistics result

Statistic	LMCGDPR	LGDP	LINF	LOER
Mean	2.5125	1.4233	2.5815	5.5023
Median	2.4250	1.5661	2.5161	5.0628
Maximum	3.4180	2.2247	3.5038	7.3254
Minimum	1.8830	-0.2158	1.6838	4.7755
Std. Dev.	0.4030	0.6662	0.4357	0.7843
Skewness	0.9443	-1.0729	0.1229	1.2364
Kurtosis	3.4389	3.3297	2.8014	3.4748
Jarque-Bera	3.1330	3.9276	0.0833	5.2836
Probability	0.2088	0.1403	0.9592	0.0712
Observations	20	20	20	20

Source: Author's computation using E-Views

The descriptive statistics indicate that LMCGDPR, LGDP, LINF, and LOER, shows different levels of dispersion and distributional characteristics. LGDP has a mean of 1.4233, while LINF, LOER, and LMCGDPR have means of 2.5815, 5.5023, and 2.5125, respectively. LOER records the highest standard deviation (0.7843), indicating the greatest variability, while LMCGDPR has the lowest (0.4030).

The skewness values show that LGDP is negatively skewed, whereas LINF, LOER, and LMCGDPR are positively skewed. The Jarque-Bera probabilities for all variables are above 5%,

indicating that the null hypothesis of normality cannot be rejected. Thus, the variables do not exhibit significant departures from normality.

TABLE 3.3 Result of the ARDL estimated model

Dependent variable: LMCGDPR

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LMCGDPR(-1)	0.337471	0.278486	1.211804	0.2456
LGDP	0.302566	0.157948	1.915599	0.0761
LOER	0.397741	0.171935	2.313325	0.0364
LINF	-0.374348	0.290996	-1.286437	0.2192
C	0.027527	0.877189	0.031381	0.9754
R-squared	0.502074	, Adjusted R-squared		0.359809
F-statistic	3.529151	Durbin-Watson stat		2.004071
Prob(F-statistic)	0.034258			

Interpretation of Coefficients

a) Gross domestic product (GDP) has a coefficient of is 0.3026, with a probability value of 0. 0761.Since 0.0761 > 0.05, GDP does not have a statistically significant effect on the market capitalization-to-GDP ratio at the 5% level. Although the coefficient is positive, the result does not provide sufficient statistical evidence to conclude that GDP significantly influences stock-market development.

b) Exchange Rate has a coefficient of LOER is 0.3977, with a probability value of 0. 0364.Since 0.0364 < 0.05, exchange rate has a statistically significant positive effect on the market capitalization-to-GDP ratio at the 5% level. Thus, a 1% increase in the exchange rate is associated with approximately a 0.40% increase in MCGDPR, holding other variables constant.

c) Inflation has a coefficient of LINF is -0.3743, with a probability value of 0.2192. Since 0.2192 > 0.05, inflation has no statistically significant effect on the market capitalization-to-GDP ratio at the 5% level. The negative coefficient suggests an inverse relationship, but this relationship is not statistically supported.

Goodness of Fit

R-Squared (R^2) = 0.5021. This means approximately 50.21% of the variation in MCGDPR is explained jointly by GDP, exchange rate, inflation and the lagged dependent variable.

Overall model significance:

The F-statistical probability of 0.0343 indicates that the explanatory variables are jointly significant.

Table 3.4 ARDL Long Run Form and Bounds Test

F-Bounds Test		Null Hypothesis: No levels ıtionship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic:	

			n=1000	
F-statistic	2.160240	10%	2.37	3.2
k	3	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66

The ARDL bounds test produced an F-statistic of 2.1602, which is below the lower-bound critical value of 2.79 at the 5% significance level. Consequently, the null hypothesis of no levels relationship cannot be rejected. This indicates that there is no statistically significant long-run relationship between stock market development and the selected macroeconomic variables GDP, exchange rate and inflation over the study period.

Table 3.4 Pairwise Granger Causality Tests

Null Hypothesis:	Obs	F-Statistic	Prob.
LGDP does not Granger Cause LMCGDPR	14	1.59157	0.2560
LMCGDPR does not Granger Cause LGDP		0.49455	0.6255
LOER does not Granger Cause LMCGDPR	20	1.94036	0.1781
LMCGDPR does not Granger Cause LOER		2.04225	0.1643
LINF does not Granger Cause LMCGDPR	20	4.69133	0.0262
LMCGDPR does not Granger Cause LINF		0.54609	0.5903
LOER does not Granger Cause LGDP	14	1.10304	0.3729
LGDP does not Granger Cause LOER		1.23921	0.3347
LINF does not Granger Cause LGDP	14	0.06377	0.9386
LGDP does not Granger Cause LINF		0.81852	0.4714
LINF does not Granger Cause LOER	20	1.09557	0.3597
LOER does not Granger Cause LINF		7.37343	0.0059

Source: E-Views

The Pairwise Granger Causality test at the 5% significance level reveals two significant unidirectional relationships. Inflation Granger-causes stock market development ($p = 0.0262$), while exchange rate also Granger-causes inflation ($p = 0.0059$). However, there is no significant Granger causality between GDP and stock market development, exchange rate and stock market development, GDP and exchange rate, or GDP and inflation. Overall, the results indicate that inflation and exchange rate movements have predictive effects within the model, while GDP shows no significant causal relationship with stock market development.

Diagnostic Test

The Durbin-Watson statistic of 2.0041, which is very close to 2 suggests there is no obvious first-order serial correlation.

Breusch–Godfrey Serial Correlation LM test

The Breusch–Godfrey Serial Correlation LM test produced an F-statistic of 0.9498 with a probability value of 0.4141 and an Obs*R-squared statistic of 2.5966 with a probability value of 0.2730. Since both probability values exceed the 5% significance level, the null hypothesis of no serial correlation is not rejected. This indicates that the ARDL model does not suffer from serial correlation in the residuals.

Breusch–Pagan–Godfrey Heteroskedasticity test

The Breusch–Pagan–Godfrey test was employed to examine the presence of heteroskedasticity in the residuals of the ARDL model. The test produced an F-statistic of 1.3407 with a probability value of 0.3036, while the Obs*R-squared statistic was 5.2622 with a probability value of 0.2614. Since both probability values are greater than the 5% significance level, the null hypothesis of homoskedasticity is not rejected. Therefore, the model does not exhibit significant heteroskedasticity, indicating that the residual variance is reasonably constant.

Summary of Findings

This study examined selected macroeconomic variables -economic growth, inflation and exchange rate effect on stock market development in Nigeria over the period 2004–2025. Stock market development was measured using the market capitalization-to-GDP ratio.

The variables were transformed into logarithmic form and subjected to ADF unit-root test and they revealed that the variables were stationary. LGDP was stationary at level, I(0), while LINF, LOER and LMCGDPR became stationary after first differencing, I(1).

The descriptive statistics showed that the variables exhibited reasonable variations over the study period. LMCGDPR, LINF and LOER were positively skewed, while LGDP was negatively skewed. The Jarque-Bera probability values for all the variables were greater than 0.05, indicating that the variables were approximately normally distributed.

The estimated ARDL model showed that:

- The lagged value of stock market development had a positive but statistically insignificant effect on current stock market development.
- Economic growth: Positive effect on stock market development but not statistically significant at the 5% level.
- Exchange rate: Positive and statistically significant effect on stock market development.
- Inflation: Negative but statistically insignificant effect on stock market development.
- Overall model: Statistically significant and explains about half of the variation in stock market development.
- Bounds test: Indicates no statistically significant long-run relationship among economic growth, inflation, exchange rate and stock market development.
- The Granger causality results provided additional evidence concerning the predictive relationships among the variables.

Conclusion

The study concludes that selected macroeconomic variables influence stock market development in Nigeria, although their effects differ. Exchange rate was found to have a positive and

statistically significant effect on stock market development, while economic growth and inflation had no significant direct effects at the 5% level. Inflation, however, was found to Granger-cause stock market development. The ARDL bounds test indicated no significant long-run relationship among the variables. Therefore, stock market development in Nigeria depends not only on macroeconomic conditions but also on broader financial and institutional factors.

Recommendations

Based on the findings of the study, the following recommendations are made:

1. The government and monetary authorities should promote exchange-rate stability and effective inflation control. This will reduce macroeconomic uncertainty and improve investor confidence. Stable macroeconomic conditions can also encourage greater participation in the Nigerian stock market. This is important given the significant role of exchange rate observed in the study.
2. Capital-market regulators should strengthen market liquidity, transparency, investor protection and corporate governance. These measures will improve the efficiency and credibility of the stock market. They will also encourage both domestic and foreign investors to participate more actively. This can support sustainable stock market development in Nigeria.

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