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Effect of Money Supply on Stock Market Development in Nigeria (1985–2023)

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Abstract

This study investigates the impact of money supply on stock market development in Nigeria over the period 1985 to 2023, with a focus on assessing the differential effects of monetary aggregates and policy rate dynamics. Using annual time-series data obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin, the analysis models stock market development proxied by total annual market capitalization as a function of narrow money supply (M1), broad money supply (M2), and the monetary policy rate (MPR). Multiple regression analysis was employed to test the formulated hypotheses, with standard diagnostic tests confirming the validity of the model, including the absence of multicollinearity and the normal distribution of residuals. Results reveal a statistically significant negative relationship between the monetary policy rate and stock market development ($p < 0.05$), suggesting that higher interest rates hinder capital market performance. In contrast, neither M1 nor M2 exhibited statistically significant effects ($p > 0.05$), indicating a limited influence of money supply aggregates on stock market growth within the observed period. These findings imply that interest rate adjustments remain a critical monetary policy tool in shaping investor behavior and capital market performance. The study recommends that policymakers prioritize interest rate management within a coherent monetary policy framework to foster a conducive environment for capital market development and broader economic growth.

Keywords: Money Supply; Monetary Policy Rate; Stock Market Capitalization; Financial Development; Nigeria

INTRODUCTION

The fundamental objective of monetary policy is to maintain price stability and support employment rates, promoting a stable macroeconomic framework conducive to economic growth. Effective monetary policy does not just aim to stabilize prices but also aims to effectively transmit such policies to the real economy, thereby fostering economic prosperity (Adrian & Liang, 2018; Bernanke, 2020). In Nigeria, money transmission through certain channels such as interest rates, supply of credit, and prices is highly significant in stock market development. The transmission mechanism can affect investment returns and the performance of the stock market by altering the earnings per share and overall liquidity in the market. Research has shown that a number of drivers have been identified for the demand and supply of stocks, ranging from firm fundamentals of management changes, formation of assets, dividend payments, and earnings to external drivers such as government policies, inflation, economic conditions, and investor sentiments (Agbeyinka, 2024). Monetary authorities employ numerous instruments to utilize policy through these transmission channels. Direct monetary policies target the balance sheets and portfolios of banks through tools like administered interest rates and selective credit control (Kallianiotis, 2017). Indirect monetary policies use market forces-based tools like reserve requirements, variable rediscount rates, and open market operations to manage inflation and stability in the economy.

In Nigeria, monetary policy transmission efficiency has at all times comprised liquidity, credit, and exchange rate channels (Oyadeyi, 2024). The Structural Adjustment Program (SAP) of 1986 introduced radical reforms, relaxing direct controls and incorporating interbank market rates as a key component of monetary policy transmission. The shift was to liberalize the financial system and stimulate foreign investment into the capital market, marking a turning point in Nigeria's monetary policy evolution (Owusu-Afriyie, 2019). Investors access capital via the debt and equity markets, with borrowing costs being settled through the debt market based on interest rates and shares purchased signaling ownership of company assets in the equity market. The distinction between the money market that deals with short-term liquidity needs and the capital market, which handles medium- to long-term investment needs, is central to understanding the monetary policy channel to economic growth (Iyoha, 2004; Ruozi et al., 2013). The role of the capital market in mobilizing long-term funds for companies and governments underscores its role in ensuring sustainable economic growth.

The relationship between money supply and stock market development in Nigeria has been studied extensively, furnishing great insights into how monetary forces influence market dynamics. For instance, Ohurogu and Anyanwu (2024) examined the effect of money supply and interest rate on the liquidity of the stock market, whereas Emmanuel and Vincent (2020) examined the long-term relationship between money supply and the performance of the stock market in Nigeria and other African countries. Tiamiyu (2022) proved that the performance of the market is inversely related to the diversification of broad money, and Gunardi et al. (2023) investigated the impact of monetary factors on Indonesian and Malaysian stock prices. Other works, such as those of Osuka et al. (2024) and Adigwe et al. (2015), have also contributed to elucidating these dynamics. This study provides an attempt to build on these results by investigating the effect of money supply on Nigeria's stock market growth between 1985 and 2023.

Literature Review

Osuka et al. (2024) examined the effect of money supply on economic development in Nigeria from 2000 to 2022. The study considered Internet transactions, mobile payment transactions, and instant pay transactions, using broad money supply (MS2) and credit to the private sector (CPS) as proxies for money supply. Controlled by the inflation rate (INF), the study measured economic development with real gross domestic product (RGDP). Employing trend analysis, ADF unit root test, Johansen cointegration test, and autoregressive distributed lag (ARDL) model, the findings revealed that MS2 and CPS had significant positive effects on RGDP, while INF exhibited a significant negative effect. Ohurogu and Anyanwu (2024) conducted a study to investigate the effects of interest rates and money supply on stock market liquidity in Nigeria. Employing an ex post facto research design, the researchers utilized secondary data sourced from the Central Bank of Nigeria Statistical Bulletin and Nigerian Exchange Group Reports. The analysis was performed using ordinary least squares multiple regression, which revealed that Automated Teller Machine (ATM) transactions have a positive impact on the performance of commercial banks in Nigeria. In a separate study, Gunardi et al. (2023) examined the macroeconomic effects on stock prices in Indonesia and Malaysia, utilizing the composite stock price index as a framework. Grounded in Arbitrage Pricing Theory, the research found that both money supply and interest rates significantly influenced stock prices in Indonesia. In contrast, the study indicated that only interest rates had a notable effect on stock prices in Malaysia. These findings highlight the differing patterns of influence between the two emerging markets.

Tiamiyu (2022) explored the relationship between financial deepening and stock market development in Nigeria over the period from 1981 to 2019. Utilizing the bound test for cointegration and the Autoregressive Distributed Lag (ARDL) approach, the study uncovered a significant inverse relationship between broad money diversification and stock market performance. This outcome suggests that the Nigerian financial sector lacks adequate financial diversification in the long run, reinforcing the idea that money is neutral over time, as the stock market reflects the broader economic conditions of the country. In a separate study, Adigun and Okhankhuele (2021) analyzed the influence of the stock market and money supply on industrial output in Nigeria from 1986 to 2020. The researchers utilized the Augmented Dickey-Fuller unit root test alongside the Autoregressive Distributed Lag (ARDL) methodology. Their findings indicated that approximately 73% of the variations in industrial growth could be attributed to differences in market capitalization, gross capital formation, stock trade, and broad money. This underscores the significant role that stock market dynamics and monetary factors play in shaping industrial output in Nigeria.

Jamilu and Asad-Ul (2021) explored the nonlinear effects of monetary policy decisions on the Nigerian stock exchange market from 2013 to 2019. Utilizing the Smooth Transition Autoregressive (STAR) model, the study provided evidence of a nonlinear relationship. Specifically, the monetary policy rate, money supply, and lagged monetary policy rate were found to have positive impacts on the stock market in the lower regime, while the current treasury bill rate exhibited a negative effect. This finding suggests that the effects of monetary policy on the stock market are not uniform and can vary depending on the prevailing economic conditions.In a separate study, Adigwe et al. (2015) examined the effect of stock market development on economic growth in Nigeria from 1985 to 2014. Employing the Ordinary Least Squares (OLS) econometric technique, the researchers found that stock market development contributed only marginally to economic growth, accounting for just 26.5% of the variations in economic growth. This suggests that while the stock market has some influence, it is not a primary driver of economic growth in the Nigerian context.

Umar et al. (2015) conducted a comprehensive theoretical and empirical review of stock market-based financial development and economic growth in Nigeria from 1997 to 2014. Utilizing least squares and vector error correction regression models, the study highlighted the presence of structural changes within Nigeria's macroeconomic environment. These changes indicate that the relationship between stock market development and economic growth is complex and influenced by various macroeconomic factors, suggesting a need for further exploration of these dynamics. Dauda and Abdulkareem (2023) examined the effects of monetary policy on economic growth in Nigeria, recognizing the critical role of financial regulation in shaping macroeconomic outcomes. Covering the period from 1990 to 2020, the study applied the Augmented Dickey-Fuller test and an ARDL bound test to assess the influence of the monetary policy rate (MPR) and money growth rate (M2) on economic growth. The findings confirmed that monetary policy significantly affects economic growth, highlighting the importance of maintaining a balanced approach to monetary regulation. The study emphasized that fluctuations in MPR and M2 could have significant consequences for Nigeria's economic trajectory, underscoring the necessity of policy stability to foster sustainable growth.

Gunardi and Disman (2023) examined how macroeconomic factors influence stock prices, utilizing the composite stock price index as a measure of stock market performance. Focusing on Indonesia and Malaysia between 2000 and 2020, the study applied the Arbitrage Pricing Theory to analyze the effects of money supply and interest rates on stock prices. The findings indicated that both money supply and interest rates significantly influenced stock prices in Indonesia, suggesting that changes in liquidity and borrowing costs affected market valuations. However, in Malaysia, only interest rates played a significant role, demonstrating that stock market dynamics can vary across different economies based on their financial structures and policy environments. Okeke (2023) investigated the impact of money supply on inflation in Nigeria, acknowledging the persistent challenges posed by inflationary pressures in the country. The study, covering the period from 1981 to 2021, employed the Auto-Regressive Distributed Lag (ARDL) approach to examine the relationship between inflation, money supply, and interest rates. The results established a significant long-run relationship, with money supply exerting both positive and negative effects on inflation. While an increase in money supply contributed to inflationary pressures, fluctuations in interest rates played a moderating role, either amplifying or dampening inflationary trends. The study underscored the importance of effective monetary control in maintaining price stability in Nigeria's economy.

Uche et al. (2023) investigated the influence of money market instruments on price stability in Nigeria, recognizing the importance of financial markets in maintaining economic stability. Using data from 1990 to 2021, the study applied the Auto-Regressive Distributed Lag (ARDL) approach to assess the relationship between treasury bills, discount windows, mutual funds, and risk premium lending rates with key macroeconomic indicators such as the consumer price index (CPI) and the gross domestic product (GDP) deflator. The findings revealed a negative and significant long-run relationship between CPI and money market instruments, indicating that an active money market helps curb inflation. Conversely, the study found a positive and significant long-run relationship between the GDP deflator and money market instruments, suggesting that financial market activities contribute to overall economic growth despite inflationary concerns. Babangida and Khan (2021) examined the nonlinear effects of monetary policy decisions on the Nigerian Stock Exchange market, addressing the complexities of financial regulation in influencing stock market performance. Covering the period from 2013 to 2019, the study employed the Smooth Transition Autoregressive (STAR) model to assess how monetary policy rate, 91-day treasury bill rate, broad money supply, and exchange rates impact the All-Share Index. The findings provided strong evidence of nonlinear effects, with monetary policy rate, money supply, lagged monetary policy rate, and lagged treasury bill rate exhibiting significant positive impacts in the lower regime of stock market performance. However, the current treasury bill rate negatively influenced the stock market, highlighting the need for strategic monetary interventions to mitigate adverse effects on market stability.

John and Ezeabasili (2020) explored the relationship between money supply and stock market performance across Nigeria, South Africa, and Ghana, acknowledging the interconnectedness of financial markets in the region. Utilizing data from 1986 to 2018, the study employed a combination of simple regression modeling, Johansen cointegration tests, error correction models, and Granger causality tests to assess the dynamics between money supply and stock market indices. The results confirmed a long-run relationship between money supply and stock market performance in all three countries, underscoring the role of liquidity in market stability. Additionally, a unidirectional causal relationship was observed, running from stock market performance to money supply, implying that stock market fluctuations influence monetary expansion rather than the other way around. Omankhanlen et al. (2022) assessed the long-term effects of monetary policy on the Nigerian stock market, emphasizing the evolving role of financial regulation in market development. Examining data from 1985 to 2016, the study utilized Johansen cointegration analysis and fully modified ordinary least squares (FMOLS) to evaluate the impact of monetary policy rate, broad money supply, and per capita income on market capitalization and liquidity ratio. The findings demonstrated a significant long-run relationship between these monetary policy variables and stock market development, suggesting that consistent financial policy measures contribute to market growth. The study highlighted the importance of stable monetary policies in ensuring long-term investor confidence and sustainable capital market expansion.

METHODS

In order to investigate the Effect of Money Supply on Stock Market Development in Nigeria (1985-2023), GLM framework was adopted to analyze the secondary data sourced from Central Bank of Nigeria statistical bulletin covering the period from 1985 up to 2023.

GLM Framework

The Generalized Linear Model (GLM) is a flexible generalization of ordinary linear regression that allows the response variable Y_i belongs to the exponential family. Let $Y_1, Y_2, \ldots, Y_n \in \mathbb{R}_{>0}$ be a set of independent, positive random variables, each having a normal distribution:

$$Y_i \sim \mathrm{N}\ (\mu_i, \sigma^2), \quad \mu_i > 0, \quad \sigma^2 > 0 \tag{1}$$

Linear Predictor and Link Function

We define the systematic component as:

$$\eta_i = \mathbf{x}_i^T \boldsymbol{\beta} \tag{2}$$

where: $\mathbf{x}_i = (x_{i1}, x_{i2}, \dots, x_{ip})^T \in \mathbb{R}^p$ is the vector of known covariates for observation *i*, $\boldsymbol{\beta} = (\beta_1, \beta_2, \dots, \beta_p)^T \in \mathbb{R}^p$ is the vector of regression coefficients to be estimated.

Applying a log link function to relate the mean μ_i to the linear predictor:

$$g(\mu_i) = \log(\mu_i) = \eta_i \quad \Rightarrow \quad \mu_i = \exp(\eta_i) = \exp(\mathbf{x}_i^T \boldsymbol{\beta}) \tag{3}$$

Ensuring that the mean response μ_i is strictly positive.

Likelihood Function

Given $Y_i \sim \text{N}(\mu_i, \sigma^2)$ and $\mu_i = \exp(\mathbf{x}_i^T \boldsymbol{\beta})$, the probability density function of Y_i is:

$$f_Y(y_i; \boldsymbol{\beta}, \sigma^2) = \frac{1}{\sqrt{2\pi\sigma^2}} \exp\left\{ -\frac{1}{2\sigma^2} \left(y_i - \exp(\mathbf{x}_i^T \boldsymbol{\beta}) \right)^2 \right\} \tag{3}$$

Assuming independence, the log-likelihood function for all *n* observations is:

$$\ell(\boldsymbol{\beta}, \sigma^2) = -\frac{n}{2} \log(2\pi\sigma^2) - \frac{1}{2\sigma^2} \sum_{i=1}^{n} \left(y_i - \exp(\mathbf{x}_i^T \boldsymbol{\beta}) \right)^2 \tag{5}$$

This is nonlinear in β due to the exponential function, and must be maximized numerically.

Maximum Likelihood Estimation

To estimate β, we maximize the log-likelihood. Define: $\mu_i = \exp(\mathbf{x}_i^T \boldsymbol{\beta})$, $\mathbf{y} = (y_1, \dots, y_n)^T$, observed responses and $\mu = (\mu_1, \dots, \mu_n)^T$. The gradient (score vector) is given as $\frac{\partial \ell}{\partial \boldsymbol{\beta}} = \frac{1}{\sigma^2} \sum_{i=1}^{n} (y_i - \mu_i) \mu_i \mathbf{x}_i$ with Hessian (second derivative matrix) defined as:

$$\frac{\partial^2 \ell}{\partial \boldsymbol{\beta} \partial \boldsymbol{\beta}^T} = -\frac{1}{\sigma^2} \sum_{i=1}^{n} \left[\mu_i^2 \mathbf{x}_i \mathbf{x}_i^T - (y_i - \mu_i) \mu_i \mathbf{x}_i \mathbf{x}_i^T \right] \tag{6}$$

These equations define the Newton-Raphson update for β Numerical optimization

Model Specification

The primary specification of the model that was tested in the study is as follows:

$$TAMC_t = \beta_0 + \beta_1 M1_t + \beta_2 M2_t + \beta_3 MPR_t + \epsilon_t \tag{7}$$

where: TAMCt = Total Market Capitalization (proxy for stock market development), M1t = Narrow Money Supply, M2t = Broad Money Supply, MPRt = Monetary Policy Rate, β0

= Intercept, β1, β2, β3 = Coefficients of the independent variables, ϵt = Error term capturing unobserved factors

Pre-Estimation Statistical Tests

Normality of Variables

Normality was assessed using the Kolmogorov-Smirnov (K-S) test:

$$D = \sup_{x} \left| F_n(x) - F(x) \right| \tag{8}$$

where: $F_n(x)$ = Empirical distribution function, $F(x)$ = Cumulative distribution function of the normal distribution, The null hypothesis H_0 : $F_n(x)$ - $F(x)$ was not rejected at α = 0.05 for all variables.

Stationarity Test

The Augmented Dickey-Fuller (ADF) test was employed to detect unit roots:

$$\Delta Y_t = \alpha + \beta_t + \gamma Y_{t-1} + \sum_{i=1}^{p} \delta_i \Delta Y_{t-i} + \varepsilon_t \tag{9}$$

Rejecting H_0: $\gamma = 0$ implies the variable is stationary.

Model Estimation and Residual Diagnostics

Ordinary Least Squares (OLS) was used for parameter estimation. Several diagnostic tests were conducted to validate model assumptions:

- **Test for Normality of Residuals: Jarque-Bera (JB) Test**

$$JB = \tfrac{n}{6}\left(S^2 + \frac{(K-3)^2}{4} \right) \tag{10}$$

where: S = Skewness of residuals, K = kurtosis of residuals, n = number of samples.

The null hypothesis H_0: Residuals are normally distributed was accepted as $p > 0.05$.

- **Test for Autocorrelation: Breusch-Godfrey LM Test**

The Breusch-Godfrey test checks for higher-order serial correlation:

$$LM = nR^2 \tag{11}$$

where: R^2 = Reject H_0 of no autocorrelation if $LM > \chi^2_{\alpha,k^*}$

- **Test for Multicollinearity: Variance Inflation Factor (VIF)**

$$VIF_j = \frac{1}{1-R_j^2} \tag{12}$$

where: R_j^2 : R^2 From regressing the j^{th} predictor on all other independent variables

A VIF < 10 indicates no severe multicollinearity.

Goodness of Fit

Coefficient of Determination:

$$R^2 = 1 - \frac{SS_{res}}{SS_{tot}}, \quad Adjusted R^2 = 1 - \left(\frac{(1-R^2)(n-1)}{n-k-1} \right) \tag{13}$$

Model Selection Criterion:

$$AIC = 2k - 2\ln(\hat{L}) \tag{14}$$

Where k is the number of parameters and $\hat{L}$ s the maximum likelihood value.

Hypothesis Testing

The following hypotheses were tested using the two-tailed t-test:

$$t = \frac{\hat{\beta}_j}{SE(\hat{\beta}_j)} \text{ with decision rule : reject } H_0 \text{ if } |t| > t_{\alpha/2,df}$$

Significance was assessed at $\alpha = 0.05$

RESULTS

Descriptive Statistics

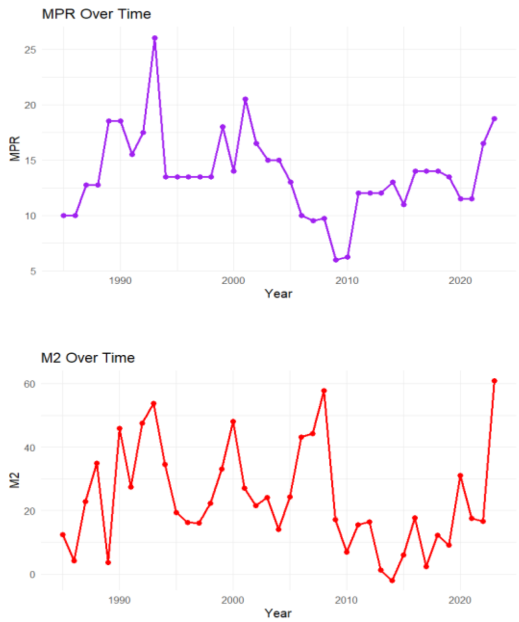
Table 1 presents the summary statistics of the key variables used in the study, including the mean, standard error, standard deviation, variance, minimum, maximum, and sample size. These statistics provide an overview of the distribution and variability of the variables.

The descriptive statistics provide insight into the distribution and variability of the study variables. The mean values indicate that narrow money supply (M1) and broad money supply (M2) are relatively stable, with averages of 23.9446 and 23.7704, respectively. The monetary policy rate (MPR) has an average value of 13.7500, reflecting the general level of interest rates during the study period. Total market capitalization growth (TMCG) has a mean of 12.9532, while total asset market capitalization (TAMC) is significantly larger, averaging 10,892.3746, indicating the scale of assets in the financial market. The variability in the data is evident from the standard deviations, with TAMC exhibiting the highest fluctuation at 16,609.2476, whereas the MPR remains relatively stable with a standard deviation of 3.7780.

Further analysis of the minimum and maximum values highlights the extent of fluctuations in the variables. M1 and M2 display a wide range, with minimum values of -5.2954 and -2.0100, and maximum values of 62.2400 and 60.8362, respectively, suggesting periods of contraction and expansion in money supply. TAMC has the most extreme variations, ranging from 6.6000 to 75,202.9044, indicating significant market shifts. The MPR fluctuates between 6.0000 and 26.0000, showing a more controlled variation in interest rates.

Table 1: Descriptive statistics of study variables

	M1	*M2*	*MPR*	*TAMC*
Mean	23.9446	23.7704	13.7500	10,892.3746
Standard Error	2.9686	2.6367	0.6050	2,659.6082
Standard Deviation	18.5389	16.4659	3.7780	16,609.2476
Sample Variance	343.6907	271.1273	14.2730	275,867,106.3
Minimum	-5.2954	-2.0100	6.0000	6.6000
Maximum	62.2400	60.8362	26.0000	75,202.9044
Count	39	39	39	39



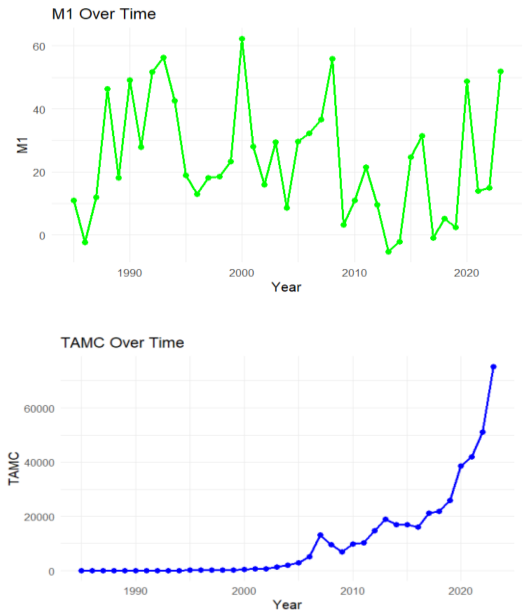


Figure 1: Plots of MPR and M2 for the Study Period

Figure 2: Plots of M1 and TAMC for the Study Period

Figure 1 and 2 presents the trend of M1 and M2 over the years and reveals significant fluctuations, reflecting the varying liquidity conditions in the economy. From 1985 to the early 1990s, both indicators exhibit moderate growth, followed by sharp increases in the mid-to-late 1990s, aligning with economic expansion. A notable peak occurs in 2000, after which fluctuations persist until a period of relative stability between 2005 and 2010. The post-2010 period sees a resurgence in liquidity growth, with substantial increases in the early 2020s, particularly in 2023, indicating heightened economic activity and financial sector expansion. These shifts correspond to economic policy changes, inflation control measures, and external shocks affecting financial stability.

The monetary policy rate (MPR) follows a fluctuating pattern from 1985 to 2023, reflecting periodic adjustments aimed at balancing inflation control and economic stimulation. The late 1980s and early 1990s witness moderate increases, but a sharp spike in 1993 marks a shift towards a more aggressive tightening policy. The rate stabilizes around 13.5% for several years before experiencing adjustments in response to macroeconomic conditions. A significant increase in 1999 and the early 2000s aligns with inflationary pressures, followed by a decline in the late 2000s. From 2010 onward, MPR remains relatively stable, with minor fluctuations until another rise in 2022 and 2023, indicating renewed monetary tightening.

Total annual market capitalization (TAMC) follows a steady upward trajectory, showing slow but consistent growth from 1985 to the early 2000s. The late 2000s mark a period of accelerated expansion, with exponential growth from 2010 onwards. By 2023, TAMC reaches its highest level, indicating increased investor confidence, market depth, and overall financial sector development despite periodic fluctuations.

Pre-estimation Analysis

Normality Test

Table 4.2 presents the results of the normality evaluation of the study variables using the Kolmogorov-Smirnov (KS) test. The KS D statistic measures the maximum deviation between the empirical distribution of each variable and the theoretical normal distribution, while the p-value determines whether this deviation is statistically significant at the 5% level.

The findings indicate that all the examined variables M1, M2, MPR, and TAMC exhibit p-values greater than 0.05, suggesting that they do not significantly deviate from normality. Specifically, M1 and M2 display relatively small deviations, with KS D statistics of 0.1199 and 0.1291, respectively, and corresponding p-values of 0.5868 and 0.4938. Similarly, MPR and TAMC, with KS D statistics of 0.1659 and 0.1796, respectively, have p-values of 0.2332 and 0.1428, further supporting the assumption of normality. Consequently, the results confirm that all variables follow a normal distribution, validating their suitability for regression analysis.

Table 2: Study Variable Normality test

Variable	KS D Statistic	KS p-value	Remark
M1	0.1199	0.5868	Normal
M2	0.1291	0.4938	Normal
MPR	0.1659	0.2332	Normal
TAMC	0.1796	0.1428	Normal

Stationarity Test

Table 3 presents the results of the stationarity test conducted using the Augmented Dickey-Fuller (ADF) test for the study variables. The test investigates whether each variable contains a unit root, indicating non-stationarity, by examining the test statistic and its corresponding p-value. The null hypothesis states that the variable is non-stationary.

The results indicate that TAMC attains stationarity at the second difference, as its p-value (0.0000) is below the 5% significance level, confirming it is integrated of order two, I(2). Conversely, MPR, M1, and M2 are all stationary at level with their p-values (0.0261, 0.0007, and 0.0128, respectively) which are below 0.05. This indicates that these variables are integrated of order zero, I(0).

Table 3: Stationarity Test

	ADF		
Variables	**T-Stats**	**P-Value**	**Order of Integration**
TAMC	-7.292185	0.0000***	*I(2)*
MPR	-3.225881	*0.0261***	*I(0)*
M1	-4.584557	*0.0007***	*I(0)*
M2	-3.518186	*0.0128***	*I(0)*

Estimation of the Study Regression Model

Table 4 presents the regression estimates for the model, providing insights into the relationship between the dependent variable and the predictors. The intercept is highly significant ($p < 0.001$), with an estimated value of 2.8557, indicating a strong baseline effect. Among the independent variables, lagged TAMC (lag(TAMC,1)) has a positive and highly significant effect ($p < 0.001$), suggesting that past values of TAMC strongly influence its current values. The Monetary Policy Rate (MPR) has a negative and significant effect ($p = 0.017$), implying that changes in MPR impact TAMC inversely. However, M2 and M1 are not statistically significant, indicating that their influence on TAMC is negligible within this model. The model demonstrates a high explanatory power, with an R-squared value of 0.9389 and an adjusted R-squared of 0.9317, suggesting that approximately 93% of the variation in TAMC is explained by the included predictors. The F-statistic (126.76, $p < 0.001$) confirms the significance of the regression model. The Akaike Information Criterion (AIC) of 266.21 indicates the model's fit relative to other potential specifications.

Table 4: Regression Estimates

Predictor	Estimate	Std. Error	t-value	p-value
Intercept	2.8557	0.1253	22.793	< 2e-16
lag(TAMC, 1)	0.0253	0.0016	16.264	< 2e-16
MPR	-0.0234	0.0093	-2.513	0.017
M2	-0.0002	0.0032	-0.065	0.949
M1	-0.0001	0.0030	-0.038	0.970
Residual Standard Error	*7.363*			
Multiple R-Squared	*0.9389*			
Adjusted R-Squared	*0.9317*			
F-Statistic (df = 4,34)	*126.76*			
p-value	*< 2.22e-16*			
AIC	*266.21*			

Post Estimation Analysis

Table 5 presents the results of the model validity tests, assessing serial correlation, normality of residuals, and multicollinearity. The Breusch-Godfrey test for serial correlation yields a p-value of 0.6918, indicating that there is no significant autocorrelation in the residuals, affirming the model's reliability. The Jarque-Bera test for normality of residuals results in a p-value of 0.8539, suggesting that the residuals follow a normal distribution, which is essential for valid inference in regression analysis. Regarding multicollinearity, the Variance Inflation Factor (VIF) values are examined. Generally, a VIF below 10 indicates no severe multicollinearity. MPR (1.310) and lagged TAMC (1.163) have low VIF values, indicating no multicollinearity concerns. However, M2 (5.294) and M1 (4.931) exhibit moderate collinearity but remain below the critical threshold of 10, suggesting that their inclusion does not severely distort the regression estimates. The model passes key validity tests, confirming that the residuals are normally distributed, serial correlation is absent, and multicollinearity is within acceptable limits.

Table 5: Model Validity Analysis

Test	Statistic	df	p-value
Breusch-Godfrey (Serial Correlation)	0.15714	1	0.6918
Jarque-Bera (Normality of Residuals)	0.31585	2	0.8539

Variable	VIF Value
lag(TAMC_trans, 1)	1.163088
MPR	1.310328
M2	5.293664
M1	4.930768

Hypothesis Testing

Table 6 presents the results of hypothesis testing for the effects of narrow money supply (M1), broad money supply (M2), and monetary policy rate (MPR) on stock market returns in Nigeria. The regression results indicate that M1 has no significant effect on stock market returns (p-value = 0.970). Since the p-value exceeds 0.05, we fail to reject the null hypothesis, confirming that narrow money supply does not significantly impact stock market returns in Nigeria. The estimate for M2 is also statistically insignificant (p-value = 0.949), since p-value is greater than 5%, the null is not rejected and conclude that broad money supply does not have a significant effect on stock market returns. The monetary policy rate (MPR) has a significant negative effect on stock market returns (p-value = 0.017). Since the p-value is below 0.05, we reject the null hypothesis, concluding that MPR significantly influences stock market returns in Nigeria.

Table 6: Hypothesis test results

Predictor	Estimate	p-value	Significance
Intercept	2.8557	< 2e-16	*** (Highly Significant)
lag(TAMC, 1)	0.0253	< 2e-16	*** (Highly Significant)
MPR	-0.0234	0.017	* (Significant)
M2	-0.0002	0.949	Not Significant
M1	-0.0001	0.970	Not Significant

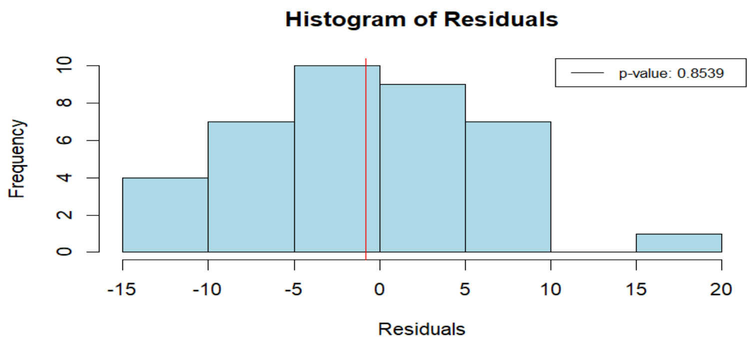


Figure 3: Histogram of Residuals

DISCUSSION

This study investigated the effects of monetary policy variables monetary policy rate (MPR), narrow money supply (M1), and broad money supply (M2) on stock market returns in Nigeria. The findings reveal that while MPR has a significant negative effect on stock market returns, M1 and M2 do not exhibit significant influences. These results provide insights into the monetary transmission mechanism in Nigeria and contribute to the ongoing discourse on the role of monetary policy in financial markets. The finding that M1 and M2 do not significantly influence stock market returns contradicts the conclusions of Emmanuel and Vincent (2020), who found a long-run relationship between money supply and stock market performance in Nigeria, South Africa, and Ghana. Their study suggested a unidirectional causal relationship, where stock market performance influenced money supply rather than the reverse. Similarly, Christopher and Kenneth (2016) revealed that monetary policy shocks related to money supply had a stronger impact on stock market performance than interest rate policies. These differences may be attributed to variations in the time frame, econometric methodology, and macroeconomic conditions considered in different studies.

The present findings align with Samson (2018), who concluded that monetary policy variables, including money supply, did not significantly influence stock market development in Nigeria over the long run. This suggests that factors beyond money supply—such as investor sentiment, fiscal policy, and external economic conditions might play a more critical role in shaping stock market returns.

The significant negative impact of MPR on stock market returns is consistent with the findings of Gunardi et al. (2023), who reported that interest rates significantly influenced stock prices in Indonesia and Malaysia. However, their study found that while both money supply and interest rates mattered in Indonesia, only interest rates significantly affected stock prices in Malaysia, reinforcing the idea that the impact of monetary variables differs across emerging markets. Jamilu and Asad-Ul (2021) identified a nonlinear relationship between monetary policy and the stock market, noting that MPR exhibited positive effects in lower economic regimes but turned negative in higher regimes. This suggests that the negative relationship found in the present study may be context-dependent, influenced by prevailing macroeconomic conditions.

Similarly, Alexander et al. (2019) found that frequent mop-up operations by the Central Bank of Nigeria following expansionary monetary policies led to instability in the money market, increasing stock price volatility. This aligns with the present study's finding that MPR negatively affects stock market returns, possibly due to restrictive monetary policies aimed at controlling inflation, which reduce market liquidity and investor confidence. The lack of a significant effect of M1 and M2 on stock market returns challenges the traditional view that an increase in money supply leads to higher stock market performance due to increased liquidity. Instead, the findings suggest that monetary policy rate adjustments play a more crucial role in shaping investor sentiment and market dynamics in Nigeria. This aligns with Tiamiyu (2022), who argued that the Nigerian financial sector lacks adequate diversification, making money supply changes relatively neutral over time. Furthermore, Samuel (2015) found that government fiscal policies had a stronger effect on stock market performance than monetary policies, which may explain why changes in money supply (M1 and M2) did not significantly impact stock market returns in this study.

CONCLUSION

This study investigated the relationship between money supply, monetary policy rate, and stock market returns in Nigeria over the period 1992–2023. The empirical findings indicate that the monetary policy rate (MPR) exerts a statistically significant negative influence on stock market returns, underscoring the sensitivity of market performance to interest rate fluctuations. Conversely, both narrow money (M1) and broad money (M2) were found to have no significant impact on stock returns during the study period. These results suggest that while money supply dynamics may influence other macroeconomic indicators, they do not exert a direct effect on stock market outcomes in the Nigerian context.

By isolating the impact of key monetary variables, this study contributes to the ongoing discourse on monetary policy transmission mechanisms in emerging markets, particularly in sub-Saharan Africa. The evidence supports the view that interest rate policy remains a dominant tool influencing investor behavior and asset pricing in Nigeria's capital market. This insight is critical, given the increasing reliance on interest rate adjustments as a stabilization instrument in response to inflationary pressures and external shocks.

The findings effectively address the research objectives by demonstrating that monetary policy rate decisions carry greater implications for stock market performance than variations in money supply aggregates. This highlights the importance of interest rate signaling in shaping investor expectations and reinforces the need for transparent and predictable monetary policy frameworks. The lack of a significant relationship between money supply measures and market returns also raises questions about the transmission efficiency of liquidity-based instruments in Nigeria's financial system.

In light of these findings, policymakers are encouraged to strengthen the coherence between monetary policy and capital market development objectives. Ensuring a stable interest rate environment will be essential for attracting both domestic and foreign investment into the stock market. Additionally, efforts to deepen the financial sector through improved financial literacy, transparency, and regulatory oversight will further support market resilience and enhance the responsiveness of monetary policy to broader economic goals.

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