



Sectoral Allocation of Deposit Money Banks' Credit and the Growth of Nigerian Real Economy: A Disaggregated Analysis (2008Q₁ – 2017Q₄)

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Authors' contributions

This research work was carried out in collaboration between all authors. Author CMU conceptualized the study, wrote the first draft of the manuscript and critically reviewed it thereafter. Author FNE sourced and managed relevant literature. Authors UGC and ACA sourced the data, performed the analysis and interpreted the result of the analysis. All authors read and approved the final manuscript.

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ABSTRACT

In this study, the effect of sectoral allocation of deposit money banks' credit on the growth of the Nigerian real economy from 2008Q₁ to 2017Q₄ was evaluated. We were inspired by the unsettled disparity in empirical literature on the effect of sectoral allocation of deposit money banks credit on the growth of the real economy. Specifically, we ascertained the effect of deposit money banks' sectoral credit on agricultural, industrial, building & construction and wholesale & retail trade

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contribution to real gross domestic product. The study was pursued within the finance-led growth framework given the increased support for this theory in existing literature using an ex-post facto research design. The models we developed were estimated using the Ordinary Least Square (OLS) regression technique. The result of the analysis revealed that deposit money banks' credit to agriculture, industries, building & construction and wholesale & retail trade have no significant effect on agricultural, industrial, building & construction and wholesale & retail trade contribution to real gross domestic product. Deposit money banks should remove the disparagement that the agricultural sector is not viable, and lend to farmers with genuine needs for funds at a low interest rate. The Central Bank of Nigeria can equally play a critical role in reducing the interest rate charged by deposit money banks in extending credit to the economy by cutting down the monetary policy rate to a single digit compared to the current double digit of 14%. Government should spend more on capital project in basic infrastructure to attract investments in the economy.

Keywords: Deposit money bank; credit; real economy.

1. INTRODUCTION

Banking sector credit is no doubt a driver of the real economy, especially in developing economies where the financial markets are not well developed to mobilise the necessary resources to accelerate or propel the desired level of economic growth and development. The success or progress of productive economic activities in Nigeria greatly depends on the intermediation function of the banking system relative to the stock market. In spite of the high interest rate charge by deposit money banks in Nigeria, the growth of the real economy is largely dependent on bank credit amidst the intervention in priority sectors like agriculture by the government, mostly through the Central Bank of Nigeria development programmes. The contribution of the banking system towards the growth of an economy is primarily credited to the role it plays in savings mobilisation and allocation of resources to deficit sectors of the economy [1]. The banking sector through financial intermediation, mobilises savings from surplus units in the economy and channels same to deficit units thus entrepreneurs' access to credit is actualised by the ability of the banking system to mobilise savings from savers with no pressing requirements for funds [2]. Fapetu and Adefemi [3] endorsed that Nigerian deposit money banks should be more favourably disposed to extending more credits to production subsectors namely agriculture, manufacturing, mining, quarrying, real estate and construction. Also credit allocated to other subsector namely government, personal, and professional at a reasonable interest rate. The significance of providing credit to various sectors of the economy stresses the sensitive and vital roles that deposit money banks play in financial intermediation and facilitation of capital formation to promote economic growth [4].

Economic growth is a key objective of macroeconomic policy however, the financial sector is crucial in the achievement of this goal, since bank credit is considered a vital means of elevating standards of living, as well as achieving economic development [5]. Further, Echekoba et al. [6] affirm that the growth of an economy would depend on the sturdiness, unavailability and stability of the financial system. Bank credit, indeed contributes to economic expansion, in that it is an important link in money transmission; it finances production, consumption and capital formation, which in turn affects economic activity but, the reverse is also applicable, in that as the economy grows, the incentive to borrow and the ability to repay heightens, given positive developments with regard to consumer demand and employment [5]. Although the Nigerian financial sector reforms improved soundness, stability and efficiency in the financial system as banks according to Nwakoby and Ananwude [1] rolled out various technology service delivery channels to attract more customers to stay in the business, improve performance and compete favourably in the industry, the resultant effect is the unwillingness of the banking sector to lend to certain sectors of the economy such as agriculture and manufacturing. The reason adduced is that these sectors are so vulnerable to shocks from instability in macroeconomic fundamentals which characterised Nigeria business environment. Even when they lend to these sectors, the credits are derisory when compared with a sector like oil and gas, because crude oil export accounts for 80% of the government revenue. The over dependence of Nigerian economy on oil exports is detrimental to the development of the financial sector; foreign inflow, non-oil exports and imports are positively related and significant in mobilising the financial sector [7].

Consistent with quarterly statistical bulletin of the Central Bank of Nigeria, sectoral distribution of deposit money banks credit in third quarter of 2017 was valued at ₦491,232.51 million for agriculture, ₦2,272,245.09 million for manufacturing, ₦459,619.08 million for real estate and construction, ₦641,372.97 million for public utilities, ₦1,356,620.50 million for transport and communication, ₦11,098.20 million for exports, ₦296,776.08 million for power and energy, ₦1,123,749.95 million for oil and gas, ₦952,798.83 million for general commerce and ₦3,533,768.66 million for solid minerals. A successful and profitable deployment of bank credit can immensely stimulate growth and development of the economy. Put differently, mobilisation of savings for investment is crucial for economic growth and development. Despite the fact that investment generates savings, it is impossible to sustain a sound investment effort without adequate savings mobilisation; which is where banks come in with their credit management and money creation [8]. The consequence of the proper, effective and efficient functioning of the banking system is vital for growth and development of the different sectors of the economy.

Contrary to expectation, deposit money banks credit is believed have not performed well enough as to propel the desired level of economic growth and development in the country. The industrial sector of the real economy has performed below expectation partly due to high interest rate charged by commercial banks. The wholesale and retail trade sector is greatly affected by continuous deterioration in exchange rate and high inflationary trend in the country. Determining how the different sectors in the real economy have performed relative to the credit received from commercial banks becomes imperative, hence the main problem for undertaking this study. The relationship between banking sector credit and economic growth has to a very large extent been debated in literature both in emerging and developed economies. Empirical studies of Ayeomoni and Aladejana [9], Okosodo [10], Nwankwo [11], Yakubu and Affoi [12], Atseye et al. [13], Nzomoi and Rutto [14] and Mohanty et al. [15] have revealed the significant and positive effect of bank credit on economic growth. On the contrary, Leitao [16,17] and Olusegun et al. [18] provided empirical evidence on the negative effect on bank credit on growth of the economy; Leitao [17] specifically asserted that bank credit

discourages growth in seventeen (17) European countries.

Branch et al. [5], Nwaru and Okorontah [19] and Alabbadi [20] prove the potential of economic growth to propel sectorial bank credit allocation. To make matter more confusing in this subject area, the study of Olowofeso et al. [21] envisage no asymmetric evidence in the effect of bank credit to real sector growth (positive and negative changes) in the short run but different equilibrium relationship exists in the long run. From the foregoing, there are divergent perspective on the nature of relationship and effect of bank credit on economic growth, hence no harmony on the alleged nexus between bank credit and economic growth. It is against this backdrop that this study examines the effect of sectoral allocation of deposit money bank's credit on the growth of Nigerian economy from first quarter of 2008 to fourth quarter of 2017.

The studies reviewed with respect to the effect of deposit money bank credit on the economic growth and development of various countries of the world reported mixed results. The bulk of the empirical studies revealed that deposit money bank credit propels economic growth. In the context of Nigeria, scholars focused on economic growth and industrial production and applied annual/yearly data. The result of most of these studies showed the significant effect of bank credit on economic and industrial growth in Nigeria. This study takes a new dimension by using quarterly data as against annual data, and disaggregating the real economy into four major components: agriculture, industrial, building & construction and wholesale and retail sector contribution to real gross domestic product as contained in the Central Bank of Nigeria (CBN) fourth quarter economic report of 2017. The disaggregation of the real economy into different sectors were obviously absent in the works of Anyanwu et al. [22], Ayeomoni and Aladejana [9], Okosodo [10], Nwankwo [11], Olowofeso et al. [21], Yakubu and Affoi [12], Uzomba et al. [4] and Ogunmuyiwa et al. [23] among others. The values of GDP per capita (PCY), Financial Deepening (FSD), Interest Rate Spread (IRS) and negative influence of Real Interest Rate (RIR) and Inflation Rate (INFR) have positive influence on the size of private domestic savings while the lagged values of total private savings, private sector credit, public sector credit, interest rate spread and exchange rates relate positively with economic growth [3].

2. RELEVANT LITERATURE

2.1 Concept of Bank Credit

Credit is the system by which goods and services are provided in return for deferred rather than immediate payment; it may be provided by the seller, or by a bank or finance company [19]. Bank credit is the credit made available to the economy by the deposit money banks. Atseye et al. [13] asserted that discussion in theoretical background regarding the relevance of bank credits and their role in economic development have received considerable attention in the literature of finance. Effective and efficient financial intermediation depends mostly on the development in the banking sector, especially in a developing economy like Nigeria. This is on the argument that deposit money banks are very important agents of economic growth and development on the basis of the capability to mobilising savings from surplus units of the economy and distributing same to deficit units in the economy for production. With bank credit, the lacuna between the borrower and the lender is filled owing to the attribute of bank credit as a blood stream of an economy [23]. The level of credit to the different sectors of the economy from the banking system determines the level of productive activities which influences growth and development reflected mostly by the growth rate of real gross domestic product because, sectoral investments can be enhanced by the provision of credits. Ogunmuyiwa et al. [23] stated that for small scale enterprises, medium and large firms in to contribute adequately to growth and development in Nigeria, adequate and regular supply of industrial loans to business concerns is imperative. While arguing that under normal circumstance, banking sector credit is expected to be seen in both quantitative and qualitative terms, Akujuobi and Nwezeaku [24] expressly affirmed the necessity to determine the extent bank credit has affected human development, reduced unemployment and poverty in the economy.

2.2 Nigeria's Real Economy

The real economy is that sector of the economy that produces goods and services that translates to real output. The productive activities of an economy rest in the real sector which makes it entirely different from other sectors like the financial sector that is concerned with financial transactions. The Central Bank of Nigeria views the real economy as comprising of households,

non-financial organisations and Non-Profit Institutions Serving Households (NPISH) involved in the production and distribution of goods and services (from a combination of factor resources), necessary to meet the consumption demand of an economy. The real economy in Nigeria is divided into three: primary, secondary and tertiary sector. The primary sector encompasses agricultural and mining activities; secondary sector consists of manufacturing and building & construction activities, while the tertiary sector is made up of services and commerce. In a nutshell, the real economy of Nigeria is constituted by agriculture & mining, manufacturing, building and construction, services and commerce output sectors. Based on the documentation of the Central Bank of Nigeria, the signals pertaining to the choice of goods and services to be produced and distributed in the real sector emanates from two key markets: production factor market and output market. Production factor market deals with raw materials, labour market, land and capital markets, while output market relates to production of agricultural and manufactured goods and general services by business units from factors of production.

The real economy drives economic growth and development, and provides an indication of the living standard of the citizens of an economy and the effectiveness of government's macroeconomic policies. It further facilitates the creation of economic linkages with other sectors and helps in capacity building, employment and income generation. GABV [25] asserts that a sustainable real sector requires enterprises and individuals that emphasises people before profit while focusing their resources on initiatives that result in economic resilience, environmental regeneration and social empowerment for the community and the people they serve. The sector is one of the sectors that is capable, if vibrant, of fast-tracking economic growth and development coupled with high level of massive employment creation. However, financing the sector has been a major challenge considering the slow pace of growth in the financial sector which is further aggravated by the incessant money market (banks) collapses, caused by the malfeasance of corporate insiders [26]. Sanusi [27] notes that the real economy is important for a lot of reasons. Firstly, the sector produces and distributes the tangible goods and services required to satisfy aggregate demand in the economy. Its performance is a gauge or an indirect measure of the standard of living of the

populace. Secondly, the performance of the sector can be used to assess the effectiveness of macroeconomic policies. Government policies can only be adjudged successful if they impact positively on the production and distribution of goods and services thereby impacting positively on the welfare of the citizenry. Thirdly, a vibrant real sector, particularly the agricultural and manufacturing sub-sectors create more linkages in the economy than any other sector and thus would reduce the economic pressures on the external sector. Finally, the relevance of the real sector is also manifested in its capacity building role, as well as in its high employment and income generating potentials.

Timsina [28] observed that bank credit contributes to economic growth in several ways, and that credit is an important link in money transmission; it finances production, consumption, and capital formation, which in turn affect economic activity. Theories have been advanced in the exploration of the nexus between financial development and economic growth for both developing and developed countries. Some of these theories include endogenous growth theory, neo-classical growth model, finance-led growth theory/supply leading hypothesis and demand following hypothesis among others. This work is anchored on the finance-led growth/supply leading hypothesis due to its assertion that financial development impacts positively on economic growth and development. Thus, restricting our theoretical discussion to the assumptions of the finance-led growth theory. The finance led growth theory maintained that the role of financial sector development as a propeller to economic growth cannot never be kept aside. With financial system development, the public sector, in the context of this work, the government and private sector would be able to efficiently and effectively mobilise needed funds required to accelerate economic growth and development. Mohd-Nor [29] stated that the importance of well-functioning financial institutions in economic development has been extensively discussed in literature more than decades ago following earlier works by Bagehot [30], Schumpeter [31], Goldsmith [32], McKinnon [33] and Shaw [34] despite contradictory contention from Robinson [35] and Stein [36] among others that financial sector development is not a determinant of economic development. Economists opposed to this theory believed that economic development influences financial sector that is, the rate of economic development determines the level of

development that would be achieved in the financial system. However, the bulk of empirical works on finance-growth nexus have upheld the significant effect of financial sector development on growth and development of the economy. (See [33]; [34]; [37]; [38] and Levine [39]).

2.3 Empirical Studies

We reviewed empirical studies on the subject matter with much emphasis on studies in Nigeria and developing countries of the world. Anyanwu et al. [22] empirically assessed the impact of commercial banks' lending on economic development of Nigeria from 1986 to 2015 by specifically ascertaining the impact of commercial banks' lending on real gross domestic product and index of industrial production. The data sourced from the Central Bank of Nigeria statistical bulletin were diagnosed for serial correlation, heteroskedasticity and Ramsey Reset model fitness specification and stationarity. The Johansen co-integration envisaged a long run relationship between commercial banks' lending and gross domestic product but such could be said for index of industrial production. The granger impact assessment result shows that commercial banks' lending has significant impact on real gross domestic product and real gross domestic product on the other hand, has significant impact on credit to private sector. Index of industrial production was not significantly influenced by commercial banks' lending activities. The vector error correction model depicts that for achievement of long term growth and development of the Nigerian economy, commercial banks' lending is very pivotal as the high interest rate charged by commercial banks' remain a threat to the positive influence of banks' credit to the economy.

Ayeomoni and Aladejana [9] examined the relationship between agricultural credit and economic growth in Nigeria. The study employed time series data from Central Bank of Nigeria, Statistical Bulletin and National Bureau of Statistics which spanned from 1986-2014. The study used the methodology of Auto-Regressive Distributed Lag (ARDL). The findings showed that short and long run relationship existed between agricultural credit and economic growth in both short and long run respectively. Moreover, real exchange rate and private domestic investment as control variables had direct effect on economic growth whereas

inflation rate revealed an inverse relationship in the model.

Okosodo [10] ascertained agricultural credit on the growth and development of the Nigerian economy from 1980-2014. The data used in this research were obtained mainly from secondary sources. The research technique employed in this research were bounds testing co-integration approach, unit root test and error correction mechanism. The study reveals that there is long run relationship between agricultural sector and economic growth in Nigeria. The study also reveals that government expenditure in agricultural sector contribute moderately to the growth of the Nigerian economy.

Nwankwo [11] evaluated agricultural financing in Nigeria and its implications on the growth of Nigerian economy using ordinary least square method and quantitative research design. The study observed that there is significant relationship between agricultural financing and the growth of Nigerian economy and that the level of loan repayment rate over the years has indeed negatively impacted significantly on the growth of Nigerian economy.

Olowofeso et al. [21] assessed the relationship between credit to agriculture and agricultural output in Nigeria by means of nonlinear autoregressive distributed lag model using a time series data from 1992Q1 to 2015Q4. Results showed no evidence of asymmetry in the impact of credit to output growth in the agricultural sector (positive and negative changes) in the short-run, but different equilibrium relationships exist in the long-run. The dynamic adjustments showed that the cumulative agricultural output growth is mostly attracted by the impact of the positive changes in credit to agriculture with a lag of four quarters of the prediction horizon.

Yakubu and Affoi [12] determined the impact of the commercial banks credit on economic growth in Nigeria from 1992 to 2012. In order to examine the role of commercial bank credit to the economy, the commercial bank credit to the private sector of the economy was used to estimate its impact on Nigeria's economic growth, which is proxy by gross domestic product. Using the ordinary least square it was found that the commercial bank credit has significant effect on the economic growth in Nigerian.

Atseye et al. [13] analysed the impact of bank credit on economic growth in Nigeria during the period spanning from 1987 to 2012. The study adopted the ex-post facto research design and time series data were collated from the Central Bank of Nigeria Statistical Bulletin. OLS regression statistic and Granger Causality Test were used to analyse the data. The estimated regression results indicated that bank credit has impacted positively and significantly on economic growth over the period of the study. The study concluded that for continuous growth of the Nigerian economy, policy frameworks that favour more credit allocation to the private sector with minimal interest rate should be encouraged.

Uzomba et al. [4] investigated the impact and the determinants of deposit money banks' loans and advances granted to agricultural sector in Nigerian sector from 1980 to 2011. In doing this the study employed rigorous econometric methods such as the multiple OLS regression, Philips Perron, unit root stationarity test, Johansen co-integration, parsimonious error correction mechanism and granger causality Test. The results of the study revealed that the overall model is statistically significant and concluded that deposit money banks' loans and advances did make positive impact on the agricultural sector of Nigerian within the period of review.

Leitao [17] explored the link between bank lending and economic growth for European Union (EU-27) for the period 1990 to 2010. They apply a dynamic panel data (GMM-system estimator). This estimator permits to solve the problems of serial correlation, heteroskedasticity and endogeneity for some explanatory variables. As the results show, savings promotes growth. The inflation and bank credit have a negative impact on economic growth as previous studies.

Oluitan [7] studied the significance of real bank credit in stimulating real output growth in the case of Nigeria. The study observes that credit granger causes output. In testing the factors that mobilise credit, it finds that exports in general are negatively related to credit. However, while oil exports are negatively related to credit, non-oil export has positive relationship with credit. Credit is also positively linked to capital inflows and imports. These findings suggest that bank credit is inextricably linked to the opening of the economy to international trade and capital flows in non-oil.

Mohanty et al. [15] investigated the causal nexus between total credit and growth across the sub-national level in India and also examining the effect of credit on economic growth. Kao's residual based cointegration test confirmed the long run association between bank credit and economic growth in 21 states of India for the period 2001-2014. The Dimetriu Herlin panel causality test revealed a bidirectional relationship between bank credit and economic growth. The results of the present study revealed that bank credit, capital outlay and developmental expenditure have favourable effect on economic growth of the states.

Ogunmuyiwa et al. [23] examined the impact of bank credit on growth of the manufacturing sector in Nigeria. Time series data from the return to democratic rule in 1999 to 2014 were fitted into the regression model using econometric techniques particularly the Augmented Dickey-Fuller (ADF) test and the Autoregressive Distributed Lag (ARDL) model. Empirical findings showed that bank credit to the private sector has a positive impact on the manufacturing sector. Albeit, a significant impact was found between bank credit and manufacturing growth, the policy implication of this finding is that bank credits drive manufacturing output in Nigeria.

Iwedi et al. [40] ascertained the impact of bank domestic credits on the economic growth of Nigeria. Using time series Nigerian data for the period of thirty three (33) years (1980-2013), credit to private sector, credit to government sector and contingent liability were used as proxy for bank domestic credit while gross domestic product represents economic growth. The augmented Dickey-Fuller unit root test results indicated that the data series achieved stationarity after first differencing at the order 1(1). The relative statistics of the estimated model shows that credit to the private sector and credit to the government sector positively and significantly correlate with GDP in the short run. The analysis revealed the existence of poor long run relationship between bank domestic credit indicators and gross domestic product in Nigeria.

Akujuobi and Nwezeaku [24] evaluated the effect of bank lending activities on economic development in Nigeria, covering the period, 1980-2013. In models 1 and 2, human development index and the industrial gross domestic product, were employed as proxies for human development and industrial development

respectively, while commercial bank credit to the general commerce, production, services and other sectors formed components of bank lending activities. Applying the test for stationarity with the Ordinary Least Square (OLS), and cointegration procedures, the hypothesis that there is no significant relationship between bank lending activities and economic development was tested. The results revealed a significant relationship between bank lending activities and economic development in Nigeria. Whereas in model 1, both credit to the general commerce and production sectors were statistically significant as well as met the a priori expectation, model 2 showed that only credit to the services sector carried the wrong sign and at the same time was statistically insignificant.

Nteegah [41] assessed the possible effects of banking sector consolidation- credit allocation to selected sectors on the growth of Nigerian economy. utilising time series data on growth rate of GDP, banking sector credit distribution to the agriculture, manufacturing, oil and gas/mining, commercial (export financing) sectors and bank size (number of Deposit money bank branches) for the period 1981 - 2015 and employing Vector Error Correction Model (VECM). The results indicated that only banking sector credit allocation to the manufacturing sector is positive and significant. Banking credit to agriculture, oil & gas/mining, commercial and bank size were all insignificant. This result revealed that funds allocated to the manufacturing sector spurred economic growth in Nigeria. Other finding of study shows that the manufacturing sector has higher propensity for increasing investment, job creation and value addition hence attracts funds from the banks than other sectors.

Akpansung and Babalola [42] explored the relationship between banking sector credit and economic growth in Nigeria over the period 1970-2008. The causal links between the pairs of variables of interest were established using Granger causality test, while a Two-Stage Least Squares (TSLS) estimation technique was used for the regression models. The results of Granger causality test showed evidence of unidirectional causal relationship from GDP to private sector credit (PSC) and from industrial production index (IND) to GDP. Estimated regression models indicated that private sector credit impacts positively on economic growth over the period of coverage in this study.

Adenugba [43] determined banking system credit as an instrument of economic growth in Nigeria. The purpose of carrying this research work was to identify the reasons why bank lending or access to credit to the poor and Small and Medium Scale Enterprises (SME) has remained low, to examine the reasons why banking habit is low in Nigeria and to identify the factors or criteria that ensures diligent and prudent credit approval. Time series data collected from the Central Bank of Nigeria (CBN) Statistical Bulletin between periods of (1983-2012) was used to regress the model using the Ordinary Least Square (OLS) technique. Findings showed that banking system credit is indeed an instrument of economic growth in Nigeria.

Nwaru and Okorontah [19] studied the significance of banks credit in stimulating output and the factors that prompt financial intermediation within the economy. Evidence from the study showed that the marginal productivity coefficient of bank credit to the domestic economy (proxies by credit to the private sector) is positive but insignificant. The implication is that banks' credit did not affect the productive sectors sufficiently for the later to impact significantly on the Nigerian economy. It was also observed that real output causes financial development, but not vice versa, and that export was not significant in driving financial development; but growth in financial sector was highly dependent on foreign capital inflows.

Belinga et al. [44] investigated the causal relationship between bank credit and economic growth in Cameroon by considering the domestic credit to the private sector by banks (DCPSB) and bank deposit (BD) as proxies for bank credit development and gross domestic product per capita (GDPPC) for economic growth. Time series data from 1969-2013 were fitted into the regression equation using various econometric techniques such as stationarity test Augmented Dickey Fuller (ADF) and Johansen Multivariate Co-Integration Test. Vector Error Correction Model (VECM) was used to analyse the relationship between bank credit and economic growth. VECM outcomes showed that there is a unidirectional causal relationship flowing from DCPSB and BD to GDPPC.

Ehikioya and Mohammed [45] analysed the impact of commercial bank credit accessibility and sectoral output performance in Nigerian economy for the period which spanned between 1986 and 2010. An augmented growth model

was estimated via the Ordinary Least Square (OLS) techniques to ascertain the relationship between various commercial bank credits and sectoral output growth. The variables were tested for stationarity and co-integration analysis was also carried out using the Augmented Dickey-Fuller test. Also error correction test was performed. The study found that the various commercial bank credit supply and other included variables has a long run relationship with sectoral output performance i.e. agricultural, manufacturing and services sector output and the main demand for credit facility in Nigeria is the manufacturing sector. The study also reveal that commercial bank credit has direct and insignificant impact on sectoral output performance but cumulative supply and demand for credit in the previous period has direct and significant impact on the growth of agriculture, manufacturing and the services sectors output.

Ogar et al. [46] examined the impact of commercial bank loans on manufacturing sector and to establish the relationship between interest rate and manufacturing sector performance. Secondary source of data were employed using Central bank statistical bulletin. Ordinary least square of multiple regression model was used to establish the relationship between dependent variable and independent variables. The finding revealed that commercial bank credit had a significant relationship on manufacturing sector.

Alabbadi [20] looked into the long-run relationship between bank credit and economic growth across the sectors in the Saudi economy using panel data from 1970 to 2014. The analysis was carried out using panel co-integration and causality techniques controlling for the presence of cross-sectional dependence. The variables are determined to be panel I (1) and co-integrated. A uni-causal link from economic growth to bank credit can be deduced from Panel Granger causality tests. While further examination of long-run dynamics reveals a narrow causal link from bank credit to economic growth in the commerce sector.

Olusegun et al. [18] reviewed the impact of commercial bank lending on Nigeria's aggregate economic growth for the period 1970-2011. The research work borrowed from the theoretical underpinning of the role of commercial bank lending in economic growth based on the combination of the quantity theory of money and aggregate production function. A regression analysis was undertaken with a model that

related the non-oil GDP as dependent variable to commercial bank credit for current and one year lagged period as the independent variables. The linear regression model showed that the previous year's loans and advances to services sector had more positive impact on economic growth compared with the current year's loans and advances. The results show that both previous and current year's credit to 'others' sector had inverse relationship with economic growth. In terms of the subsectors, the previous year's credit to public utilities and transport/telecommunications sub-sectors showed positive contributions to economic growth while the impact of that of current year was negative.

Ojeaga et al. [47] ascertained the effect of bank lending on growth in Nigeria using a sample of data from 1989 to 2012; 23 years the method of estimation used in the study is the quantile regression estimation method. It was found that commercial bank lending was having a negative effect on growth while institutions were not sufficiently protecting customers from the negative effect that often arise when banks liquidate. Central bank policies were found to be minimising bank losses and helping to drive economic growth in general.

Nwakanma et al. [48] evaluated the nature of long-run relationship and the direction of causality between economic growth and micro credits disbursed by private sector led micro finance institutions in Nigeria. Covering the period 1982 – 2011 (30 years), the Autoregressive Distributed Lag (ARDL) technique was employed in analysing the time series data. The study finds significant long-run relationship between Nigeria's economic growth and micro credits disbursed, while causality runs from economic growth to micro credits.

Timsina [28] assessed the impact of commercial bank credit to the private sector on the economic growth in Nepal from supply side perspectives. The study has applied Johansen co-integration approach and Error Correction Model using the time series data for the period of 1975-2013. The empirical results showed that bank credit to the private sector has positive effects on the economic growth in Nepal only in the long run. Nevertheless, in the short run, a feedback effect from economic growth to private sector credit was observed. More specifically, the growth in real private sector credit by 1 percentage point contributes to an increase in real gross

domestic product by 0.40 percentage point in the long run.

Emecheta and Ibe [49] determined the impact of bank credit on economic growth in Nigeria applying the reduced form of vector autoregressive (VAR) technique using time series data from 1960 to 2011. Current gross domestic product (GDP) is the dependent variable and proxy for economic growth while bank credit to the private sector (CPS) to GDP ratio and broad money (M2) to GDP ratio were proxies for financial indicator and financial depth respectively. They tested the stationarity of the variables using the Augmented Dickey-Fuller (ADF) and Phillips Perron (PP) unit root tests. All the variables were integrated of order one i.e., I (1). A major finding is that there is a significant positive relationship between bank credit to the private sector, broad money and economic growth. The past values of all the variables were significant in predicting their current values.

Oni et al. [50] studied the impact of bank credit to output growth in the manufacturing and agricultural sub sectors of the economy over the period 1980-2010. Using the error correction modelling techniques, the results show that bank credit has significant impact on manufacturing output growth both in the short run and long run but not in the agricultural sub sector. Inflation and exchange rate depreciation have negative effects on manufacturing output growth in both short run and long run.

Olowofeso et al. [51] investigated the impacts of private sector credit on economic growth in Nigeria using the Gregory and Hansen (1996) co-integration test that accounted for structural breaks and endogeneity problems. The method was applied to quarterly data spanning 2000:Q1 to 2014:Q4, while the fully modified ordinary least squares procedure was employed to estimate the model coefficients. We found a co-integrating relationship between output and its selected determinants, albeit, with a structural break in 2012Q1. Amongst others, findings from the error correction model confirmed a positive and statistically significant effect of private sector credit on output, while increased prime lending rate was inhibiting growth.

Mamman and Hashim [52] analysed the impact of credit to private sector (CPS) on the real sector of Nigeria with a view to assess the significant contribution of CPS to real sector growth in Nigeria. The study used aggregate time

series data from 1986 to 2010, which was drawn from central bank of Nigeria (CBN) statistical bulletin and CBN annual report and statement of accounts. The data was analysed using multiple regression and based on the coefficient of determination (R square), the study reveals a 96.1% variation between the CPS and real sector growth in Nigeria. The study concluded that there is a statistically significant impact of credit to private sector on the real sector of Nigeria.

Makinde [53] explored the implications of commercial bank loans on economic growth in Nigeria between 1986 and 2014. The study made use of secondary data sourced from the Central Bank of Nigeria statistical bulletin and the National Bureau of Statistics between 1986 and 2014. The model for the study has as its dependent variable the Gross Domestic Product (GDP) and its explanatory variables were commercial bank loans to key sectors like industrial, manufacturing, agriculture and the service sectors. Using the Ordinary Least Square (OLS) multiple regression techniques; the study revealed that only the agricultural sector have been enjoying much of Bank credit and it has been making positive impact on the Gross Domestic products (GDP) while others like Mining and Quarrying, Manufacturing and the Building and Constructions sectors have not been getting much attention in terms of bank credit to spur development in that sector.

Balago [54] looked into the relationship between bank credit and economic growth in Nigeria by considering the total bank credit extended to the production sector (which comprises manufacturing, agriculture, fishery and forestry, mining and quarrying, real estate and construction), general commerce sector (comprising: bills discounted, domestic trade, exports and imports) and services sector (comprising: public utilities, transport and communication, credit to financial institutions). Time series data from 1983-2012 were fitted into the regression equation using various econometric techniques such as stationarity test using Augmented Dickey Fuller (ADF) and Johansen Multivariate Co-Integration Test. Ordinary Least Square Regression (OLS) and VEC Models were used to analyse the relationship between the independent variables (total credits to production, general commerce and services sectors) and dependent variable (real gross domestic product). The result of the OLS showed that total bank credit to production, general commerce and services sectors has a

positive relationship with the gross domestic product. Similarly, the VEC model result shows that causality runs from bank credit to the GDP.

Ananzeh [55] examined the relationship between bank credit and economic growth in Jordan at different sectors for the period that span from 1993 to 2014. They employed two different methodologies Vector Error Correction Model (VECM) and Granger Causality Test. The results report for a long run relationship could be inferred between Real GDP, and its Explanatory variables of Total Bank Credit (TBC); Bank Credit for Agriculture sector (CFA); Bank Credit for Industry sector (CFI); Bank Credit for Construction sector (CFC); Bank Credit for Tourism sector(CFT). So we can suggest that TBC, CFA, CFI, CFC, and CFT are in the long term relationship with the development of Jordanian economy. Granger causality test conclude for a causal relationship going from economic growth to bank credit at agriculture and construction sectors in Jordan economy. Also the results report bidirectional causality observed among economic development and bank credit to construction sector that is the most important sectors in this economy.

Okafor et al. [56] evaluated the causal relationship between deposit money bank credit and economic growth in Nigeria over the period 1981-2014. The technique of analysis employed was the Vector autoregressive (VAR) Granger causality test. The proxied variables, real gross domestic product (RGDP), private sector credit (PSC) and broad money supply (M2) were subjected to preliminary tests while a validity test of serial autocorrelation was also conducted on the residuals of the variables. The results revealed a unidirectional causality running from private sector credit and broad money supply to economic growth as measured by real gross domestic product (RGDP), whereas there was no feedback system from RGDP to either PSC or M2. In other words, RGDP was neither Granger causal for PSC nor M2. This result confirms the significance of financial development to economic growth. Banking system credit is therefore critical for the growth of the economy.

Fapetu and Adefemi [3] ascertained the impact of sectoral allocation of Deposit Money Banks' loans and advances on economic growth in Nigeria during intensive regulation, deregulation and guided deregulation regimes. Regression analysis of the ordinary least square method is performed for each of the three regimes. The

results showed that only the credit allocated to government, personal and professional have significant positive contributions on economic growth during the intensive regulation. However, bank credits generally do not contribute significantly to economic growth during deregulation. Introduction of guided deregulation appears to be a success as commercial bank's loans and advances to production and other subsector are both positive and significant in determining growth.

Ihemeje and Ikwuagwu [57] assessed the effect of Deposit Money Banks (DMBs) credits to various sectors on the economic growth in Nigeria within the periods of 1985 – 2014. The annual data was sourced from CBN statistical bulletin. The study adopted rigorous empirical analysis to analyse the data using Unit root test, Co-integration, Ordinary Least Squares and Error Correction Model. Result from the analysis reveal that Deposit money banks credits to both agricultural sector and manufacturing industry exhibited a positive relationship with Real GDP. While Deposit money banks credit to commerce and trade show an inverse relationship with Real GDP.

Udoka et al. [58] determined the effect of commercial banks' credit on agricultural output in Nigeria. The ex-post facto research design was adopted for the study. Data for the study were collected from published articles and the Central Bank of Nigeria Statistical bulletin. The estimated results showed that there was a positive and significant relationship between agricultural credit guarantee scheme fund and agricultural production in Nigeria. This means that an increase in agricultural credit guarantee scheme fund could lead to an increase in agricultural production in Nigeria; there was a positive and significant relationship between commercial banks credit to the agricultural sector and agricultural production in Nigeria. This result signified that an increase in commercial banks credit to agricultural sector led to an increase in agricultural production in Nigeria. Again, there was a positive and significant relationship between government expenditure on agriculture and agricultural production in Nigeria and a negative relationship between interest rate and agricultural output also confirmed theoretical postulations.

Modebe et al. [59] investigated the impact of bank credit on the growth of Nigerian economy for the period of 1986-2012. The data was

sourced from CBN statistical bulletin. To determine the impact of the independent variables on the dependent OLS method of estimation was employed. ADF was used to determine the order of integration, and all the variables were found to be integrated of same order one I(1). The Johansen and Juselius co-integration test was employed and the result showed that there is at most one co-integrating equation in the model, implying that there is a long run relationship between the variables in the model. The result of the OLS regression showed that there is a negative and significant relationship between GDP and TBCPS in the long run. M2 which was used as control variable has a positive and significant impact on GDP at the long run. The ECM showed that 24.03% of the disequilibrium will be corrected yearly. The short run dynamics of the variables indicates that TBCPS also have a negative and insignificant impact on GDP at the short-run. The result of the granger causality test reveals that causation runs from GDP to TBCPS and not the other way round, a case of unidirectional causality. The result also showed bidirectional causality between TBCPS and M2.

Ibe [60] studied the impact of banks' and public sector's financing activities on agricultural output in Nigeria. Towards this background, the paper looked at the Nigeria budgetary allocation to the agricultural sector between 1990 and 2007. An analysis was performed using SPSS. The study discovered that the joint action of commercial banks' credit to the agricultural sector, government financial allocation to agriculture and agricultural products prices are significant factors that can influence agricultural production in Nigeria.

Obilor [61] analysed the impact of commercial banks' credit to agricultural sector under the Agricultural Credit Guarantee Scheme Fund in Nigeria. Until the mid-seventies, agriculture was the primary foreign exchange earner for Nigeria. Now it has lost its prime position to the mineral sector. Of these factors, inadequate capital is considered as the single most important factor affecting the performance of the sector. It therefore empirically examined the impact of Agricultural Credit Guarantee Scheme Fund, agricultural product prices, government fund allocation and commercial banks' credit to agricultural sector on agricultural productivity. The result revealed that Agricultural Credit Guarantee Scheme Fund and Government fund

allocation to agriculture produced a significant positive effect on agricultural productivity, while the other variables produced a significant negative effect.

Osman [62] applied the autoregressive distributed lag (ARDL) models as an approach to co-integration on annual time series data from (1974-2012) to explore the relationship between private sector credit and economic growth in Saudi Arabia. Six variables were used, mainly GDP, private sector credit (BF), and the rest other four control variables, commercial bank's deposits (DS), government expenditure (G), inflation rate (CPI) and open economy (OPE). Where the study found different results on the results of other researchers, The study found that there is a long-run relationship between (BF) and economic growth. Moreover, (BF) has positive long and short-run relationship and the elasticity of GDP to the (BF) was (0.054) and (0.068) for long-run and short run respectively.

Bakare et al. [63] examined the extent to which banks' credit affects economic growth in Nigeria. The data used was collected from the Central Bank of Nigeria statistical bulletin for a period of 24 years from 1990 to 2013. We used credit to the private sector, credit to the public sector and inflation to proxy commercial bank credit while Gross Domestic Product proxies economic growth. Augmented Dickey Fuller (unit root) test was used to test stationarity which reveals that all the independent variables and dependent variable were stationary at first difference, the trace statistics and maximum eigen value test were used to test for co-integration. The result shows that the lagged value of credit to the private sector is positively and significantly influencing economic growth in Nigeria while the lagged value of credit to the public sector shows a positively insignificant relationship with GDP. Lagged value of inflation shows a negatively significant relationship with economic growth.

3. METHODOLOGY

We adopted an ex post facto research design to determine the effect of sectoral credit allocation on the growth of the real economy from 2008Q₁ – 2017Q₄. We disaggregated the real economy into agriculture, industrial, building & construction and wholesale and retail sector contribution to real gross domestic product, and these serve as

the dependent variables. Deposit money banks' credit to these sectors are the independent variables. In an attempt to actualising the objective of our study, we estimated four functional models as follows:

$$AGSCRGDP = f(DMBCA) \quad (1)$$

$$INDSCRGDP = f(DMBCIND) \quad (2)$$

$$BCSCRGDP = f(DMBCBC) \quad (3)$$

$$WRTSCRGDP = f(DMBCWRT) \quad (4)$$

Econometrically transforming the models by introducing the constant parameter and error term, the following models were developed:

Model 1

$$AGSCRGDP_t = \beta_0 + \beta_1 DMBCA_t + u_t \quad (5)$$

Model 2

$$INDSCRGDP_t = \beta_0 + \beta_1 DMBCIND_t + u_t \quad (6)$$

Model 3

$$BCSCRGDP_t = \beta_0 + \beta_1 DMBCBC_t + u_t \quad (7)$$

Model 4

$$WRTSCRGDP_t = \beta_0 + \beta_1 DMBCWRT_t + u_t \quad (8)$$

Where:

AGSCRGDP is agricultural sector contribution to real gross domestic product; *INDSCRGDP* is industrial sector contribution to real gross domestic product; *BCSCRGDP* is building and construction sector contribution to real gross domestic product; *WRTSCRGDP* is wholesale and retail trade sector contribution to real gross domestic product; *DMBCA* is deposit money banks credit to agriculture; *DMBCIND* is deposit money banks credit to industries, *DMBCBC* is deposit money banks credit to building and construction; *DMBCWRT* is deposit money banks credit to wholesale and retail trade; β_0 is constant coefficient; μ is a random error term; and *t* is the time trend; normally included in standard time-series specifications to account for the omitted variables in the model. It is our expectation based on the finance – led growth theory that deposit money banks credit should have positive relationship with the real economy.

3.1 Estimation Technique

Augmented Dickey-Fuller (ADF) and Phillips Perron (PP) test were used to check for stationarity of data. Residual and stability tests of serial correlation LM, heteroskedasticity and Ramsey Reset Specification tests were performed by classical linear regression. Johansen co-integration approach in evaluation of the long run relationship between the variables of interest was also used. The relationship between deposit money banks' sectoral credit allocation and disaggregated real economy was tested by using OLS regression technique and lagged by one year as a way of eliminating possible autocorrelation in the model. The granger causality test was applied to evaluate the effect of deposit money banks' sectoral credit allocation on the growth of Nigeria's disaggregated real economy. The statistical significance of the regression model and the reliability of the predictors were determined by using F-test and standard error test.

4. RESULTS

4.1 Data Descriptive Properties

The descriptive properties of the data was the first step we took in the analysis of data. The result in Table 1 provides insight on the summary of the descriptive statistics for all the variables used in the study. The mean values of the AGSCRGDP, INDSCRGDP, BCSCRGDP, WRTSCRGDP, DMBCA, DMBCIND, DMBCRGDP and WRTSCRGDP are 3031528, 2568405, 450463.1, 2132027, 937012, 3981003, 1869238 and 2765125, while the median are 3373026, 3118952, 536725.7, 2543194, 943238.8, 3264824, 1868552 and 2830900 respectively. The maximum and minimum values are 5189366 and 51405 for AGSCRGDP, 3567652 and 29589 for INDSCRGDP, 740204.2 and 2714.5 for BCSCRGDP, 3109423 and 22815.60 for WRTSCRGDP, 1613871 and 289868.7 for DMBCA, 6816735 and 1498579 for DMBCIND, 2769608 and 995965.5 for DMBCBC and 3531186 and 2106196 for DMBCWRT. The variables' standard deviation are 1641630 for AGSCRGDP, 1295893 for INDSCRGDP, 245374.9 for BCSCRGDP, 1089904 for WRTSCRGDP, 464393.3 for DMBCA, 1495540 for DMBCIND, 409915.6 for DMBCBC and 380128.3 for DMBCWRT. DMBCIND and DMBCBC were the only variables that were positively skewed towards normality as

evidenced by the positive values of the skewness statistic. The Kurtosis value shows that only INDSCRGDP and WRTSCRGDP that are leptokurtic in nature as evidenced by the greater than 3 values of the Kurtosis statistic. The Jarque-Bera suggests that all were normally distributed as the p-values are significant at 5% level of significance.

4.2 Residual and Stability Test

We subjected the models developed to residual and stability tests of serial correlation LM, heteroskedasticity and Ramsey Reset Specification tests as required by classical linear regression assumptions in econometric. This p-values of all the f-statistics for all the model are insignificant at 5% level of significance, an implication that the models are free from serial correlation LM (Table 2), heteroskedasticity (Table 3) and Ramsey Reset Specification (Table 4) issues.

4.3 Unit Root Test Result

Augmented Dickey-Fuller (ADF) and Phillips Perron (PP) test were used to check for stationarity of data to ensure that the variables are from stationarity defect linked with most time series data. The ADF and PP results in Table 5 and 6 show that all the variables are stationary at first difference as such, inferences made from analysis will not be spurious.

4.4 Johansen Co-integration and Error Correction Model

This study adopted the Johansen co-integration approach in evaluation of the long run relationship between the variables of interest. The use of Johansen co-integration technique is widely supported in literature owing to the fact that most time series data are integrated at order one: 1(1) attributed to the nature of data generation which makes attainment of stationarity at level form difficult. The result of the Johansen co-integration in Tables 7 – 10. The results in Tables 7, 8 and 10 unveil that deposit money banks' credit to agriculture, industries and wholesale & retail trade sectors is not related to these sectors contribution to real gross domestic product in the long run. The Trace test and Max-eigenvalue test of their estimated equation indicate no co-integrating equation (s) at the 0.05 level, hence the null hypothesis of no-integration on the facet of the Johansen co-integration would

Table 1. Descriptive properties of the data

	AGSCRGDP	INDSCRGDP	BCSCRGDP	WRTSCRGDP	DMBCA	DMBCIND	DMBCBC	DMBCWRT
Mean	3031528.	2568405.	450463.1	2132027.	937012.0	3981003.	1869238.	2765125.
Median	3373026.	3118952.	536725.7	2543194.	943238.8	3264824.	1868552.	2830900.
Maximum	5189366.	3567652.	740204.2	3109423.	1613871.	6816735.	2769608.	3531186.
Minimum	51405.00	29589.00	2714.500	22815.60	289868.7	1498579.	995965.5	2106196.
Std. Dev.	1641630.	1295893.	245374.9	1089904.	464393.3	1495540.	409915.6	380128.3
Skewness	-0.895670	-1.420440	-0.954385	-1.327837	-0.022095	0.666767	0.291980	-0.082951
Kurtosis	2.557205	3.145189	2.517669	3.021207	1.451217	2.097736	2.819866	2.176318
Jarque-Bera	5.674941	13.48613	6.460083	11.75510	9.001135	9.320656	9.622431	9.176625
Probability	0.048574	0.001179	0.039556	0.002802	0.035258	0.035287	0.032556	0.045264
Sum	1.21E+08	1.03E+08	18018525	85281091	37480481	1.59E+08	74769529	1.11E+08
Sum Sq. Dev.	1.05E+14	6.55E+13	2.35E+12	4.63E+13	8.41E+12	8.72E+13	6.55E+12	5.64E+12
Observations	40	40	40	40	40	40	40	40

Source: Computer analysis using E-views 9.0

Table 2. Breusch-Godfrey serial correlation LM test

Estimated Equation	F-statistic	P-value
AGSCRGDP → DMBCA	2.079645	0.0762
INSCRGDP → DMBCIND	0.449546	0.6417
BCSCRGDP → DMBCBC	1.796960	0.1061
WRSCRGDP → DMBCWRT	0.167099	0.8468

Source: Computer analysis using E-views 9.0

Table 3. ARCH heteroskedasticity test

Estimated Equation	F-statistic	P-value
AGSCRGDP → DMBCA	0.350386	0.5577
INSCRGDP → DMBCIND	0.022566	0.8814
BCSCRGDP → DMBCBC	8.26E-06	0.9977
WRSCRGDP → DMBCWRT	0.011249	0.9161

Source: Computer analysis using E-views 9.0

Table 4. Ramsey RESET Test

Estimated Equation	Value	df	P-value
AGSCRGDP → DMBCA	1.420993	(7, 31)	0.0623
INSCRGDP → DMBCIND	3.045603	(1, 35)	0.0897
BCSCRGDP → DMBCBC	3.691207	(1, 35)	0.0629
WRSCRGDP → DMBCWRT	0.019307	(1, 35)	0.8903

Source: Computer analysis using E-views 9.0

Table 5. ADF test result

Variables	ADF Test Statistic	Test Critical Value at 1%	Test Critical Value at 5%	Order of Integration/Remarks
AGSCRGDP	-7.017990 (0.00)*	-3.653730	-2.957110	1(1)/Stationary
INDSCRGDP	-6.850571 (0.00)*	-3.615588	-2.941145	1(1)/Stationary
BCSCRGDP	-5.576967 (0.00)*	-4.234972	-3.540328	1(1)/Stationary
WRSCRGDP	-4.481245 (0.00)*	-3.621023	-2.943427	1(1)/Stationary
DMBCA	-7.802427 (0.00)*	-3.615588	-2.941145	1(1)/Stationary
DMBCIND	4.428634 (0.00)*	-3.615588	-2.941145	1(1)/Stationary
DMBCBC	-7.119652 (0.00)*	-3.615588	-2.941145	1(1)/Stationary
DMBCWRT	-7.152516 (0.00)*	-3.615588	-2.941145	1(1)/Stationary

Source: Computer analysis using E-views 9.0

Note: The p-values are in parentheses where (*) & (**) denote significance at 1% and 5% respectively

not be rejected. On the other hand, Table 9 provides evidence of a long run relationship between deposit money banks' credit to building & construction and this sector's contribution to real gross domestic product in the long run. This portrays the need for more fund to this sector in order to address the infrastructural conundrum in the economy. The co-integration relationship between deposit money banks' credit to building & construction and this sector's contribution to real gross domestic product necessitates the determination of the speed of adjustment to equilibrium via the Vector Error Correction Model (VECM). As dispelled in Table 11, the ECM showed the supposed negative sign but statistically insignificant owing to low t-statistic coefficient of -1.16389. The ECM result

envisages that there is significant error correction taking place, and by implication, there is tendency for the model to return to equilibrium following disequilibrium in previous periods.

4.5 OLS Regression

From the OLS regression result in Table 12, there is a positive insignificant relationship between deposit money banks' credit to agricultural and building & construction sectors, and their contribution to real gross domestic product, while a negative insignificant relationship between deposit money banks' credit to industrial and wholesale & retail trade sectors, and their contribution to real gross domestic product. A unit rise in deposit money banks'

credit to agricultural and building & construction sectors lead to ₦63.35 million and ₦5.44 million in agricultural and building & construction sectors contribution to real gross domestic product respectively, whereas a percentage increase in deposit money banks' credit to industrial and wholesale & retail trade sectors reduce industrial and wholesale & retail trade sectors contribution to real gross domestic product by ₦0.93 million

and ₦0.73 million respectively. The p-values of the f-statistics for the estimated equations proved that deposit money banks' sectoral credit allocation significantly explained the variation in the different sectors contribution to real gross domestic product. There is no autocorrelation issues owing to the fact that the Durbin Watson coefficients for all the estimates were within the acceptable range of no autocorrelation.

Table 6. PP test result

Variables	PP Test Statistic	Test Critical Value at 1%	Test Critical Value at 5%	Order of Integration/Remarks
AGSCR GDP	-7.473850 (0.00)*	-3.615588	-2.941145	1(1)/Stationary
INDSCR GDP	-6.846316 (0.00)*	-3.615588	-2.941145	1(1)/Stationary
BCSCR GDP	-9.476728 (0.00)*	-3.615588	-2.941145	1(1)/Stationary
WR TSCR GDP	-6.225422 (0.00)*	-3.615588	-2.941145	1(1)/Stationary
DMBCA	-7.953479 (0.00)*	-3.615588	-2.941145	1(1)/Stationary
DMBCIND	-4.280532 (0.00)*	-3.615588	-2.941145	1(1)/Stationary
DMBCBC	-7.050714 (0.00)*	-3.615588	-2.941145	1(1)/Stationary
DMBCWRT	-7.111693 (0.00)*	-3.615588	-2.941145	1(1)/Stationary

Source: Computer analysis using E-views 9.0

Note: The p-values are in parentheses where (*) & (**) denote significance at 1% and 5% respectively

Table 7. Johansen co-integration for AGSCR GDP and DMBCA

Unrestricted Co-integration Rank Test (Trace) AGSCR GDP and DMBCA				
Hypothesised Number of CE(s)	Eigen Value	Trace Statistic	0.05 Critical Value	Prob.**
None	0.298837	13.60835	15.49471	0.0943
At most 1	0.003095	0.117803	3.841466	0.7314
Unrestricted Co-integration Rank Test (Maximum Eigenvalue) AGSCR GDP and DMBCA				
Hypothesised Number of CE(s)	Eigen Value	Maximum Eigen Statistic	0.05 Critical Value	Prob.**
None	0.298837	13.49055	14.26460	0.0660
At most 1	0.003095	0.117803	3.841466	0.7314

Trace test and Max-eigenvalue test indicate no co-integrating eqn(s) at the 0.05 level;

* denotes rejection of the hypothesis at the 0.05 level; **MacKinnon-Haug-Michelis (1999) p-values

Table 8. Johansen co-integration for INDSCR GDP and DMBCIND

Unrestricted Co-integration Rank Test (Trace) INDSCR GDP and DMBCIND				
Hypothesised Number of CE(s)	Eigen Value	Trace Statistic	0.05 Critical Value	Prob.**
None	0.119772	5.337214	15.49471	0.7720
At most 1	0.012796	0.489374	3.841466	0.4842
Unrestricted Co-integration Rank Test (Maximum Eigenvalue) INDSCR GDP and DMBCIND				
Hypothesised Number of CE(s)	Eigen Value	Maximum Eigen Statistic	0.05 Critical Value	Prob.**
None	0.119772	4.847840	14.26460	0.7609
At most 1	0.012796	0.489374	3.841466	0.4842

Trace test and Max-eigenvalue test indicate no co-integrating eqn(s) at the 0.05 level;

* denotes rejection of the hypothesis at the 0.05 level; **MacKinnon-Haug-Michelis (1999) p-values

Table 9. Johansen co-integration for BCSCR GDP and DMBCBC

Unrestricted Co-integration Rank Test (Trace) BCSCR GDP and DMBCBC				
Hypothesised Number of CE(s)	Eigen Value	Trace Statistic	0.05 Critical Value	Prob.**
None*	0.203697	15.64783	15.49471	0.0474
At most 1*	0.168072	6.992358	3.841466	0.0082
Unrestricted Co-integration Rank Test (Maximum Eigenvalue) BCSCR GDP and DMBCBC				
Hypothesised Number of CE(s)	Eigen Value	Maximum Eigen Statistic	0.05 Critical Value	Prob.**
None	0.203697	8.655472	14.26460	0.3160
At most 1*	0.168072	6.992358	3.841466	0.0082

*Trace test and Max-eigenvalue test indicate 2 and 1 co-integrating eqn(s) respectively at the 0.05 level; * denotes rejection of the hypothesis at the 0.05 level; **MacKinnon-Haug-Michelis (1999) p-values*

Table 10. Johansen co-integration for WRTSCR GDP and DMBCWRT

Unrestricted Co-integration Rank Test (Trace) BCSCR GDP and DMBCBC				
Hypothesised Number of CE(s)	Eigen Value	Trace Statistic	0.05 Critical Value	Prob.**
None	0.125024	8.421253	15.49471	0.4215
At most 1	0.084287	3.346001	3.841466	0.0674
Unrestricted Co-integration Rank Test (Maximum Eigenvalue) WRTSCR GDP and DMBCWRT				
Hypothesised Number of CE(s)	Eigen Value	Maximum Eigen Statistic	0.05 Critical Value	Prob.**
None	0.125024	5.075252	14.26460	0.7323
At most 1	0.084287	3.346001	3.841466	0.0674

*Trace test and Max-eigenvalue test indicate no co-integrating eqn(s) at the 0.05 level; * denotes rejection of the hypothesis at the 0.05 level; **MacKinnon-Haug-Michelis (1999) p-values*

Table 11. Vector error correction model for BCSCR GDP and DMBCBC

Variables	Coefficient	Standard Error	T-Statistic
C	24069.28	15966.8	1.50746
D(BCSCR GDP (-1))	-0.461839	0.16459	-2.80599
D(BCSCR GDP (-2))	-0.144116	0.17239	-0.83597
D(DMBCBC (-1))	0.000803	0.06038	0.01329
D(DMBCBC (-2))	0.116296	0.05708	2.03741
ECM (-1)	-0.012011	0.01032	-1.16389

Source: Output data from E-views 9.0

4.6 Granger Causality Test Result

From the result in Table 13, there is no unidirectional or bidirectional relationship between deposit money banks sectoral credit allocation and Nigeria’s disaggregated real economy: agricultural, industrial, building & construction and wholesale and retail trade contribution to real gross domestic product. The argument is on the premise that causality does not flow from either direction at 5% level of significance. That is to say that deposit money credit to agriculture, industries, building & construction and wholesale and retail trade have no significant effect on the growth of Nigeria’s

real economy disaggregated into agricultural, industrial, building & construction and wholesale and retail trade contribution to real gross domestic product within the period studied.

5. DISCUSSION

The existence of a positive relationship between deposit money banks credit to agriculture and agricultural contribution to real gross domestic product points the importance of agriculture to the growth of the economy, especially in Nigeria that depends majorly on revenue from crude oil sales. This findings also suggests that the calls

Table 12. OLS result of deposit money banks' sectoral credit allocation and disaggregated real economy

	Agricultural Sector Contribution to RGDP		Industrial Sector Contribution to RGDP		Building & Construction Sector Contribution to RGDP		Wholesale & Retail Trade Sector Contribution to RGDP	
	Coefficient		Coefficient		Coefficient		Coefficient	
C	431607.7	C	412920.8	C	-26999.01	C	295040.3	
DMBCA	0.633478	DMBCIND	-0.009349	DMBCBC	0.054433	DMBCWRT	-0.007254	
R-squared	0.740818		0.855797		0.847112		0.894109	
Adjusted R-squared	0.726418		0.847786		0.838618		0.888226	
F-statistic	51.44914		106.8243		99.73324		151.9857	
Prob(F-statistic)	0.000000		0.000000		0.000000		0.000000	
Durbin-Watson stat	1.776138		2.235866		2.715202		2.052422	

Source: Computer output data using E-views 9.0

Note: (*) and (**) denote p-value at 1% and 5% respectively

Table 13. Granger causality result for DMBs credit and sectoral growth of Nigeria economy

Null Hypothesis:	Obs	F-Statistic	Prob.	Remarks
DMBCA does not Granger Cause AGSCRGDP	39	1.97677	0.1683	No Causality
AGSCRGDP does not Granger Cause DMBCA		3.55533	0.0674	No Causality
DMBCIND does not Granger Cause INDSCRGDP	39	0.06515	0.8000	No Causality
INDSCRGDP does not Granger Cause DMBCIND		0.04770	0.8284	No Causality
DMBCBC does not Granger Cause BCSCRGDP	39	2.52039	0.1211	No Causality
BCSCRGDP does not Granger Cause DMBCBC		0.45447	0.5045	No Causality
DMBCWRT does not Granger Cause WRTSCRGDP	39	0.07741	0.7824	No Causality
WRTSCRGDP does not Granger Cause DMBCWRT		1.01619	0.3202	No Causality

Source: Computer analysis using E-views 9.0

by various stakeholders to diversify the economy should not be ignored. Again, it unveils that the policies of the government towards expansion agricultural exports is a step in the right direction owing to depression witnessed in the economy in 2016 due to decline in oil price in the international oil market. This finding supports earlier research in this subject matter by Olusegun et al. [18], Ayeomoni and Aladejana [9], Makinde [53], Udoka et al. [58], Uzomba et al. [4] and Nwankwo [11] on the importance of agricultural financing in stimulating economic growth. Deposit money banks credit to agriculture having no effect on agricultural contribution to real gross domestic product favourably aligns with Obilor [61] in Nigeria.

Surprisingly and contrary to our expectation, there is a negative relationship between deposit money banks credit to industries and industrial contribution to real gross domestic product. This could be attributed to the high interest rate charged by deposit money banks in lending to the industrial sector and the frequent volatilities in the macroeconomic environment. That notwithstanding, industrial/manufacturing sector, especially through small and medium scale enterprises is in susceptibility to enhancing growth and development in the economy due to its tendency in reducing unemployment. This is unfavourably with the findings [23], [24] and [46]. Nigeria's Industrial/manufacturing sector has not been able to accelerate the desired level of economic growth in Nigeria due to poor infrastructures that characterised the business operating environment, especially power fluctuation and continuous deterioration in exchange rate which significantly result in high operating costs when compared to their foreign counterpart. Besides, the interest rate charged by deposit money banks to lend to the industrial sector is on the high side, and this discourages external finance by entrepreneurs which according to Akpansung and Babalola [42] impedes economic growth in Nigeria. Deposit money banks credit to wholesale and retail trade was negatively but insignificantly correlated with wholesale and retail trade contribution to real gross domestic product. This agrees with the finding of Fapetu and Adefemi [3] which they attributed to inability of local firms to compete favourably with their foreign counterparts who are dominant players in the sector.

Deposit money banks credit to building and construction to real gross domestic product in Table 12 has positive relationship with building

and construction contribution to real gross domestic product. Although the housing and real estate is growing in recent time, there is need for more credit allocation to meet the housing need of the increasing population. This accepts the result [53] on the negative relationship between credit to building and construction and building and construction contribution to real gross domestic product.

6. CONCLUSION

In line with the finance led growth theory, no economy can realise the desired level of growth and development without finance reflected by the volume of credit extended to the economy by the financial system. This study empirically determined the effect of deposit money banks sectoral credit allocation on the growth of the Nigerian real economy. The result of the study established that deposit money banks credit to various sectors of the economy have no significant effect on these sectors contribution to real gross domestic product. It is concluded that deposit money banks credit to the economy has not driven Nigeria to the desired level of growth and development anticipated by her citizens.

The study revealed that deposit money banks should remove the disparagement that the agricultural sector is not viable, and lend to farmers with genuine needs for fund at a low interest rate. The Central Bank of Nigeria can equally play a critical role in reducing in interest rate charged by deposit money banks in extending credit to the economy by cutting down the monetary policy rate to a single digit compared to the current double digit of 14%. Government should spend more on capital project in basic infrastructures: road, transport and communication, etc. This has the potential to making deposit money banks' credit to building and construction sector more proactive to encouraging investment in infrastructural facilities and real estates which in turn improve its contribution to Nigeria's real gross domestic product.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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