Capital Market - Manufacturing Sector Relationship Revisited in Nigeria

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Abstract
Based on the financial intermediation theory, this study examined the impact of capital market on the manufacturing sector performance in Nigeria from 1985 to 2023. Market capitalization (MKT), all-share-index (ASI), and total value of trades (TVT) were used to measure capital market. The auto regressive regression showed that TVT had positive and significant relationship, ASI only had a positive relationship but market capitalization had negative and insignificant relationship on the manufacturing sector performance. The results imply that manufacturing sector can perform better if capital market reduces borrowing constraint, improve capital allocation efficiency, and appropriately absorbs foreign advanced technologies. Policymakers should guarantee capital market liquidity and timely channel of funds for manufacturing sector performance.

1 Introduction

The last decades have recorded a growing acceptance of the idea that manufacturing sector is fundamental to economic growth. In his engine of growth, Kaldor (1967) articulated how society with well-developed manufacturing sector can drive productivity growth through technological advancements, intersectoral linkages while ensuring equilibrium job creation in an economy. Loto (2023) posited that manufacturing is a unique and irreplaceable force for any economy that hope to secure sustainable return on investment. As at January 2025, the sector that is expected to be an engine of growth recorded -0.66 on the Business Confidence Monitor (BCM) Index (Nigeria Economic Summit Group, 2025). The dip in manufacturing output and capacity utilization has led to a 29.99 percent reduction in manufacturing job creation between July, 2023 and January, 2024(Business Day, 2025, February, 20). Manufacturing Association of Nigeria (MAN) consistently raised an alarm over the abysmal performance of manufacturing sector with its possibility of costing the economy $1 trillion targets by end of 2026(Punch Newspaper. December, 2).

An increasingly common argument in favour of robust performance in the manufacturing sector is to ensure efficient mobilization of funds in the capital market. Chou (2007) argued that if efficiently utilized, resources that are mobilized from the surplus to the deficit through the capital market could be a promising intermediation vehicle, by lowering cost and helping to overcome liquidity constraint. Capital market is an essential mechanism for obtaining the institutional capital required to support infrastructure and other real sector activities via the sale and acquisition of financial instruments with a comparable length of maturity (Rodrigue, 2020). Laeven (2014) argued that underdeveloped capital market is a major factor responsible for poor performance of manufacturing output in many developing economies. Capital market assists businesses in overcoming moral hazards and adverse selection issues, which in turn lowers the costs of external funding as well as transaction costs in general (Rajan & Zingales, 1998; Rodrigue, 2020; Bamishe & Ajao, 2024). An efficient capital market is key to financial liquidity, risk diversification, the mobilization of funds, and corporate control and accountability (Angaye & Frank, 2020). An efficient stock market can create a more favorable environment for manufacturing companies to access capital, invest in growth, and ultimately enhance their productivity and profitability (Erhijakpor et al, 2022).

This study revisited the role of capital market on the performance of the Nigeria manufacturing sector. The controversial position in the literature, covering the full gamut of positive, to negative and to no discernible impact makes this study compelling. This study is fundamental since the sector that is expected to be leading has been weak and sluggish averaging 10 percent annual contribution to GDP in almost 2 decades, falling far short of globally competitive levels, (KPMG, 2023). This is a conundrum at a time when the Nigerian economy is sensitive to fluctuating crude oil prices on the international market (Business Day, November 9, 2023), at a time she experiences foreign exchange shortages, high unemployment rate and aim to achieving 2030 Agenda - Industrialize Nigeria. This study is crucial since it would lay to rest the question of whether government should urgently harness capital market reforms for manufacturing developmental purposes. Following this introduction, the next section, 2, reviews the literature, while section 3 discusses technique. Section 4 presents the outcomes and section 5 concludes with recommendations

2. Theoretical and Empirical Review of the Literature

Theoretically,the capital market should enhance the expansion of the manufacturing sector by alleviating borrowing constraints, fostering competition, optimizing capital allocation efficiency, assimilating foreign sophisticated technologies, and mitigating the risks associated with innovative operations. (Bencivenga & Smith, 1993; Chou, 2007). Shaw (1973), and Mckinnon (1973) argued that capital market through efficient financial intermediation play a critical role in the growth, integration, and expansion of economies through the transfer of resources the savers to the investors through the capital market. For manufacturing to innovate and experience significant growth, there must be an efficient capital market to guarantee the effective and timely channelling of these funds (Osaze, 2000). Since the manufacturing sector requires significant amount of capital to import machinery and equipment for instance, capital market can serve as a platform to match the savings (Chou, 2007). Studies like Levine (1991), Obstfeld (1994), Levine & Zervos (1996), Acemoglu & Zilibotti (1997), Bekaert et al (2005), Gupta & Yuan (2009), Ojo (2012), and Ayadi (2021) investigated the role of capital market on growth. Obstfeld (1994) investigated how financial development affects growth by facilitating risk management Acemoglu and Zilibotti (1997) investigated savings mobilization, whereas King and Levine (1993) developed a model in which financial systems assess prospective entrepreneurs and mobilize savings to fund the most promising productivity-enhancing activities. They concluded that the capital market is a major factor to achieve economic growth.

On the other hand, Bencivenga and Smith (1991), noted that capital markets activity may be harmful to growth. Stiglitz (2000) believed that capital market may have no real effect on economic growth. Meanwhile, Cheng & Zhu (2024) argued that unbiased understanding of the role of capital market on economic growth can better be understood by focusing on the manufacturing sector which need huge capital investment to grow. Loto(2023) argued that manufacturing sector remains the crucial engine to move the economy forward and sustainably.

Okpara (2010) examined the role of capital market activities on the performance of the Nigerian manufacturing sector. The result indicated that there exists a significant relationship capital market activities and manufacturing sector. Atje and Jovanovic (1993) employed panel data analysis and concluded that capital market is key to manufacturing sector growth. Bekaert, Harvey, & Lundblad (2011) used panel data to reach similar conclusion**.** Pan and Mishra (2016) discovered that an inefficient capital market reduces the long-run productivity of the Chinese economy by increasing transaction costs or unfair stock prices. Cheng and Zhu (2024) investigated the impact of Chinese capital market liberalization on total business efficiency and process of action utilizing the Shanghai Hong Kong capital market program. The results confirm positive and significant relationship between Shanghai Hong Kong and business efficiency, a conclusion that remains valid after several analyses. Levine (2021) examined the links between the operation of the financial system, economic growth and inequality. He found out that efficient capital market encourages economic growth via improved resource allocation, technological improvement in the manufacturing sector. This aligned with the work of Levine & Zervos (1996) who conclude that financial system boosts economic wealth by promoting more consumer expenditure and investment in manufacturing companies.

A number of scholars have challenged the validity of the above conclusion. Kose et al. (2009), for example, used multinational data to investigate how stock market liberalization a ffected TFP but were unable to concur that it encouraged TFP improvements. Kaminsky and Reinhart (1999) and Glick and Hutchinson (2001) felt that capital market liberalization could lead to financial crises in emerging nations by encouraging risk-taking behaviour.

Nyong (1997) supported the argument that capital market development is not having significant on the Nigeria manufacturing sector. Levchenko et al. (2009) investigated the relationship between stock market openness and TFP using industry data.Their research indicated that stock market openness is key to industry's efficiency processes, but only in the near run. Offum and Ihuoma (2018) investigated the causal relationship between the capital market and the succe ss of Nigeria's industrial sector between 1985 and 2015.
The authors discovered that the market capitalization ratio and total value of shares traded ratio have a one-way causal relationship with industrial performance. While Erhijakpor et al (2022), based on multiple regression, investigated the relationship between capital market, and industrial development and discovered that the phenomenon affects the Nigeria industrial performance significantly, Bamishe & Ajao (2024) report was positive but negligible. Controversial position, ranging from positive, to negative and to insignificant can be noticeable from the empirical review, it is therefore important to lay the argument to rest.

3 Materials and Methods

3.1 Model Specification

This study follows the model specification of Atje and Jovanovic (1993) and Okpara (2010) that analyzed the role of the capital market on the industrial sector in Nigeria. The model adopted is expressed in the equation below:

$$lnMANG_t = \alpha + \beta_1 lnMKTt + \beta_2 lnASI_t + \beta_3 lnTVT_t + \beta_4 lnINFL_t + \beta_5 lnINTR_t + \mu \qquad (3.1)$$

Where: $MANG_t$ = Manufacturing Sector Growth at time (t), MKT_t = Market Capitalization at time (t)

ASI_t = All-Share Index at time (t), TVT_t = Total Value of Trades at time (t), $INFL_t$ = Inflation Rate at time (t)

$INTR_t$ = Interest Rate at time (t) and μ = The error term.

Table 3.1: Definition, Measures and A Priori Expectation of Variables

Variables	Definition	Measurement	A-Priori Expectation
$MANG_t$	Manufacturing Growth at time (t)	Manufacturing growth is measured as a rate of change in the manufacturing sector performance	Dependent Variable
MKT_t	Stock market capitalization at time (t)	Stock market capitalization is measured by the performance return of the total value of all listed stocks on the Nigerian Exchange Group (NGX)	$\beta1 > 0$
ASI_t	All-Share Index at time (t)	All-Share Index is measured by the average value of the share price of all companies	$\beta2 > 0$
TVT_t	Total value of trades at time (t)	Total value of trades is defined as the total monetary worth of transaction in the capital market	$\beta3 > 0$
$INFL_t$	Rate of inflation at time (t)	The inflation rate is quantified as the rate of change in the consumer p rice index.	$\beta4 < 0$
$INTR_t$	Interest rate at time (t)	Interest rate is measured as the cost of borrowing funds from financial institutions	$\beta5 < 0$

Source: author's computation, 2025

3.2 Estimation Technique

In estimating this model, the multiple regression analysis of Autoregressive Distributed Lag (ARDL) technique was employed. To ascertain the stationarity of the data, Augmented Dickey-Fuller (ADF) Unit root test was conducted. The ARDL Bound Test is used to evaluate the speed of adjustments. To estimate the model specified above, the following techniques would be followed. Afterwards, the ARDL error correction representation technique was be utilized to determine the long-run and short-run dynamics after establishing cointegration. Assuming that every variable is stationary, cointegrated, and has been statistically determined to have the ideal number of lags for both dependent and exogenous variables, the following is the ARDL model's equilibrium error correction representation as below:

$$\Delta lnMANG_t = \alpha_0 + \sum_{i=1}^{m} \beta_1 \Delta lnMANG_{t-i} + \sum_{i=1}^{n} \beta_2 \Delta lnSMC_{t-i} + \sum_{i=1}^{n} \beta_3 \Delta lnASI_{t-i} + \sum_{i=1}^{n} \beta_4 \Delta lnTVT_{t-i} + \sum_{i=1}^{n} \beta_5 \Delta lnINFL_{t-i} + \sum_{t=1}^{n} \beta_6 \Delta lnINTR_{t-i} + \alpha_1 lnMANG_{t-i} + \alpha_2 lnSMC_{t-i} + \alpha_3 lnASI_{t-i} + \alpha_4 lnTVT_{t-i} + \alpha_5 lnINFL_{t-i} + \alpha_6 lnINTR_{t-i} + \mu_{it} \quad (3.2)$$

3.3 Data

The data utilized in this study were mostly gathered from secondary sources in order to investigate how the performance of the capital market has impacted the performance of Nigeria's manufacturing sector. Annual secondary time-series data from 1985 to 2023 were used, depending on data availability.

4 Results

4.1 Unit Root Test

A time series' stationarity can significantly affect its features and forecasting behavior.The failure to co nvert a time series to the appropriate form of stationarity can result in erroneous results (Greunen et al, 2014). To ensure the stationarity of the variables, the research adopted Augmented Dickey-Fuller (ADF) unit root test in table 4.1.

Table 4.1: ADF Result

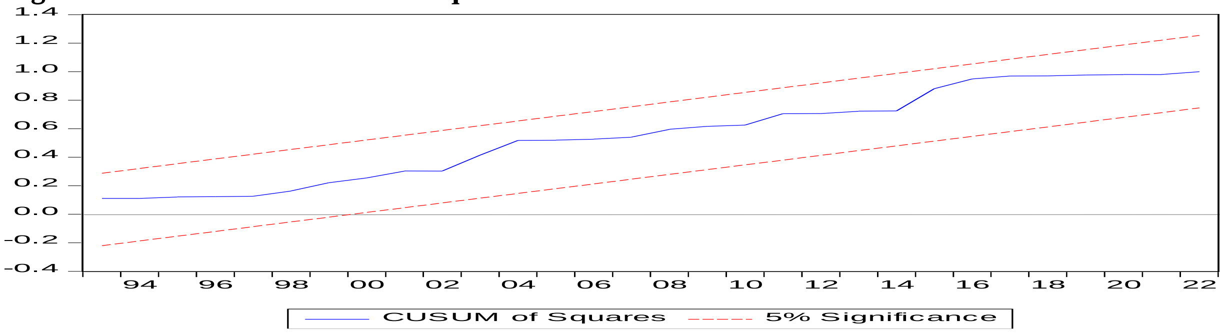
Variables	ADF T-Statistics	Critical Value 5%	Prob Value	Level of Stationarity	Order of Integration	Decision
MAG	-5.9941	-2.9434	0.0000	At Levels	I(0)	Stationary
MAC	-8.3898	-2.9639	0.0000	First Difference	I(1)	Stationary
ASI	-6.0795	-2.9484	0.0000	First Difference	I(1)	Stationary
VTR	-6.6372	-2.9458	0.0000	First Difference	I(1)	Stationary
INF	-4.5067	-2.9677	0.0013	First Difference	I(1)	Stationary
INTR	-3.0379	-2.9434	0.0405	At Levels	I(0)	Stationary

Source: Author's construct 2025

The result above shows MAG and INTR, with ADF of -5.994165 and -3.037920 respectively are stationary at level and integrated at I(0). MAC, ASI, VTR, and INF with ADF of -8.389806, -6.079503, -6.637256, and -4.506711 respectively are stationary at first-order difference and integrated at I(1). It is clear from table 4.1 that the P-values of all the variables are below the 5% level of significance. This implies that all the variables employed are stationary and do not exhibit a unit root, hence appropriate to use ARDL model for estimation technique.

4.2. Stability Test

Figure 4.2: Recursive CUSUM of Square Test



Source: Author's construct, data computed using E-views 10

In Figure 4.2, A diagnostic test is performed to determine the stability of the predicted model. A model is considered stable if the CUSUM of Squares line stays within the 5% boundary line. The graphic shows that the CUSUM of Squares line does not pass the 5% boundary line, showing that t he calculated model's coefficients are stable.

4.3 Multicollinearity Test

	Coefficient	Uncentered	Centered
Variable	**Variance**	**VIF**	**VIF**
MAG(-1)	0.016483	1.694163	1.239932
MAC	3.96E-08	6.166815	3.697014
ASI	1.60E-08	9.235776	3.801308
VTR	8.32E-06	4.227653	2.533545
INF	0.005176	3.161247	1.374338
INTR	0.113871	36.94347	1.621746
C	49.60747	45.06828	NA

Source: Author's construct, data computed using E-views 10

The Variance Inflation Factor (VIF) is used to test for multicollinearity between the variables. This test is needed because we need to know if the independent variables are truly independent of each other. The decision rule here is that when the Centered VIF values are less than 10, then we have no severe multicollinearity in the variables. From Table 4.3 above, we can conclude that there is no multicollinearity.

Table 4.4: Auto Regressive (AR) Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.*

MAG(-1)	0.103724	0.128388	0.807897	0.4255
MKT	-0.000487	0.000199	-2.445614	0.0205
ASI	0.000213	0.000127	1.684643	0.1024
VTR	0.006118	0.002884	2.121136	0.0423
INTR	0.042986	0.337448	0.127387	0.8995
INF	-0.018451	0.071944	-0.256463	0.7993
C	0.527913	7.043257	0.074953	0.9407

R-squared	0.653633	Mean dependent var	-0.989255
Adjusted R-squared	0.653633	S.D. dependent var	9.898749
S.E. of regression	5.825702	Akaike info criterion	6.389091
Sum squared resid	1221.797	Schwarz criterion	6.432630
Log likelihood	-117.1982	Hannan-Quinn criter.	6.404441
Durbin-Watson stat	1.493339		

Source: Author's construct, data computed using E-views 10

Table 4.3 reveals that ASI, VTR, and INTR rate are all positively related to the dependent variable while MKT and INF rate are both negatively correlated with the manufacturing sector growth. The durbin-watson statistic (1.493339) which is approximately 2
falls within the acceptability region, indicating the absence of autocorrelation. The coefficient determination of 0.653633 shows that 65 percent of the total variation of manufacturing sector growth is explained by the variations in the independent variables.

4.4 Co-integration Test: Autoregressive Distributed Lag Model Cointegration Bound Test

Table 4.4 is the ARDL Bounds Test to check for the long run relationship between the variables.

F-Bounds Test				
Test Statistic	**Value**	**Signif.**	**I(0)**	**I(1)**
			Asymptotic: n=1000	
F-statistic	8.214646	10%	2.08	3
K	5	5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.15

Source: Author's construct, data computed using E-views 10

The result in table 4.4 shows that F statistics values is greater than both the lower and the upper bound values, hence, there is a significant and stable long-run relationship between manufacturing sector growth and the independent variables.

4.2.5 Autoregressive Distributed Lag Results

Table 4.5 shows the result for error correction which measure the speed at which the deviation of the manufacturing sector growth from its equilibrium level is adjusted. The table presents the estimated short-run relationship between the dependent variable and the regressors, along with the error correction term computed from the ARDL model.

Table 4.5: Autoregressive Distributed Lag (Short-run dynamics Error Correction Model)

Error Correction Result				
Restricted Constant and No Trend				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
CointEq(-1)*	-0.8962	0.1078	-8.3068	0.0000
R Squared	0.6536	Mean dependent var		-0.9892
Adjusted R Squared	0.6536	S.D. dependent var		9.8987
Standard Error of Reg	5.8257	Akaike info criterion		6.3890
Sum of Squared Residual	1221.7	Schwarz criterion		6.4326
Log Likelihood	-117.198	Hannan-Quinn criter.		6.4044
Durbin Watson Test	1.4933			

Source: Author's construct, data computed using E-views 10

The result indicates that the probability value of CointEq (-1), which is 0.000 is significant at 5 percent confidence level. It implies that the errors can be corrected even with short-run disequilibrium. The value for the equilibrium error value is -0.896276 and significant, implying the presence of a long-run association between the regressand and the regressors after short-run disequilibrium. Specifically, the high magnitude of the error correction value suggests that 89 percent of the disequilibrium each year is adjusted in the following year which indicates that the model is a good fit. Additionally, the DW value of 1.49 is permissible, indicating the absence of serious autocorrelation.

Table 4.6: Autoregressive Distributed Lag (Long-run Model)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MAC	-0.000543	0.000214	-2.539533	0.0165
ASI	0.000238	0.000143	1.658354	0.1077
VTR	0.006826	0.003157	2.162360	0.0387
INF	-0.020586	0.080027	-0.257239	0.7988

INTR	0.047961	0.378428	0.126738	0.9000
C	0.589007	7.827859	0.075245	0.9405
EC = MAG - (-0.0005*MAC + 0.0002*ASI + 0.0068*VTR -0.0206*INF + 0.0480				
*INTR + 0.5890)				

Source: Author's construct, data computed using E-views 10

Table 4.6 displays the equilibrium long-run relationship between the dependent variable (MAG) and the explanatory variables (MAC, ASI, VTR, INF, INTR), as well as the levels equation of the model.

Inflation has negative relationship with manufacturing sector growth. However, the value is not statistically relevant in the long run, indicating that inflation may not have a significant impact on the level of manufacturing sector growth over a long economic duration. Oddly, the coefficient of interest rate is positive at 0.0479 but not statistically significant given a probability value of 0.9000. The suggests that interest rate has the potential to drive manufacturing growth. The insignificant influence may be as a result of high interest rate for industrial credit.

Market capitalization has an unexpected negative and insignificant influence on manufacturing sector growth.This result contradicts Oke and Adeusi's (2012) findings, which indicated a positive but negligi ble association between market capitalization and the number of deals, whereas all shares index, total n ew issues, and total value of transactions had negative and insignificant relationships with GDP.

Although the work of Donwa and Odia (2010) discovered that market capitalization and value of transactions had a positive but insignificant impact on manufacturing growth. ASI has the expected positive relationship with manufacturing performance with a coefficient of 0.000238 but lost its significance at all levels given the probability value of 0.1077. This suggests that ASI is not an important driver of manufacturing growth in Nigeria.

Finally, the long-term analysis indicates that VTR has a significant influence on the Nigeria manufacturing sector. The long run coefficient for value of trades is 0.006826, indicating a positive link between the two variables.

This means that if the value of trade increases by one-unit, the manufacturing sector growth in Nigeria would increase by an average of 0.68%, holding all other variables constant. This study supports the work of Ojo (1984) who concluded that capital market is relevant in promoting the growth of the manufacturing sector. It also agrees the findings of Atje and Jovanovic (1993) who discovered a strong link between industrial sector growth and stock market value. It can be concluded that the Nigerian capital market has the capacity to boost Nigeria manufacturing growth but lack the meaningful capacity to do so.

5 Conclusion and Recommendations

Based on ARDL method, the study finds that MKT has a negative and statistically significant impact on the manufacturing sector performance in Nigeria in the long run. The study finds that ASI has a positive but not statistically significant impact on the manufacturing sector performance in Nigeria over a long period of time. VTR has a positive and statistically significant impact on the manufacturing sector performance in Nigeria in the long run. This study concluded that capital market could be a mechanism to boost manufacturing sector performance in Nigeria. Overall, this study provides valuable insights into the relationship between the capital market and manufacturing sector performance in Nigeria, with significant policy implications for the country's economic development. The value of capital market transactions should be increased, and policymakers should implement supportive policies such as incentivizing manufacturing investment, improving infrastructure, and encouraging innovation and technology adoption to improve manufacturing sector performance and overall economic growth.

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