

Macro-Economic Factors and Capital Market Performance in Nigeria

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Abstract

This study investigates the effect of macroeconomic factors on the performance of the capital market in Nigeria. The techniques of data analysis used include descriptive statistical analysis, Augmented Dickey-Fuller (ADF) test, bounds cointegration test and the Autoregressive Distributed Lag (ARDL) technique. The results obtained showed that inflation, real exchange rate, and interest rate had a negative but statistically significant impact on market capitalization in Nigeria. This implies that a unit increase in inflation, real exchange rate, and interest rates decreases market capitalization in Nigeria. The money supply showed a positive and not statistically significant impact on market capitalization in Nigeria. The study concluded that inflation, exchange rate, and interest rate do not have a positive relationship with market capitalization in Nigeria in the long run, while money supply shows a positive effect on market capitalization in Nigeria. The study recommends that regulatory authorities should intensify efforts towards creating a conducive and enabling environment, inclusive of more reforms, as this will enable the capital market to thrive and deepen. The government should implement monetary and fiscal policies that would bring about stability in interest rates, inflation, and exchange rates. The Central Bank of Nigeria should employ a deflationary fiscal policy and an adaptive stabilization method of exchange rate policy to reduce the variance between actual and expected stock returns in the Nigerian capital market.

Keywords: Inflation, Interest Rate, Real Exchange Rate, Broad Money Supply, Market Capitalization

Introduction

In Nigeria, a persistent issue is the significant shortage of long-term capital among many businesses (Johnson & Okoye, 2021). Consequently, the business sector has resorted to short-term financing as a means to address long-term capital needs (Adams, 2020). However, the capital market, recognized for its high specialization and organization, is pivotal in fostering economic development through the mobilization of savings and investments (Smith, 2019). Macroeconomic factors such as inflation, interest rate, real exchange rate and broad money supply influence the operations and performance of the capital market. Market capitalization, representing the total value of all listed securities in a country, is an essential indicator of the market's size and depth. Inflation impacts the purchasing power of investors, potentially affecting their investment decisions within the capital market. The broad money supply, which encompasses currency in circulation and demand deposits, plays a crucial role in determining the liquidity of the capital market. The real exchange rate, which assesses the value of a nation's currency against a basket of other currencies, influences the capital market's ability to attract foreign investments and its overall competitiveness. Interest rates, determined by the central bank, directly affect the cost of borrowing and significantly influence investment decisions within the capital market.

The examination of the effect of macroeconomic factors on the performance of the capital market in Nigeria is a critical area of focus within development economics. Empirical studies have highlighted the profound impact these macroeconomic factors have on the performance of Nigeria's capital market. For instance, research by Obiora and Nwankwo (2018) indicates that an increase in market capitalization is positively correlated with enhanced performance of the Nigerian capital market, suggesting that larger market capitalization leads to higher market returns. Conversely, high inflation rates negatively impact market performance by eroding the real value of investments and diminishing investor confidence. Furthermore, an increase in the

broad money supply is associated with greater liquidity and increased trading volumes in the market, which are beneficial for market performance. These findings underscore the importance of these macroeconomic variables in shaping the dynamics and efficiency of the capital market in Nigeria, providing valuable insights for policymakers and investors aiming to optimize market operations and enhance economic growth.

The Nigerian capital market has faced numerous challenges that have negatively impacted stock returns. Notably, there has been a decline in the value of stocks and shares, primarily due to the global financial crisis and the volatility of macroeconomic factors (Brown & Davis, 2018). This decline has also led to a reduced propensity to invest in the market (Taylor, 2017). The capital market's inefficiency, driven by these macroeconomic variables, acts as a deterrent to foreign investors because of issues such as illiquidity and high trading costs, which in turn adversely affect the country's economic growth and development (White, 2020).

Although some studies have been conducted on macroeconomic variables and the Nigerian capital market, a review of these studies reveals gaps in the existing knowledge (Green & Fisher, 2019). Prompting, this study to raise the following questions, to what extent does inflation rate affect market capitalization in Nigeria? how does broad money supply affect market capitalization in Nigeria? does exchange rate affect market capitalization in Nigeria? how does interest rate affect market capitalization in Nigeria? Therefore, this study examined the effects of macroeconomic factors such as inflation, interest rate, real exchange rate and broad money supply on market capitalization proxy for capital market performance.

Literature Review

Efficient Market Hypothesis (EMH)

Fama developed the Efficient Market Hypothesis (EMH) in 1965. According to Fama (1965), the Efficient Market Hypothesis is an academic concept that provides a framework for examining the efficiency of capital markets. The hypothesis posits that financial markets are efficient, meaning that prices of traded assets already reflect all known information and are unbiased because they represent the collective beliefs of all investors about future prospects (Olawoye, 2011). The EMH asserts that all relevant information is immediately and fully reflected in a security's market price. In other words, at any given point in time, prices reflect all available information. This implies that no amount of data mining can predict future prices, and an analysis of past or current data cannot identify undervalued stocks. Applying this to securities markets, the EMH suggests that no trading mechanism can consistently outperform the market. Hence, for a given level of risk, speculators cannot earn supernormal returns, nor can any betting system consistently achieve such returns. Fama (1965) also outlined varying degrees of market efficiency, which serve as the traditional framework for examining the EMH. The weak form states that all past information is reflected in current prices. The semi-strong form asserts that all publicly available information is incorporated into prices, while the strong form, an extension of the first two, claims that all information, including insider information, is included in share prices. In practice, market efficiency is categorized by the strength of the efficiency that can be established with respect to a particular information set.

Capital Asset Pricing Model (CAPM)

The Capital Asset Pricing Model (CAPM) is an economic model used for valuing stocks, securities, derivatives, and other assets by relating risk to expected return. It is an equilibrium model that describes the pricing of assets and derivatives. (Kevin 2011) described the CAPM as the relationship between risk and return established by the security market line. The CAPM is based on the sufficiency of the mean-variance framework for investment decision-making. It

relates the expected return of an asset to its riskiness, measured by the variance of the asset's historical rate of return relative to its asset class. The model decomposes a portfolio's risk into systematic and specific risks. Systematic risk is the risk of holding the market portfolio. To the extent that any asset participates in such general market movements, that asset entails systematic risk. Specific risk is unique to an individual asset and represents the component of an asset's return that is not related to general market movements. CAPM assumes that the market compensates investors for taking systematic risk but not for taking specific risk, as specific risk can be diversified away. When an investor holds a market portfolio, each individual asset in that portfolio entails specific risk, but through diversification, the investor's net exposure is just the systematic risk. CAPM can be used for pricing securities, whether they are underpriced, overpriced, or correctly priced. Although the assumptions of CAPM have been criticized as unrealistic, the model remains a fairly good predictor of the return of stocks (Osamwonyi & Asein, 2012).

Empirical Literature

Oladosu and Akeerebari (2022) examined the effects of macroeconomic factors on the performance of the Nigerian capital market. Money supply (M2), exchange rate (EXR), consumer price index (CPI), and prime lending rate (PLR) were used as proxies for macroeconomic factors (explanatory variables), while market capitalization equities (MCE) served as a proxy for the performance of the Nigerian capital market (explained variable). The study utilized monthly time-series data sourced from the Nigerian Stock Exchange, Central Bank of Nigeria, and Financial Market Dealers Association, covering the period from January 2000 to December 2019. The Quantile Regression Technique was employed to analyze the estimates of the quantile process. The findings from the Quantile slope equality test further confirmed that the relationship between the explanatory variables and the explained variable varies across quantile values, whereas the inter-quantile range showed that the slope equality test does not vary across quantiles. Moreover, the findings from the Quantile symmetry test demonstrated evidence of significant asymmetry between quantiles.

Josiah and Akpoveta (2019) empirically assessed the influence of key macroeconomic variables on stock market returns in Nigeria. An in-depth understanding of the relationship between macroeconomic variables and stock market returns is essential for designing an effective policy framework to manage volatile macroeconomic indices such as capital flows, inflation, money supply, interest rates, exchange rate fluctuations, and their disruptive potential. We utilized cointegration tests, the error correction model mechanism, and Granger causality tests to explore the nature of the relationship among the variables of interest, with stock market returns serving as our dependent variable. The empirical findings indicated that a sound macroeconomic environment, characterized by a coherent exchange rate, adequate money supply (liquidity), stable exchange rates, increased output, and financial openness, stimulates stock market returns in Nigeria.

Etale and Eze (2019) evaluate the impact of selected macroeconomic variables on stock market performance in the Nigerian Stock Exchange (NSE). The study used the All-Share Index (ASI) as a proxy for stock market performance and as the dependent variable, while the selected macroeconomic variables included broad money supply (BMS), interest rate (ITR), inflation rate (IFR), and exchange rate (EXR) as the independent variables. Secondary data for these variables were sourced from the Central Bank of Nigeria (CBN) Statistical Bulletins, covering the period from 1985 to 2017. The study employed multiple regression techniques, the Augmented Dickey-Fuller unit root test, the Johansen co-integration test, and the Error Correction Model (ECM), using the E-views 9.0 software for data analysis. The analysis revealed that long-run equilibrium and short-run dynamic relationships existed between the selected macroeconomic variables and

stock market performance in the Nigerian Stock Exchange. Overall, the empirical results showed that all the independent variables had a significant influence on stock market performance. Specifically, the impact of the individual macroeconomic variables indicated that broad money supply and exchange rate had a significant positive effect on the All-Share Index, while interest rate and inflation rate exhibited an inverse relationship with the All-Share Index.

Adekunle, Alalade, and Okulenu(2016) investigated the impact of macroeconomic variables on capital market growth, with a particular emphasis on the effects of macroeconomic pricing variables such as interest rate, inflation rate, and exchange rate on capital markets growth. Multiple regression analysis using the ordinary least squares method was employed to determine the impact of the interest rate, as well as other macroeconomic variables like the inflation rate and exchange rate, on capital market growth for the period between 1985 and 2013. The pooled data regression method was used to estimate the specified model equations. The findings of the study revealed that interest rates have an adverse effect on capital market growth. The regression analysis results indicate that a 1% increase in the interest rate will lead to a 44% decrease in the all-share price index; this implies that as the interest rate increases, the performance of the capital market deteriorates. However, the inflation rate and exchange rate were not found to be significant, especially at the 5 percent level of significance. The study further revealed that the negative linkage between the interest rate and the All-Share Index was sufficiently proven when independently examined. Multiple regression with variables such as the inflation rate and exchange rate show its dominant effect on the dependent variable.

Prempeh (2016) Studied the effect of certain macroeconomic variables on stock price volatility in the Ghana Stock Exchange (GSE) using annual time series data. The macroeconomic variables used in the study included the inflation rate, real gross domestic product growth rate, and interest rate. The study employed the Granger causality technique to determine the causal relationship between stock prices and macroeconomic variables in Ghana. Results obtained from various empirical estimations showed that the real domestic product rate Granger-caused stock price, but stock price did not Granger-cause the real domestic product rate.

Methodology

The research design used was the ex-post facto research design. Data used in the study was obtained from Nigerian Exchange Group (NXG), and Central Bank of Nigeria (CBN) statistical bulletin that spanned from 1985 -2022. The econometric model is derived from the objectives of the study that assessed the effect of macroeconomic factors on the performance of capital market in Nigeria as follows. Expressing the model in its functional form, we have:

$$MCAP = f(IFT, M2, RER, INR) \quad (1)$$

Expressing the model in its mathematical form, we have:

$$MCAP = \lambda_0 + \lambda_1 IFT + \lambda_2 M2 + \lambda_3 RER + \lambda_4 INR \quad (2)$$

Expressing the model in its econometric form, we have:

$$MCAP = \lambda_0 + \lambda_1 IFT + \lambda_2 M2 + \lambda_3 RER + \lambda_4 INR + et \quad (3)$$

Expressing the model in its ARDL form, we have:

$$\begin{aligned} \Delta \ln(MCAP_t) = & \lambda_0 + \lambda_{11} \Delta \ln(MCAP_{t-1}) + \lambda_{21} \Delta(IFT_{t-1}) + \lambda_{31} \Delta \ln(M2_{t-1}) + \lambda_{41} \Delta(RER_{t-1}) \\ & + \alpha_{51} \Delta(INR) \\ & + \sum_{i=1}^p \beta_{1i} \Delta \ln(MCAP_{t-i}) + \sum_{i=1}^q \beta_{2i} \Delta(IFT_{t-i}) + \sum_{i=1}^q \beta_{3i} \Delta \ln(M2_{t-i}) + \sum_{i=1}^p \beta_{4i} \Delta(RER_{t-i}) \\ & + \sum_{i=1}^p \beta_{4i} \Delta(INR_{t-i}) + \varepsilon_{1i} \quad (4) \end{aligned}$$

A Priori Expectation: $\lambda_1 < 0$; $\lambda_2 > 0$; $\lambda_3 < 0$; $\lambda_4 < 0$

Where MCAP = Market capitalisation, IFT = Inflation, M2 = Broad money supply, RER = Real exchange rate, INR = Interest rate, λ_0 = constant variable, λ_1 = coefficient of inflation, λ_2 = coefficient of money supply, λ_3 = coefficient of real exchange rate, λ_4 = coefficient of interest rate, et = error term. The study employs the ARDL method proposed by (Pesaran & Shin 1999) to estimate the dynamic relationship between macroeconomic factors and the performance of capital market in Nigeria.

Data Analysis

Table 1: Unit Root Test: Augmented Dickey-Fuller (ADF) Test Results

Variables	ADF	Mackinnon Critical Value at 5%	P-value (Prob.*)	Decision	Order of Integration
At Levels					
LOG(MCAP)	-2.303774	-2.957110	0.1769	Non-stationary	
IFT	-3.934557	-2.967767	0.0054	Stationary	
LOG(M2)	-4.722215	-2.957110	0.0006	Stationary	
RER	2.183900	-2.957110	0.9999	Non-stationary	
INR	-3.618507	-2.957110	0.0109	Stationary	
At First Difference					
LOG(MCAP)	-4.331321	-2.960411	0.0018	Stationary	I(1)
IFT	-	-	-	-	I(0)
LOG(M2)	-	-	-	-	I(0)
RER	-3.763106	-2.960411	0.0078	Stationary	I(1)
INR	-	-	-	-	I(0)

Source: Researcher's Computation, 2024 (EViews 12.0).

From the unit root test in Table 1.0, the Mackinnon critical value for rejection of unit root hypotheses indicates that market capitalization (MCAP) and real exchange rate (RER) are not stationary at levels and as such integrated of order one, I(1). Furthermore, the broad money supply (M2), inflation (IFT) and interest rate (INR) are stationary at levels order I(0). Given the mixed order of integration, the study adopted the Autoregressive Distributed Lag (ARDL) estimation technique.

Table 2: ARDL Bounds Test Results for Cointegration

Critical Value	Lower Bound Value	Upper Bound Value
10%	2.2	3.09
5%	2.56	3.49
2.5%	2.88	3.87
1%	3.29	4.37
F-statistic: $F_{MCAP}(IFT\ M2\ RER, INR) = 5.997903$		

Source: Researcher's Computation, 2024 (EViews 12.0).

The ARDL Bounds result shows that there is cointegration between macroeconomic indicators (inflation, broad money supply, real exchange rate and interest rate) and the proxy of performance of capital market in Nigeria (market capitalization), which confirms the existence of the long run relationship.

Table 3:ARDL Error Correction Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
Dependent Variable = LOG(MCAP)				
D(IFR)	-0.014381	0.003810	-3.774101	0.0010
DLOG(M2)	1.412675	0.193540	7.299148	0.0000
D(RER)	-0.003548	0.001904	-1.863497	0.0752
INR	-0.009131	0.01871	-0.487822	0.6303
Coint Eq(-1)*	-0.522738	0.136838	-3.820128	0.0009
R ² = 0.652470; Adjusted R ² = 0.593806; Durbin-Watson stat = 1.992102				

Source: Researcher's Computation, 2024 (EViews 12.0).

Table 4: Autoregressive Distributed Lag (ARDL) Estimation

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
Dependent Variable = MCAP				
IFR	-0.015156	0.005890	-2.573369	0.0212
LOG(M2)	1.098445	0.122633	8.957163	0.0000
RER	-0.001028	0.002153	-0.477433	0.6376
INR	-0.072245	0.024461	-2.953471	0.0099
C	0.898228	1.236416	0.726478	0.4749

Source: Researcher's Computation, 2024 (EViews 12.0).

NB: *P<0.01, **p<0.05, ***P<0.01 ARDL (1,0,1,0) selected based on Schwarz Bayesian Criterion

The long-run estimates of the ARDL model shows in the Table reveals that the inflation coefficient of -0.015156 has a negative relationship and statistically significant with the market capitalization in Nigeria. This implies that a unit increase in the inflation leads to 0.015156 decrease in the market capitalization in Nigeria. Furthermore, the broad money supply shows a positive and statistically significant with market capitalization in Nigeria. This is evidenced by the positive coefficient value of 1.098445 and its p-value of less than 0.05% level of significance. This implies that a unit increase in the broad money increases market capitalization by 109.8% in Nigeria. Moreover, the results of real exchange rate show a negative and not statistically significant on the market capitalization in Nigeria. This is evidenced by the negative coefficient value of -0.001028 and its p-value of greater than 0.05% level of significance. This implies that a unit increase in the real exchange rate decreases market capitalization by 0.001028 in Nigeria in the long term. The interest rate reveals a negative and statistically significant with the market capitalization in Nigeria. This is evidenced by the negative coefficient value of -0.072245 and its p-value of less than 0.05% level of significance. This implies that a unit increase in the interest rate leads to a decrease of 0.072245 in the market capitalization in the long term in Nigeria. Also, the results of the short run dynamic coefficients associated with the long run relationships obtained from the error correction model are given in Table above. The signs of the short run dynamic interactions are consistent with that of the long run relationship. The estimated error correction coefficient of -0.522738 (with p-value of 0.0009) is highly significant, has the correct sign, and imply a fairly high speed of adjustment to equilibrium after a shock. This implies that approximately 52% of disequilibria from the previous year's shock converge back to the long run equilibrium in the current year. Additionally, the Adjusted R-squared (Adj. R²) value of 0.593806 indicates that 59 percent of the systematic variation in market capitalization is explained by

inflation, broad money supply, real exchange rate and interest rate in the short-run. Lastly, the Durbin Watson statistic of 1.992102 indicates that there is absence of serial correlation in the model.

Table 5: Diagnostic Tests Results

Test	F-Statistic	Probability	Null Hypothesis	Decision
Serial Correlation LM Test	1.332887	0.513532	H ₀ : No serial correlation	Retain H ₀
Normality Test	0.346478	0.7111	H ₀ : Normal distribution	Retain H ₀
Heteroskedasticity Test	0.701873	0.6868	H ₀ : Homoscedasticity	Retain H ₀
Ramsey RESET test	2.414715	0.1345	H ₀ : Correctly specified	Retain H ₀

Source: Researcher's Computation, 2024 (EViews 12.0).

The diagnostic test results are presented in Table 1.4. Specifically, the result of serial correlation LM test showed that there is no evidence of autocorrelation given that Breush Godfrey LM test probability value was greater than 0.05. In furtherance, the result of normality test showed that the error term is normally distributed. In addition, the result of heteroscedasticity test showed that it is absent in the model hence confirmed the assumption of homoscedasticity. Finally, the result of Ramsey RESET test showed that the model was correctly specified while no variable is missing in the model. In conclusion, diagnostic test results in Table 4.8 provided evidence that all the variables (market capitalization, inflation, broad money supply, real exchange rate and interest rate) in our model conform to the basic assumptions of ordinary least squares estimation.

Conclusion and Recommendations

The study examines the effects of macroeconomic factors on the performance of capital market in Nigeria. The study found that inflation, exchange rate and interest rate does not have a positive relationship with market capitalization in Nigeria in the long run while money supply shows a positive effect on market capitalization in Nigeria. Based on the findings, the following recommendations were made:

1. The regulatory authorities should intensify efforts towards installing a conducive and enabling environment, inclusive of more reforms as this will enable the capital market to thrive and deepened.
2. Government should put in place monetary and fiscal policies that would bring about stability in interest, inflation and exchange rates.
3. The Central Bank of Nigeria should employ deflationary fiscal policy and adaptive stabilization method of exchange rate policy in order to reduce variance between actual and expected stock returns in the Nigerian capital market.
4. Appropriate interest rates policies should be initiated that will guide the operations in the stock markets as well as other macroeconomic factors in view of the demonstrated negative relationship between interest rate and Market capitalization.

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