DEPOSIT MONEY BANKS, MANUFACTURING SECTOR AND ECONOMIC DEVELOPMENT IN NIGERIA: AN ARDL APPROACH

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ABSTRACT

This study examines the relationship between deposit money banks, manufacturing sector, and economic development in Nigeria from 1980 to 2025. Main indicators include credit reserve ratio, liquidity ratio, monetary policy rate, minimum rediscount ratio, manufacturing sector output, treasury bills and open market operation. Data were sourced from the Central Bank of Nigeria (CBN) Statistical and the analysis employed the Augmented Dickey-Fuller (ADF) unit root test and the Autoregressive Distributed Lag (ARDL) model to ensure data stationarity and robust examination of long-run and short-run connections. The study used Augmented Dickey Fuller (ADF) test Unit root test to Co-integration and ARDL approach. Results revealed that R^2 = 0.803933 meaning that the various independent variables explain 80% in dependent variable per capita income (PCI) in both the short and long run. The study concluded that deposit money bank indicators significantly affect Nigeria's economic development. It recommended that the Central bank (CBN) should implement stable policies to improve liquidity management and credit allocation to stimulate overall economic development.

Keywords: Credit Reserve Ratio, Liquidity Ratio, Monetary Policy Rate, Minimum Rediscount Ratio.

Introduction

Deposit money banks and the manufacturing sector are essential for sustainable economic growth. Deposit money banks denote to financial institutions that receive deposits from the public and provide variety of banking services such as loans, savings, and checking accounts. These banks perform critical roles in the effective allocation of capital, enabling industrial growth (Orji and Ezeanyaeji, 2022; Oparah, Ndubuisi and Okoye, 2023). On the other hand, the manufacturing sector is a vivacious part of Nigeria's economy, contributing to employment, economic diversification, and industrial development. This sector involves the transformation of raw materials into finished products using machinery and labour, with activities ranging from consumer goods production to heavy machinery manufacturing (Omolola, Obayelu and Owuru, 2023; Onyi and Okafor, 2023). The interrelationship between deposit money banks and the manufacturing sector is evident in their combined efforts to foster economic growth. Banks provide essential financial services such as loans and trade finance, which enable manufacturers to invest in new technologies, modernize production processes, and expand their operations. For instance, between 2015 and 2020, loans to Nigeria's manufacturing sector increased by 18%, demonstrating the banking sector's commitment to supporting industrial expansion (Ojarikre, Akpan and Eziokwu, 2024; Olurinola, 2022; Omankhanlen and Akinsanya, 2025). This financial support is crucial for manufacturers to participate in global supply chains and compete internationally.

The increased integration into global markets has enhanced the manufacturing sector's ability to contribute to Nigeria's GDP growth and economic diversification (Anyaegbuna, Wayas, Ugwu and Chukwuma, 2018). The synergy between deposit money banks and the manufacturing sector has far-reaching impacts on economic development. Research shows that countries with robust banking systems, such as Singapore and South Korea, have thriving manufacturing sectors that significantly contribute to GDP growth and technological advancements (Nnabu, Igwurube, Awoke and Eze, 2025; Nweze and Ejim, 2021; Nweze and Ejim, 2021 and Elijah, 2018). In Nigeria, the banking sector has played a vital role in facilitating manufacturing output, which has been pivotal in driving non-oil GDP growth. For instance, in 2020, manufacturing exports accounted for approximately 14% of Nigeria's total non-oil exports, highlighting the sector's role in earning foreign exchange and stabilizing the economy (Chinanuife, Madueme, Orji and Anthony-Orji, 2019). Foreign direct investment (FDI) is another area where the banking and manufacturing sectors intersect. It is therefore imperative to note that a strong banking sector and a thriving manufacturing industry attract foreign investors, contributing to technology transfer, infrastructure development, and job creation. The investment inflows from FDI further boost economic growth and industrial capacity, positioning Nigeria as an attractive destination for global businesses (Elijah, 2018; Ibrahim, Abdulrahman and Abubakar, 2021; Ifenowo, 2019; ThankGod and Nwikina, 2023; Ndandra, Ibbih and Akawu, 2025).

Despite the positive contributions of deposit money banks and the manufacturing sector, certain challenges persist, particularly in the areas of exchange rate volatility and inflation. The exchange rate significantly impacts the cost of imported raw materials, machinery, and equipment, which are essential for manufacturing activities. According to Orji and Ezeanyaeji (2022), between 2016 and 2020, the depreciation of the Naira against the US dollar increased production costs, reducing profitability for manufacturers reliant on imports. For example, the exchange rate surged from NGN 200 to over NGN 360 per dollar, leading to higher costs for manufacturers and a slowdown in sectorial growth (Abimbola, 2023; Achi**,** 2023; Ajudua, 2023; Anyaegbuna, David, Ugwu and Chukwuma, 2018). Inflation is another critical factor shaping the manufacturing sector's performance. High inflation erodes purchasing power and increases production costs, making it difficult for manufacturers to maintain profitability. Nigeria has experienced persistent inflationary pressures, averaging around 15% between 2016 and 2020, further impacting manufacturing output (Anyanwaokoro and Ogbu, 2018; Audu, Anfofum, Bilkisu, 2021). As inflation rises, production costs for raw materials and energy increase, leading to reduced capacity utilization and lower growth in the sector (Adetunji, Oke and Akindele, 2019; Akinmulegun and Akinde, 2019) While exchange rate depreciation might benefit export-oriented manufacturers by making Nigerian goods cheaper in international markets, the overall negative impact on import-dependent producers is substantial (Akinmulegun and Akinde, 2019; Alula, Uyo and Anthony, 2024; Andabai and Eze, 2018; Anyaegbuna, Wayas, Ugwu and Chukwuma, 2018; Eke, Eke and Edom, 2023; Andabai and Eze, 2018).

The fundamental objectives of this study are to investigate the deposit money banks credit, manufacturing sector and economic development in Nigeria. These specific objectives are to; examine the effect of credit reserve ratio, manufacturing sector output, monetary policy

rate, minimum rediscount ratio, open market operation, liquidity ratio, treasury bills and the economic development in Nigeria.

Theoretical Literature Reviewed

Financial Intermediation Theory

The Financial intermediation theory was proposed by Gurley and Shaw in 1960. The theory posits that financial institutions, particularly banks, play a vital role in the economy by enabling the flow of funds from savers to borrowers. This theory adopts several important aspects such as efficient allocation of resources through the bank' efficient allocators of capital, pooling savings from depositors and channeling them into productive investments. Through this medium, intermediation between savers and borrowers take place and banks help guarantee that funds are used in the most productive ways, thereby supporting economic development. Again, there is information asymmetry reduction. Financial intermediaries help reduce the information gap between savers and borrowers. Savers may not have the expertise or resources to evaluate the creditworthiness of borrowers, but banks specialize in assessing and managing credit risk. This reduces the risk for savers and encourages greater investment. Other major aspects relate to bank's ability to manage risk by diversifying their loan portfolios across different borrowers and sectors. This diversification helps lessen the impact of any single borrower defaulting on their loan, thereby enhancing financial stability and reducing systemic risk and again, financial intermediaries benefit from economies of scale in transaction processing, information gathering, and risk management. By spreading fixed costs over a large volume of transactions, banks can provide financial services more efficiently and at lower costs than individual savers and borrowers could achieve on their own. Finally, bank's provide liquidity by offering depositors the ability to withdraw funds on demand, while simultaneously lending those funds to borrowers for longer-term investments.

Empirical Literature Reviewed

Alula, Anthony and Nsonwu (2025) study examines the effect of bank credit, lending rate and inflation rate on the manufacturing sector's output in Nigeria for the periods between 1981 and 2022. Data were obtained from Central Bank of Nigeria (CBN) Statistical Annual Bulletin. The study employed descriptive analysis techniques and Autoregressive Distributed Lagged modelling approach. Empirical findings from the descriptive analysis revealed significant increasing trend in the time series plots of manufacturing sector output, deposit money banks' credit to manufacturing sector, lending rate and inflation rate of Nigeria. The study's empirical findings showed that deposit money banks' credit to manufacturing sector, lending rate and inflation rate significantly co-integrate with the country manufacturing sector output. Explicitly, this study found that deposit money banks' credit to manufacturing sector significantly and positively impacts the manufacturing sector output both in the short-run and long-run, which could be interconnected to the significant positive impact of lending rate on deposit money banks' credit. Ndandra, Ibbih and Akawu (2025) study investigated the role of deposit money bank credit and lending rates in shaping the growth dynamics of Nigeria's manufacturing sector utilizing annual time-series data from 1980 to 2023, sourced from the Central Bank of Nigeria. The approach employed the Autoregressive Distributed Lag (ARDL) model, which facilitated the analysis of both short- and long-term associations between the variables. The theoretical

framework for the study was based on Schumpeter's Supply Leading Theory, Credit Creation Theory, and Wicksell's Theory of Lending and Economic Growth.

The findings revealed that credit to the manufacturing sector (DBCM) has a significant positive impact on manufacturing sector output (MSO), both in the short and long run. In contrast, high lending rates (DBLR) negatively affect manufacturing growth, corroborating previous empirical studies. The study concluded that enhancing credit access and reducing lending rates are essential for fostering industrial growth. Therefore, the study recommended policies aimed at reducing lending rates, improving credit accessibility for small and medium enterprises (SMEs), and promoting financial inclusion to drive the competitiveness and productivity of Nigeria's manufacturing sector. Nnabu, Igwurube, Awoke and Eze (2025) study investigated the impact of deposit money bank credit to private sector on private domestic investment from 1981 to 2023 using vector error correction model (VECM). The study specifically examined the following objectives such as to ascertain the impact of deposit money bank credit to agriculture on private domestic investment in Nigeria, examine the extent of the impact of deposit money bank credit to manufacturing on private domestic investment in Nigeria and investigate the magnitude of the impact of deposit money bank credit to mining on private domestic investment in Nigeria. The pre-test results indicated that all the variables were integrated of order 1(1) while Johansen co-integration test confirmed that the variables were co-integrated. The result indicated that deposit money bank credit to agriculture significantly result in rise in private domestic investment both in the short run and in the long run. Also, the study showed that deposit money bank credit to manufacturing significantly led to increase in private domestic investment.

Finally, the study found that deposit money bank credit to mining in the short run does not impact on private domestic investment but significantly resulted in increase in private domestic investment in the long run. Based on these findings, the study recommended adoption of expansionary monetary policy to increase credit availability to economic development, creation of mining guarantee scheme to mitigate risk associated to lending to mining sector and lowering interest rate to 5% to encourage private sector borrowing. Omankhanlen and Alkinsanya (2025) examines the impact of commercial bank credit, inflation and interest rate on Nigeria's manufacturing sector, a crucial part of the economy that faces challenges such as inadequate funding. The study analyses the relationship between bank credit, inflation and manufacturing output from 1985 to 2022 using secondary data and the Autoregressive Distributed Lag (ARDL) regression model. The results indicate a positive correlation between lending rates and manufacturing output, becoming significant after a one-year lag, suggesting that favourable lending conditions can boost production. Conversely, there is a significant negative relationship between commercial bank credit and manufacturing output, raising concerns about the effectiveness of bank credit in enhancing sector performance. Additionally, inflation positively influences manufacturing output with a three-year lag, indicating that while it may temporarily boost production, it could hinder sustainable growth in the long run. The study recommends that the Nigerian government implement effective policies to achieve price stability, full employment, exchange rate stabilization and economic development.

Method of Data Analysis

The method of data analysis employed in this study is the use of analytical tool such as the unit root test, co-integration test and error correction mechanism.

Model Specification

The general bases for model specification is the financial intermediation theory proposed by Gurley and Shaw (1960) which posits that the velocity at which money is distributed has some implication for an economy. This presupposes that deposit money instruments can influence economic development in Nigeria.

The model is stated thus:

PCI = f(MSQ, MPR, MMR, TBR, CRR, LDR, OPO)

Where:

PCI = Per capita income

MSQ = Manufacturing sector output

MPR = Monetary policy rate

MRR= Minimum rediscount ratio

TBR = Treasury bill rate

CRR = Cash Reserve ratio

LDR= Liquidity ratio.

OMO = Open market operation

Data Analysis

1. Unit Root Test

Table 1. The Augmented Dickey Fuller (ADF) unit root test is use to establish the stationarity of the time series data used in the study.

Variables	Levels		First Difference		Order of Integration	P-value
	ADF Statistics	5% Critical Value	ADF Statistics	5% Critical Value		
PCI	2.0548762	-2.898423	-3.237785	-2.908420	1(1)	0.0484
CRR	2.3409631	2.0068432	3.650832	-2.452782	1(1)	0.0383
LDR	-2.298714	-2.808432	-3.179345	-2.908420	1(1)	0.0266
MPR	-3.082544	-2.908420	-3.072555	-2.798445	1(0)	0.0330
MMR	-0.055958	-2.808432	-3.672560	-2.915522	1(1)	0.0034
TBR	-3.884954	-2.708444	-3.874988	-2.808432	1(0)	0.0029
OPO	-2.210439	-1.513417	3.347034	-2.908420	1(1)	0.0023

Source: Author Computation from E-Views 2025* Level of significance at 5%

This study employs the Augmented Dickey-Fuller (ADF) unit root tests to check the order of integration of the variables and the results are presented in Table 1. The results of Augmented Dickey-Fuller (ADF) revealed that the variables are integrated in different order or a combination of order I(0) and I(1) series. The ADF result discovered that MPR and TBR are stationary at levels 1(0) while, CRR, LDR, MMR, and OMO are stationary after first differencing 1(1). This condition makes the Autoregressive Distributive Lag (ARDL) Bounds test approach to co-integration appropriate for investigating the long-run relationship among these variables.

2. Co-integration Test

Table 2 ARDL Bound Test

Test Statistics	Value	K
F-statistics	21.44137	5

Significance	I (0)	1(1)
10%	2.31	3.43
5%	2.64	3.86
2.5%	2.78	4.17
1%	3.51	4.56

Source: Authors computation from E-Views 2025

From table 2, the bound test result designates that there exist long run associations amongst the variables as the F-statistic value of 22.43145 exceeds both the lower and upper bound critical values. Consequently, we reject the null hypotheses of no long run association and accept its alternative. This means that there is a long-run relationship between deposit money banks, manufacturing sector and economic development in Nigeria.

3. ARDL Long-run Analysis

Table 3: ARDL Long-run Result (MGDP)

Variables	Coefficient	Std. error	t-Statistic	Prob-Value
PCI	-0.033416	1.323641	-0.013443	0.7636
CRR	-0.042134	1.423645	-0.023415	0.8685
MSQ	-0.031482	1.215612	-0.62589	0.0304
MPR	-0.791275	0.261495	-3.026084	0.0009
MMR	-0.742242	0.305798	-2.427229	0.0084
LDR	-0.156395	0.059552	-2.626206	0.0092
TBR	-0.097679	3.799290	-0.025710	0.9796
OMO	-0.087665	3.798660	-0.035720	0.7796

Source: Authors computation from EViews 2025

The Autoregressive Distributive Lag (ARDL) Long run result in table 3 shows that the value of liquidity ratio (LDR) showed a negative (-0.156395) relationship with the value of economic development as a proxy for per capita income in Nigeria. This implies that a unit increase in the value of liquidity ratio (LDR) will lead to about 0.03% fall in the value of per capita income (economic development) in Nigeria. The p-value of 0.8873 designates that there is no statistical significant relationship between liquidity ratio and per capita income (economic development) in Nigeria. Furthermore, the value of manufacturing sector output (MSQ) showed a negative (-0.031482) relationship with the value of per capita income as a proxy for economic development in Nigeria. This implies that a unit increase in the value of manufacturing sector output will lead to about 0.62% fall in the value of per capita income in Nigeria. The p-value of 0.0304 indicates that there is a statistical significant relationship between manufacturing sector output and per capita income, a proxy for economic development. The long-run ARDL result of the value of monetary policy rate (MPR) reported a negative (-0.791275) relationship with per capita income as a proxy for economic development in Nigeria. This means that a unit increases in monetary policy rate in Nigeria will result to about 79% decrease in economic development in Nigeria.

The p-value of 0.0009 displayed that there is a significant relationship between monetary policy rate and economic development. In addition, the value of minimum rediscount ratio indicated a negative (-0.742242) link with the value of per capita income economic as a proxy for development in Nigeria. This implies that a unit increase in the value of minimum rediscount ratio will lead to about 74% fall in the value of per capita income economic as a proxy for development in Nigeria. The p-value of 0.0084 indicates that there is a statistical significant association between minimum rediscount ratio and per capita income economic as a proxy for development in Nigeria. Again, the long-run ARDL result of the value of liquidity ratio showed a negative (-0.156395) bond with per capita income as a proxy for economic development in Nigeria. This means that a unit increase in the value of liquidity ratio will result to about 0.15% decrease tin per capita income as a proxy for economic development in Nigeria. The p-value of 0.0092 showed that there is no significant relationship between liquidity ratio and per capita income in Nigeria. Once more, the long-run ARDL result of the value of Treasury bill rate showed a negative (-0.097679) bond with per capita income as a proxy for economic development in Nigeria. This means that a unit increase in the value of treasury bill rate will result to about -0.09% decrease in per capita income as a proxy for economic development in Nigeria. The p-value of 0.9796 showed that there is no significant relationship between Treasury bill rate and per capita income in Nigeria. Finally, the long-run ARDL result of the value of open market operation exhibited a negative (-0.087665) link with per capita income as a proxy for economic development in Nigeria. This means that a unit increase in the value of open market operation will result to about -0.08% decrease in per capita income as a proxy for economic development in Nigeria. The p-value of 0.7796 showed that there is no significant affiliation between open market operation and per capita income in Nigeria.

Table 4. ARDL Short-run Result (PCI)

Variable	Coefficient	Std. Error	t-Statistics	Prob
C	0.339582	0.107538	3.157850	0.0000
D(CRR)	0.007452	0.008409	0.886236	0.3808
D(CRR(-1)	-0.339743	0.574940	-0.590904	0.5579
D(LDR(-2))	-0.085765	0.032287	-2.656343	0.0113
D(LDR)	0.496424	0.268747	-1.874181	0.0721
D(MPR(-1))	-0.200024	0.319690	-0.625693	0.5351
D(MPR(-2))	-0.603167	0.319436	-1.888225	0.0663
D(MPR(-2))	-0.603167	0.319436	-1.888225	0.0663
D(MMR)	-0.245390	0.097146	-2.525995	0.0156
D(MMR(-1)	0.447427	1.324099	-0.337911	0.7372
D(MMR(-2))	-0.484752	1.059287	-0.457625	0.6497
D(TBR)	-0.834967	0.201169	-4.150576	0.0002
D(TBR(-1)	-0.235459	0.240409	-0.979413	0.3333
D(TBR(-2))	-0.834967	0.379634	-0.979413	0.0330
D(OMO)	-0.341767	0.114838	-2.208690	0.0005
D(OMO(-1)	-0.431794	0.157248	3.760048	0.9784
D(OMO(-2))	-0.040294	0.133548	-0.27196	0.7644
Ecm (-1)*	-0.000703	5.84E-05	-12.03049	0.0000

Adj R^2 = 0.803933, F-statistics = 3.687324 (0.000000), DW = 1.751845

Source: Authors computation from EViews 2025

The coefficient estimate for the error correction term, ECM (-1) has a negative value and is significant at the 0.05 level. It suggests that the model will reach long-run equilibrium at a rate of 0.0007% every year. This means that a yearly adjustment speed of 0.0007% may fix the mistake from the previous year. The independent variables (LDR, CRR, MMR, MPR and OMO) explain 80% of the total variance in the dependent variable (CPI), according to the corrected R-Square (R2) value. As a whole, the model is noteworthy since the F-statistic is significant at the 5% level of significance. Without serial correlation, the model would not work, according to the Durbin-Watson statistics of 1.751845, which is close to 2.

Table 4 displays the model's short-run outcome. A negative value of liquidly ratio (LDR) of-0.085765 was seen in the second year periods when the value of manufacturing gross domestic product (MGDP) was used as a surrogate for manufacturing sector in Nigeria. This means that the value of manufacturing gross domestic product (PCI), would decrease by approximately 0.09% for every unit increase in the value of liquidity ratio (LDR) in Nigeria. Liquidity ratio and manufacturing gross domestic product value correlate statistically (p=0.0113). Economic theory do not predicts this outcome. The value of manufacturing gross domestic product is likely to increase in response to an increase in liquidity ratio. Using manufacturing gross domestic product (PCI) in Nigeria over the previous and second year, the value of monetary policy rate (MPR) have a negative value of -0.200024.and -0.603167. If the value of non-performing loans (MPR) in Nigeria increases by one unit, the value of manufacturing gross domestic product (PCI), would decrease by about 0.20% and 0.60%. Based on the p-value of 0.5351 and 0.0663 it can be concluded that non-performing loan (MPR) is insignificantly related to manufacturing gross domestic product.

Economic theory do not support this outcome. The predicted outcome is that manufacturing gross domestic product significantly decreases in response to an increase in non-performing loans. As a surrogate for manufacturing sector, manufacturing gross domestic product (PCI) in Nigeria over the current, have a negative value of -0.245390. If the value of bank capital to asset ratio (BCAR) in Nigeria increases by one unit, the value of manufacturing gross domestic product (MGDP), would fall by about 0.25%. Based on the p-value of 0.0156 it can be concluded that the value of liquidity ratio (LDR) is significantly related to the value of PCI. Economic theory do not support this outcome. The predicted outcome is that the value of per capita income rises in response to an increase in LQR. More, so, the value of minimum rediscount ratio (MRR) reported a negative value of -0.834967 when the value of per capita income was used as a surrogate for manufacturing sector in Nigeria. This means that the value of per capita income (PCI) would decrease by approximately 0.83% for every unit increase in the value of minimum rediscount ratio (MRR) in Nigeria. MRR and PCI value correlate statistically (p=0.0330). Economic theory predicts this outcome. The value of manufacturing gross domestic product is likely to decrease in response to an increase in interest rate spread.

Recommendations

The following recommendations are proffered based on the findings of this study:

i. The Central Bank of Nigeria (CBN) ought to design policies that balance liquidity management and credit allocation to support both overall economic growth. This is needed to targeted credit schemes or reducing interest rates for manufacturers.

ii. Implementing policies to enhance credit risk assessment and enforce stricter loan recovery frameworks to reduce low performance should be done by Central bank of Nigeria.
iii. The Bank of Industry (BOI) should increase access to affordable credit for manufacturers to reduce their reliance on commercial bank loans while Federal Ministry of Industry, Trade, and Investment should collaborate with the CBN and BOI to design policies that support manufacturing financing while safeguarding overall financial stability.
iv. Finally, the Central Bank of Nigeria (CBN) should implement policies to improve deposit mobilization and ensure banks channel deposits to productive sectors, especially manufacturing.

Conclusion

This study examined the relationship between deposit money banks, manufacturing sector and economic growth rate in Nigeria. The findings of the study showed that CRR indicated a weak relationship with PCI. On the other hand, monetary policy rate, minimum rediscount ratio, treasury bills and open market operation related to PCI strongly. It is concluded that deposit money bank significantly contributes to the per capita income in Nigeria.

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