

**FINANCIAL DEVELOPMENT AND MANUFACTURING  
SECTOR PERFORMANCE IN NIGERIA, (1986 – 2021)**

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**Abstract**

This research investigates Financial Development and Manufacturing Sector Performance in Nigeria. The study used the Ex-post facto research design and annual time series from 1986 to 2021 which was sourced from Central Bank of Nigeria (CBN) Statistical Bulletin of various years and World development indicators. Principle component analysis were employed to construct index for the independent variables. The study employed Unit Root Test, the Error Correction Model (ECM) and ARDL Estimator were used in testing the hypotheses. The study used financial intermediation and financial liberalization measures to proxy financial development, while manufacturing sector growth (MOG) was used as the dependent variable. The study used deposit rate and prime lending rate as moderating measures. The Results of the study revealed, Financial Liberalization explained -31% of changes that take place in manufacturing sector through exchange rate liquidity ratio and nominal interest rate with a t-test of 6.366 while Financial Intermediation explained 85% of changes that take place in Manufacturing Sector in Nigeria (MOG) through total loan and advance, loan to deposit and private sector credit with a t-test of 6.8150. The variables also have positive significant effect on the dependent variable except financial liberalization that has negative significant effect on manufacturing sector output. The study, concludes that regulatory authorities should concentrate more on promoting good saving mind-set, increase quality and quantity of money supply in the economy, enhancement of exchange rate, improvement of private sector credit and create effective mobile payment system as this will lead to an improved manufacturing sector performance which will in turn lead to economic growth.

## 1. Introduction

Financial Development is the increase in supply of financial assets to the economy and it involves creating an effectual and competent enabling intermediation process and policy that target the enhancement of life of populace in the country and development of the entire economy.

Financial development is a multidimensional model and constitutes a potentially important system for long run growth and development of the economy (Camillus, 2019). It involves primarily, mobilizing and allocating of resources for productive use and providing monetary structures for growth. The effectiveness and efficiency in performing these roles depends mostly on the intensity of development of the financial system.

Developing economies that is working towards the enhancement of their economy is anticipated to increase the provision of financial services by taking on financial policies such as financial liberalization, efficient intermediation process and other financial reformation process that boost the financial development of the country and also have positive upshot on economic growth (Albert, Samson, Gbemniyi & Olayemi, 2021).

The unfailing long run growth of an economy would require a consistent long run growth of various sectors that made up the economy and in Nigeria, the manufacturing sector has become one of its major economic sector that spurs growth. The main argument in this direction is that majority of Nigerian investments are related to the non-oil sector such as the manufacturing sector, agricultural sector, real estate, telecommunication and their operations depend heavily on the efficient operation of the financial system. The efficient effects financial development has on various sectors have always fascinated policymakers, practioners, academics and others (Ustarz & Fanta 2021).

Pham and Lipsy (as cited in Aminu, Rafiu & Oloyede, 2019) state that a working manufacturing sector is an antecedent to rapid economic growth, solution to increased rate of unemployment and instrument for sustainable economic development over a long period of time. Government has recognized the key role of manufacturing sector in driving the Nigerian economic growth. Also, particularly to spur the value of the currency globally, government put restriction on importation of goods that can be locally manufactured in the country.

In 2016 as a way to revitalized the manufacturing sector, the slogan of 'Buy made in Nigeria to Grow the Naira' became a motto that motivated investors in the manufacturing sectors. Recently,

the Nigeria government introduced policies that will increase the provision of financial services such as financial innovations, financial intermediaries process with wider choice of products and services geared to all levels in the society and sectors that enhanced growth especially manufacturing sector, agricultural sectors and also to cottage entrepreneurs.

The introduction of Structural Adjustment Programme (SAP) and Financial Liberalization Policy (FLP), manufacturing sectors lending limit and restrictions by banks were abandoned and private sector participation in manufacturing through foreign direct investments (FDI) increased (Ehiedu, Onuorah & Osakwe, 2022). Despite the concerted efforts exerted by the government to enhanced financial development through intermediation role, liberalization policies, banking reformation policies and the diverse Central Bank of Nigeria industrial financing programmes and initiatives, seems not to have positive impact on the growth of the manufacturing sector in the nation (Aminu, Rafiu & Oloyede, 2019).

The World Bank and central bank of Nigeria official statistics show that the annual growth rate of Nigeria manufacturing sector has slowed over the years. It fell from 2.3 percent in 1999 to 0.2 percent in 2000 and further declined to -10.8 percent at the end of 2003. Although, the manufacturing sector experienced an increase of 21.8 percentage output in 2013. In 2015 and 2020, it dropped drastically to -1.5 and -2.8 respectively. The continual decline on the growth of the manufacturing sector in Nigeria may be allied to the nation's inadequate financing of the non-oil sectors, lack of access to credit and inconsistent policies.

Nevertheless, prior studies such as Mesagan, Olunkwa and Yusuf (2018), Aminu, Rafu and Oloyede (2019), Akintola, Orji-Okoro and Itodo, (2020); Mbah and Okoli (2020), Albert, Samson, Gbemniyi and Olayemi, (2021), investigated financial development and manufacturing sector performance and use several financial intermediation measures in a single model but failed to address the policies aspect of financial development such as financial liberalization and how the concept could enhance the resilience of intermediaries in promoting manufacturing sector in Nigeria. They also fail to disintegrate the wider scope of financial development by taking cognizance of the policy aspect of financial development. This has created a huge gap that this research has filled.

This is what motivated the researchers to embark on this study by investigating financial liberalization and financial intermediation on manufacturing sector performance in Nigeria. It is imperative to examine the effect of financial development (intermediation and policies ) on specific economic sectors that make-up the economy, for example the manufacturing sector. This research is original and novel because there is not much empirical study that has predicted financial intermediation and financial liberalization on manufacturing sector performance in one study.

The specific objectives are to (1) assess the impact of financial intermediation on manufacturing sector output in Nigeria . (2) To evaluate the effect of financial liberalization on manufacturing sector output in Nigeria. The contribution of the study results will provide empirical evidence that will be relevant for policy makers and monetary authorities in Nigeria and other developing economies in developing the financial system and boost real sector growth.

## **2. Literature Review and Development of Hypotheses**

### **2.1. Financial Development**

Financial development is the development on the financial system of an economy. Development of the financial system could be done through increase of supply of financial assets of the economy and creating an efficient and effective enabling intermediation process and policies targeting the progress of life of people in the country and enhancement of the entire economy. Financial development is a critical and perplexing part of industrialization which spurs growth of any developing economy. In view of that, financial development gives improved information about possible profitable investments and promotes most favorable allocation of capital to the real sector of the economy.

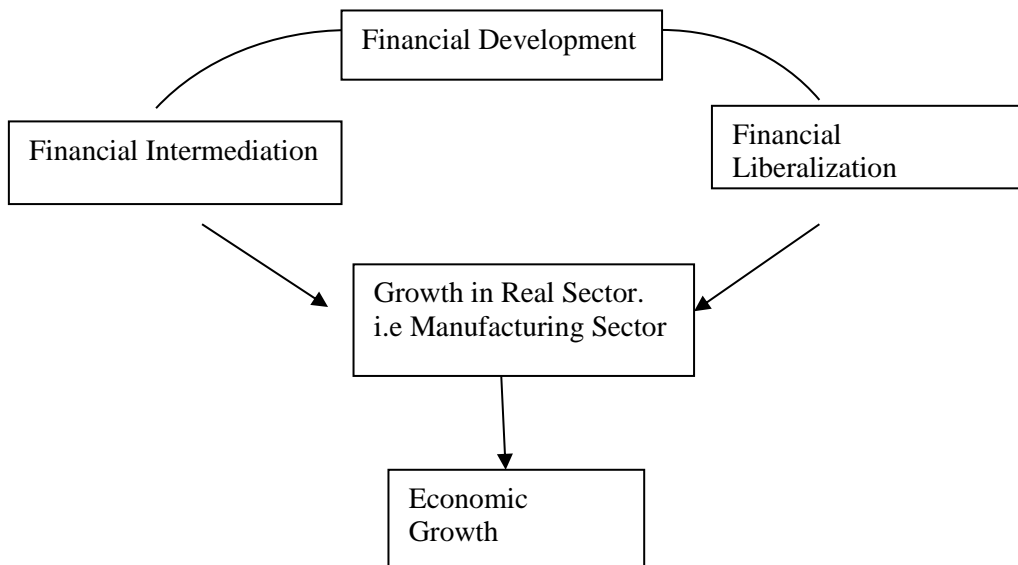
Government most often facilitates its financial system through interventions by promulgating of laws, regulations and policies. The focal emphasis of financial policies lies on the financial development of a country (Kayode, Ibenta and Owoputi, 2020).

### **2.2. Manufacturing Sector**

Manufacturing can be defined as the value added production of products for use or sale with the use of machines and labour, biological and chemical processing formation (Attah & Obumneke,

2016). It also, refers to series of human activity such as handicraft and high tech, but mainly applied to industrial production, in which raw goods are transformed into finished goods on a large scale. Manufacturing sector alternate in all types of economic systems. In free market economy, manufacturing sector is directed towards mass production of goods for sale to consumers at a profit. However, in a communalist economy, manufacturing sector is directed frequently by the state to supply a central planned economy. In a mixed economies, manufacturing sector operate under some level of government regulations.

### 2.3. Conceptual Framework



**Figure 2. 1:- Conceptual Framework of Financial Development Measures.**

**Source: Authors Concept**

The figure 2.1 depicts the conceptual framework of financial development and real sector growth which stimulate general development of the entire economy. Financial development is the improvement on the financial system of an economy. It could be done through increase of supply of financial assets of the economy and creating an effective and efficient enabling intermediation process targeting enhancement of real sectors such as the manufacturing sectors, agricultural

sectors, e.t.c which stimulate improvement of the entire economy.

The figure shows that most often, the Central Bank of Nigeria and government improves on its financial system through interventions by promulgating of laws, regulations and policies. The focal emphasis of financial policies lies on the financial development of a country. (Kayode, Ibenta, and Owoputi, 2020) Hence, a vastly developed financial system is regarded as a channel to economic growth. Some of the policies put in place by Nigerian government in trying to achieve a robust financial development is the financial liberalization policy.

#### **2.4. Financial Intermediation and Manufacturing Sector Performance**

Financial intermediation can be defined as the process through which financial service providers like banks haul funds from the public as deposits and transform them into loan-able funds (Agbada & Osuji, 2020).

Onwe and Adeleye (2018) view financial intermediation as a process in which financial intermediaries mobilizes deposits and transforms the deposit money into bank credits, usually loans and overdraft. Thus, the competence of the financial system could be said to center largely on financial intermediation process as it plays very key roles in ensuring capital formation necessary for investments purpose and development. The global financial system and the banking sector flourishes on financial intermediaries' abilities to accept deposit at low rate of interest and lend them at a higher rate of interest to investors (Omonode, 2022).

Government has over the years used the medium of financial intermediaries to make funding available in the manufacturing sector. It is understood that an improved manufacturing sector is a prerequisite for economic development. The financial sector can spurs growth through its proficient allocation of resources from the surplus sector to the productive sector i.e. manufacturing sector (Hill & Perez-Reyna, 2017). The manufacturing sector process is capital intensive by its nature with majority of its resources from financial intermediaries. It is against these postulations that Research hypothesis 1 is formulated:

H1 Financial intermediation has a significant effect on manufacturing sector performance

## **2.5. Financial Liberalization and Manufacturing Sector Performance**

Financial liberalization is the process of removing controls by regulatory authorities, thereby deregulating the financial system (Camillus 2019). Liberalization of the system involves eliminating restrictions and regulatory controls over financial institutions and allowing core instruments, such as credit distribution and interest rates to be determined by the market. Uche and Adenikinku (2022).

A key objective in the implementation of financial liberalization, is achieving development in the financial system by allowing interest rates to rise and fall based on market assessment, reducing and subsidizing credit facilities, improvement of bank statues, implementing indirect instruments of monetary policy, creating easy conditions for participation in the stock market and privatizing the systems. Financial liberalization can promote manufacturing sector development by encouraging saving, productivity of capital and investment. According to Demirguc-Kunt and Detragiache (2008), developing countries can increase their domestic savings, decrease excessive dependence on foreign capital and improve manufacturing sector performance through financial liberalization.

Therefore, given the actuality that manufacturing industries are eminent catalyst for real growth and development of economies, its under-performance clearly indicate a greater danger for the Nigeria economy. It is against this premise that the second hypothesis is formulated:

H2 Financial Liberalization has a significant effect on manufacturing sector performance

## **2.6. Theoretical Underpinning**

The baseline theory that best explain this research is the endogenous growth theory by Romer (1986). Romer (1986), propounded the endogenous growth theory which was enhanced by the contribution of Lucas in his work “Mechanics of Economic Development” in 1988.

Endogenous growth theory is an economic theory which postulate that economic growth is derived from within a system as a result of internal processes.

The model asserted that the growth depends on improved financial intermediation, productivity, human capital investment, policies, capital investment, interest rate and savings rate. Therefore, it is not arguable that financial development is a determinant of an increasing growth rate of an

economy. Hence, the policies of government has a great influence, to increase saving rate, improvements in innovation and investment internally will lead to increased productivity which will consistently improve the growth rate and economic outlook.

Hence, the growth model of this study is based on the endogenous model which postulate that growth in developing economies is determined by financial development policies and intermediation targeting the improvement of the economic sectors in particular and national economy in general.

Manufacturing Sector Output Growth(MOG) = Financial Development (FD).

Therefore,

Manufacturing Sector Output Growth (MOG) = f(financial intermediation process(FIP))

Manufacturing Sector Output Growth (MOG) = f(financial liberalization(FL))

## 2.6. Empirical Review

Mesagan, Olunkwa, and Yusuf (2018) investigate financial sector development and manufacturing performance in Nigeria (1981-2015). The study used In the study, manufacturing output, manufacturing capital utilization and manufacturing value added as proxies for manufacturing performance while the independent variable is private sector credit, money supply as a percentage of GDP and liquidity ratio employed as proxies for financial sector development. The study found that credit to the private sector and money supply impact positively but insignificantly to manufacturing sector enhanced capacity utilization and output, but impact negatively impacted the manufacturing sector value added in the short run. Egbetunde, Odeleye and Simon-Oke (2019) In their research, assess the relationship between financial development and industrial sector output in Nigeria from the period of 1970 to 2016. Unit root tests, co-integration tests and Auto-Regressive Distributed Lag (ARDL) was used in the study. The findings is that, the variables are stationary at level and first difference – I (0); I (1). The results also reveal that all variables of the study are cointegrated which means that. they are related in the long run. The ECM results within the framework of ARDL also indicate the cointegration tests. Furthermore, the direction of causality is from financial development to industrial output in Nigeria. There is an existence of a long run-relationship between financial sector development and industry in Nigeria. The study



recommend that the economy will gain from the development of financial institutions in industrializing the country if government encourage and promote sound macro-economic policies and political stability. Aminu, Raifu and Oloyede (2019) studied institutional quality role in the relationship between financial development and manufacturing sector performance in Nigeria from 1984 to 2016 using the autoregressive distributed lag method (ARDL). The result findings indicate that financial development impact positively to manufacturing sector in the long-run. However, it is moderated down by institutional quality measures. The study recommend that government should develop a policy framework that allow integration of all the financial sector with information about the manufacturing sector . Rapheal and Gabriel (2015) examine the effect of Financial Sector Development on Manufacturing Output Growth in Nigeria (1986-2012) using the Vector Autoregression (VAR). The study employed the use of unit root and Johansen cointegration tests to assess the direction of the macro data. The result recommend that relieving financial development constraints and financial sector deepening are important in boosting the manufacturing sector output in Nigeria. The study of Ewetan and Ike (2014), assess the causal and long run relationship between financial sector development and industrialization in Nigeria from 1981 to 2011. The study used multivariate VAR and VECM. The study found that there is long run relationship between financial sector development and industrialization. Private sector credit and broad money supply to GDP has a contrasting impact on industrial growth. Broad money supply has a negative effect with industrial output while private sector credit has a positive effect with industrial output. The study show that the causality test had a long run unidirectional link running from industrialization to financial development. Ekor and Adeniyi (2012),investigate the impact of financial development on manufacturing output in Nigeria. The study used Vector Autoregression (VAR) based on Johansen co-integration technique and the Ordinary Least Square method (OLS) estimator. The time series span from 1970 to 2010. The study found out that there is an insignificant co-efficients for credit to the manufacturing sector in Nigeria, non-oil sector and bank efficiency. This study outcome suggests an essential disconnect between the financial and real sector economy. The study therefore, recommend that regulatory authorities should innovate with productivity, improving reforms which better suits the needs of the manufacturing sector.

### 3. Research Methodology

The research used the *ex-post* facta research design. This was considered suitable for this research as the study investigated an already existing relationship between the independent and dependent variable. In this type of design the researcher cannot manipulate the variables but just obtains the already existing natural course of events (Akpan 2006). Annual time series was used from 1986 to 2021. The data are secondary data and was collected from CBN Statistical Bulletin, world development data bank for the analysis. The data used in the analysis cover the period 1986 to 2021. The period of this study is informed by the availability of dataset used and to capture the period structural adjustment programme was introduced in Nigeria which is the mechanism used by the regulatory authorities to implement the financial liberalization policy in the country.

However, following economic growth theories typical of slow growth model, endogenous growth theory and finance-growth theory, it is evident that all financial development policies target the enhancement of the economy which are important factor of manufacturing sector growth. The theoretical model for this study is Autoregressive distributed lag (ARDL). The model was adopted for its high predictive power of ARDL-Bounds testing techniques to test for the cointegrating long-run nexus between financial development and manufacturing sector performance in Nigeria. Following Lenka and Barik (2018) and Le et al. (2019), this study adopted the PCA model to construct the financial intermediation index and financial liberalization index combining the various adopted indicators into a single index to examine the effect on manufacturing sector performance in Nigeria.

In the PCA method, *the*  $i$ th FinDev factor can be expressed as

$$\text{Index}_i = W_{i1}X_1 + W_{i2}X_2 + \dots + W_{in}X_n + \varepsilon_t \dots \dots \dots (\text{Eq.1})$$

where  $\text{Index}_i$  = financial intermediation index and financial liberalization index for a particular year. This index is a merged combination of all adopted indicators.

$W_i$  = the weight on factor coefficients

$X$  = the original value of the factor,

$n$  = number of variables in the index

$\varepsilon_t$  = error term.

The models for this study are specified and modified based on the reviewed empirical works of some scholars on financial intermediation and financial liberalization variables in assessing manufacturing sector performance.

**Model 1:**

Financial Intermediation does not have significant effect on manufacturing sector output in Nigeria. The ARDL model was adopted to test the hypothesis as follows:

$$\Delta MOG_t = \beta_0 + \sum_{i=1}^k \beta_i \Delta MOG_{t-1} + \sum_{i=1}^{k1} \beta_i \Delta FIIN_{t-1} + \sum_{i=1}^{k2} \beta_i \Delta PLR_{t-1} + \sum_{i=1}^{k3} \beta_i \Delta DR_{t-1} + \omega_{1p} MOG_{t-1} + \omega_{2p} FIIN_{t-1} + \omega_{3p} PLR_{t-1} + \omega_{4p} DR_{t-1} + \varepsilon_{1t} \dots \dots \dots \text{(Eq.2)}$$

**Model 2:**

Financial liberalization does not have significant effect on manufacturing sector output in Nigeria. The ARDL model was adopted to test the hypothesis as follows:

$$\Delta MOG_t = \beta_0 + \sum_{i=1}^k \beta_i \Delta MOG_{t-1} + \sum_{i=1}^{k1} \beta_i \Delta FINLB_{t-1} + \sum_{i=1}^{k2} \beta_i \Delta PLR_{t-1} + \sum_{i=1}^{k3} \beta_i \Delta DR_{t-1} + \omega_{1p} MOG_{t-1} + \omega_{2p} FINLB_{t-1} + \omega_{3p} PLR_{t-1} + \omega_{4p} DR_{t-1} + \varepsilon_{1t} \dots \dots \dots \text{(Eq.3)}$$

**Where:**

$\beta_0$  = constant,  $\beta_{1-5}$  = coefficient of the regression,  $\mu$  = error term, TLA = Total loan and advances to GDP, LDR = Loan to deposit ratio, RPSC = Private Sector Credit to GDP, EXR = Exchange rate, LR = Liquidity Ratio, NIR = Nominal Interest rate, PLR = Prime lending rate, DR = Deposit rate

**Table 3.1 Description of Model Variables**

Variables	Description	Measure	Designation	Source
MOG	Manufacturing Sector Output	% of GDP	Dependent Variable	World Development Indicators (2022)

<b>Financial Liberalization (FINLB)</b>				
EXR	Exchange Rate	Rate	Independent Variables	World Development Indicators (2022)
LR	Liquidity Ratio	Ratio	Independent Variables	
NI	Nominal Interest Rate	Rate	Independent Variables	
<b>Financial Intermediation FIIN</b>				
TLA	Total Loan and Advance	(% of GDP	Independent Variables	World Development Indicators (2022)
LDR	Loan to Deposit Ratio	Ratio	Independent Variables	
RPSC	Credit to Private Sector	(% of GDP	Independent Variables	
<b>Control Variables</b>				
PLR	Prime Lending Rate	Rate	Control Variables	CBN 2022
DR	Deposit Rate	Rate	Control Variables	

#### 4. Results

Before reporting the full estimation, the statistical properties of the datasets are shown in this section. This is done using basic descriptive statistics and correlation analyses. Table 4.1 below, shows the basic descriptive statistics which show the mean, median and mode of all the observations at levels and first difference order of integration. This also includes the standard deviation which is a measure of dispersion. The kurtosis, skewness and the Jarque Bera Statistics are tests for normality for the distributions.

**Table 4.1 Summary of Basic Descriptive Statistics**

Variable	Mean	Median	Max	Mini	Std.Dev	Skewness	Kurtosis	Jarque-Bera	Prob
DR	11.750	11.325	25.640	4.7100	4.695	0.846	3.753	5.1535	0.076
EXR	115.341	123.110	358.810	1.7500	98.363	0.7632	2.927	3.5033	0.173
LDR	66.360	66.700	96.820	37.560	13.556	-0.124	2.685	0.2414	0.886
NIR	18.531	17.690	31.650	9.9600	4.056	0.825	4.848	9.2116	0.009
LR	47.873	45.475	104.200	26.390	14.658	1.8072	7.746	53.395	0.000
MOG	2.234	2.195	21.800	-17.510	9.805	-0.0078	2.602	0.2371	0.888

PLR	18.332	17.770	29.800	10.500	3.927	0.772	4.323	6.2117	0.044
RPSC	11.795	8.365	22.7500	5.810	5.553	0.607	1.630	5.0297	0.080
TLA	5575.729	1364.635	24378.19	15.700	7007.423	1.068	2.975	6.8482	0.032

**Source: Author's Computation (2023)**

The mean credit to the manufacturing sector is 437.424, indicating a substantial average credit flow for investment in the sector to improve operational efficiency, competitive advantage and stimulate economic growth. The high kurtosis (8.393) suggests that the distribution has heavy tails, potentially indicating extreme values. The mean exchange rate is 115.341, reflecting the average value of the exchange rate. The positive skewness (0.7632) indicates a right-skewed distribution. The mean output is 2.234, reflecting the average manufacturing sector output. The skewness close to zero (-0.0078) suggests a relatively symmetric distribution. The mean nominal interest rate is 18.531, and the mean prime lending rate is 18.332. These rates are important factors that can influence borrowing costs for businesses, including those in the manufacturing sector. The mean liquidity ratio is 47.873, suggesting the average proportion of liquid assets to total assets held by banks. A higher liquidity ratio can be indicative of a safer financial position.

Considering the manufacturing sector in Nigeria, these results may imply: . Exchange rates (EXR) impact the cost of imported raw materials and influence international trade. External factors such as political stability, social issues, and economic policies also play a crucial role in shaping the manufacturing sector's performance.

### **Unit Root Tests**

This is to confirm the stationarity properties for a meaningful analysis, variants of structurally and traditional accountable unit root tests were conducted. Augmented Dickey-Fuller (ADF), is a technique for unit root tests that employs the whole sample, which was conducted. The Zivot and Andrews (1992) structural break test conducted has a process for endogenizing the break date and this was used as a robustness check on the unit root processes.

**Table 4.2 Unit Root Test Results**

Traditional ADF (Trend and Intercept)				Zivot and Andrews Unit Root Test (Trend and Intercept)			
Variables	ADF Stat	Critical Value (0.05)	Order of Integration	ZAU Stat	Critical Value (0.05)	Break Date	Inference
LogDR	-6.886	-3.5484	I (1)	-8.79	-6.86	2015	Stationary
LogEXR	-6.2530	-3.5484	I (1)	-5.44	-4.08	2010	Stationary
LogLDR	-4.6521	-3.5575	I (0)	-5.72	-4.18	2008	Stationary
LogLR	-6.6617	-3.5484	I (0)	-7.02	-5.08	2008	Stationary
NIR	-6.7697	-3.5484	I (0)	-7.73	-4.95	2008	Stationary
MOG	-8.3048	-3.5484	I (1)	-8.90	-5.08	2019	Stationary
PLR	-5.8630	-3.5529	I (0)	-7.73	-4.95	2008	Stationary
RPSC	-5.3257	-3.552	I (1)	-8.40	-5.02	2007	Stationary
TLA	-5.6708	-3.56288	I (1)	-5.19	-4.52	2007	Stationary

**Source: Authors Computation (2023)**

The results show the nonexistence of second-order integrated variables, indicating that the series are stationary at  $I(0)$  and  $I(1)$ . The results essentially meet the Gauss-Markov conditions for unbiased estimation and satisfies the condition for the adoption of the ARDL model.

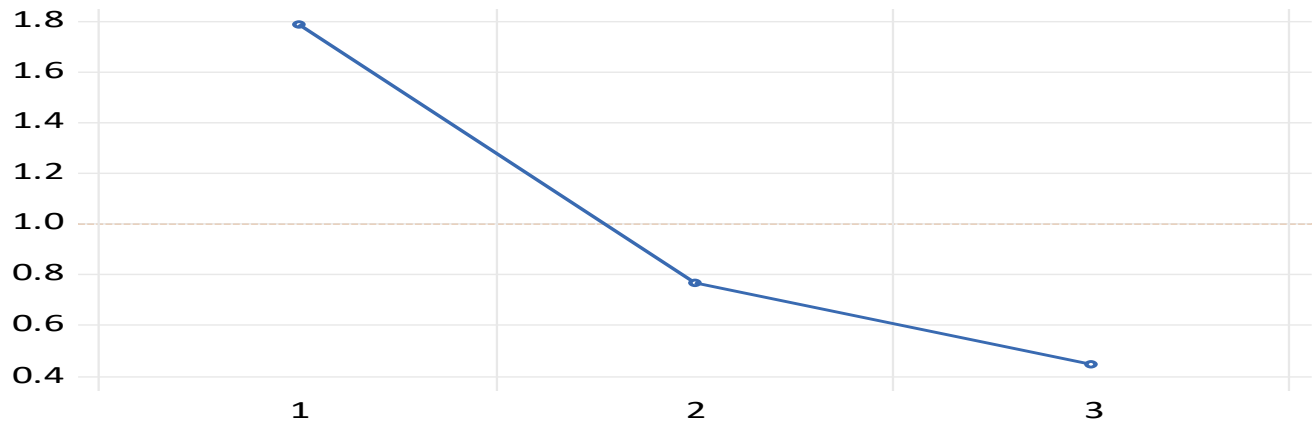
### **Test of Hypotheses**

To evaluate the effect of financial development on manufacturing sector performance in Nigeria. The dynamic autoregressive distributed lag model and the principal component analysis (PCA) was used to transform the several correlated sets of independents variables into a smaller number of uncorrelated variables.

### **Construction Hypotheses Index with Principal Component Analysis (PCA)**

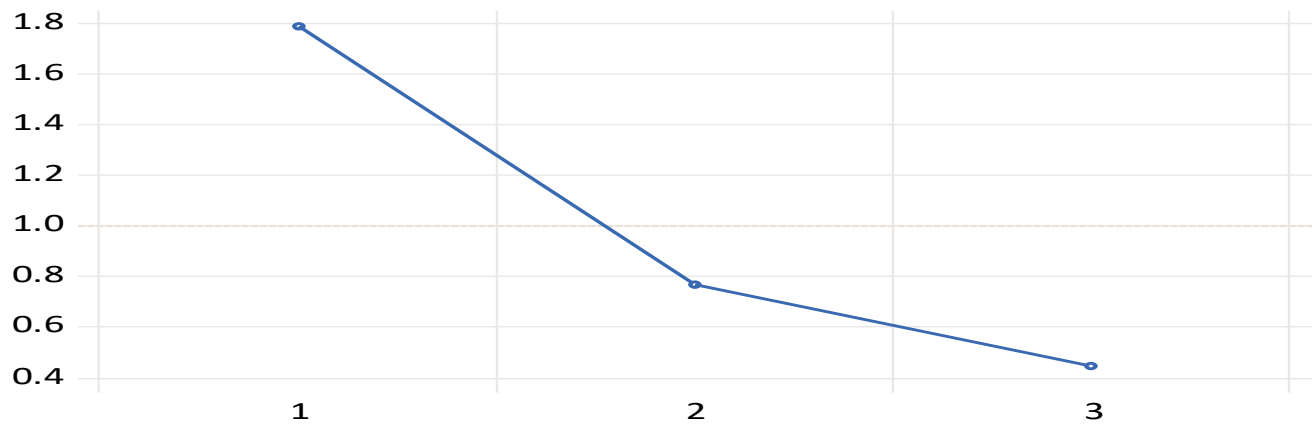
### **Financial Intermediation Index (FIIN)**

Scree Plot (Ordered Eigenvalues)



**Financial liberalization Index (FINLB)**

Scree Plot (Ordered Eigenvalues)



The high FINLB and FIIN indicators are linearly and orthogonally transformed into low indicators through PCA. The corresponding eigenvalues for FINLB account for 50.49%; 1.8850 while FIIN account for 62.83%; 1.88112. of the total variation in the data.

**Table 4.3 Error Correction Model for Hypothesis One**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
COINTEQ*	-0.818512	0.049907	-16.40074	0.0000
D(LOGMOG(-1))	0.881594	0.120504	7.315889	0.0000

**Source: Author (2023) Extract from the full result in Appendix**

The ECM result in Table 4.7.2 shows that the error correction term (CointEq(-1) value of (-0.8185) is correctly signed “negative and statistically significant”, which confirms the presence of a long-run nexus. The CointEq(-1) value of 81% indicates the speed of convergence from short-run divergence arising from high interest rates on loans, low prime lending rate leading to excessive borrowing, contributing to inflation and potentially destabilizing the financial system to provide funds for investment and development of the manufacturing sector to enhance its operational performance to long-run equilibrium.

**Table 4.4 ARDL Long Run Estimate for Hypothesis One**

Panel A					
Variable	Coefficient	Std. Error	t-Statistic	Prob.	Expectations
LOGMOG(-1)*	-0.318512	0.050026	-6.366929	0.0003	(-)
FINLB**	-0.462782	0.061361	-7.542079	0.0000	(-)
LOGLR**	-1.276536	1.161665	-1.098885	0.3219	(+)
LOGLDR**	-4.476985	1.087458	-4.116928	0.0092	(+)
C	25.17414	6.683870	3.766401	0.0131	
D(LOGMOG(-1))	0.381594	0.198336	1.923978	0.1124	
Panel B Other Parameter Estimate					
R <sup>2</sup>	0.880	F-Stat	7.39184	Prob	0.0003
Adjusted R <sup>2</sup>	0.761	DW stat	1.973	(Stat)	

**Source: Author (2023) Extract from the full result in Appendix**

The R<sup>2</sup> value of 88% revealed that the variation in manufacturing sector within the framework of this study was explained by the regressors and moderating variables. An adjusted R<sup>2</sup> value of 76% indicated the goodness of fit of the ARDL model line. The F-test of 7.39184 with the p-value of (0.0003) confirmed the stability of the ARDL model at 0.05% significance level for a robust analysis. Additionally, the D-W statistics of 1.973, which is approximately (2) by the rule of thumb, rules out any suspicion of AR-1 autocorrelation.



**Table 4.5 Error Correction Model for Hypothesis Two**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
COINTEQ*	-0.854476	0.103892	-8.224656	0.0000

**Source: Author (2023) Extract from the full result in Appendix**

The ECM result in Table 4.8.2 shows that the error correction term (CointEq(-1) value of (-0.8544) is correctly signed “negative and statistically significant”, which confirms the presence of a long-run nexus. The CointEq(-1) value of 85% indicates the speed of convergence from short-run divergence arising from high interest rates on loans, low prime lending rate leading to excessive borrowing, contributing to inflation and potentially destabilizing the financial system to provide funds for investment and development of the manufacturing sector to enhance its operational performance to long-run equilibrium

**Table 4.6 ARDL Long Run Estimate for Hypothesis Two**

<b>Panel A</b>					
Variable	Coefficient	Std. Error	t-Statistic	Prob.	Expectations
LOGMOG(-1)*	0.854476	0.125380	6.815090	0.0000	(+)
FIIN**	0.810181	0.090954	8.907590	0.0000	(+)
LOGPLR**	0.758441	0.845941	0.896564	0.5482	(+)
LOGDR**	0.561710	0.082611	6.799457	0.0000	(+)
C	5.607562	6.736839	0.832373	0.4215	
<b>Panel B Other Parameter Estimate</b>					
R <sup>2</sup>	0.991	F-Stat	113.1915	Prob	0.0003
Adjusted R <sup>2</sup>	0.982	DW stat	1.973	(Stat)	

**Source: Author (2023) Extract from the full result in Appendix**

The R<sup>2</sup> value of 99% revealed that the variation in manufacturing sector within the context of this study was explained by the regressors and moderating variables. An adjusted R<sup>2</sup> value of 98% indicated the goodness of fit of the ARDL model line. The F-test of 113.1915 with the p-value of (0.0003) confirmed the stability of the ARDL model at 0.05% significance level for a robust analysis. Additionally, the D-W statistics of 1.973, which is approximately (2) by the rule of thumb, rules out any suspicion of AR-1 autocorrelation.

## 5. Discussion of Findings

From the results of test of hypothesis one, financial liberalization negatively and significantly influences manufacturing sector output in Nigeria. The negative and significant effect on manufacturing sector output could be attributed to various factors such as: liberalization exposes the financial system to increased risk and volatility, which can negatively influence the operational and business activities of the manufacturing sector that require stable financial conditions. A unit change in financial liberalization caused a 31% decrease in manufacturing sector output in Nigeria. Liberalization led to unequal access to financial services, with larger firms benefiting more than smaller ones, creating disparities in the manufacturing sector. The negative impact of prime lending rate and deposit rate revealed that higher interest rates hindered manufacturing sector profitability and investment decisions. The results of the study also suggest that financial liberalization increases the probability of financial crises indirectly through financial development, largely to banks' indisposition to make credits available to manufacturers, owing partly to inequality between the short-term nature of banks' funds and the medium to long-term nature of funds needed by Nigerian industries.

From the result of test of hypothesis two, financial intermediation has a positive and significant effect on manufacturing sector output in Nigeria. A positive and significant effect on manufacturing sector output implies that the functions of financial intermediaries contribute to the growth of the manufacturing sector. A unit change in financial intermediation caused an 85% increase in manufacturing sector output through access to capital, risk management by diversifying portfolios and allocating funds to viable projects and enhancing the stability of manufacturing businesses. Prime lending rate and deposit rate are key interest rates influencing the cost of borrowing and returns on deposits, respectively. A positive and significant effect on manufacturing sector output suggests that these interest rates are conducive to the growth of the manufacturing sector.

## **6. Conclusion and Recommendations**

### **Conclusion**

Distinctively, the nexus between finance and growth depends on the nature/type of proxies used for financial development. This study therefore used varieties of variables in order to capture most of financial development intermediaries process and policies. The study, concludes that Nigeria government and policy makers should ponder more on promoting good saving attitude, increase quantity and quality of money supply in the country, enhanced private sector credit, improvement of exchange rate, effective mobile payment transaction as this will lead to an improved manufacturing sector performance which will in turn lead to economic growth.

### **Recommendations**

The recommendation of this study is line with the findings. The recommendations are as follows:

1. The negative influence of financial liberalization must be address through refine financial liberalization policies to mitigate risks and uncertainties associated with liberalization, ensuring that the manufacturing sector is not adversely affected. The adoption of a phased approach to liberalization allows businesses to adapt to changes gradually.
2. There is a dare need for financial regulators to strengthen the role of financial institutions as intermediaries to ensure efficient allocation of capital to the manufacturing sector. Encourage policies that promote risk diversification and effective intermediation practices and foster collaboration between financial institutions and manufacturing firms to understand and address sector-specific financing needs.

## COMPETING INTERESTS

The authors have no competing interests to declare.

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