DEPOSIT MONEY BANK'S CREDIT AND INDUSTRIAL OUTPUT IN NIGERIA

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Abstract
The study examines the role of Deposit Money Bank Credit on Industrial Output in Nigeria. The objectives are to ascertain the relationship between deposit money banks credit, money supply, inflation rate and lending rate on industrial output in Nigeria. The study employed time series data covering 1981 to 2018, sourced from CBN statistical bulletin and subjected them to ADF, ARDL Bound test and Parsimonious regression. The finding of the study revealed that deposit money bank credit and money supply have significant relationship with industrial output in Nigeria while Inflation rate and lending rate have an insignificant relationship industrial output. Further revealing showed that deposit money bank credit impacted industrial output in Nigeria. The findings therefore conclude that deposit money banks credit improve industrial output in Nigeria. Hence, the study recommended the need for government to increase its budgetary allocation for capital investments especially in infrastructure (power, roads and energy) which will have direct impact in driving down lending rates to single digit, boosting access to credit by the manufacturing sector, enhancing productivity and boosting industrial output in Nigeria

Keywords: Industrial Output, Deposit Money Banks Credit, Money Supply.

Introduction
The expanding financial services, communications, manufacturing, technology and entertainment sectors distinguished Nigerian economy is an emerging market. In recent years, the federal government appropriations bills have been focused on sustainable growth and job creation. The industrial sector which is critical in achieving these objectives is however constrained by many structural imbalances including infrastructural deficit, tariff and non-tariff barriers to trade, investment obstacle, multiple exchange rate regime and limited foreign exchange rate capacity.

The industrial sector is a leading sector in many respects in advanced economies. It plays a catalytic role crucial for economic transformation and has ability to drive productivity, growth, innovation and trade. In 2018, the industry sector was the second largest contributor to GDP in Nigeria. The sector contributed 25.75 percent to the GDP ahead of agriculture sector's 21.24 percent and below Service Sector's 52.01 percent (Plecher, 2020). The manufacturing subsector of the industrial sector is a major driver of import substitution which enhances exportations, foreign exchange earnings, employment creation, consumption patterns and standards of living.

To underscore the critical role of industrialization and the manufacturing sector on the country's GDP, both the fiscal and monetary authorities in Nigeria have over years established intervention funds targeted at revamping the sector and ramping up production. For instance, the Central Bank of Nigeria (CBN) established the ₦300 billion Real Sector Support Facility (RSSF) targeted at manufacturing, agriculture value chain and selected sub-sectors thus providing a window for newly established manufacturing companies to borrow up to ₦10 billion for 15 years at single digit interest rate. The CBN also established the ₦200 billion intervention funds for re-financing and restructuring banks facilities to the manufacturing sectors which was aimed at fast tracking the development of manufacturing sectors and boosting access to credit by the sector. Similarly, the Federal Government of Nigeria (FGN) through the Bank of Industry (BOI) established the ₦5 billion Special Intervention funds for Micro Small Medium Enterprises (MSMEs) to stimulate economic activities in the SME sub-subsector to drive industrialization and job creation.

Deposit Money Banks (DMBs) serves as veritable source in which credits are channeled to different sectors of economy through their intermediation role. Given their intermediation role, the FGN and CBN intervention funds for the manufacturing sector and other subsectors are channeled through DMBs (as participating banks). Most of these funds are priced at single digit rate (9 percent and below). In addition to the intervention funds, private sector deposits/funds are another important source of credit DMBs lend or channel to the manufacturing sector for investments purposes. These funds are however priced at double digit averaging 16.9% for prime lending rate and 31.09% for maximum lending rate (CBN, 2018).

Despite the continuous policy strategy by the government to attract credits to the industrial sector, the sector has remained unattractive to the DMBs as credit disbursed to the sector remain relatively low (Ogar, Nkamare, & Effiong, 2014). Accordingly, Edirisuriya (2018) posit that manufacturing in Nigeria is challenged with the problem of accessing credits at low lending rates (single digits) for productive investment.

Arising from the above, could the lackluster performance of manufacturing sector in Nigeria be attributed to the high cost of funding which has impeded its much-desired growth and contribution to the industrial output? It is against this backdrop, that this study set out to examine the effect of Deposit Money Banks (DMBs) credit on the industrial output in Nigeria and also determine whether DMBs credits has significant effect on the industrial sector output.

LITERATURE REVIEW
Conceptual Review
Traditionally, Deposit Money Banks (DMB) are short and medium-term lenders. But in the recent decades they have expanded this role to include the extension of long-term credits especially through loan syndication (Tawose, 2018). Banks' functions vary across countries and institutions. For example, specialized banks are known to have created to deal specifically with certain problems of economic development.

In 2010, universal banking was repealed by CBN which necessitated the re-introduction of Merchant banks, Commercial banks and Specialized banks like microfinance banks, development banks, non-interest banks, and mortgage banks. Commercial banks are licensed institutions with banking activities across region, nation and international communities while banking activities relegated to region or nation only are carried out by non-interest banks authorization by the CBN issues overtime. Example of other banks are: Bank of Agriculture (BOA) and the Bank of Industry (BOI) etc.

Merchant banks are institutions that provide finance and credit to non-retail customers and are authorized to take deposit from any natural or legal persons not below the sum of one hundred million naira per tranche or other such minimum amount as may be prescribed by the CBN from time to time (CBN, 2010).

According to Adekanye (1983), the cannon of lending can be summarized into 6 C's. They include: Character: customer's willingness to meet obligations when due; Capacity: customers' ability to settle financial obligations. Which is derived from well analyzed financial (cash flow) position of the firm; Capital: measures the customer's financial reserve which provides an indication of the customer meeting obligation when necessary; Collateral: assesses the value of pledged assets and determine their monetary value and also ensuring that they are free of encumbrance; Condition: the position of being affected by prevailing economic situations and Confidence: measures the faith of lender in the five C's discussed.

Banks are always required to prepare a comprehensive credit policy duly approved by their Board of Directors which should, inter alia cover loan administration, disbursement and appropriate monitoring mechanism etc. The policy should be reviewed at least every three years (CBN, 2010). The credit policies are important to banks because they help mitigate risk, sets out procedures for determining acceptable risk to onboard, and define procedures in dealing with credit relationship.

Banks credit are total amount of loans (advances) granted by the banking sector (CBN, 2003). Most bank credit in developing economies like Nigeria are accompanied with collateral that enforces repayment so as to avoid default. Credit aid channeling of savings vis-à-vis investment facilitation thus boosting growth in the economy. Invariably, helping to fulfil the intermediation role of banks, which is important for the growth of the economy.

Business loans and advances reflects bank credits to the industrial sector. According to Sanusi (2009), financial assistance granted to organization or firms in need of financial resources for business enhancement if called business loan.

Manufacturing Sector Performance in Nigeria
Manufacturing sector output cum growth in Nigeria has been mixed from 1981 to 2018. The sector has recorded both upswings (positive growth) and downswings (negative growth) during this period as shown in table 1, 2 and graphically exhibited in figure 1.
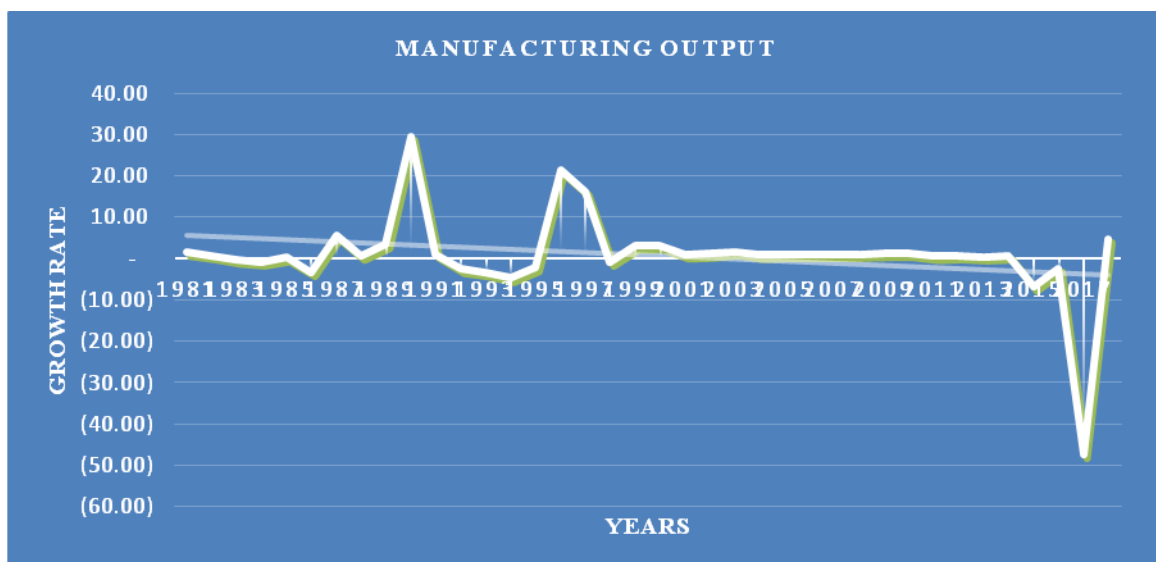
Table 1: Manufacturing sector Output in the 1980s and 1990s

Year	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999
Manufacturing Sector Output (N'billion)	1,558.0	1,167.9	1,416.9	1,398.0	1,665.9	1,829.4	1,706.0	1,592.9	1,609.3	1,459.2

Source: CBN 2018

Table 2: Manufacturing Sector Output in the 200s

Year	2001	2003	2005	2007	2009	2011	2013	2015	2017
Manufacturing Sector Output (N'billion)	1,666.49	1,918.09	2,350.99	2,823.53	3,323.41	4,216.19	5,826.36	6,586.62	6,288.90

Source: CBN 2018

Figure 1: Manufacturing Sector Output/Growth in Nigeria from 1983-2018

The positive manufacturing sector output growth were recorded in 1985,1987, 1990, 1996 as shown in figure 1. The manufacturing sector output also grew between 1999 and 2014, though the growth was slow and fragile indicating a path to recovery. On the contrarily, the sector experienced downswings (negative growth) from 1983-1984, 1986, 1992-1995, and 2015-2017 which indicated fall in productivity. Of particular mention is the negative growth of 2016, which

could be attributed to the effect of technical recession the Nigerian economy witnessed after recording two quarters consecutive negative growth.

Theoretical Framework

The critical role of Deposit Money Bank (DMBs) credits in stimulating industrial sector output cannot be overemphasized. This is because DMBs are at the center of financial intermediation of mobilizing funds from surplus units to deficit units of the economy for productive purpose. The intermediation role of DMBs is therefore important to the performance of the industrial sector output. However, the dearth of credit and high lending rate to the industrial could be attributed to the abysmal performance of the sector. This study is therefore been carried out on the strength of the following theories: Loan pricing theory and the Neo-classical theory of interest rate.

The loan pricing theory affirm the inability of banks to set high interest rate. For instance, high banks interest rates may induce adverse investment selection problems due to the narrowing of investment to only potential high-risks borrowers willing to accept it. High interest rate loans can instigate high risky projects/investment which can cause moral hazard behaviour of borrowers (Chodecai, 2004). Thus, the potential borrowers who are the most likely to default (adverse outcome) and create non-performing loans for the DMBs balance sheet are the most likely to be selected and granted credit because they aggressively pursue these loans with well packaged business plans and proposals likely to meet the credit policy criteria of the banks. Most of these loans when disbursed turn out to be bad credit risk (non-performing loan or toxic assets) due to the adverse selection process. Therefore, lenders may decide not to extend loan facilities (risk asset) even though they are inundated with viable business proposals in the marketplace to create good credit risks (Magaji, 2017). Asymmetrical information necessitates moral hazard which might dictate borrowers' activities into immoral engagements to meets requirement of loans (Ajayi, 1981).

The Neo-Classical Theory of Interest Rate: The neo-classical or the loanable fund theory of interest as propounded Wicksell (Swedish Economist) was later developed and supported by several leading economists like professor Robertson, bertil Ohlin, Lindhal and Myrdal. However, the theory in its present form is associated with Professor Robertson. According to the theory, struggles between demand and supply of loanable funds influences the interest rate. In the markets, there are those who supply loanable funds and those who borrow them. Interest rate will be such as shall bring about equilibrium between the loanable funds' demand and supply.

The theory of loanable fund is a distinctive improvement on the old classical theory of interest because the term 'supply of loanable funds' is wider in scope and includes not only savings out current income but also bank credit, dis-hoarding and dis-investment. Bank loans represents important funds, which are available on payment of interest by the borrower. Since loanable funds theory is more comprehensive, it is often referred to as real as well as monetary theory of interest. This theory is just the one of the two general approaches that have been followed in developing the modern monetary theory of interest rate. The loanable funds theory provides a

link between deposit money bank credits and industrial output, because the theory buttresses that borrowing by business for investment is determined by the cost of credit (interest rate).

In line with the loan pricing theory, interest rate set by banks as cost of credit facility to customers should be commensurate with the risk appetite of the borrower. This will place the financial institutions in a better position to perform its traditional function of financial intermediation. The attendant benefit of this is increased credits disbursement to all the productive sectors of the economy. In Nigeria, the manufacturing sector has not attracted the much-needed funding to enhance its output.

Empirical Review

Empirically, there are several postulations on the topic under study, some of which have been discussed under this review. For instance, Andabai and Eze (2018) investigated a causality between bank credit and manufacturing sector growth in Nigeria for the period of 1990- 2016. Using VECM and Johansen co-integration, the study revealed that bank credit had no short-run and long run equilibrium significant relationship with manufacturing sector growth in Nigeria. Causality test indicated that bank credit had no causal relationship with manufacturing sector growth in Nigeria. The study thus conclude that bank credit had not significantly contributed to manufacturing sector growth in Nigeria.

Ugwuanyi and Utazi (2017) examines the growth of manufacturing sector as a reaction to commercial bank credit in Nigeria for the period between 1980 – 2015. Using the OLS technique and ARDL for variables like; manufacturing value added (MVA), lending interest rate (LINT), exchange rate (EXR) and bank deposits (BD); the study showed that lending interest rate and exchange rate are the major constraints to manufacturing sector of Nigeria economy. The two variables negatively and significantly impacted on the economy in the first model and second model. This implies that manufacturing sector growth in Nigeria will be possible only when bank lending/interest rate and exchange rate is low to allow investors access to capital for investment and acquisition of machines and other equipment's for manufacturing in Nigeria. Ebele and Iorember (2017) also discovered negative impact of inflation and interest rate except loans and advances and broad money supply on manufacturing sector in their study of loan interest rate components and manufacturing sector in Nigeria. This is contradicted by the position of Tomola, Adebisi and Olawale (2012), Ebi and Emmanuel (2014) and Ogar, Nkamere and Effiong (2014) who revealed that commercial bank credit had a significant relationship on the manufacturing sector.

Akpan, Yilkudi and Apiah (2016) investigates the impact of lending rate on output of the manufacturing sub-sector using the Vector Error Correction Model (VECM) and annual data from 1981-2014. The empirical results indicated that high lending rate had negative impact on manufacturing output in the long-run. This suggests that increase in lending rate undermines manufacturing output, thus retarding growth in the real sector. This finding is line with Hassan (2016) whose multiple linear regression techniques study revealed that only the agricultural sector has enjoyed much of Bank credit with positive impact on the Gross Domestic Products

(GDP) while other sectors had limited attention in terms of bank credit to spur development in their sector.

Tawose (2012) investigating the effect of bank loans and advances on industrial performance in Nigeria between 1975 to 2009 and using Johansen and ECM discovered that industrial performance co-integrated with all the identified exploratory variables. Industrial sector as dependent variable was proxied by real GDP, while money deposit banks' loan and advances to the industrial sector, aggressive saving, interest rate, and inflation rate were independent variables. This suggested that the behavior of real GDP contribution to the industrial sector in Nigeria was significantly explained by the deposit money bank credit facilities.

Okafor, Ogbonna and Anaemena (2020) examined monetary policy and the industrial output of selected developing African economies using ARDL regression. The study found that monetary policies has significant impact on industrial output of Nigeria, South Africa and Kenya. However, the study also showed panel results that revealed that monetary policy has insignificant influence on industrial output in Africa.

Based on these divergent findings, this study intends to ascertain the role of Domestic Money Bank credit on industrial output in Nigeria.

RESEARCH METHODOLOGY

This study adapted the model used by Ogar, Nkamare, and Effiong (2014) but however considered a longer period study from 1981 to 2018. The study retained the components of industrial output as a function of deposit money bank loans, lending rates and the control variables as money supply (MS) and inflation (INFL). The model is expressed in a mathematical form as follows:

$Mo = f (DMBL, LR, MS, INFL)$ ………………………………………(1)

Where:

Mo = manufacturing output

$DMBL$ = deposit money bank loans

LR = deposit money bank lending rate

MS = broad money supply

$INFL$ = inflation rate

The stochastic or explicit form of the model is expressed as;

$Mo = b_0 + b_1DMBL + b_2LR + b_3MS + b_4INFL + U$ ………………… (2)

Mo = Dependent variable

$DMBL, LR, MS, INFL$ = regressors

b_o = Regression constant

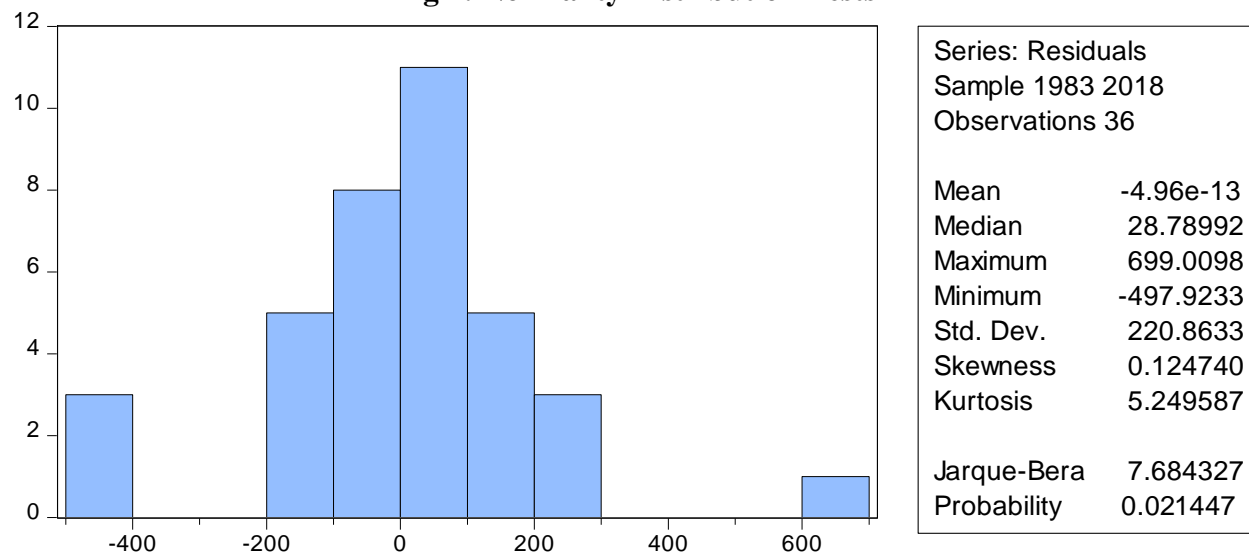b_1-b_4 = Unknown parameters or coefficients

U = stochastic error

On a priori, b_1 is expected to be positive because an increase in loans will lead to increase in the manufacturing output. ($b_1 > 0$). Similarly, b_3 is expected to be positive, hence an increase in broad money supply will lead to increase in industrial output($b_3 > 0$). On the other hand, b_2 is expected to be negative. This is because increase in lending rate will discourage borrowing thereby

leading to reduction in the industrial output($b_2<0$). Similarly, b_4 is expected to be negative in that, increases in inflation potentially reduces the value of investable funds thereby leading to a reduction in the level of output.

Presentation of Results and Analysis
This section is divided into three subsections. The unit root test is presented first, followed by Parsimonious Regression analysis. This leads to the presentation of the ARDL Bound test for long run study.

Fig 2: Normality Distribution Tests

Series: Residuals	
Sample 1983 2018	
Observations 36	
Mean	-4.96e-13
Median	28.78992
Maximum	699.0098
Minimum	-497.9233
Std. Dev.	220.8633
Skewness	0.124740
Kurtosis	5.249587
Jarque-Bera	7.684327
Probability	0.021447

Hence, using the normality distribution test, the result in figure 2 revealed that all the variables are normally distributed in the study. The kurtosis is above 3 proving that it is platykurtic while the p-value of 0.021447 is good for analytical purposes.

Test for Stationarity

Table 3: Unit Root Tests for Stationarity

Variables	ADF Statistics	TestCritical Values	P-value	Order of Integration	Remarks
D(DMBL)	-4.050865	-2.945842	0.0033	**I(1)**	Stationary @ 5%
D(INFL)	-5.585463	-2.945842	0.0000	**I(1)**	Stationary @ 5%
D(LR)	-7.789069	-2.945842	0.0000	**I(1)**	Stationary @ 5%
D(MO)	-2.749366	-1.950687	0.0074	**I(2)**	Stationary @ 5%
D(MS)	-4.757827	-3.540328	0.0026	**I(1)**	Stationary @ 5%

Source: Researcher's E-view 10.0 Computation

The Augmented Dickey-Fuller Unit root test was used for the study. The results revealed that all the variables were found to be stationery at order one (1) except MO which was stationary at order two (2). At both First and Second difference as reported, the test statistics was more negative than the critical value at the set level of significance. The reported P-values were all less

than 0.05 chosen level of significance for which cause, the Null Hypothesis of the presence of unit root in all the variables are convincingly rejected. Since, the variables were integrated of mixed order, the study will test for long-run relationship using ARDL bounds test for co-integration study.

Table 4: ARDL Parsimonious Regression

Dependent Variable: MO
Method: Least Squares
Date: 05/15/20   Time: 07:56
Sample (adjusted): 1985 2018
Included observations: 34 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MO(-2)	0.837794	0.131585	6.366935	0.0000
DMBL(-1)	-0.369010	0.072410	-5.096124	0.0000
DMBL(-2)	-0.418776	0.075688	-5.532921	0.0000
DMBL(-3)	-0.304308	0.069633	-4.370204	0.0002
INFL	0.504829	2.072609	0.243571	0.8097
INFL(-4)	1.552929	2.079096	0.746925	0.4627
LR	-1.357376	7.731726	-0.175559	0.8622
MS(-1)	0.232844	0.095751	2.431780	0.0232
MS(-2)	1.252519	0.123121	10.17307	0.0000
MS(-4)	-0.685291	0.123038	-5.569747	0.0000
C	23.25734	156.9986	0.148137	0.8835
R-squared	0.998203	F-statistic		1277.267
Adjusted R-squared	0.997421	Prob (F-statistic)		0.000000
Durbin-Watson stat		1.822118		

Source: Computation by author using E-view10.0

The results of the t-statistics for the four variables: Deposit Money Bank Loans (DMBL); Inflation Rate (INFL); Lending Rate (LR); and Money Supply (MS) including their probability values are -5.096124 (0.0000), -5.532921 (0.0000),-4.370204 (0.0002) all for DMBL at lag 1, lag 2 and lag 3 respectively, while MS at lag 1, lag 2 and 3 show 2.431780 (0.0232), 10.17307 (0.0000),-5.569747 (0.0000) respectively. These results prove that only DMBL and MS at their lagged periods have significant relationship with Industrial output (MO). However, INFL and LR at 0.243571 (0.8097) and -0.175559 (0.8622) respectively have insignificant relationship with MO in Nigeria. The R-squared and Adjusted R-squared of 0.998203 and 0.997421 further prove that variation in the output of Manufacturing (MO) are mostly captured in the changes in the components of DMBL, INFL, LR and MS to the tune of 99%. This implies that variation in the components of the variables combined by 1 will prove changes to the tune of 99% in MO. The 1.822118 as revealed by Durbin Watson statistics showed that there is absence of autocorrelation in the study and the findings of our study is fit and accepted for policy implementation.

Table 5: ARDL Bound test and Long Run Result

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	4.145014	10%	2.2	3.09
K	4	5%	2.56	3.49
		2.5%	2.88	3.87
		1%	3.29	4.37
			Finite Sample: n=40	
Actual Sample Size	36			
		10%	2.427	3.395
		5%	2.893	4
		1%	3.967	5.455
			Finite Sample: n=35	
		10%	2.46	3.46
		5%	2.947	4.088
		1%	4.093	5.532

Source: Computation by author using E-view10.0

The results of the ARDL bounds test shown in table 3 indicates that the F-statistic with a coefficient of 4.145014 is greater than the lower bound value of 2.56 and upper bound value of 3.49 at 5% level of confidence show long run relationship in the study. Thus, a long run position is established between deposit money bank credit and industrial output in Nigeria.

Model One

Test of Hypothesis One (1)

H $_{01}$: Deposit Money Bank Credit (DMBL) have no significant relationship with Industrial output (MO) in Nigeria.

The component of Deposit Money Bank Credit (DMBL) has t-statistic values of -5.096124, -5.532921,-4.370204 and p-values of 0.0000, 0.0000, 0.0002 at lag 1, lag 2 and 3 respectively at 5% significance level and were found to have significant relationship with the Nigerian industrial output. However, this significant relationship was negative implying that DMBL negatively influence the industrial output in Nigeria. The study therefore holds that industrial output was boosted but negatively and significantly by deposit money banks credits within the period of the study.

Decision rule: We reject null hypothesis of no significant relationship. Thereby, accepting the alternative that there is significant impact of DMBL on Nigerian manufacturing output.

Model Two
Test of Hypothesis Two (2)
H $_{02}$: There is no significant relationship between Inflation rate (INFL) and Industrial output in Nigeria.

The component of INFL has t-statistic value of 0.243571, 0.746925 with p-values of 0.8097 and 0.4627 and was found to have an insignificant relationship with the Nigerian Industrial output but the impact was both insignificant and positive for INFL at 5% significance level since its p-value was well above 0.05 at both normal and lag 4 period. The study noted that past level of INFL position also influenced the present industrial output position in Nigeria as indicated in the results but insignificantly. The parsimonious regression result holds that the components of INFL boosted the Nigerian industrial output but insignificantly within the period of the study.

Decision rule: We accept the null hypothesis of no significant relationship between INFL and Nigerian manufacturing output.

Model Three
Test of Hypothesis Three (3)
H $_{03}$: Lending Rate have no significant relationship with industrial output in Nigeria.

The component of Lending rate (LR) has t-statistic value of -0.175559, and p-values of 0.8622 and was found to have an insignificant relationship with the Nigerian industrial output. The impact was however both insignificant and negative for LR at 5% significance level since its p-value was well above 0.05. The study noted that past level of lending rates positions also influenced the present industrial output negatively in Nigeria as indicated in the results. The study therefore holds that LR influence the Nigerian industrial output insignificantly within the period of the study.

Decision rule: We accept the null hypothesis of no significant relationship between Lending Rate (LR) and Nigerian Manufacturing Output.

Model Four
Test of Hypothesis Four (4)
H $_{04}$: Money Supply (MS) have no significant relationship with Industrial output (MO) in Nigeria.

The component of Money Supply (MS) has t-statistic values of 2.431780, 10.17307, -5.569747 and p-values of 0.0232, 0.0000, 0.0000 for lag 1, lag 2 and lag 4 respectively at 5% significance level and was found to have significant relationship with the Nigerian industrial output. However, this significant relationship was negative at lag 4 suggesting that MS negatively influence the industrial output in Nigeria after lagging of 4 years. But the significant relationship was positive at lag 1 and lag 2 signifying that after 1-year and 2-years lag, the component of MS positively influences the industrial output in Nigerian significantly. Thus, the study holds that industrial output was boosted significantly by money supply within the period of the study.

Decision rule: We reject null hypothesis of no significant relationship between Money Supply and Industrial output in Nigeria.

Discussion of Findings, Conclusion and Recommendation

From table 3 to 5, the results showed the conditions of our findings and the position of the independent variables on the dependent variable. The normality results present that all the variables and findings of the study are normally distributed. Four hypotheses form the basis of the study and the ADF unit root test showed that all the variables are stationary and good for analytical procedures. The ARDL parsimonious regression which was necessitated by the presence of different levels of stationarity showed that the four variables facilitated both positive and negative influence on industrial output and the result also showed the presence of significant long run relationship in the study. Signifying that all the deposit money bank loans and other components like money supply, inflation and lending rate variables combined were able to facilitate long run significant change on the industrial output in Nigeria.

The short run dynamics proved that only DMBL and MS variables can facilitate significant change on the industrial output with DMBL showing negative influence while MS had positive impact. The inflation and lending rate components proved that they were unable to significantly distinguish any major change in the industrial output within Nigeria for the period under study. However, the overall adjusted r-squared proved that a large proportional change manifested on industrial output by virtue of an increase in the variables to the tune of 99.8% approximately in Nigeria. The Durbin Watson statistics result (1.822) further approved the acceptability and reliability of the result of the study for the Nigerian economy.

The results inclusively showed that deposit money bank credit or loans and money supply facilitates significant change in industrial output in Nigeria. The findings thus imply that deposit money bank loans and money supply enhance industrial output in Nigeria within the period under review. The result of the study is supported by the findings of Ebi and Emmanuel (2014) whose study revealed that commercial banks credit improved industrial output and a more robust support of our findings is Okafor, Ogbonna and Anaemena (2020) who found a significant relationship both in the short run and long run between monetary policy and industrial output for Nigeria, South Africa and Kenya. However, the panel data study revealed that monetary policy was unable to significantly improve the industrial output in Africa which is contrary to our findings. But the components of lending rate and inflation rate proved to insignificantly improve the components of industrial output which have been as a result of high cost of production, low infrastructural capacity, illiquidity, misappropriation of funds among others.

The findings of the study confirms that the central bank's mandate of ensuring monetary and price stability through the use of policy instruments to control inflation as well as its risk based pricing model policy issued to promote transparency in pricing and setting rates with the ultimate goal of driving down lending rates in Nigeria and boosting industrial output growth have not achieved the desired result. The study noted that the accumulated years of infrastructural (power, road, energy etc) decay and neglect by successive administrations (fiscal authority) in Nigeria could have contributed to the high cost of doing business in the country and by extension high lending rate. The cost of doing business (indirect cost) is a cost element in the cost components of determining lending rates in Nigeria. Therefore, the study concludes that the well thought-out policies of the central bank such as the risk based pricing model cannot achieve its intended

purpose without the collaboration of the fiscal authorities noting that unless deposit money bank loans sourced especially from private sector deposits achieve a single digit lending rate and supported by a well-developed infrastructural system in Nigeria, optimal industrial output growth may remain a challenge.

The study therefore recommends improved policy measures by the central bank towards controlling inflation and reducing inflationary pressure on manufacturing firms' profitability and ability to meet contractual obligations with the DMBs as and when due. The fiscal authority should also increase capital investment to critical infrastructures such as power, roads, energy etc. which is about 19.81 percent of GDP against world average of 24.29 percent as at 2018. The increase in budgetary allocation and releases for capital investments to over global average would have a direct impact of driving down the cost of doing business and lending rate in Nigeria and ultimately boost industrial sector borrowings and investments. Finally, as a stop gap measure, the fiscal authority should intensify efforts at increasing the quantum of intervention funds to equal or over trillion naira, priced at single digit interest and targeted exclusively to the manufacturing sector thereby boosting its access to credit, enhancing its productivity and boosting industrial output in Nigeria.

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