Original Research Article

Macroeconomic Aggregates and Stock Prices in Nigeria

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Abstract

The study examines the impact of macroeconomic aggregates on stock price in Nigeria. The study employs secondary data extracted from the Central Bank of Nigerian (CBN) Statistical Bulletin of 2023 and the international financial statistics (IFS). The methods of data analyses include the ordinary least squares multiple regression and the error correction mechanism on a time series data covering the period of thirty years (1994-2023). The findings of the study are that, the current level of money supply (DM_2) has a positive and insignificant impact on All Share Index (ASI) in the short-run while the money supply (M_2) in the long run has a negative relationship and a statistically significant impact on All Share Index (ASI), the current level of Interest Rate (DINTR) has a negative and insignificant impact on All Share Index (ASI) in the short run while interest rate (INTR) has negative relationship with the all share index (ASI) and not statistically significant, the current year of inflation rate (DINFR) has a negative and a statistically significant impact on All Share Index (ASI) in the short run while inflation rate (INFR) has a negative and a statistically significant impact on All Share Index (ASI), and the current level of consumer confidence index (DCCI) has a negative and statistically significant impact on All Share Index (ASI) in the short-run while consumer confidence index has a positive and statistically significant impact on All Share Index (ASI). A major recommendation of the study is that Government should reduce its participation in direct importation so as to enhance stock market indices in the Nigerian capital market.

Keywords: Macroeconomic Aggregates and Stock Prices.

1.1 BACKGROUND TO THE STUDY

Both public and private entities can obtain long-term funding through the stock market. It is expected that the capital market will be efficient because of its function in offering investment opportunities and channels for obtaining funds. The rationale is that the projected profits on equities traded in the market are influenced by the stock market's efficiency (Gbanador,2021).

The efficiency of the stock market is frequently used to define the economic state of the market. If the value of a security reflects a sufficient computation of its intrinsic value, the capital market is considered to be efficient. This is typically observed in relation to the responsiveness of the security price to information, which ultimately results in a security return. From the aforementioned, it will be pointless to try to predict market price movements if all the relevant information is evident in stock values. This will make it hard to generate extraordinary profits on portfolios. The rationale is that in an efficient capital market, investors can only obtain an average return on their investment (Gbanador, 2018). The stock is one of the assets that is most susceptible to changes in the economy. The relationship between macroeconomic factors and stock returns is therefore one of the most hotly contested issues in finance during the last few decades, as any drastic shift in stock prices can have detrimental effects on an economy (Barakat, Elgazzar, & Hanafy, 2016). The capital market's effectiveness in pricing stocks and the correlation between volatility and stock values are inextricably linked to the behavior of stock prices. (2021). In a similar vein, Umer (2016) believes that the stock markets are an essential component of the economy and that their significance cannot be overlooked.

Therefore, it is necessary to determine the factors that influence the stock market index and either

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increase or decrease investors' wealth. Numerous research have found that changes in economic data are what cause stock market behavior.

The indicators that determine the economic system are macroeconomic aggregates. Their primary focus is on predicting national income by analyzing key economic parameters that show recurring patterns and trends and how they affect each other (Anochie, Okereafor & Bashir, 2023). Macroeconomic aggregates include the overall economic output of goods and services, the rate of unemployment and inflation, interest rates, the balance of payments, and the exchange rate, as well as booms and recessions, reflect the behavior of the entire economy (Nasution, Siregar & Sadalia, 2021). It is therefore impossible to overstate the importance of researching the impact of macroeconomic aggregates on stock prices in Nigeria.

Statement of the Problem

There is a common argument that certain important macroeconomic aggregates influence stock prices. According to Anyanwu and Ohurogu (2024) and malika (2021), a number of basic macroeconomic factors, including the money supply, inflation, interest rates, GDP, and currency rates, influence stock prices. There is a positive correlation between stock prices, exchange rates, money supply, market capitalization, and industrial production, according to a number of studies on macroeconomic aggregates and stock market prices. For instance, Mukherjee and Naka (1995) used an Error Correction Model (ECM) to examine the relationship between Tokyo stock prices and these factors as well as interest rates, inflation rates, industrial production, and money supply.

Nevertheless, the consumer price index, oil prices, foreign reserves, foreign direct investment, and so forth are additional factors that impact stock prices. These factors are related to Ross's (1973) asset pricing theory, which explains the theoretical connection between stock market prices and macroeconomic factors. The majority of studies such as Iwegbu and Adeoye (2020), Josiah and Akpoveta (2019), Roy (2020), Musa *et al.,* (2020) and Iyodo *et al.,* (2021), examined the short-term or long-term relationship between macroeconomic aggregates and stock market prices and found significant impact of macroeconomic aggregates on stock prices.

Furthermore, a number of empirical studies have looked at how the money supply, exchange rate, interest rate, inflation rate, and gross domestic product affect stock prices without properly accounting for the consumers' confidence index, which measures how optimistic consumers are about the state of the economy as expressed by their spending and investment decisions. Every month, a household poll of consumers' opinions about the state of the economy and their expectations for the future is used to calculate the index. The indicator is

composed of 60% expectations for future situations and 40% opinions about current ones. Such shortcomings in this literature evaluation justify this investigation. Thus, this research aims to close this information gap.

LITERATURE REVIEW
CONCEPTUAL REVIEW
Macroeconomic Aggregates

Macroeconomic aggregates serve as key markers or indications of the economy's present dynamics. Keynes therefore determined that the gross domestic product, exchange rate, interest rate, inflation rate, and money supply are some of the primary macroeconomic factors that support stock prices in an economy as a whole. Because it gauges the overall health of the economy, which lowers the standard of living for its population, the gross domestic product is regarded as a macroeconomic aggregate (Karimo, 2020).

Macroeconomic aggregates serve as primary markers or indications of the state of the economy. Thus, Keynes listed the money supply, interest rates, inflation rates, gross domestic product, and exchange rates as some of the primary macroeconomic factors that support stock prices in an economy as a whole. Since the gross domestic product gauges the overall health of the economy, which lowers the standard of living for its population, it is regarded as a macroeconomic aggregate (Karimo, 2020).

Malika (2021) asserts that macroeconomic variables serve as key markers or indications of the economy's current tendencies. From a different angle, Aliyu (2015) described macroeconomic variables as being related to economic aggregates, such as a nation, a region, a nation's population, and all of its businesses. Economic growth, inflation, unemployment rates, and gross domestic product are examples of macroeconomic variables that have an effect on the market (Saibu, 2014). Additionally, macroeconomic variables were conceptualized by Osamwonyi and Evbayiro-Osagie (2012) as elements that are used to gauge progress in a community, state, region, nation, continent, or the entire planet. The idea of Malika (2021) as indicators or primary signposts indicating the current economic trends is adopted in this study.

Stock prices quickly adapt to new information in an effective capital market, thus they represent all accessible information about the stocks. This implies that an investor cannot forecast changes in stock prices and profit from share trading using the easily accessible information. In summary, new knowledge is swiftly and thoroughly incorporated into an efficient market. Additionally, we are aware that stock prices are a reflection of expectations for future corporate profit performance. Therefore, stock prices should be utilized as indices of economic activity if they represent these assumptions. Therefore, a country's macroeconomic policies can be guided by the dynamic relationship

between stock prices and macroeconomic indicators (Maysami *et al.,* 2020).

Stock prices are influenced by a company's net earnings. The amount of profit the business is expected to make in the immediate or long term will determine this. A company's stock price will increase to reflect the optimistic expectation if it is thought that it will perform well in the years to come. However, stock prices may drop if patterns indicate that the company might not do well in the long run. Stated differently, stock prices are directly correlated with the company's performance. The value of the company's earnings will likewise decline if inflation rises. The stock prices and ultimately the market returns will suffer as a result. According to the APT framework, share prices are likely to be influenced by economic factors that affect a stock's necessary returns and future cash flows.

Stock Market Prices
According to Muneerah (2021), the stock market is a sophisticated organization with built-in mechanisms that mobilize, harness, and make available to different economic sectors the long-term funds of the main economic sectors, which include households, businesses, and the government. According to Olowe *et al.,* (2011), the stock market offers chances for increased capital mobilization, more effective resource allocation, and the availability of pertinent data for appraisal. The stock market offers a way to increase medium- to long-term financial resources. This study embraces the idea of Muneerah (2021) as a complex organization with built-in mechanisms that mobilize, harness, and make available to other economic sectors the long-term funds of the main economic sectors, which include households, businesses, and the government.

Theoretical Framework
Various schools of thought have attempted to explain the movement of stock prices. Among the prominent ones are the fundamentalist, technical, behavioral, random walk hypothesis, and macroeconomic schools. Fundamentalists contend that a firm's stock value is driven primarily by projected future earnings, which are discounted at a relevant rate. Conversely, the technical school challenges this view, suggesting that stock prices follow identifiable trends and are influenced by prior price movements, indicating a level of price interdependence.

The random walk hypothesis, rooted in the efficient market theory, maintains that prices adjust quickly to reflect new information, rendering stock prices random and making consistent market outperformance implausible. Meanwhile, the macroeconomic perspective asserts that stock prices respond to fluctuations in macroeconomic variables.

This research is guided by Ross's (1976) Arbitrage Pricing Theory (APT), which offers a multi-factor explanation of asset pricing. Ross argued that stock returns are influenced by various unanticipated macroeconomic events such as changes in risk premiums, industrial production levels, inflation expectations, and shifts in the interest rate structure. Each of these factors is associated with specific sensitivity coefficients that quantify an asset's responsiveness.

Given the scope of this study, the macroeconomic hypothesis provides a suitable theoretical lens, focusing on the influence of variables like money supply, interest rate, inflation, and other macroeconomic indicators. This approach is anchored in general equilibrium theory, which emphasizes the interconnectedness of economic sectors and their collective impact on the persistence and synchronization of macroeconomic trends.

Empirical Review
Khan and Khan (2018) analyzed how macroeconomic indicators affect stock prices in Pakistan's Karachi Stock Exchange. Using time series data from May 2001 to August 2016 (184 monthly observations), they applied Ordinary Least Squares (OLS) regression and the ARDL bounds testing approach. Their results indicated that in the short term, only the exchange rate significantly affected stock prices, exhibiting a negative relationship. The authors recommend that central monetary authorities be cautious with money supply adjustments, as excessive expansion could impact investments and the stock market adversely.

In Nigeria, Josiah and Akpoveta (2019) explored how macroeconomic factors influence stock market returns. Utilizing historical data and representing market performance with the All Share Index, they incorporated variables such as money supply, inflation, interest rate, exchange rate, real GDP, and financial openness. The study employed OLS regression, cointegration analysis, error correction modeling, and Granger causality testing. Findings revealed significant relationships among the variables, leading to recommendations for policy reforms that could enhance financial openness and attract capital investments.

Iwegbu and Adeoye (2020) assessed how inflation expectations influence stock market returns in Nigeria using quarterly data from Q1 2007 to Q4 2018. Applying the ARDL model, after confirming variable stationarity via the Augmented Dickey-Fuller (ADF) test and long-run equilibrium through bounds testing, they concluded that inflation expectations significantly determine stock returns.

Roy (2020) studied the causal links between stock market behavior and macroeconomic variables in India, covering April 1979 to March 2020. Using OLS regression and the Johansen cointegration method, the study found three cointegrating relationships, later

confirmed by a Vector Error Correction Model (VECM) with the Bombay Stock Exchange as the dependent variable. Additionally, short-run bidirectional causality was identified between imports and GDP, and unidirectional causality from exports to imports.

In Nigeria, Musa *et al.,* (2020) investigated the relationship between interest rates and both stock market capitalization and share indices from 1995 to 2015. Adopting descriptive and diagnostic research designs, the study used OLS regression to model interest rates as the independent variable, and stock market capitalization and share index as dependent variables. After testing for stationarity with the ADF test, the results demonstrated stable long-run relationships.

Malika *et al.,* (2021) analyzed the impact of macroeconomic indicators on the UK stock market using monthly data from January 1999 to December 2007, representing the pre-Global Financial Crisis period. Variables included interest rate, exchange rate, and consumer price index, while stock price served as the market proxy. OLS regression, Johansen cointegration, Granger, and Toda-Yamamoto causality tests showed no long-run cointegration. However, exchange rate exhibited a unidirectional causality toward stock prices. Further results from the ARDL model and Error Correction Mechanism (ECM) suggested that macroeconomic factors collectively influenced long-run stock price behavior.

Iyodo *et al.,* (2021) evaluated how inflation, exchange rate, and interest rate affect stock returns, measured by return on equity (ROE) of listed banks in Nigeria. Employing OLS regression due to its suitability for the dataset, the results indicated that the stock market maintains a systemic relationship with macroeconomic fundamentals.

Udo, Odey, and Jacob (2022) studied the long-run impact of macroeconomic factors on Nigeria's stock market performance, represented by the All-Share Index. Using the ARDL methodology, they analyzed the effects of GDP growth, money supply, exchange rate, savings interest rate, and inflation. Their findings confirmed long-term associations between the variables, highlighting positive impacts of GDP, money supply, and exchange rate on market performance.

Anyanwu and Ohurogu (2024) examined how interest rate and money supply influence stock market liquidity in Nigeria over the period 1985–2022. Using an ex post facto design and secondary data from the Central Bank and Nigerian Exchange reports, they applied Vector Autoregression (VAR), Variance Decomposition, and Impulse Response Functions. Results indicated that interest rates had a significant negative effect, while money supply positively influenced stock market liquidity.

3.0 METHODOLOGY

This study is based on secondary data covering a time period of thirty years (1994-2023). The data for the study were sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin and the international financial statistics (IFS). The ex-post facto research was used in the study to enable the researcher to ascertain the impact of the independent variables on the dependent variables.

Model Specification

This study builds on the asset pricing theory of Ross (1973) and adopts the macroeconomic hypothesis of Fama (1977) which explains that stock market prices are influenced by changes in macro-economic aggregates. The macroeconomic aggregates used in this paper are interest rate, inflation rate, money supply, gross domestic product and consumers' confidence index which are also the independent variables and the All-Share Index (our proxy for stock price) as the dependent variable. The study adapts the model of Iyodo *et al.,* (2021), which examined the impact of interest rate, inflation and exchange rate on stock return. Therefore, the model of this current study was modified and depicted as money supply, interest rate, inflation rate, consumers' confidence index and gross domestic product at a function of All Share Index. Therefore, the functional form of the model is given by

$$ASI = (M_2, INTR, INFR, CCI, GDP)$$

The econometric form of the model is specified as:
$$ASI = \beta_0 + \beta_1 M_2 + \beta_2 INTR + \beta_3 INFR + \beta_4 CCI + \beta_5 GDP + \mu$$
Where,
ASI = All Share Index
M_2 = Broad Money Supply
INTR = Interest Rate
INFR = Inflation Rate
CCI = Consumers' Confidence Index
GDP = Gross Domestic Product
μ_t is the error term in the model.

The coefficients of the independent variables are presumptively signed as; β_1, β_2, β_4, β_5, > 0 and β_3, < 0.

Data Analyses

In order to properly analyse the data we adopted both the ordinary least squares multivariate regression of macroeconomic aggregates on stock prices to ascertain the long-run relationship and the error correction mechanism (ECM) was used to capture the short-run dynamics of the economy so as to correct for any temporal deviations in the model. The autoregressive distributed lags (ARDL) approach was used in estimating the ECM model while the adjusted R-squared Criterion and information criteria were used in selecting the parsimonious model from the over-parameter models

4.0 DATA PRESENTATION AND INTERPRETATION OF RESULT

Data Presentation I

Table 4.1: Ordinary Least Squares Multiple Regression Analysis showing Long-run relationships between ASI and the independent variables

Dependent Variable	Variables	Coefficient	t-statistic	Probability
ASI	C	-30916.99	-2.2601	0.0332
	INTR	-285.53	-0.7829	0.4413
	INFR	-14.8815	-0.1787	0.8597
	M_2	-4.2289	-3.2449	0.0034*
	GDP	2.0931	4.4592	0.0002*
	AR (1)	0.3135	1.5387	0.1370
R^2	0.83			
Adj. R^2	0.799			
F-statistic	24.09			
Pro (F-statistic)	0.000000	Durbin Watson	= 1.729	

Source: Data analysis by Researcher, June, 2025

4.2 Interpretation of Long-Run Equilibrium Result

The relationships between the dependent variable, All share index (ASI) (our proxy for stock market price), and gross domestic product (GDP) and Consumer Confidence Index (CCI) are positive and statistically significant at 5% level (respectively prob. value is 00.0370 and 0.0002). Meanwhile, the relationships between All share index (ASI) and interest rate (INTR), inflation rate (INFR) and money supply (M_2) are all negative and not statistically significant except Money supply (M_2) that is statistically significant at the 5% level (prob. value is 0.0413). The negative relationships are in conformity with theoretical expectations except that of money supply (LMS) that is contrary to *apriori* expectation.

The results indicate that while gross domestic product (GDP) is positively and significantly related to stock market prices in Nigeria within the period of study (1994 to 2023), money supply (M_2) is negatively and significantly related to stock market prices. However, inflation, exchange rate and interest rate are negatively related to stock prices.

From the table, the coefficient of determination, R^2 is 0.87 while the adjusted coefficient of determination, adj. R^2, is 0.79. This indicates that the independent variables explain about 79% of the systematic variations, thereby leaving the remaining 21% to stochastic error term. The Durbin Watson statistic (DW) of 1.75 (approx. 2.0) indicates the absence of autocorrelation among the explanatory variables of the model. Similarly, the F-statistic, 24.09 is statistically significant at 1% level (probability value is 0.0000). This indicates that the model satisfies appropriate diagnostic and statistical criteria. Therefore, the results of the OLS regression analysis are reliable and the influence of the explanatory variables on the dependent variable is significant. Thus, the model can be useful for policy direction.

4.3 Data Presentation II

Table 4.2: ARDL Representation of the Error Correction Mechanism Based on the Adjusted R-Squared and Information Criteria

Dependent Variable	Variables	Coefficient	t-statistic	Probability
ASI	C	49.20361	9.380836	0.0001
	ASI	0.004846	7.147266	0.0003
	DASI	0.002514	5.143538	0.0002
	DASI (-1)	-0.007841	-4.246935	0.0051
	DASI (-2)	0.005265	1.911859	0.1040
	DM_2	0.012231	2.134011	0.2140
	$D(M_2(-1))$	-0.012772	-2.277528	0.0830
	$D(M_2(-2))$	0.004861	0.853603	0.6261
	DINTR	-2.341361	1.2358014	0.7848
	D(INTR(-1))	-4.634266	-2.953960	0.0855
	D(INTR(-2))	-7.792471	-4.298009	0.0051
	DINFR	-5.329113	-5.431418	0.0048
	D(INFR(-1))	-6.899136	-3.638672	0.0209
	D(INFR(-2))	0.785829	2.541293	0.0430
	DCCI	-0.434193	2.104875	0.023
	D(CCI (-1))	0.655741	2.294910	0.0815

	D(CCI (-2)	0.794508	2.563020	0.0627
	DGDP	0.814772	4.123878	0.013
	D(GDP(-1)	0.000772	2.387417	0.0842
	DGDP(-2)	0.001007	2.091862	0.0914
	DGDP	0.000296	0.742744	0.6857
	ECM(-1)	-0.737224	-2.543185	0.0539
R^2	0.969			
Adj. R^2	0.867			
F-statistic	19.20			
Pro (F-statistic)	0.0052	DW=2.21		

Source: Data computation by Researcher, June, 2025.

4.4 Short-Run Dynamic Relationships

The R-Squared value of 0.969 and the adjusted value of 0.867 give an indication that about 86% of the systematic variations in All share index (ASI) are accounted for by variations in the explanatory variables including changes in the error correction term. The F-statistic is 19.20, and passes the significant test at 1% prob (F-stat] = 0.006) level. This is a strong indication that the ECM model has strong predictive power. Hence, we reject the null hypothesis of no significant linear relationships between All share index (ASI) our proxy for stock market price and the independent variables combined. Therefore, we conclude that a significant linear relationship exists between stock price and macroeconomic aggregates and other control variables. We observed that the first year lag value [GDP(-1) has a positive but insignificant impact on the latter at both 1% level (Prob value of 0.0842). In the same vein the first and second year lag values of GDP(-1) and GDP(-2) have positive impact on All share index (ASI).

The current, level first and second year lags of interest rate (INTR), DINTR D(INTR(-1) and D(INR(-2) have negative relationship with All share index as only the second year lag of interest rate was statistically significant at the 5% level. The relationship between the current, level first and second year lag of money supply D(M2(-1) and DM2(-2) are positive but not statistically significant at the 1% level and 5% level of significance. The relationship between the current, level of consumers' confidence index DCCI is negative but statistically significant

5.0 SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

Summary of Findings

Arising from the data analysis, the findings of the study are:

1. The current level of money supply (DM2) has a positive and insignificant impact on All Share Index (ASI) in the short-run while the money supply (M2) in the long run has a negative relationship and a statistically significant impact on All Share Index (ASI).
2. The current level of Interest Rate (DINTR) has a negative and insignificant impact on All Share Index (ASI) in the short run while interest rate (INTR) has negative relationship with the all share index (ASI) and not statistically significant.

3. The current year of inflation rate (DINFR) has a negative and a statistically significant impact on All Share Index (ASI) in the short run while inflation rate (INFR) has a negative and a statistically significant impact on All Share Index (ASI).
4. The current level of consumer confidence index (DCCI) has a negative and statistically significant impact on All Share Index (ASI) in the short-run while consumer confidence index has a positive and statistically significant impact on All Share Index (ASI).

CONCLUSION

In conclusion, the results from the study showed that both consumer confidence index and gross domestic product are the most important macroeconomic aggregates that have significant impact on stock market prices in Nigeria. While money supply and inflation rate have significant positive impact on stock prices, money supply has negative effect on the later.

Recommendations

From the findings of the research, the following recommendations are offered.

1. Government should strengthen the capacity of the Nigerian security and exchange commission so as to check and prevent sharp practices by market operators (particularly speculators) in order to safeguard the interest of shareholders.
2. Government should reduce its participation in direct importation so as to enhance stock market indices in the Nigerian capital market.
3. Government should invest more and develop the nation's infrastructure (such as roads, power, telecommunications, etc.) in order to create an enabling environment for businesses to grow, increase the productivity and efficiency, and the rate of returns of firms.
4. The current year gross domestic product (GDP) has a positive and not statistically significant impact on ASI, in the short run, while GDP has a positive and statistically significant impact on ASI.

Ordinary Least Squares Multiple Regression

Dependent Variable: ASI				
Method: Least Squares				
Date: 06/06/25 Time: 09:15				
Sample: 1994 2023				
Included observations: 30 after adjustments				
Convergence achieved after 10 iterations				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	-30916.99	13.679.02	-2.2601	0.0332
M2	-285.53	364.7081	-0.7829	0.4413
INTR	-14.8815	83.27644	-0.1787	0.8597
INFR	-4.2289	1.303245	-3.2449	0.0034*
CCI	2.0931	0.469389	4.4592	0.0002*
GDP	0.3135	0.203743	1.5387	0.1370
R-squared	0.833855	Mean dependent var		15248.92
Adjusted R-squared	0.799241	S.D. dependent var		15023.81
S.E of regression	6731.580	Akaike info criterion		20.64386
Sum squared resid	1.09E+09	Schwarz criterion		20.92410
Log likelihood	-303.6580	Hannan-Quinn criter		20.73351
F-statistic	24.09043	Durbin-Wastson stat		1.729338
Prob(F-statistic)	0.000000			

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