ANALYSIS OF THE ROLE OF BANKS IN FINANCING THE AGRICULTURE AND MANUFACTURING SECTORS IN NIGERIA

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ABSTRACT

This study analyzes the role of banks in financing the agriculture and manufacturing sectors in Nigeria from
1981 – 2010. Data were generated from the Central Bank of Nigeria Statistical Bulletin (2010) and analyzed using both
descriptive and inferential techniques. Two multiple regression models were estimated using the Software Package for
social Sciences (SPSS). The tolerance values are greater than zero in the estimated models. The absence of
multicollinearity among the independent variables (IVs) is further supported by an engenval that is less than 0.5.
The descriptive results show that Nigeria's commercial and merchant banks lagged behind in financing agriculture when
compared to manufacturing. Average bank credit to agriculture, within the period, ranged between 9.0% and 10.1%.
Average bank credit to the manufacturing sector ranged between 32.0% and 36.8%. Within the period, average
contribution of agriculture to GDP was 33.5% while contribution of the manufacturing sector to GDP averaged 5.4%.
The inferential results show a significantly weak correlation between commercial bank lending and the contribution of
agriculture to GDP. However, there is a significantly positive correlation between merchant bank lending and agricultural
contribution to GDP. The beta coefficient shows that agricultural contribution to GDP increased significantly by 48.22%
with a 100% increase in merchant bank lending to agriculture. With a 100% increase in commercial bank lending, the
contribution of manufacturing to GDP declined by 27.32%.

However, the contribution of the manufacturing sector to GDP increased by 40.08% as merchant bank lending to
manufacturing increased by 100%. There is also a significantly inverse correlation between commercial bank lending and
manufacturing contribution to GDP. The model R^2 shows that 23.04% of the variation in agricultural contribution to GDP
is explained by an increase in bank lending to the sector. It also shows that 18.75% of the variation in manufacturing
contribution to GDP is explained by a change in aggregate lending. The results, however, indicate that the role of banks in
facilitating the contribution of the agriculture and manufacturing sectors to economic growth is still significantly limited.
The rise of numerous public intervention funding programs in these sectors is evidence of the lagging banking
intermediation. The growing risk aversion of Nigerian banks is indicative of the liquidity and funding shortages in the
agriculture and manufacturing sectors. Monetary policy should, therefore, emphasize mandatory sectoral allocation of
credit with appropriate incentives to boost the flow of bank credit to these sectors.

KEYWORDS: Bank Credit, Agricultural GDP, Manufacturing GDP, Regression Analysis

INTRODUCTION

The critical role that banks play in financing the agriculture and manufacturing sectors in Nigeria dates back to

post independence. Their primary role in these sectors is credit extension. Amongst the various banking institutions in Nigeria, merchant, commercial and development banks have been the most effective in carrying out this function. The manufacturing sector acts as a catalyst that accelerates the pace of structural transformation and diversification of the economy, thus enabling a country to utilize its factor endowments and to depend less on the foreign supply of finished goods or raw materials (Adediran and Obasan, 2010). The manufacturing sector also creates investment capital at a faster rate than any other sector of the economy while promoting wider and more effective linkages among different sectors. On the other hand, the agricultural sector has a multiplier effect on a nation's socio-economic and industrial fabric, as a strong and efficient agricultural sector would enable a country to feed its growing population, generate employment, earn foreign exchange, and provide raw materials for industries (Ogen, 2007). It has also the potential to be the industrial and economic springboard from which a country's development can take off, shape the landscape, and provide environmental benefits.

Adediran and Obasan (2010) have argued that in advanced and developing countries (of which Nigeria is inclusive), productivity growth tends to be higher in agriculture than manufacturing, but in terms of output growth manufacturing continues to outperform agriculture. The manufacturing sector offers more opportunities for capital accumulation than the agricultural sector since it is more spatially concentrated than the agricultural sector which is spatially dispersed. Nevertheless, many years of neglect and maladministration on the part of successive military and civilian governments, coupled with corruption and indiscriminate policy reversals, have rendered these sectors a comatose.

Responding to the dilapidated state of these sectors, the Federal Government of Nigeria prioritized the agriculture and manufacturing sectors by directing commercial banks, through the Central Bank of Nigeria, to devote a certain percentage of their loanable funds to these sectors. Hence, to encourage commercial banks to meet their target, the Central Bank of Nigeria introduced the Agricultural Credit Guarantee Scheme (ACGS) in 1979, to guarantee credit disbursement by commercial banks. The dimensions of government intervention funding in the agriculture and manufacturing sectors in Nigeria are summarized in Appendix A. The modest achievements, recorded by the agriculture and manufacturing sectors in the early 1970s and up to the early 1980s, could partly be attributed to a loose and favourable monetary policy regime. The manufacturing sector recorded a 9.5 percent contribution to GDP and over 70.0 percent average capacity utilization in 1975 (Mike, 2010).   Prior to financial sector deregulation in 1986, interest rates were fixed by administrative fiat by the Central Bank of Nigeria (CBN) with the sole aim of chanelling credit to the preferred sectors like agriculture and manufacturing. With the liberalization of the economy and the abolition of mandatory sectoral allocation of credit in 2000, the market-determined interest rates influenced the credit allocation to the real sector of the economy.

According to a recent report by the Central Bank of Nigeria (CBN), aggregate bank credit (net) to the domestic economy fell by 2.7% in the first six months of 2012, in contrast to the growth of 54.0% at the end of the second half of 2011. The decline in net domestic credit reflected the substantial decline of 177.8% in net claims on the Federal Government. However, the structure of Domestic Money Banks' credit at the end of June, 2012 showed that short-term maturities remained dominant. Outstanding loans and advances with maturity of one year and below accounted for 59.1%, compared with 60.0% at the end of the second half of 2011. The medium-term (≥1 year and < 3 years) and long-term maturities (3 years and above) stood at 14.8% and 26.1%, compared with 15.2% and 24.8%, respectively, at the end of the second half of 2011.

Similarly, deposits below one year constituted 97.6% of the total. Further analysis showed that 77.3 percent of the deposits had a maturity of less than 30 days, while long-term deposits of more than three years constituted a mere 0.01% at the end of June 2012, compared with 0.08 percent at the end of the second half of 2011.

Average term deposit rates rose to 6.81% from 5.94% in the second half of 2011. Prime and maximum lending rates moved to 17.02 and 23.27 from 16.82 and 23.85 percent respectively, in the second half of 2011. The spread between average term deposit rates and maximum lending rates narrowed to 16.46 percentage points in the first half of 2012 from 18.06% in the second half of 2011. Deposit rates were negative in real terms given the year-on-year inflation rate of 12.9% in June, 2012.

Banks in Nigeria are highly liquid, but they believe that lending to the agriculture and manufacturing sectors is very risky, hence increasing credit to these sectors is not justifiable in terms of risk and cost (Olorunsola, 2001). Adebiyi and Babatope-Obasa (2004) have shown that the liberalization of the Nigerian economy has promoted manufacturing growth between 1970 and 2002. However, interest rate spread and government deficit financing have negative impact on the growth of the manufacturing sector.

The major research questions in this study are:

- To what extent has bank credit impacted on agricultural GDP?

- To what extent has bank credit impacted on manufacturing GDP

Within these contexts the following null research hypotheses are tested:

H_{01}: There is no significant relationship between bank credit and agricultural contribution to the Gross Domestic Product (agricultural GDP)

H_{02}: There is no significant relationship between bank credit and manufacturing contribution to the Gross Domestic Product (manufacturing GDP).

The next part of the paper presents the review of relevant literature, followed by the methodology of the study. The paper then shows the results and discussion and the conclusion.

LITERATURE REVIEW

Bank credit aids in generating self-employment, maintaining a business to take advantage of economics of scale and help prevent an economic activity from total collapse in the event of a natural disaster (Nwanyanwu, 2011). Maftau (2003) argues that bank credit helps in reactivating, expanding and modernizing all types of agricultural enterprise, which are considered economically feasible and desirable to the achievement of stated economic goals of self-sufficiency in agricultural production. In this context, bank credit provides incentives to adopt new technologies that would have been more slowly accepted (Eyo, 2008 and Olokyo, 2011).

Credit to the agricultural sector could take the form of an overdraft, short, medium, or long-term credit, depending on the purpose and gestation period of the project (Muftau, 2003). The works of Rahji and Adeoti (2010) identified that agricultural credit is a major input in the development of the agricultural sector in Nigeria, yet there has been a decline in banks' enthusiasm to lend to the sector because of the inherent problems associated with the sector. Iheanyi (2012),

however, shows how commercial banks have exhibited their concerns for the agricultural sector in Nigeria by funding it extensively.

Mike (2010) has argued that the manufacturing sector is reputed to be an important engine of growth, an antidote for unemployment, a creator of wealth, and the threshold for sustainable development, thus it is expected to dominate, shape, and define the core path of industrialization. Adediran and Obasan (2010) have noted that the manufacturing sector contributes to a nation's economic development, as it increases the chances of industrialization. Anyanwu (2000) pointed out that low level of investments have constrained productivity in Nigeria. The low investments have been traced largely to banks unwillingness to make credits available to manufacturers, owing partly to the mis-match between the short-term nature of commercial banks' funds and the medium to long-term nature of funds needed by industries.

Nwanyanwu (2011) identified banks' traditional roles to include financing of agriculture, manufacturing, and syndicating of credit to productive sectors of the economy. In order to ensure proper distribution of bank credit, the Nigerian economy was divided into two (the priority sectors and non-priority sectors) and a certain percentage of bank credit allocated to these sectors, as directed by the Central Bank of Nigeria (CBN) circular 27 of 1993 (Ekezie, 2006).

In the past eight years alone, more than N800 billion was made available to operators in the manufacturing sector for the purpose of re-tooling their machines and increasing productivity. The impact of these intervention funds have not manifested in the sector's contribution to GDP. It is equally reported that manufacturing output in Nigeria was particularly hit by the 2007-2009 global financial crisis, estimated to have fallen to its lowest levels since 1969 in terms of its contribution to GDP (Oputu, 2010). At the end the relevance of the financial services industry to the financial life-cycle requirements of the productive sector is now being evaluated in spite of the numerous economic reforms (Toby, 2013).

The major challenges to real sector financing from banks in Nigeria have been identified as unfavourable macroeconomic environment, cumbersome documentation process, inadequate long-term finances, lack of data base on borrowers and poor infrastructure (Anyanwu, 2010). The works of Oputu (2010) present a fragmented "rent-seeking" banking industry in Nigeria that earns income by capturing economic rent through manipulation and exploitation of the economic and political environment, rather than earning profits through economic transactions and the production of value-addition wealth.

It has been shown clearly that banking reforms in Nigeria have not adequately and positively impacted the Nigerian economy (Azeez and Ojo, 2010). Akpansung and Babalola (2012) have demonstrated statistically that private sector credit impacts positively on economic growth in Nigeria, although lending rate impedes growth. Obamuyi *et al* (2012) show that manufacturing capacity utilization and bank lending rates significantly affect manufacturing output in Nigeria. Okwo *et al* (2012) have found a strong and positive relationship between bank credit to the private sector and economic growth in Nigeria. Their study recommends an easy monetary policy regime by lowering the minimum rediscount rate, as well as adopting direct credit control to favour preferred sectors like agriculture and manufacturing. Obilor (2013) has found that the Agricultural Credit Guarantee Scheme (ACGS) produced a significantly positive effect on agricultural productivity in Nigeria.

The empirical works of Onoja *et al* (2012) have demonstrated an exponentially increasing trend of agricultural credit supply in the Nigerian economy immediately after financial sector reforms. Udah and Obafemi (2012) employed the

variance decomposition and impulse response paradigms to test whether or not financial sector variables stimulate the growth of output in the agricultural and manufacturing sectors of the Nigerian economy. The results suggest that relaxing the financial sector development constraints and deepening the financial sector are crucial to boosting economic growth in Nigeria. The studies by Onoja and Agumagu (2009) are, however, critical of the role of commercial banks and Federal Government intervention funds in advancing the growth of the agricultural sector between 1999 and 2006. Akinyele and Osinubi (2006) argue that the real sector relies on the banking system for working capital with which to purchase inputs locally and abroad. Increases in bank lending rates compound the problems of rising cost of working capital, thereby increasing the significance of the cost of funds in the performance of the sector.

Ikenna (2012) has employed time series data from 1970-2009 on an Autoregressive Distributed Lag (ARDL) – Based Test Model to test for the long and short run impact of financial deregulation and the possibility of a credit crunch in the real sector. The results suggest that deregulating the Nigerian financial system had an adverse boomerang effect on the credits allocated to the real sectors in the long run, and in the short run financial liberalization was in all insignificant and negative. Ikenna also concludes that Deposit Money Banks (DMBs) in Nigeria have a strong discriminatory credit behaviour towards the real sector (agriculture and manufacturing) and the SMEs as credit crunch is found to be present in these sectors both in the short and long run.

Both theory, dating back to Schumpeter (1934), and more recent empirical research (e.g. King and Levine, 1993a, 1993b; Rajan and Zingales 1998; Petrick, 2004; Gurkinger and Baucher, 2007) indicate that capital-constrained firms grow more slowly, have fewer workers and make few productive investments than firms utilizing debt in their capital structure. The Mckinnon-Shaw paradigm postulates that government restrictions on the operations of the financial system, such as interest rate ceiling, direct credit program and high reserve requirements may hinder financial deepening and this may in turn affect the quality and quantity of investments, and hence have a significantly negative impact on economic growth (McKinnon, 1973 and Shaw, 1973).

Izhar and Tariq (2009) have shown that during the post-reform period in India, institutional credit is not a significant determinant of agricultural production. Medyawati *et al* (2011) have shown that, although banking development is highly correlated with agriculture and manufacturing growth, the contribution of these sectors to the economic growth of Indonesia is relatively small. Acha (2012) has found that a significant relationship exists between non-bank financial institutions' (NBFIs) credit and the manufacturing/agricultural GDP in Nigeria.

METHODOLOGY

Annual time series data for this study were generated from the Central Bank of Nigeria Statistical Bulletin for the period of 1981-2010. The dependent variables are agricultural contribution to GDP (ACGDP) and manufacturing contribution to GDP (MCGDP). The independent or explanatory variables are commercial banks' lending to agriculture (CBLA), merchant banks' lending to agriculture (MBLA), commercial banks' lending to manufacturing (CBLM) and merchant banks' lending to manufacturing (MBLM).

Two levels of analysis were adopted in the study: descriptive and inferential statistics. The descriptive analysis relied on the Panel Data I (1981-2000) and Panel II (2001-2010) with calculation of the mean and standard deviations for the two comparative periods. The comparative trend graphs were plotted for the comparative periods.

The inferential analysis involved the specification of two multiple regression equations as follows:

- $ACGDP = \alpha + \beta_1 CBLA + \beta_1 MBLA + \varepsilon i$

- $MCGDP = \alpha + \beta_1 CBLM + \beta_1 MBLM + \varepsilon i$

The problem of multicollinearity addressed with the relevant collinearity diagnostics obtained from the Software Package for Social Sciences (SPSS). Specifically, the tolerance, variance inflation factors (VIFs), condition indices and engenvals test statistics were interpreted in line with the standard rules.

RESULTS AND DISCUSSIONS

Descriptive Analysis

Table 1 shows a descriptive analysis of the role of deposit money banks in facilitating agriculture and manufacturing contribution to GDP. The table shows that average bank credit to the agriculture sector in 1981-2000 was 9.0% and 10.1% for commercial and merchant banks respectively. In the same period, average bank credit to the manufacturing sector was 32.0% for commercial banks and 36.8% for merchant banks. From panel data II (2001-2010) we see average commercial bank credit was 3.74% and 17.88% for agriculture and manufacturing sectors respectively while average contribution of these sectors to GDP was 41.13% (agriculture) and 3.95% (manufacturing) respectively. The comparative data have shown that in terms of productivity and contribution to Gross Domestic Product, the agricultural sector outweighs the manufacturing sector as average contribution of the agricultural sector is 33.5% (Panel Data I) and 41.13 (Panel Data II) while average manufacturing contribution to GDP is 5.4% and 3.95% respectively.

The standard deviation of commercial bank lending to agriculture fell from 6.31% in the 1981-2000 period to 1.96% in the 2001-2010 period, reflecting less risk exposure to the sector. The same decrease in risk exposure is found in terms of commercial bank lending to manufacturing as the standard deviation fell from 8.65% in period 1 to 5.89% in period 2. In spite of a high standard deviation of 6.79% in the 1981-2000 period, the merchant banks allocated a substantial portion of their credit portfolio to the manufacturing sector.

Table 1: Bank Credit and the Contribution of Agriculture and Manufacturing to GDP

| S/N	Description	Mean (%)	Standard Deviation (%)
	Panel Data 1: 1981 - 2000		
1	Sectoral allocation of commercial bank credit to agriculture	10.1	6.31
2	Sectoral allocation of merchant bank credit to agriculture	9.0	3.53
3	Contribution of Agriculture to GDP	33.5	1.16
4	Sectoral allocation of commercial bank credit to manufacturing	32.0	8.65
5	Sectoral allocation of merchant bank credit to manufacturing	36.8	6.79
6	Contribution of Manufacturing to GDP	5.4	0.87
	Panel Data II: 2001 – 2010		
7	Sectoral allocation of commercial bank credit to agriculture	3.74	1.96
8	Contribution of Agriculture to GDP	41.13	2.42
9	Sectoral allocation of commercial bank credit to manufacturing	17.88	5.89
10	Contribution of manufacturing to GDP	3.95	0.21

Source: Author's computation based on published data in Central Bank of Nigeria Statistical Bulletin (2010)

Figure 1 shows that the ratio of commercial and merchant banks' credit to the agricultural sector depicts a rising trend between 1981 to 2000. This was accompanied by an increasing agricultural contribution to the GDP for the same

period. Figure 2 shows a declining trend in merchant bank lending to the manufacturing sector between 1981 and 2000. However, commercial banks' credit to the manufacturing sector showed a rising trend for the same period. The average manufacturing contribution to GDP declined between 1981 and 2000.
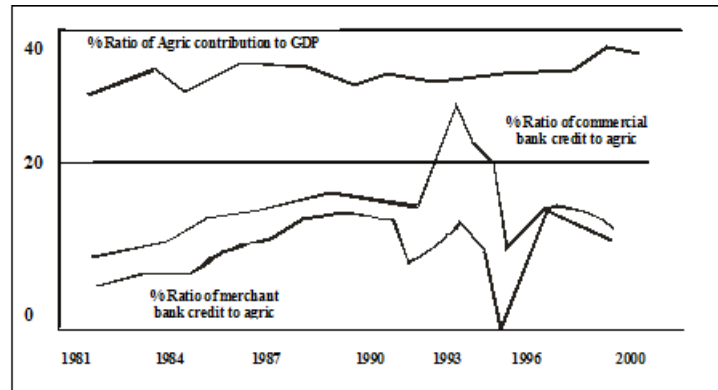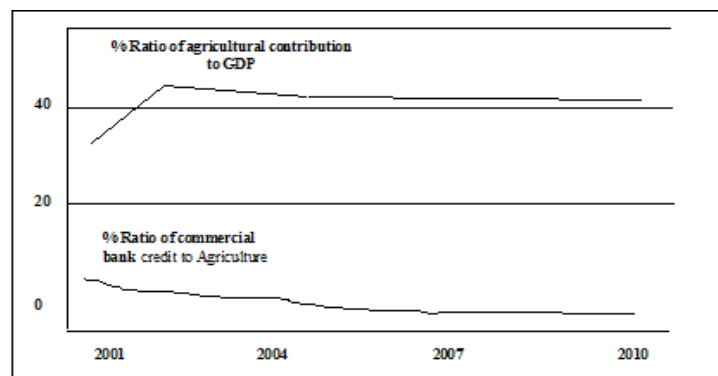

**Figure 1: Trend of Commercial and Merchant Banks Credit and
Agricultural Contribution to GDP (1981-2000)**
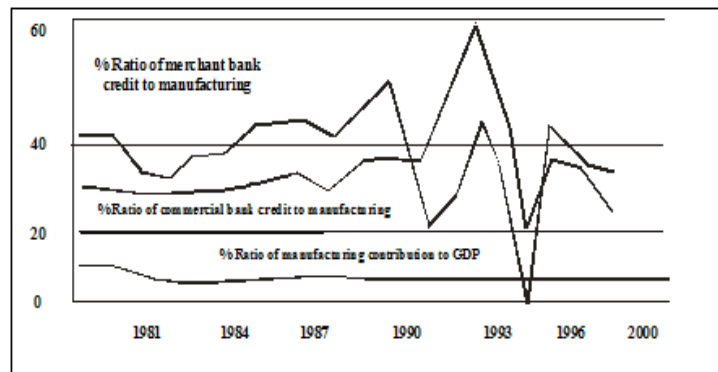
**Figure 2: Trend of Commercial and Merchant Banks Credit and
Manufacturing Contribution to GDP (1981-2000)**

Figure 3 shows that aggregate commercial banks' lending to the agricultural sector declined between 2001 and 2010, with a consequential slowly declining agricultural sector's contribution to the GDP. There was a radical decline in the sectoral allocation of commercial banks' credit to the manufacturing sector between 2001 and 2010, with the sector's contribution to GDP showing a nearly constant trend.

**Figure 3: Trend of Commercial Banks Credit and Agricultural
Contribution to GDP (2001-2010)**
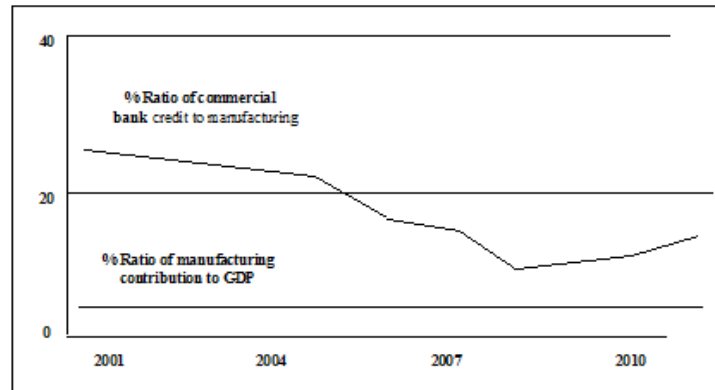
**Figure 4: Trend of Commercial Banks Credit and Manufacturing
Contribution to GDP (2001-2010)**

Tests of Multi-Collinearity in Models 1 & 2

The multi-collinearity and autocorrelation results are summarized in Appendix B. The variance inflation factors (VIFs) range between 1.0020 and 1.4810, far below the 10.0 threshold. The eigenvals that correspond to the highest condition index and variance constant is 0.06928 (Model 1) and 0.0125 (Model 2). We can safely infer that there is no strong multicollinearity between our independent variables (IVs) and hence the explanatory and predictive powers of Models 1 and 2 are robust.

Inferential Results

The results in Table 2 show a weak and insignificant correlation between commercial banks' lending and agricultural contribution to GDP. With a correlation coefficient of 0.2669, the t-test of -0.0150 falls within the critical region of ±0.9896. Hence there is no significant relationship between commercial banks' credit and agricultural GDP. A beta coefficient of -0.0039 shows that the agricultural GDP is significantly insensitive to changes in the sectoral allocation of commercial banks' credit to the agricultural sector. However, we find a significantly positive correlation between merchant bank lending and agricultural GDP at the 5% level.

With a correlation coefficient of 0.4822, the computed t-test statistic of 1.8070 falls outside the critical region of ±0.0897. The beta coefficient of 0.4822 shows that agricultural GDP is significantly sensitive to changes in merchant bank lending to the agricultural sector. Specifically, a 100 percent increase in merchant bank lending would bring about a 48.22 percent increase in agricultural sector's contribution to GDP.

Table 2: Relationship between Bank Lending and Agriculture Contribution to GDP

Model	Independent Variables	
Variables	**CBLA**	**MBLA**
B	-0.0015	0.2771
SE B	0.1061	0.1534
95% Confidence	-02.264	-0.0480
Interval B	0.2233	0.6022
Beta	-0.0039	0.4822
SE Beta	0.2669	0.2669
Correl.	0.2708	0.4806
Partial Corr.	-0.0032	0.3963
Partial	-0.0036	0.4116

Table 2: Contd.,

T-test	-0.0150	1.8070
Sig.t.$_{(0.05)}$	0.9896	0.0897

B constant = 30.7326, SE B. Constant = 1.4269,
Interval B Constant = 3.75.7574, t-constant = 21.539,
Sig. t constant = 0.000

The results in Table 3 show a significantly inverse correlation between commercial bank lending to the manufacturing sector and the sector's contribution to GDP. A beta coefficient of -0.2732 confirms this negative relationship at the 5% level of significance. With a correlation coefficient of 0.3911, we find a significantly positive relationship between merchant bank lending and manufacturing GDP. The computed t-test of 1.7890 falls outside the critical region of ±0.014 at the 5% level of significance. A beta coefficient of 0.4008 shows that manufacturing GDP is positively sensitive to merchant bank lending.

Table 3: Relationship between Bank Lending and Manufacturing Contribution to GDP

Model	Independent Variables	
Variables	**CBLM**	**MBLM**
B	-0.0277	0.0320
SE B	0.0227	0.0179
95% Confidence	-0.0756	-0.0057
Interval B	0.0202	0.0700
Beta	-0.2732	0.4008
SE Beta	0.2240	0.2240
Correl.	-0.1857	0.3412
Partial Corr.	-0.2666	0.3911
T-test	-1.2190	1.7890
Sig.t.$_{(0.05)}$	0.2393	0.014

B constant = 5.2590, SE B. Constant = 0.9107,
Interval B Constant = 7.1804, t-constant = 5.7750,
Sig. t constant = 0.000

The results are significant for both models I and II (Table 4). The coefficient of determination for Model I is 0.2304 and shows that 23.04 percent of the variation in agricultural contribution to GDP is explained by changes in the sectoral allocation of bank credit to the agricultural sector. The computed R^2 is 0.1875 in model II. It is obvious that 18.75 percent of the variation in manufacturing GDP is explained by commercial and merchant banks' credit allocation to the manufacturing sector.

Table 4: Model Summary

Summary	Model I (*)	Model II (**)
Multi R	0.4800	0.4330
R^2	0.2304	0.1875
Adjusted R	0.1342	0.0919
F-ratio	2.3950	1.9610
Sig. F	0.1230	0.1710
Rsqch	0.2304	0.1875
Sigch	0.1230	0.171
S.E	1.9905	0.8442

* **Model I:** ACGDP = a + b CBL$_A$ + bMBL$_A$ + E$_i$
** **Model II:** MCGDP = a + b CBL$_M$ + bMBL$_M$ + E$_i$

CONCLUSIONS

The descriptive statistics shows that the manufacturing sector has been more favoured than agriculture in terms of bank credit allocation in Nigeria. However, the contribution of the agricultural sector to the gross domestic product in the comparative period exceeded the contribution of the manufacturing sector. With a decrease in commercial banks risk exposure, agricultural lending declined substantially in the comparative periods. The banks' risk aversion could have contributed significantly to the liquidity and funding shortages in the manufacturing and agricultural sectors.

From the inferential results, it is evident that a significantly weak correlation exists between commercial bank lending and agricultural sector's contribution to GDP. However, a significantly positive correlation exists between merchant bank lending to agriculture and agricultural GDP. However, only 23.04% of the variation in agricultural GDP is explained by aggregate sectoral allocation of bank credit to the sector. Only 18.75% of the variation in manufacturing GDP is explained by aggregate bank credit.

The role of banks in financing the agricultural and manufacturing sectors in Nigeria is still limited, hence the increase in direct intervention funding in the industrial sector. In addition to the consequences of a maturity mismatch, the near-absence of long-term deposits has continued to constrain the ability of banks to create long-tenored risk assets crucial for economic development. A rising interest rate has the potential for impairing borrowers' ability to service loans, leading to increased non-performing loans (npls) and higher loan-loss provisions.

Monetary policy should, therefore, emphasize mandatory sectoral allocation of bank credit with appropriate incentives to boost the flow of credit to the agricultural and manufacturing sectors. The government should put in place a revolving intervention fund to meet the long-term funding needs of the manufacturing sector which Deposit Money Banks (DMBs) are unwilling and unable to provide. The financial sector must equally seek ways of making resources more available to the productive sector of the economy at zero or low cost of funds. By shoring up its funding for the priority sectors, the banks can help to stabilize the economy and alleviate the impact of oil shocks.

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APPENDICES

Appendix A

Table 5: A Summary of Government Intervention in the Agriculture and Manufacturing Sector

Intervention Fund	Objectives
The Agricultural Credit Guarantee Scheme Fund	• Established in 1979 by the federal military government under the agricultural credit guarantee scheme fund decree 1977. • It was to provide guarantee in respect of loans granted by any bank for agricultural purposes with the aim of increasing the level of bank credit to the agricultural sector. • The agricultural purposes in respect of which loans can be guaranteed by the fund are those connected with the establishment or management of plantation for the production of rubber, oil palm, cocoa, coffee, tea and similar crops.
The Small and Medium Industries Equity Investment Scheme	• Introduction by the CBN and the Bankers' Committee in 2001. • To provide both finance and managerial expertise to the small and medium industries (SMIs) in the Nigerian economy. • The guidelines for the scheme require all deposit money banks in Nigeria to set aside 10 percent of their pre-tax profit for equity investment in the SMIs. • Activities approved for funding under the scheme range from manufacturing and solid minerals extraction to construction, information technology, education, tourism and services.
The Trust Fund Model	• It was established in 2001. • It was initiated as a framework for funds intermediation for agricultural development. • Under the model, states and local governments, oil companies and nongovernmental organization augment farmers' savings security by placing funds with the participating banks, thereby helping to mitigate the risks that banks face by lending to agricultural sector borrowers. • The beneficiaries under the scheme are normally members of farmers' cooperative associations and informal self-help groups.
Agricultural Credit Support Scheme	• It was introduced in 2006. • It was introduced to enable farmers exploit the untapped potentials of Nigeria's agricultural sector, reduce inflation, lower the cost of agricultural production, generate surplus for exports, increase Nigeria's foreign earnings as well as diversify its revenue base.
Commercial Agricultural Credit Scheme	• Established in 2009. • To fast track the development of the agricultural sector of the Nigerian economy by providing credit facilities to large scale commercial farmers at a single digit interest rate: enhance national food security by increasing food supply and effecting lower agricultural produce and product prices.
The SME/Manufacturing Refinancing and Restructuring Fund	• Was established in 2010. • It was to restructure banks existing loan portfolios to manufacturers and SMEs. • It was to address the huge financing gap in Nigeria with a view to boosting the operations of manufacturers and SMEs to achieve a double-digit growth rate over the next decade.
The Power and Aviation Intervention Fund	• It was established in 2010 • Its aim was to provide long term financing for infrastructure development, with emphasis on the power sector.

APPENDIX B

Tests of Collinearity and Autocorrelation

Table 6: Tolerance and Variance Inflation Factor (VIFs)

Model	Tolerance	VIF
Model 1: ACGDP = a + b1 CBL$_A$ + MBL$_A$ + εi		
C (MBLA)	0.6754	1.4810
B (CBLA)	0.6754	1.4810
Model 2: AMCGDP = a + b$_1$ CBL$_M$ + b$_2$ MBL$_M$ + εi		
C (MBL$_M$)	0.9976	1.0020
B (CBL$_M$)	0.9976	1.0020

Table 7: Collinearity Diagnostics with Durbin-Watson Test

Model/ Number	Eigenval	Cond. Index	Variance Constant	Proportions	
				B	C
Model 1: ACGDP = a + b$_1$ CBL$_A$ + b$_2$ MBL$_A$ + εi					
1	2.8761	1.000	0.01181	0.00995	0.00997
2	0.06928	6.443	0.98812	0.19942	0.21094
3	0.05461	7.257	0.00007	0.79064	0.77908
Model 2: MCGDP = a + b$_1$ CBL$_M$ + b$_2$ MBL$_M$ + εi					
1	2.9413	1.000	0.00221	0.00606	0.00354
2	0.0462	7.976	0.01126	0.70453	0.25030
3	0.0125	15.369	0.98653	0.28941	0.74616