



## MACROECONOMIC FACTORS AND STOCK MARKET PERFORMANCE IN NIGERIA: EMPIRICAL EVALUATIONS

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### ABSTRACT

The Nigerian stock exchange is a vital component of the nation's economy, providing a means of wealth creation, capital mobilization, and economic growth. Nonetheless, several macroeconomic factors impact stock market performance, which can present investors and market players with both possibilities and difficulties. The increase in the gross domestic product (GDP), inflation, interest rates, currency rates, and foreign direct investment (FDI) are a few macroeconomic factors that have the power to have a big impact on stock market performance. This research, which was based on the theory of arbitrage pricing, created a model of stock market performance by utilizing a few key macroeconomic variables as predictors, including GDP growth, the money supply, credit to the private sector, and foreign direct investment. The autoregressive distributed lag technique was utilized in the study to analyze the data and determine how these factors influenced stock market performance proxied by stock market capitalization. The outcome of this study revealed that gross domestic product was found to positively and significantly affect the stock market capitalization in Nigeria ( $B = 1.294702$ ,  $P = 0.0588$ ) at a 10% level of significance; money supply was found not to significantly impact stock market capitalization in Nigeria ( $B = -0.973407$ ,  $P = 0.2674$ ); credit to the private sector recorded a positive and significant impact on stock market capitalization in Nigeria ( $B = 3.064146$ ,  $P = 0.0305$ ) at 5% level of significance; while foreign direct investment could not significantly influence stock market capitalization in Nigeria ( $B = 2.437674$ ,  $P = 0.2835$ ). Thus, the study established that GDP and credit to the private sector are important macroeconomic factors that influence the performance of the stock market in Nigeria. Also, contrary to expectations, this study provided evidence that money supply and FDI failed to influence stock market performance.

**KEYWORDS:** Stock market performance; Macroeconomic factors; Gross domestic product; Money supply; Credit to private sector; Foreign direct investment.

**JEL:** G10, E10

### INTRODUCTION

The Nigerian Exchange (NGX), the official name of the country's stock market, is an essential part of the nation's financial system and is crucial in directing savings toward profitable ventures. Numerous macroeconomic factors have affected investor sentiment, market volatility, and general economic stability over time, effecting the performance of the Nigerian stock market (Udo et al., 2022; Okoebor, 2022).

Various metrics, including stock market capitalization, turnover, and traded value, can be used to assess the success of the stock market. Stock market capitalization is the most widely used metric.



Stock market capitalization, which is the total value of all publicly listed equities in a nation's stock market, is frequently used as a gauge of the state of the economy and investor sentiment (Haruna et al., 2023; Beck et al. 2003). The main venue for trading stocks in Nigeria is the Nigerian Exchange (NGX), whose market capitalization represents the total worth of all listed businesses. Stock market capitalization fluctuations are a reflection of changes in investor attitudes, economic forecasts, and company performance.

Numerous studies have demonstrated the different effects that macroeconomic factors, including economic growth, inflation rates, interest rates, and currency rates, have on the performance of the stock market (Udo et al., 2022; Josiah & Akpovita 2019; Nkoro & Uko, 2013; Naceur et al., 2007). For example, investor confidence is directly impacted by GDP growth rates because higher growth rates are typically linked to higher corporate earnings and more investment prospects, which improve stock market outlooks. Elevated rates of inflation diminish the buying capacity of consumers and harm investor trust and stock market outcomes (Okoebor, 2022). On the other hand, modest inflation rates can be a sign of a may indicate a healthy economy and support stock market growth. strong economy and encourage the rise of the stock market.

Additionally, reduced interest rates frequently encourage borrowing for investments and boost economic activity, which may raise stock values (Udo et al., 2022). On the other hand, higher interest rates can impede economic expansion and result in poorer stock market performance. Exchange rate fluctuations can have an impact on the financial performance of businesses that trade internationally as well as the stock prices of businesses that rely on imports or exports (Okechukwu et al., 2019). The mood of international investors toward the Nigerian stock market is also influenced by exchange rate volatility (Okoebor, 2022).

Other, less well researched macroeconomic factors like the money supply, bank credit to the private sector, and foreign direct investment may also have an impact on stock market performance. As a result, this study deviates from the conventional macroeconomic variables and views these variables as having a significant impact on the stock market performance framework. According to Aremo et al. (2020), the relationship between the money supply and the stock market illustrates how the dynamics of monetary policy interact with the performance of the financial markets. Knowing how the money supply affects stock market capitalization is crucial for evaluating the monetary policy's transmission mechanism and forecasting market developments in Nigeria, a nation with a fast-rising financial sector and the stock market. The stock market may be impacted by shifts in the money supply.

In a similar vein, the relationship between stock market performance and bank credit to the private sector illustrates how credit dynamics interact with financial market performance. Greater availability of bank credit can encourage investment and company growth, resulting in increased profits for corporations and better stock market performance (Okoebor, 2022). On the other hand, a reduction in the availability of credit might limit economic growth and undermine investor confidence, which would affect stock prices and market capitalization.

Additionally, in developing nations like Nigeria, foreign direct investment (FDI) is a major factor in determining how financial markets, especially stock markets, function. The connection between foreign direct investment (FDI) inflows and the stock market illustrates how domestic capital



markets are integrated with international financial flows and the possible effects on market efficiency and economic development. There are research gaps in both technique and study areas in a growing country like Nigeria, which faces numerous macroeconomic issues like insecurity, unemployment, declining GDP and buying power, rising inflation, and declining government revenue. Nigeria has struggled with growing levels of insecurity over the years, and these conditions have made it difficult to make stock market investments. Several financial professionals have suggested that more capital erosion in the stock market may occur if the nation's current state of insecurity is not addressed. Two essential metrics that show a nation's financial stability and economic performance are its stock market capitalization and GDP (Alphonsus et al., 2023). Therefore, investors, policymakers, and market players need to comprehend the relationship between these macroeconomic variables and the performance of the Nigerian stock market. In light of this, the current study empirically examined the effects of a few key macroeconomic variables on the performance of the Nigerian stock market between 1999 and 2022, including GDP growth, credit to the private sector, and the money supply. The study adds to the body of knowledge on Nigerian financial markets by analyzing historical data and using econometric tools to provide better insight into the links between these variables and stock market capitalization.

## LITERATURE REVIEW

### Arbitrage Pricing Theory (APT)

The multifactor model known as the Arbitrage Pricing Theory (APT), which was created by Ross in 1976, offers an additional method of relating macroeconomic factors to stock market performance. The market risk premium serves as the only independent variable in this expansion of the Capital Asset Pricing Model (CAPM), which is based on a single element. The assumptions of homogeneous expectations, completely competitive marketplaces, and frictionless capital markets are shared by both CAPM and APT. Nonetheless, Ross (1976) suggested using the arbitrage pricing theory (APT) in conjunction with several factors to explain asset pricing. Some economic forces are the main movers on stock returns, in his opinion. He claimed, using factor analysis, that there are several. Using factor analysis, he claimed that in addition to a security's beta, or how sensitive it is to changes in the market return, there are other systematic factors (both macroeconomic and industry-specific) that affect the security returns. These factors could have different effects on different firms. Examples of these factors include the gross domestic product, inflation, and interest rate structure. The sensitivity of the assets to each of these factors is represented by factor-specific coefficients. APT is a multifaceted method of valuing assets that is based on the law of one price.

In reality, the same goods cannot be sold at different prices in an efficient market since there would be room for arbitrage. Any stock's returns must be linearly correlated with a set of indices to qualify for APT. The APT T allows the researcher to select the components that best describe the data, but it is unable to explain asset return variation in terms of a small number of readily identifiable elements. As a result, the APT offers the framework for assessing the variables affecting the stock market's performance. This is understandable considering that the APT's multi-factor linear model, on which stock market performance is built, allows for the combination of several components.

### Relationship between macroeconomic variables and stock market performance

Macroeconomic variables have a complex and multifaceted relationship with one another. Therefore, this study investigated the relationship between market capitalization and the money



supply, credit to the private sector, foreign direct investments, and gross domestic product. The Central Bank of Nigeria (CBN) uses discount rates, reserve requirements, and open market operations to set the money supply. Modifications in the money supply have a direct impact on the economy's liquidity circumstances, which in turn affect inflation, interest rates, and the price of financial assets, such as stock market capitalization.

Changes in the money supply have a variety of effects on the capitalization of the stock market. Increased money supply under an expansionary monetary policy tends to lower interest rates, which increases the appeal of equities over fixed-income assets (Igbinovia & Airhiavbere, 2022). Both stock prices and the size of the stock market may rise as a result of this. On the other hand, contractionary monetary policy actions can have the reverse impact, decreasing capitalization and slowing down the stock market.

The money supply and stock market capitalization in Nigeria have been found to positively and significantly correlate over the long term (Igbinovia & Airhiavbere, 2022; John, 2019; Josiah & Akpovita, 2019), indicating that the money supply has a positive influence on the size of the stock market. Similar findings were made by Udo et al. (2022), who found a positive relationship between the money supply and stock market performance in Nigeria. This suggests that increases in money supply are typically accompanied by increases in stock market capitalization.

The entire amount of loans and advances made to individuals, companies, and other non-governmental organizations by commercial banks and other financial institutions is known as bank credit to the private sector. The cost and accessibility of credit are major factors influencing investment, consumption, and economic expansion in Nigeria. Changes in bank lending levels thereby affect financial market dynamics, asset values, and economic activity.

Changes in bank loans to the private sector have a variety of effects on stock market capitalization. A greater availability of bank credit can encourage investment and company growth, resulting in increased profits for corporations and better stock market performance (Okoebor, 2022). On the other hand, a reduction in the availability of credit might limit economic growth and undermine investor confidence, which would affect stock prices and market capitalization. Research looking into the relationship between stock market capitalization and bank credit to the private sector found a strong positive correlation (Okoebor, 2022). Moreover, foreign direct investment (FDI) is the money invested by foreign organizations, usually multinational firms, to acquire or start up activities in a different nation. FDI inflows into Nigeria have been crucial for funding infrastructure projects, encouraging knowledge transfer, and boosting the country's economy. The Nigerian government has put in place several measures to entice foreign direct investment (FDI), such as plans for privatization, regulatory changes, and investment incentives.

It has been argued that there exists a nexus or relationship between fluctuations in stock price and economic growth. For instance, the argument goes that, gyrations in stock prices is often synonymous to macroeconomic information available in the market and may lead to unpredictable outcomes in terms of investment decisions by individual investors (Alphonsus et al 2023). According to a study by Haruna et al. (2023), FDI had a favorable and significant short-term influence on the growth of the Nigerian stock market, indicating that FDI inflows support the depth, efficiency, and liquidity of the market. Adeleke (2023) discovered proof of a long-term equilibrium correlation between foreign direct investment (FDI) and stock market capitalization



in Nigeria. This suggests that FDI inflows have a noteworthy influence on the size of the stock market. Oke et al. (2023) did discover, however, that FDI had no discernible impact on stock market capitalization. A crucial macroeconomic metric, the gross domestic product (GDP) represents the total value of all products and services generated inside a nation's boundaries during a certain period. GDP growth is used as a gauge of economic activity in Nigeria, showing the state and direction of the country's economy.

GDP growth rates are influenced by several factors, including net exports, consumer spending, investment, and government spending. There are several facets and a complex relationship between GDP and stock market capitalization. Since rising corporate profits and more investor confidence are usually associated with expanding economies, GDP growth is sometimes regarded as a leading indicator of stock market success. Consequently, this has the potential to raise stock prices and augment the total market capitalization. The relationship between Nigeria's GDP and stock market capitalization has been studied in previous research. For instance, Kolapo et al. (2018) discovered evidence of a strong and positive long-run association between Nigeria's GDP and stock market capitalization, indicating that the country's GDP growth has a beneficial impact on the size of the stock market.

All things considered; Nigeria's economy has seen tremendous changes since democratic rule was restored in 1999. During this time, there were changes in inflationary pressures, rates of economic development, and regulatory changes meant to improve capital market depth and financial stability. Variations in policy interventions, regulatory changes, and credit growth rates were also observed over this period to advance financial inclusion and improve credit availability. In light of this, comprehending the connection between stock market capitalization and macroeconomic variable dynamics offers important insights into the macroeconomic setting and financial market dynamics in Nigeria.

**METHODOLOGY**

An ex-post facto research design was used in this study since relevant independent variables were not controlled or manipulated, and research data was already available in secondary form. Additionally, the World Bank Development Indicators, 2022 time series data were used in the study. Specifically, statistics from 1999 to 2022 were used for stock market capitalization as a percentage of GDP, GDP growth rate, money supply as a percentage of GDP, credit to the private sector as a percentage of GDP, and foreign direct investment as a percentage of GDP.

Model specification

The model for this study is stated in the functional form below:

SMC = F (GDP, MS, CPS, FDI) ..... (i)

This model is further written in its Autoregressive Distributed Lag (ARDL) form as follows:

$$\Delta SMC_y = \phi_0 + \theta_1 \sum_{j=1}^p \Delta SMC_{t-j} + \theta_2 \sum_{j=1}^q \Delta GDP_j + \theta_3 \sum_{j=1}^q \Delta MS_j + \theta_4 \sum_{j=1}^q \Delta CPS_j + \theta_5 \sum_{j=1}^q \Delta FDI_j + \gamma_0 SMC_{t-j} + \gamma_1 GDP_j + \gamma_2 MS_j + \gamma_3 CPS_j + \gamma_4 FDI_j + ECT_{=1} + \epsilon_t \dots\dots\dots(ii)$$

Where;

GDP= Gross Domestic Product

MS = Money Supply

CPS = Credit to Private Sector

FDI = Foreign Direct Investment

ECT = Error Correction Technique

$e_t$  = error term also known as stochastic random variable.

Method of data analyses

The stationarity of the series used in this study was determined using the Augmented Dickey Fuller unit root test, and the impact of the chosen macroeconomic variables on the performance of the Nigerian stock market was determined using the Autoregressive Distributed Lag techniques put forth by Pesaran and Shin (1999). Due to its many benefits, including its capacity to accept mixtures in the integration order and its ability to support a dynamic error correction model (ECM) through linear transformation, the autoregressive distributed lag model (ARDL) is frequently employed in research (Banerjee et al. 1993).

## RESULTS AND DISCUSSIONS

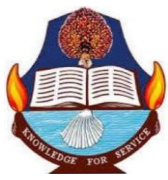
This study’s model tested four hypotheses against a dependent variable (stock market performance) by using four variables as predictors: the gross domestic product, money supply, loans to the private sector, and foreign direct investment inflows. The findings of the descriptive statistics and analysis of the variables used in this study are shown in Table 1.

Table 1: Descriptive Statistics

	GDP	MS	CPS	FDI	SMC
Mean	4.954583	18.97912	14.90138	1.407500	11.37542
Median	5.615000	21.49400	17.74094	1.565000	10.92500
Maximum	15.33000	24.89526	22.75484	2.900000	33.64000
Minimum	-1.790000	11.40873	7.509444	-0.040000	0.000000
Std. Dev.	3.718763	4.912005	5.410533	0.812667	8.124581
Skewness	0.410883	-0.466850	-0.373153	0.064791	1.087827
Kurtosis	4.022744	1.500872	1.414178	2.099934	4.608896
Jarque-Bera	1.721305	3.119182	3.071806	0.826909	7.322019
Probability	0.422886	0.210222	0.215261	0.661362	0.025707
Sum	118.9100	455.4988	357.6378	33.78000	273.0100
Sum Sq. Dev.	318.0716	554.9393	673.2989	15.18985	1518.203
Observations	24	24	24	24	24

Source: Extracted from E-views 12, 2023.

Based on the descriptive statistics shown in Table 1, the mean values of GDP, MS, FDI, and SMC are as follows: 1.407500 for FDI, 18.97912 for CPS, \$14.90138 for GDP, and 11.37542 for SMC. These figures all represent the variable average returns for the given time period. All the variables, except MS, which is far from the mean, cluster around the mean, according to the median values displayed in the table.



This was further supported by the standard deviation, which indicates that high values indicate significant variance in the data within the timeframe, whereas low values relative to the mean indicate a low degree of variation over the period. Regarding the distribution's skewness, every variable—aside from MS and CPS—is positively skewed, meaning that the values of each variable fall to the left of their corresponding means. All of the variables, except for GDP and SMC, which have values less than three (3), are platykurtic (flat tail), according to the distribution's kurtosis. Given that both GDP and SMC have values greater than 3, they are leptokurtic. Except SMC, all of the variables have low J-B values; only SMC is significant at 5%

#### Stationarity test

Table 2 gives the stationarity status of the time series used in this study using the Augmented Dickey-Fuller test. The result revealed a mixed order of stationarity.

Table 2: Summary of Unit Root Test

Variable	ADF	Critical value	P.value	Order of integration	Status
SMC	-6.368802	-3.004861	0.0000	I(1)	Stationary
GDP	-4.388008	-3.622033	0.0106	I(0)	Stationary
MS	-4.239689	-3.004861	0.0035	I(1)	Stationary
CPS	-4.373813	-3.012363	0.0028	I(1)	Stationary
FDI	-7.533546	-3.004861	0.0000	I(1)	Stationary

Source: Extracted from E-views 12, 2023.

#### ARDL Long-run Bound Test

To find out if the study's variables have a long-term relationship, the ARDL bound test was used. The F-statistic value (1.800123) is less than the lower (2.56) and higher (3.49) bound values, confirming the absence of a long-run association, which is the reason for the negative outcome. As a result, we estimate the ARDL short run. The ARDL short-term estimations are shown in Table 3.

Table 3: ARDL Short-run Estimates

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDP)	1.294702	0.435	2.975	0.0588***
D(MS)	-0.973407	0.716	-1.358	0.2674
D(CPS)	3.064146	0.791	3.873	0.0305**
D(FDI)	2.437674	1.870	1.303	0.2835
CointEq(-1)	-1.060580	0.197	-5.366	0.0127
R-squared	0.936905			
Adjusted R-squared	0.842263			
F-statistic	1.800123			
Prob(F-statistic)	0.291373			
Durbin-Watson stat	1.748038			

**Source:** Researcher’s output extracted from Eviews 12, 2023.

**Note:** \*\*\* indicates significance at 10% level, and \*\* indicates significance at 5% level.

LM test for serial correlation

To find out if there were any potential serial correlations in the used series, the serial correlation test was run. The test demonstrated that serial correlation does not exist. As a result, it is agreed upon that there is no serial association. Table 4 displays the outcome.

Table 4: LM test for serial correlation

F-statistic	41013.65	Prob. F(2,1)	0.3580
Obs*R-squared	20.99974	Prob. Chi-Square(2)	0.0000

Source: Researcher’s output extracted from E-views 12, 2023.

Test of hypotheses

**H0<sub>1</sub>:** At the 10% significance level, the gross domestic product was found to have a significant impact on Nigeria's stock market capitalization ( $B = 1.294702$ ,  $P = 0.0588$ ). As a result, the test result demonstrated that higher GDP growth rates will have a favorable impact on Nigeria's stock market's performance. Consequently, ceteris paribus, a 1% rise in GDP growth will translate into a 1.29% increase in stock market capitalization.

**H0<sub>2</sub>:** The money supply was shown to have no discernible effect on Nigeria's stock market performance ( $B = -0.973407$ ,  $P = 0.2674$ ). Consequently, the test result demonstrated that the performance of the stock market is unaffected by increases in the money supply. This suggests that, while appearing to have a negative impact, MS does not significantly affect the performance of the Nigerian stock market.

**H0<sub>3</sub>:** At the 5% level of significance, the performance of the Nigerian stock market was positively and significantly impacted by credit to the private sector ( $B = 3.064146$ ,  $P = 0.0305$ ). This suggests that the performance of the Nigerian stock market will benefit from increases in loans to the private sector. Ceteris paribus means that a 1% increase in CPS will translate into a 3.06% increase in stock market capitalization.





**H04:** The performance of the Nigerian stock market was not significantly impacted by foreign direct investment ( $B = 2.437674$ ,  $P = 0.2835$ ). As a result, growth in FDI has little bearing on the performance of the Nigerian stock market, much as the conclusion in H02. This could be the result of the minimal FDI influx into Nigeria over the study's duration. Even though the FDI showed a beneficial contribution, it is not noteworthy.

#### Discussion of findings

The impact of macroeconomic factors on Nigeria's stock market performance was empirically assessed in this study. From 1999 to 2022, the impact of a few chosen macroeconomic indicators on the capitalization of the Nigerian stock market was examined. These factors included the GDP, money supply, credit to the private sector, and foreign direct investment. Nigeria's economy has seen several notable changes since democratic administration was restored in 1999. During this time, there were changes in inflationary pressures, rates of economic growth, and governmental changes intended to strengthen capital markets and improve financial stability. Variations in credit growth rates, regulatory changes, and policy initiatives targeting the advancement of financial inclusion and improved loan availability also occurred throughout this time. Thus, the study's conclusions indicated that Nigeria's stock market performance is strongly stimulated by the GDP's degree of economic growth and the credit extended to the private sector during the study period. By implication, the study emphasized how crucial GDP growth and rising private sector credit are to the expansion of the stock market. An expanding economy would be expected to provide larger business profits and more confidence among investors.

Consequently, this has the potential to raise stock prices and augment the total market capitalization. This result validates the conclusions of Udo et al. (2022) and Kolapo et al. (2018). In particular, Udo et al. (2022) found a favorable association between GDP growth rates and stock market performance in Nigeria; Kolapo et al. (2018) contended that there is a substantial long-run relationship between GDP and stock market capitalization in Nigeria. The study's conclusions thus indicate the contribution of economic expansions to increasing stock market capitalization levels. Furthermore, the dynamics of the financial markets, asset values, and economic activity are all impacted by bank lending levels.

The results of this investigation also supports Okoebor (2022) contention that increased bank credit to the private sector encourages investment and business growth, which in turn leads to increased stock market performance and corporate earnings. According to Okoebor (2022), there is a substantial and positive correlation between Nigeria's stock market capitalization and bank credit. However, the study's conclusions showed that FDI and the money supply had little effect on Nigeria's stock market performance. This runs counter to previous research findings (Igbinovia & Airhiavbere, 2022; John, 2019; Josiah & Akpovita, 2019) that indicated a positive and significant long-run relationship between money supply and stock market capitalization in Nigeria, implying that money supply positively influences stock market size. Similar to this, a study by Haruna et al. (2023) discovered that FDI had a favorable and significant short-term influence on the growth of the Nigerian stock market, indicating that FDI inflows support market efficiency, depth, and liquidity. Adeleke (2023) also discovered evidence of a long-term equilibrium between Nigeria's stock market capitalization and foreign direct investment. However, the results of investigations by Oke et al. (2023); Tite et al. (2022); and Omodero and Ekwe (2017) provide support for this study. In their research, these writers discovered a negligible correlation between foreign direct



investment (FDI), the money supply, and stock market capitalization. All things considered, the study's conclusions are illuminating and offer insightful information about the dynamics of macroeconomic factors and the Nigerian financial sector, particularly in light of the country's return to democracy in 1999.

### CONCLUSION AND IMPLICATION OF THE STUDY

Through the Arbitrage Pricing Theory (APT) model, the study established that GDP and credit to the private sector are important macroeconomic factors that influence the performance of the stock market in Nigeria. Also, contrary to expectations and literature, this study provided evidence that money supply and FDI failed to influence stock market performance. These findings imply that the level of economic growth and the credit to the private sector catalyze stock market growth. This means that increases in the GDP growth and the credit to the private sector would increase corporate earnings, boost investors' confidence, raise investment, and lead to business expansion. This will, in turn, stimulate stock market performance. Therefore, increases in GDP growth and credit to the private sector tend to coincide with higher stock market capitalization levels.

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