

Stock Market Development, Financial Deepening, and Industrial Growth in Nigeria

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ABSTRACT

This study examines the roles of the stock market and financial deepening in Nigeria's industrial development, with a particular focus on their relationships with Industrial Output, Stock Market Capitalisation, and Credit to the Private Sector. Data covering 43 years (1981–2023) on annual time series used for the study were obtained from the World Bank Development Indicators (2023) and the Central Bank of Nigeria's Statistical Bulletin.

The control variables adopted in the study were government expenditure, foreign direct investment, inflation and interest rate. The study used the Fully Modified Ordinary Least Squares (FMOLS) estimator to examine the long-run relationship among the variables. Empirical findings indicate that while Market Capitalisation has a negative and significant effect on industrial output, the effect of financial deepening was negative and not significant. Also, the interactive effect of stock market capitalisation and financial deepening showed a positive, though non-significant, relationship with industrial output. Overall, the industrial sector in Nigeria is not receiving the necessary support from the Nigerian capital and financial markets to drive the required expansion in activities. The study recommends, among other measures, strengthening the performance of the stock market, improving the level of financial deepening in the country and ensuring the availability of low-interest, longer-tenured funds for industrial investments.

Keywords: Industrials Output, Market Capitalization, Financial Deepening, Government Expenditure, Interest Rate. JEL Classifications: **G10, O14, O16, L16.**

INTRODUCTION

The industrialisation of Nigeria remains a cornerstone of the country's long-term economic transformation, but the sector has been bedevilled by inconsistent government policies, inadequate financing, and a huge infrastructure gap. The development of the stock market and the wide-ranging improvements in financial deepening are potential drivers of industrial development in the country. As expected, their synergy would improve corporate governance, enhance risk-sharing, mobilise long-term funds, and promote fund diversification beyond the banking system. The Nigerian government has implemented several financial reforms affecting the financial and capital markets since the early 1990s (Alenoghena et al., 2014). These reforms were intended to strengthen the financial system by improving financial transactions, increasing market depth, enhancing corporate governance, and expanding credit to the productive sectors of the economy. During the implementation of these reforms in the country, capacity utilisation and industrial value added have remained below expectations.

The lacklustre performance of the manufacturing sector raises critical questions about the extent to which the

stock market and financial deepening have promoted industrial expansion, and whether complementary conditions, such as macroeconomic stability, institutional quality, and infrastructure, have actually played the expected moderating roles. Consequently, assessing the effect of stock market development and financial deepening on Nigeria's industrial development is essential for evidence-based policies that align financial reforms with the nation's industrialisation agenda.

A lively stock exchange market is a key driver of economic growth and overall development in any nation. Governments worldwide, in both developed and developing countries, have recognised the need to establish robust, dynamic stock markets, and Nigeria is no exception. The performance of stock markets in allocating functions based on efficiency and effectiveness significantly influences an economy's overall growth (Algaed, 2021).

Theoretically, a well-developed financial system enhances industrial performance by providing firms with access to capital needed for investment, technological upgrading, and expansion of productive capacity (Saibu & Alenoghena, 2017). When financial markets deepen, they reduce information asymmetry, lower transaction costs, and improve the efficiency of resource allocation. This allows industrial firms to obtain long-term financing for capital-intensive activities, thereby fostering productivity growth and industrial expansion. In this regard, financial deepening is often viewed as a key mechanism through which financial development contributes to overall economic growth and structural transformation.

The capital market can be characterised as a collection of institutions and mechanisms that mobilise long-term funds for investment purposes. It comprises a web of financial entities and infrastructures that interact with one another to mobilise and distribute long-term funds to the economy. Consequently, the market provides a platform for the issuance of new securities and the trading of existing ones, making it well positioned to serve as a vital component of the financial system in any country that aims to promote industrial finance (Aghughu et al., 2022; Udofia et al., 2022).

An effective stock market can allocate funds properly, punctually, and at minimal cost to promote investment and output (Alenoghena et al., 2020; Ogbulu, 2016; Muibi et al., 2016; Fama, 1990). The capital market's transmission mechanism enables savings to be channelled into investment outlets (Gurley & Shaw, 1997). The market acts as an intermediary between surplus units and deficit units, facilitating capital accumulation that fosters investment and economic growth (Chou, 2007). Fama (1990), however, argued that stock market returns indicate information about corporate expectations of future cash flows and discount rates, thereby serving as an effective signal for assessing industrial production and investors' expectations.

Given the extensive academic discussion regarding the stock market's influence on Nigeria's economic growth, many scholars have made important contributions to this field of research. This research, however, aims to enhance the current body of literature by taking on a more critical and analytical approach. It examines in greater detail the mechanisms by which the stock market influences economic performance, offering a nuanced perspective that encompasses both structural and temporal dynamics. The primary objective of this study is to empirically examine the impact of stock market performance on economic growth in Nigeria. The following are the specific objectives: i) To assess the impact of stock market capitalisation on Nigeria's industrial output; ii) To investigate the effect of financial deepening on Nigeria's industrial productivity; iii) To evaluate the interactive effect of the stock market and financial deepening on Nigeria's industrial output.

While several studies have evaluated the effect of the stock market on industrial output in Nigeria, some other empirical studies have examined the effect of financial deepening on the country's industrial productivity. However, empirical studies on the interactive effect of financial deepening and the stock market on industrial output in the country are scarce. This study aims to highlight the lacuna in the interactive effect of the stock market and financial deepening on the country's industrial development, covering the period 1981 to 2024.

LITERATURE REVIEW

Theoretical Literature

Efficient Market Hypothesis (EMH)

Eugene Fama first expressed the Efficient Market Hypothesis (EMH) in the 1960s. It is a foundational theory for the development of capital markets. This theory asserts that asset prices reflect all available information instantly and accurately. Essentially, because asset prices already incorporate and reflect all pertinent information, it is almost impossible to consistently "beat the market" according to the EMH. Fama's groundbreaking 1970 paper posits that the EMH can be divided into three categories (Fama, 1990): weak, semi-strong, and strong. The weak form posits that current prices incorporate past price and volume data. The semi-strong form indicates that asset prices reflect all publicly available information, whereas the strong form asserts that market prices instantly incorporate all information, including private data (Emenike & Nwokoma, 2022).

The robustness of the Efficient Market Hypothesis (EMH) is evident in its assertion that future price changes cannot be predicted from historical prices, a claim supported by numerous empirical investigations. This lack of predictability ensures that markets remain competitive, preventing any investor from gaining an excessive advantage over their peers. Moreover, EMH underscores the significance of spreading information and its impact on asset pricing, which can account for the increase in transparency and disclosure mandates observed in contemporary capital markets. Nevertheless, the theory has its share of critics. According to behavioural economists such as Robert Shiller, psychological factors and irrational behaviour can result in market inefficiencies. They propose that misalignments in asset prices caused by emotional and cognitive errors can lead to market bubbles and crashes (Japinye et al., 2025).

The Efficient Market Hypothesis (EMH) is limited because it ignores market anomalies, bubbles, and crashes. The theory fails to account for irrational investor behavior (like herd mentality), and does not address information asymmetry caused by factors like insider trading. Furthermore, it underestimates the potential for skilled active managers to consistently outperform the market and overlooks market frictions such as transaction costs, taxes, and regulations.

Random Walk Theory

This financial theory, popularised by Malkiel in 1973, posits that the successive price movements of stocks in the market are serially independent. It asserts that knowledge of a security's historical prices cannot reliably predict the size or direction of future price movements through fundamental or technical analysis, maintains that stock prices vary randomly around their actual value and that current stock prices incorporate all available information about a security to such an extent that an investor cannot achieve consistent market outperformance. The proponents of this approach recommend a buy-and-hold strategy rather than trying to outperform the market. Therefore, the random walk hypothesis is a specific instance of the broader efficient market hypothesis (Owui, 2019).

The implications of the random walk theory suggest that information is the primary factor influencing securities prices in the market; the order or pattern of that information is irrelevant. Also, trends and patterns in short-term securities prices will be identified and corrected over time. Moreover, current securities prices reflect past prices that are fully disclosed, sufficiently static, and accessible to all traders. Though this theory has many implications, there are a few limitations. According to the Random Walk Theory, the entry and exit points must be carefully considered to outperform the market. It takes quite some time, effort, and expertise to consistently outperform the market.

Supply Leading Hypothesis

The Supply-Leading hypothesis in finance and economic growth was primarily championed by Joseph

Schumpeter, who argued that a well-developed financial sector is a prerequisite for economic growth by facilitating innovation and capital accumulation. However, the term "supply-leading hypothesis" was also coined by Hugh Patrick in 1966, distinguishing it from the "demand-following hypothesis". According to the Supply-Leading Hypothesis, the establishment and growth of financial institutions such as stock exchanges provide the essential financial infrastructure, capital, and services that propel growth in the real sector (Bernard, 2022). The hypothesis, in this context, asserts that the stock market is not merely a passive result of economic activity but rather serves as a catalyst for economic and industrial growth. The theory suggests that there is a uni-directional causality flowing from the financial market to economic growth. Hence, the market leads and induces the development of the economy. In the Supply-Leading Hypothesis, the financial system drives growth by providing a range of financial instruments. The key points to note about this hypothesis are: i) It promotes investment in sectors by lowering transaction and information costs; ii) It boosts liquidity, enabling investors to trade stocks with ease and; iii) It draws in both local and international investment for the growth of industry.

The supply-leading theory assumes a unidirectional causality flows from financial development to economic growth, which may not hold true in all contexts, particularly in developing economies where the relationship can be bidirectional or demand-following. It lacks empirical support across different countries and economic conditions, with evidence showing the theory is more applicable to developed economies during economic uptrends. Additionally, it fails to account for the influence of the stage of economic development, as well as the critical role of the financial sector's efficiency and potential for financial fragility, which can hinder its ability to act as a catalyst for growth.

Empirical Literature Review

It is important to highlight the scarcity of literature on the topic (particularly at both the local and international levels), as well as the lack of consensus among the findings and conclusions of various studies.

Offum and Ihuoma (2018) conducted a study on the causal link between capital market activities and industrial sector performance in Nigeria, covering the period from 1985 to 2015. The finance-led growth hypothesis and the endogenous growth theory served as the theoretical foundation for the paper. In the empirical analysis, the Phillips-Perron unit root test was employed to determine the time-series properties of the variables, and Granger causality was examined. The findings indicated that a one-way causal relationship exists between the market capitalisation ratio and the total value of shares traded ratio, and both are positively associated with industrial performance.

Akinmulegun et al. (2019) examined the relationship between financial deepening and the Nigerian manufacturing sector for the period 1981 to 2019, utilising OLS and ECM analyses. Their findings revealed mixed results regarding the financial development variables. While credit had a positive effect on the country's industrial sector, the ratio of the value of transactions traded on the stock exchange was negative.

Uremadu et al. (2019) explored the influence of stock market performance on Nigeria's industrial productivity from 1985 to 2016. The study specifically assessed various indices of the Nigerian stock market, including market capitalisation, all share index, value of shares traded, and number of deals, to determine their impact on the industrial sector's contribution to the Gross Domestic Product. For testing and analysis, the study employed unit root tests, Johansen cointegration tests, and vector error-correction mechanisms. The unit root test outcomes indicated that the variables examined in the study were integrated of order 1. Meanwhile, the Johansen cointegration test results indicated a long-term relationship between industrial-sector productivity and indicators of stock market performance. It was also found that, despite being negative, market capitalisation was the leading factor for industrial productivity in Nigeria.

Furthermore, Adigun and Okhankhuele (2021) conducted a study investigating how the stock market and the money supply affect industrial output levels in Nigeria. This study differs from prior research, which frequently overlooks the impact of the money supply on industrial output. The research utilised the Augmented Dickey-Fuller unit root test, followed by the ARDL method to examine the long-term relationship between the variables, and concluded with a co-integration test. The study concludes that approximately 73 per cent of the

variance in industrial growth can be attributed to differences in market capitalisation, gross capital formation, stock trading, and broad money.

Okoye et al. (2021) also examined the influence of the capital market on Nigeria's industrial development from 1985 to 2018. We utilised the key indicators of the capital market, namely market capitalisation, growth in the number of listed securities, and transaction volume. The data used for this study were sourced from secondary sources. The research utilised multiple regression analysis with ordinary least squares (OLS) methods to investigate the effect of the capital market on industrial growth. The research revealed that in Nigeria, the increase in the number of listed securities (GLST) is positively correlated with industrial growth. In contrast, market capitalisation (MC) and transaction volume (VT) correlate negatively with it.

Ighoroje and Ujuju (2021) examined the relationship between financial deepening and industrial sector output in Nigeria using time-series data from 1987 to 2019. They adopted the ARDL approach for analysis. Their findings were basically structured into short-run and long-run relationship outcomes. The study showed that the overall long-run relationship was not statistically significant. While the money supply has no short-run effect on the Nigerian industrial sector, credit to the private sector does. Among others, they recommend that the government ensure effective management of the money supply in the Nigerian economy, as well as encourage increased credit extension to the private sector to boost industrial output in Nigeria.

Algaeed, A. H. (2021) examined and tested the effects of capital market development on per-capita GDP growth in the Saudi Arabian economy, covering the period from 1985 to 2018. An ARDL, FMOLS and Johansen tests are implemented. Applying the Granger causality test, the share price index, market capitalisation, and number of shares traded do not Granger-cause per-capita GDP. They are significant at the 5 per cent level. The Capital Market Authority (CMA) should develop a roadmap to accelerate the deepening of the capital market to support economic growth.

Furthermore, Kaka et al. (2021) evaluated the impact of market capitalisation on the Nigerian economy over the period from 1985 to 2017. The co-integration test validated a long-term relationship between the dependent variable and the explanatory variables, leading to the estimation of the Vector Autoregressive (VAR) and Vector Error Correction Model (VECM). The results confirmed that market capitalisation and economic growth are positively correlated, and that gross fixed capital formation is directly related to economic growth. Meanwhile, an inverse relationship can be observed between GDP and total transactions on the Nigerian Stock Exchange.

Additionally, Udofia et al. (2022) investigated the effect of the capital market on Nigeria's industrial growth, utilising time series data from 1986 to 2018. The empirical analysis utilised a co-integration and error-correction model, revealing that the chosen variables were co-integrated. This indicates that a significant long-term relationship existed among the study variables. The empirical findings from the error-correction model indicate that Market Capitalisation (MCAP) and the All Share Index (ASI) have a positive and significant impact on industrial growth in Nigeria. In contrast, the Value of Transactions (VTS) has a negative and significant effect on industrial growth during the study period. The considerable effect of MCAP and ASI on Industry Growth suggests that these are robust capital market indices with the potential to promote industrial growth in Nigeria, provided they are managed effectively.

Ezeanyejji et al. (2023) investigate the correlation between capital market activities and industrial output growth in Nigeria to identify the factors driving industrial output expansion in the country. This research work is motivated by the necessity to rejuvenate the declining Nigerian industrial sector. In the analysis, the Augmented Dickey-Fuller (ADF) test, Autoregressive Distributed Lag (ARDL) technique, and short-run diagnostics and stability assessments for the ARDL Model were utilised. The results indicate that all variables lack stationarity and are not of the same order of co-integration, thus necessitating the use of the Autoregressive Distributed Lag (ARDL) model. Furthermore, the ARDL Bound test indicates a unique long-term relationship between the dependent and independent variables used in the study. Nevertheless, the research recognised, in its first hypothesis, that the capital market has a positive and significant effect on industrial output growth in Nigeria.

Additionally, Aiyedogbon et al. (2024) examined the effect of capital market development on Nigeria's industrial sector growth from 1986 to 2022 using the ARDL estimation technique. The results showed that Stock Market Capitalisation significantly and positively influenced growth in the industrial sector, indicating that as market capitalisation grew, the industrial sector prospered. Also, the Turnover Ratio (the value of traded shares divided by market capitalisation) was found to positively and significantly enhance growth in the industrial sector. In light of these findings, the paper suggested advocating public listings and private investments to boost the industrial sector's growth potential. In addition, it was stressed that enhancing trading platforms, ensuring market transparency, and reducing transaction costs are crucial to capitalising on the advantages of a high turnover ratio. Policymakers were advised to address the negative aspects associated with the All-Share Index to ensure comprehensive development of both the capital market and the industrial sector.

Ogbulu and Ejem (2024) also investigated the debate over the causality and direction of impact between stock markets and the development of Europe's industrial sector, aiming to draw lessons for Nigeria's pursuit of industrial sector development to achieve swift economic growth. The research utilised cross-sectional monthly data from the stock exchanges of eleven European countries, covering the period from January 2015 to November 2022. The econometric estimation tools used for the Panel data relationship include the pooled regression models with fixed and random effects, the Kao Residual Cointegration Test, the Likelihood Ratio Test, the Hausman specification test, and the Residual cross-section dependence test. The study's empirical findings reveal a mixed relationship among market capitalisation, the stock market index, and industrial output, exhibiting both negative and positive effects.

Alenoghena et al. (2025) investigated the effect of human capital development and financial deepening on industrial growth in Nigeria, covering the period 1989 to 2022. They utilised the ARDL approach for analysis. The study found that human capital development and financial deepening negatively and significantly affect industrial output in Nigeria.

Gaps in the Literature Review

A critical review of the empirical literature on stock market development, financial deepening, and industrial growth in Nigeria reveals several important gaps. First, there is an overemphasis in the literature on the relationship between the stock market and financial development and economic growth in Nigeria (Alenoghena, 2014; Mamudu & Gayovwi, 2020). Hence, there is a limited understanding of the channel through which the stock market impacts industrial output. Second, there is weak integration of the stock market and financial deepening in the adoption of a unified framework (Orji et al., 2025). Third, insufficient consideration is given to the influence of the external sector. This study takes into account the gaps that are highlighted to improve on the existing empirical literature in these areas.

METHODOLOGY

To ensure robustness, the study employs econometric analysis, including unit root tests (to assess stationarity), cointegration tests (to evaluate long-term relationships), and error correction models (to capture short-term dynamics). The model specification is derived from theoretical and empirical frameworks, incorporating key variables such as market capitalisation, industrial production index, government expenditure, and exchange rate.

Research Design

This study examines the role of the stock market in the industrialization of Nigeria. The stock market is the leading institution in the capital market and its role in the industrialization process of the country is paramount. The research design adopted for the study is a descriptive research design and it uses an Ex-Post Facto Research Design. Hence, the study adopts secondary data that is secured from the World Development Index (World Bank) and the Central Bank and the Central Bank of Nigeria (CBN) data publications. The variables used for the analysis are Industrial Output (a proxy for industrial performance), IPI, which is the dependent variable in the model, and the independent variables: Market Capitalisation (MCP), Credit to Private Sector

(CPS), Government Expenditure (GE), Foreign Direct Investment (FDI), Inflation Rate (INFL) and Interest Rate (INTR).

Model Specification

Economic growth, the model of economic growth equation is specified. The functional form of the model that will be used in study this is stated as:

$$IPI=f(MCP, CPS ,GE, FDI, INFL, INTR, \varepsilon) \dots\dots\dots(1)$$

Where:

IPI = Industrial Production Index; MCP = Market Capitalization; CPS = Credit to Private Sector; GE = Government Expenditure; FDI = Foreign Direct Investment; INFL = Inflation Rate; INTR = Interest Rate

The functional form of the model can further be expressed in equation (2)

$$IPI_t = \alpha_0 + \alpha_1MCP_{t1} + \alpha_2CPS_{t2} + \alpha_3GE_{t3} + \alpha_4FDI_{t4} + \alpha_5INFL_{t5} + \alpha_6INTR_{t6} + \varepsilon_t - - (2)$$

Equation (2) is used to evaluate the effect of the stock market and financial deepening on industrial development.

Equation (2) is reconfigured to investigate the interactive effect of the stock market and financial deepening on industrial development in Nigeria.

$$IPI_t = \alpha_0 + \alpha_1MCP_{t1} + \alpha_2CPS_{t2} + \alpha_3MCP * CPS_{t3} + \alpha_4GE_{t4} + \alpha_5FDI_{t5} + \alpha_6INFL_{t6} + \alpha_7INTR_{t7} + \varepsilon_t - - (3)$$

Where $\beta_0, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \& \beta_6$ are the coefficients to be estimated in Equation (2) and ε_t is the stochastic error term associated with the model.

Furthermore, the apriori expected signs of the models are for equation (2): $\beta_1 > 0; \beta_2 > 0; \beta_3 > 0; \beta_4 > 0; \beta_5 > 0; \& \beta_6 < 0$.

For Equation (3), the apriori signs may be stipulated as $\beta_1 > 0; \beta_2 > 0; \beta_3 > 0; \beta_4 > 0; \beta_5 > 0; \beta_6 > 0; \& \beta_7 < 0$.

Therefore, the parameter > 0 implies a positive relationship between the dependent and independent variables. Also, < 0 means a negative relationship between the dependent and independent variables.

Method of Data collection

This study will use secondary data consisting of time series observations from 1981 to 2023 (44 years). The information regarding Industrial Output, Market Capitalisation, Credit to Private Sector, Government Expenditure, Foreign Direct Investment, Inflation and Interest Rate. The data for the variables is obtained from the World Bank's and the Central Bank of Nigeria's statistical reports.

Variable	Description and Measurement	Source
IPI	Industrial Production Index. Value added is the net output of Industrial sector sub-sectors after adding up all outputs and subtracting intermediate inputs.	WDI
SMC	Stock Market Capitalization. This is the percentage change in the market value of listed equities on the domestic stock exchange at the end of every year, measured as a ratio to the GDP. Market Capitalization refers to the share price times the number of shares outstanding for each company.	CBN
CPS	Credit to Private Sector. Refers to funds provided to the private sector by financial institutions, such as through loans, purchases of non-equity securities, and trade credits	WDI

	and other accounts receivable (Estimated as share of GDP).	
GE	Government Expenditure. Federal government spending refers to the total expenses incurred by the federal government to execute its functions and responsibilities. Some examples are defense, education, healthcare and infrastructure. (Taken as a ratio of GDP)	CBN
INTR	Interest Rate. Lending rate is the bank rate that usually meets the short- and medium-term financing needs of government and the private sector (Lending rate/Monetary Policy Rate).	WDI
FDI	Foreign direct investment are the net inflows of investment to acquire a lasting management interest (10, percent or more of voting stock) in an enterprise operating in an African Country. Estimated as share of GDP.	WDI
INFL	Inflation is measured by changes in consumer prices at annual % change	WDI

Source: Authors’ Compilation from CBN (2024) and World Bank (WDI, 2024)

Estimation Techniques

In estimating the specified multiple regression model, the Fully Modified Ordinary Least Squares (FMOLS) is adopted in this study. (CLS) is used. Fully Modified Ordinary Least Squares (FMOLS) is used to obtain asymptotically unbiased and consistent estimators for cointegrated relationships, correcting for the serial correlation and endogeneity biases that plague standard OLS in such contexts. It's justified when long-run relationships are suspected between integrated time series variables, as it provides reliable estimates for these relationships even in the presence of short-run dynamics and heterogeneity. The advantage of the FMOLS procedure over the regular OLS model is based on four points: First, the regular OLS can produce biased estimates in cointegration analysis, while FMOLS is designed to provide accurate estimates for long-term relationships among integrated variables. Second, the FMOLS modifies the estimation to account for serial correlation in the residuals of cointegrated regressions, which is common in economic data. Third, the FMOLS addresses endogeneity problem by incorporating a nonparametric correction that accounts for the correlation between regressors and the error term, leading to more consistent estimates. Four, by adjusting for both serial correlation and endogeneity, FMOLS removes the asymptotic bias that affects conventional single-equation cointegrating vector estimates.

The estimated parameters are evaluated using the student t-statistic test and the F-statistic test. The overall stability of the specified empirical model is tested using the multiple coefficient of determination (R^2), adjusted R^2 , and the Durbin-Watson test results show the serial correlation status of the of the model.

Analysis And Presentation Of Results

Descriptive Statistics

Descriptive Statistics

The summary statistics of all variables used in this study are show in Table 4.1. The mean, standard deviation, minimum and maximum values of each variable are display.

Table 1: Descriptive Statistics

	IPI	LSMC	CPS	FDI	LGE	INFL	INTR
Mean	28.2483	6.65601	9.25115	1.18906	6.52373	19.4014	17.2132
Median	28.2770	6.92724	8.16215	0.96147	7.01864	13.1265	16.8986
Maximum	39.2451	11.60147	19.6035	4.28209	9.96589	72.8355	31.6500
Minimum	18.1731	1.60944	4.94803	0.02887	2.26556	5.38801	8.91667

Std. Dev.	6.2834	3.31953	3.47211	0.95268	2.42720	16.2318	4.73518
Skewness	-0.0804	-0.23770	1.13278	0.96861	-0.45121	1.79563	0.42084
Kurtosis	1.8408	1.58056	3.88577	3.72909	1.88416	5.27543	3.71495
Jarque-Bera	2.5107	4.10817	10.8484	7.85467	3.77568	33.13706	2.23591
Probability	0.2850	0.12821	0.00441	0.01970	0.15140	0.0000	0.32695
Sum	1242.93	292.8642	407.051	52.3185	287.04420	853.6598	757.3808
Sum Sq. Dev.	1697.71	473.8291	518.389	39.0264	253.32580	11329.3	964.1412
Observations	44	44	44	44	44	44	44

Source: Author`s Computation (2026)

This sub-section analyses the statistical features of the data extracted from the study variables. The main features of the study variables presented in Table 1 include estimates of the mean, maximum and minimum values, standard deviation, kurtosis, the Jarque-Bera statistic, and the associated probability. Starting with the mean, the means for the variables industrial development, stock market development, credit to the private sector, foreign direct investment, government expenditure, inflation, and interest rate are 28.24, 6.65, 9.25, 1.19, 6.52, 19.40, and 17.21, respectively. The maximum values for the variable, when presented in a similar order, are 39.25, 11.60, 19.60, 4.28, 24.89, 9.97, 72.83 and 31.65. Also, the respective minimum values for the variables industrial development, stock market development, credit to the private sector, foreign direct investment, government expenditure, inflation, and interest rate are 18.17, 1.60, 4.95, -0.03, 2.27, 5.39, and 8.92. The analysis period for all variables covers 1981 to 2024, yielding 44 observations. The variables with the lowest and highest standard deviation (variability) are inflation and foreign direct investment, with 16.23 and 0.95, respectively. The data is positively skewed, as four out of the seven variables exhibit positive skewness: credit to the private sector, foreign direct investment, inflation, and interest rate. Kurtosis measures the peakedness of the distribution, and the data indicate that it is leptokurtic (positive), as four variables (credit to the private sector, foreign direct investment, inflation, and interest rate) exceed the threshold of 3.

For the Jarque-Bera statistic, two variables (credit to the private sector and inflation) have high values, hence, with probabilities below 0.05. The remaining five variables have low Jarque-Bera values and p-values above 0.05. Therefore, given the nature of the data in this study, the null hypothesis of normality cannot be rejected. Hence, the study data are normally distributed.

Correlation Analysis

The correlation analysis for the study is shown in Table 2. The variables with the high correlation are government expenditure with stock market capitalization and credit to private sector with industrial production having correlation figures of 0.71 and -0.68 respectively. Their high correlation is because they are all stock market variables that are influenced by the same circumstances. Aside from these variables all other variables including the control variables have low correlation values.

Table 2: Correlation Analysis

Covariance Analysis: Ordinary							
Correlation	IPI	LSMC	CPS	LGE	FDI	INFL	INTR
IPI	1						
LSMC	-0.4637	1					
CPS	-0.6840	0.7099	1				
GE	-0.5609	0.7473	0.4521	1			
FDI	0.0670	-0.0218	0.1923	-0.3084	1		
INFL	0.3085	-0.2677	-0.2460	-0.0723	0.1678	1	
INTR	0.1563	0.0078	-0.0252	-0.2591	0.5044	0.3514	1

Source: Author`s Computation (2026)

Pre-Estimation Analysis

Analysis of Unit Root Test

The unit root test was performed to ascertain the stationarity of the time series data under study to avoid running a spurious regression. Augmented Dickey-Fuller (ADF).

Table 3: Augmented Dickey Fuller Unit Root Test Results

Variables	LEVEL			FIRST DIFFERENCE			
	T-Stat	Critical Values 5%	P-Values	T-Stat	Critical Values 5%	P-Values	Order of Integration
IPI	-1.66709	-2.93694	0.4398	-6.21257	-2.93694	0	I(1)
SMC	-2.78391	-2.9353	0.6941	-5.86526	-2.93899	0	I(1)
CPS	-2.53772	-2.93316	0.1141	-5.61722	-5.68552	0	I(1)
GE	-2.57343	-2.9314	0.2752	-5.63572	5.362914	0	I(1)
FDI	2.86307	-2.935	0.3986	-4.21135	-2.93694	0.019	I(1)
INTR	-2.77415	-2.9411	0.0715	-6.67409	-2.94342	0	I(1)
INFL	-2.61556	2.96041	0.1007	4.56152	-2.96397	0.001	I(1)

Source: Author`s Computation (2026)

The stationarity of the variables was evaluated using the Augmented Dickey-Fuller (ADF) unit root test, a crucial step in time series analysis to prevent spurious regression outcomes. For each variable, the test was conducted at both the first difference and the level. The findings indicate that all the variables are non-stationary at level. When the variables become stationary at first difference.

Cointegration Test

At the 5% significance level, the null hypothesis of no cointegration is rejected by the combined results of the Johansen Cointegration Test and the normalised autocorrelation coefficient (z-statistic) (see Tables 4 and 5). Tables 4 and 5 present the Johansen test results, indicating two (Trace) and one (Maximum Eigenvalue) cointegrating ranks.

Table 4: Johansen Cointegration Rank Test (Trace)

Hypothesized		Trace	0.05	Prob.**
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Critical Value
None	0.373184	50.44163	69.81889	0.6185
At most 1	0.34506	33.62596	47.85613	0.5224
At most 2	0.220763	18.39036	29.79707	0.5373
At most 3	0.163565	9.410514	15.49471	0.3288
At most 4	0.079462	2.980697	3.841465	0.0843

Source: Author`s Computation (2026)

Table 5: Johansen Unrestricted Cointegration Rank Test (Max-eigenvalue)

Hypothesized		Max-Eigen	0.05	Prob.**
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Critical Value
None	0.373184	16.81567	33.87687	0.9286
At most 1	0.34506	15.2356	27.58434	0.7294
At most 2	0.220763	8.979848	21.13162	0.834
At most 3	0.163565	6.429817	14.2646	0.5587
At most 4	0.079462	2.980697	3.841465	0.0843

Source: Author`s Computation (2026)

Since most variables were stationary after initial differencing, another test was conducted to assess the cointegration of the non-stationary variables. These results provide evidence of a long-term relationship between the variables.

The Fully Modified Least Squares Regression Analysis

The Fully Modified Least Squares approach is adopted to analyse the effects of the stock market and financial deepening on industrial output in Nigeria.

Evaluating the impacts of the Stock Market and Financial Deepening on Industrial Output

Table 6: Results of the Effect of the Stock Market and Financial Deepening on Industrial Output

Dependent Variable: IPI				
Method: Fully Modified Least Squares (FMOLS)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LSMC	-0.95639	0.28851	-3.31496	0.0021
CPS	-0.19517	0.18976	-1.02849	0.3106
LGE	-0.00034	0.00016	-2.18268	0.0357
FDI	-0.28505	0.58311	-0.48885	0.6279
INFL	0.05603	0.03253	1.72245	0.0936
INTR	0.13812	0.12576	1.09835	0.2793
C	34.41620	2.22651	15.45746	0.0000
R-squared	0.803937	Mean dependent var		27.99258
Adjusted R-squared	0.77126	S.D. dependent var		6.121705
S.E. of regression	2.927814	Sum squared resid		308.5954
Long-run variance	7.901012			

Source: Author`s Computation (2026)

The effect of the independent variables on industrial output in Nigeria is shown in Table 6. While the effects of the stock market and government expenditure are negative and significant on industrial output, the effect of credit to the private sector is negative but not significant. The effects of inflation and interest rate are positive but not significant. In terms of elasticity, a one (1) per cent change in stock market capitalisation induces a 0.95 per cent change in industrial output in the reverse direction. It means that the stock market's activities have been detrimental to the country's industrial progress. Furthermore, the model's Adjusted R-squared of 0.803 indicates that 80.3% of the variation in industrial output is accounted for by the independent variables. The number of predictors used corroborates that it fits moderately well. The Adjusted R-Squared value reinforces the model's fit to the data used in the analysis.

Investigating the Interactive Effect of the Stock Market and Financial Deepening on Industrial Output

The results of the interacted effect of the stock market and financial deepening on industrial output in Nigeria is shown in Table 7. The value of the interacted coefficient of the stock market and financial deepening on industrial output is positive and not significant. The positive implication of this interaction suggests that the stock market and financial deepening expand and reinforce each other in affecting industrial development. However, this interaction is weak in Nigeria in terms of impacting on the productivity of the industrial sector.

The adjusted R-Squared for the model shows that 81 percent of the variation in industrial output is explained by the variations in the independent variables including stock market performance, credit to private sector, government expenditure, foreign direct investment, inflation and interest rate.

Table 7 Results of the interacted Effect of the Stock Market and Financial Deepening on Industrial Output

Dependent Variable: IPI				
Method: Fully Modified Least Squares (FMOLS)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LSMC	-1.78966	0.65980	-2.71242	0.0103
CPS	-1.53237	0.95607	-1.60279	0.1180
LSMC*CPS	0.14524	0.10289	1.41169	0.1669
GE	-0.00049	0.00019	-2.54731	0.0154
FDI	-0.35827	0.59067	-0.60655	0.5481
INFL	0.05628	0.03290	1.71048	0.0960
INTR	0.15765	0.12722	1.23916	0.2235
C	42.44675	6.18861	6.85885	0.0000
R-squared	0.81061	Mean dependent var		27.99258
Adjusted R-squared	0.772732	S.D. dependent var		6.121705
S.E. of regression	2.91838	Sum squared resid		298.0929
Long-run variance	8.071665			

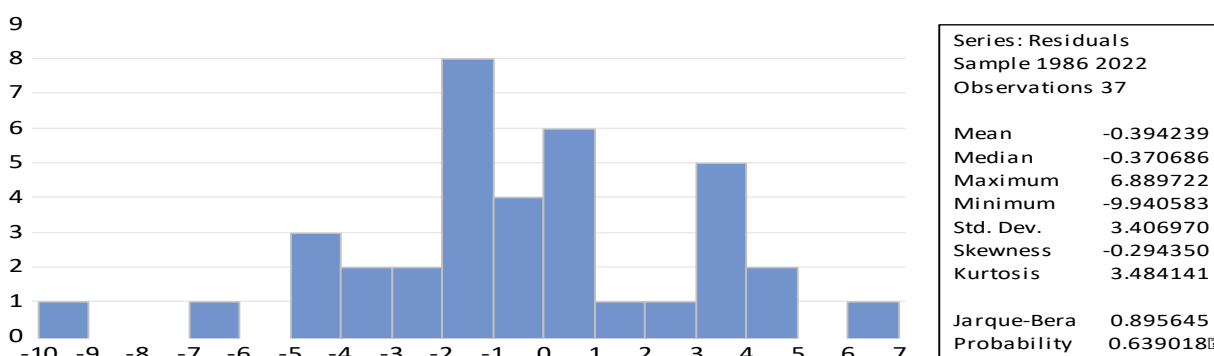
Source: Author’s Computation (2026)

Model Diagnostics

Normality Test

The normality test for the data utilized in this study is shown in Figure 1. While the data is negatively skewed, the Kurtosis shows an average height with 3.5. Therefore, the distribution is mesokurtic falling into the category of a normal distribution. The Jarque-bera is 8.95 with a probability of 0.639 indicating that we cannot reject the null hypothesis of a normal distribution.

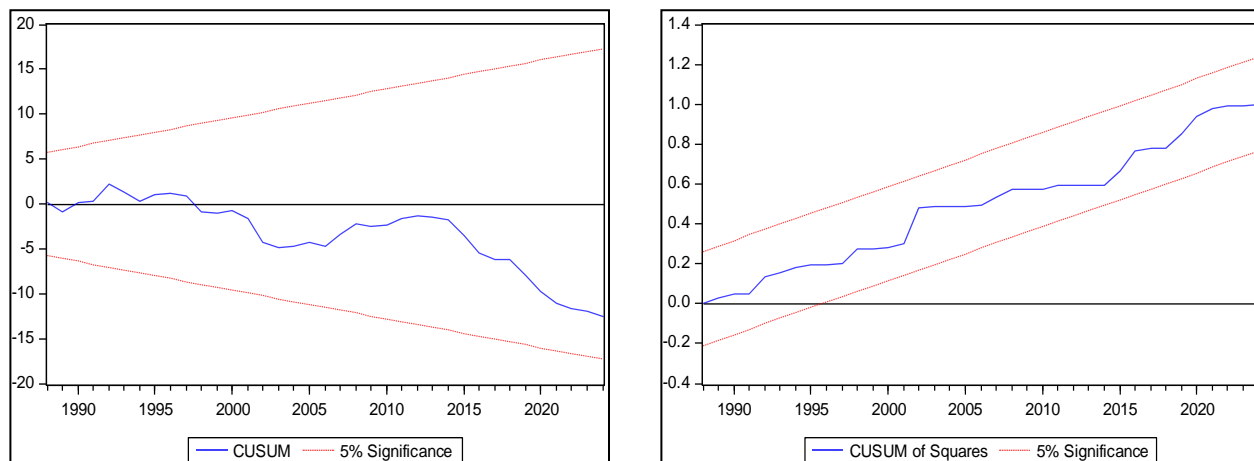
Figure 1: Historical -Normality Tests



Stability Test

The model stability test is shown in Figure 2. The test is conducted using the CUSUM and CUSUM Squares tests. The result of the test shows that the model and data are stable for the period and there are no structural breaks in the data for the period of analysis. The blue lines (curves) in the figures did not fall out of the margins of the red lines.

Figure 2. CUSUM and CUSUM Squares Tests



CONCLUSION AND RECOMMENDATION

This study assesses the impact of the stock market and financial deepening on Industrial output in Nigeria. The paper draws on a time series spanning 1981 to 2024. The study uses the Fully Modified Ordinary Least Squares (FMOLS) method for data analysis. The study's analysis led to the following conclusions: First, there is a significantly negative relationship between Stock Market Capitalisation (SMC) and Industrial Output in Nigeria. In particular, the regression coefficient of -0.96 suggests that all else being equal, a one-unit increase in stock market capitalisation results in an approximate 0.96-unit decline in industrial output. The negative relationship between the stock market and industrial development is supported by some empirical studies (Uremadu et al., 2019; Udofia et al., 2022). The negative effect of the stock market on industrial development suggests that the market is not favourably disposed to industrial lending and that there is a tendency toward crowding out. Also, the country's infrastructure does not support investment in industrial businesses, and the long-term gestation period associated with returns on investment further complicates the situation.

The study also finds that financial deepening has a negative, insignificant effect on industrial growth in Nigeria. The negative effect of financial deepening on the industrial sector is supported by some existing empirical studies (Alenoghena et al., 2025; Ngong et al., 2021). The economic intuition of a negative effect of financial deepening on industrial output implies that the flow of credit to the industrial sector may be hampered. Also, it may imply that the interest rate on available loanable funds is too high for industrial investment, which often has a long gestation period. It may also signal that the depth of the financial markets is shallow, based on poor policy management and weak institutions.

The final finding shows that the interactive effect of the stock market and financial deepening is positive but not significant on industrial output in Nigeria. The implication of this interaction is that these two variables, which individually have negative effects on industrial output, may work together to support industrial development; however, the evidence remains too weak to draw firm conclusions about their joint impact. The economic intuition here is that when the stock market is more developed, the ability of financial deepening to enhance industrial output also increases, and vice versa. In economic terms, this suggests that a deeper financial system and a stronger stock market may function better together than independently.

The general and particular findings in this study suggest some policy directions which may provide a basis for practical recommendations:

First, Augment the Productive Connection between Industry and the Stock Market. The Nigerian government and financial regulatory authorities must strengthen mechanisms that direct capital market resources into the industrial sector. Policies that promote the public listing of industrial companies and offer targeted investment incentives can increase capital flows to productive businesses. This study offers recommendations to improve the understanding of how stock market activity affects industrial production in Nigeria.

Second, Promote Financial Deepening in the Productive Sector: The government should implement policies to ensure that financial deepening improves credit availability for the industrial sector. This should not just mean expanding liquidity across the entire economy. Monetary and financial authorities should encourage banks and financial institutions to channel more funds to manufacturing and other productive activities. They can do this through industrial credit guarantee schemes, targeted lending, and by lowering borrowing costs for industrial firms in strategic sectors.

Third, Improve Access to Long-term Finance: The development of a country's industrial sector relies heavily on low-cost long-term financing. Yet the situation in developing countries like Nigeria shows that industrial firms face short-term, expensive credit facilities due to the poor depth of financial markets. Policymakers should make a conscious effort to develop specialised financial institutions, such as industrial banks, corporate bond markets, and special intervention funds, to provide the necessary long-term, affordable financing for industrial investment. This would minimise the overreliance of industrial firms on short-term bank loans.

Fourth, Limit Excessive Speculative Trading: Given the significant adverse impact of stock market liquidity on industrial output, regulatory bodies such as the Securities and Exchange Commission (SEC) should adopt strategies to deter excessive speculation and encourage behaviours aligned with long-term investment. This encompasses implementing transaction taxes on short-term trades and promoting longer holding periods for industrial equity among institutional investors.

Fifth, Bolster the Connection Between the Financial Market and the Real Sector: Strategies for developing financial markets should be integrated with industrial policy frameworks. For example, the creation of bond markets specific to certain sectors or equity funds targeting industrial growth could increase capital availability for the agro-processing and manufacturing sectors.

Sixth, Support Capital Market Reforms with Macroeconomic Stability: To foster sustained confidence and increase productive investment in the stock market, it is crucial to maintain macroeconomic stability, especially regarding exchange rates, inflation, and interest rates. Continued commitment to these foundational economic indicators will not only attract more foreign and domestic investment but also decisively position the industrial sector for robust, long-term advancement.

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