

Effect of Deposit Money Banks' Credit on the Performance of Micro, Small and Medium Enterprises in Nigeria

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Abstract

This paper set out to empirically evaluate the effect of deposit money banks' credit on the performance of MSMEs in Nigeria, with the aid of a vector autoregression and error correction mechanism (ECM) technique. Results of the empirical investigation confirmed credit had a positive effect on GDP of MSMEs in Nigeria as the coefficient of CAM (credit to MSMEs) was positive (1.0569) and significant at 1.0 per cent level. It was, therefore, recommended that every effort should be made to improve access to credit by MSMEs, so that they could play their potential roles of employment generation and wealth creation and move the majority of the entrepreneurs out of poverty.

Keywords: Micro, small and medium enterprises, Financing, Credit, Economic development.

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I. Introduction

Economic growth is a process whereby an economy's real national income or output increases over a long period of time. Economic development, however, refers to higher levels of real national income and improved conditions of living for the people. Maintaining development is a problem for rich countries, but accelerating development is an even more pressing matter for poor countries (Ojo, 2010). The role of finance in economic growth and development is widely acknowledged in literature. It is argued that financial intermediation through the banking system play a pivotal role in economic development by affecting the allocation of savings, thereby improving productivity, technical change and the rate of economic growth (Sanusi, 2011).

For both developing and developed countries, micro, small and medium scale firms play important roles in the process of industrialisation and economic growth. Apart from increasing income and output, MSMEs create employment opportunities,

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enhance regional economic balance through industrial dispersal and generally promote effective resource utilisation considered critical to engineering economic development and growth (Sule, 1986 and Udechukwu, 2003). Micro, small and medium enterprises (MSMEs) are companies whose headcount or turnover falls below certain limits. The definitions change over time and depend, to a large extent, on a country's level of development. Thus, what is considered small in a developed country like the USA could actually be classified as large in a developing country like Nigeria. However, the definition of MSMEs in Nigeria as contained in the National Policy on Micro, Small and Medium Enterprises (SMEDAN, 2007) was adopted as indicated in Table 1. This was also in line with the definition in some developing countries like Indonesia (Timberg, 2000) as well as in the European Union (EU) (European Commission, 2007).

Table 1: Classification of MSMEs in Nigeria

S/N	Size Category	Employment	Assets (₦'million) (excluding land and buildings)
1.	Micro enterprises	Less than 10	Less than 5
2.	Small enterprises	10 -49	5 to less than 50
3.	Medium enterprises	50 -199	50 – less than 500

Source: *Small and Medium Enterprises Development Agency of Nigeria (SMEDAN), Abuja, 2007.*

The National Policy document states that, where there exist a conflict in classification between employment and assets criteria (for example, if an enterprise has assets worth ₦7.0 million but employs 7 persons, the employment-based classification will take precedence and the enterprise would be regarded as micro (SMEDAN, 2007). This is because employment-based classification tends to be relatively more stable definition, given that inflationary pressures may compromise the asset-based definition.

In Nigeria, incidence of poverty is still very high. According to the World Bank, in 2010, 68 per cent of total Nigerian population was said to be living on less than \$1.25 per day compared with 18.1 per cent in Indonesia. In the same vein, per capita income has not fared better. It was as low as US\$1,180 in 2010 compared with US\$2,500 in Indonesia (World Bank, 2012). The reason for evolving several credit schemes in the past was to accelerate economic development in the country through the MSMEs. Since the MSMEs represent over 90.0 per cent of the agricultural and industrial sectors in terms of the number of enterprises, and account for about 50.0 per cent of Nigeria's GDP

together with the MSMEs in the other sectors of the economy. The acceleration of their growth and development would certainly have a positive spillover effect on the whole economy. This has not been the case because of their lack of access to adequate finance.

Credit-constrained groups, namely, micro, small and medium enterprises traditionally risk-appraised by lenders as the "lower end" of the credit market often face discrimination from formal credit purveyors resulting in stringent credit rationing and high risk-premium charges, even if they secure credit. The repressive circumstance derive from their incapacity to pledge the traditional favoured securities such as; mortgages, land, sterling shares or other "gilt-edges" to back up credit proposals (CBN/CeRAM, 2007). This is why specialised financing schemes and funds have been evolved over the years in Nigeria like in other developing countries.

While financing is obviously not the only problem militating against the MSME sector, it is certainly the most critical. Unlike other investments in the real sector of the economy, investment in MSMEs is relatively huge due to the need for fixed assets such as land, civil works, buildings, machinery and equipment and movable assets. Moreover, empirical studies (Udechukwu, 2003), show that the incidence of the extra outlays required to compensate for deficiencies in the supply of basic utilities is relatively heavier on MSMEs than large enterprises. While such extra investments have been shown to account for about 10.0 per cent of the cost of machinery and equipment of large enterprises, they represent about 20.0 to 30.0 per cent of that of MSMEs because of the absence of economies of scale.

Furthermore, due to the long gestation period of MSME investments in the real sector compared with trading activities, and other ancillary reasons, MSMEs have suffered bias by deposit money banks (DMBs), which prefer to pay penalty rather than meet up the 20.0 per cent target lending to small-scale enterprises (SSEs) following the then CBN credit guidelines in the direct monetary policy regime (CBN, 1995). This resulted in a drastic decline of SSEs lending after the abolition of the sectoral allocation in 1996 (CBN, 2009).

Statistics from the CBN also revealed that commercial banks' loans to SSEs as a ratio of total credit declined from 48.8 per cent in 1992 to 17.0 per cent in 1997, just one year after the abolition of the guidelines. By 2009, SSEs share of commercial banks' total credit portfolio was a paltry 0.17 per cent. Similarly, the ratio of SSEs loans to merchant

banks' total credit before the granting of universal banking license to DMBs in 2000/2001 declined from 31.2 per cent in 1992 to 9.0 per cent in 2000. According to Anyanwu (2003), the technical committee for the establishment of a national credit guarantee scheme for SMEs in its analysis, established that not more than 50.0 per cent of aggregate effective demand for investment loans in the manufacturing sector were being met. This, therefore, necessitates further action aimed at enhancing the flow of financial resources to the MSMEs.

In Nigeria, after several years of debt (credit) financing, inadequate capital is still believed to be a major inhibiting factor for new and growing MSMEs. Specifically, it is argued that inadequate equity capital creates the need for debt financing which the MSMEs are ill-equipped to attract; and determines or influences their initial decisions concerning the acquisition of fixed assets, working capital requirements and even location (Owualah, 2002).

To alleviate the shortcomings of the past schemes towards the financing of MSMEs in Nigeria, the Small and Medium Enterprises Equity Investment Scheme (SMEEIS) was conceived and put into operation from August 2001, with emphasis on banks providing equity financing rather than debt. From inception in 2001 to end-December 2008, the cumulative sum set aside by banks under the SMEEIS was ₦42.0 billion. The sum of ₦28.2 billion or 67.1 per cent of the sum was invested in 333 projects, out of which the real sector accounted for 205 projects, and the service-related sector, excluding trading, accounted for 128 projects (CBN, 2007a). By the third quarter of 2008, the Bankers Committee took the decision that participation under SMEEIS be optional. After almost five decades of tinkering with various financing schemes for the MSMEs, it has become pertinent to carry out an empirical study on the effect of these funding initiatives on the performance of the MSMEs in Nigeria. Therefore, the objective of this paper is to examine the effect of DMBs credit on the performance of MSMEs in Nigeria. Following this introduction, Part II examined the theory, conceptual framework and literature review. Part III discussed the methodology and the models adopted. Part IV contained the analysis of result while Part V concluded the paper.

II. Theory, Conceptual Framework and Literature Review

II.1 Theory and Conceptual Framework

The financial system plays a fundamental role in the growth and development of an economy, particularly by serving as the fulcrum for financial intermediation between the surplus and deficit units in the economy. For many years, theoretical discussions

about the importance of credit development and the role that financial intermediaries play in economic growth have occupied a key position in the literature of development finance. Shaw (1973), stated that financial or credit development can foster economic growth by raising savings, improving efficiency of loan-able funds and promoting capital accumulation. Following the adoption of the Universal Banking System in Nigeria in January 2001, the dichotomy between the erstwhile commercial and merchant banks was removed, thus paving the way for banks to effectively play their intermediation role and provide level playing ground for operators in the banking industry. Consequently, the banks were able to pursue the business of receiving deposits, and the provision of finance, consultancy and advisory services unhindered (CBN, 2007b).

Economic growth is the increase in value of the goods and services produced by an economy. It is conventionally measured as the rate of increase in real gross domestic product (GDP). Some economists have defined it as an increase in GDP per capita. Economic growth shifts society's production possibility frontier up and to the right. The production possibility frontier shows all possible combinations of output that can be produced in a society, if all of the scarce resources are fully and efficiently employed (Fapohunda, 2000).

The role of financial institutions in the accumulation of savings and provision of credits for investment through their intermediation processes is widely documented and acknowledged (Saunders and Cornett, 2009). These institutions mobilise funds from surplus areas and channel them to deficit units, thereby allocating the funds efficiently for investment purpose. Banks are the most important example of a class of institutions called financial intermediaries, firms that extend credit to borrowers using funds raised from savers (CBN, 2007b). Other examples of financial intermediaries are savings and loans association and credit unions (CBN/World Bank, 1999). However, credit is not an end in itself; it is a means to an end. The ultimate goal is to affect productivity. Thus, a successful economy not only saves, but also uses its savings wisely by applying these limited funds to the investment projects that seem likely to be the most productive (Frank and Bernanke, 2007). Various funding initiatives have been instituted in the past to improve the access of MSMEs to long term funds in order to improve their performance and contribution to the economy.

To this end, a variety of financial institutions, schemes and funds have evolved over the years. The period, 1964-2000 can be described as the old financing initiatives, while the

period, 2001 to date can be described as the current financing initiatives. Past initiatives to support MSMEs in Nigeria had been very largely focused on bolstering the credit finance opportunities at their disposal. In this paper, specific emphasis was on the effect of DMBs' credit on the performance of MSMEs in Nigeria.

II.2 Review of Empirical Literature

II.2.1 Credit Constraints and Credit Market Imperfections

Credit programmes have long been a favoured intervention by donors and governments in Africa. Implicit in these interventions is a concern that credit markets are not functioning well and that their malfunctioning results in low economic activity and growth. There are well established reasons for credit markets not to be perfect. Given the inter-temporal and risky nature of credit administration, the informational requirement and enforcement problems are large and agency costs affect the outcome. The consequence is that uncollateralised lending will not take place at the prevailing real interest rate. The borrower will be constrained by being forced to borrow money at higher interest rates to cover monitoring and enforcement costs or, as is usually the case, be rationed by not being allowed to borrow at all at these interest rates. In either case, less lending takes place than if there were no monitoring problems. Enforcement problems further reduce credit market transactions (Stiglitz and Weiss, 1981; CBN/CeRAM, 2007).

Bigsten et al., (2003) investigated the question whether or not firms in the manufacturing sector in Africa were credit constrained. They made use of firm-level data from six African countries (Ghana, Zimbabwe, Kenya, Ivory Coast, Burundi and Cameroon) to study both the existence and nature of credit constraints. They applied evidence on credit market participation and on the reasons for non-credit market participation to identify possibly constrained firms. They also investigated whether agency and enforcement costs, or limited demand were the cause of non-participation in credit markets by firms. They attempted to identify whether banks' lending policies are biased against certain firms, beyond monitoring and enforcement problems. Bigsten et al., (2003) indicated that more than half of the firms in the sample had no demand for credit. Of those firms with a demand for credit, only a quarter obtained a formal sector loan. Their analysis suggested further that banks allocate credit on the basis of expected profits. Thus, micro, small and medium sized firms are less likely to be given a loan.

This buttressed the justification for evolution of various specialised financing programmes to increase access of MSMEs to loan in Nigeria by the Federal Government in collaboration with the Central Bank of Nigeria. However, as gleaned from the study and confirmed by Odeniran (2002) and Evbuomwan (2004), evidence of low demand for formal credit was established. To overcome this obstacle, the Federal Government in collaboration with the Bankers' Committee came up with the Small and Medium Enterprises Equity Investment Scheme (SMEEIS), where Nigerian banks were requested to set aside 10.0 per cent of their profit after tax for equity investments in SMEs.

An earlier work by Abereijo and Fayomi (2005) on Small and Medium Industries Equity Investment Scheme (SMIEIS) (renamed SMEEIS in 2006) alluded to the fact that access to finance was one of the factors inhibiting SMEs growth in Nigeria. The authors agreed that equity had distinct advantages over debt for the development of SMEs. They concluded, however, that in Nigeria, equity financing was still an unknown fiscal concept, both by the entrepreneurs and financial institutions, and the market was still poorly developed. Given the dearth of experience in venture capital investing, it was important that the government, through the CBN, considered the establishment of a formal programme for the training of fund management professionals to augment the experience required by the eligibility criteria for the equity financing. This was required to change the mindset of the bankers and to acquire more skills which was quite different from their usual ways of loan appraisal.

A study by Rahji and Ajani (2007) found profit and equity provision to negatively affect the demand for funds under SMEEIS, while enterprise type, net-worth, gender and ownership were positive significant variables, explaining the demand for funds under the scheme. The equity provision condition was identified by the authors as a major problem in the operation of the scheme. The authors therefore called for an overhaul of the scheme.

Similarly, a study on supply and demand for finance of small enterprises in Ghana by Aryeetey et al., (1994), indicated that, smaller firms in Ghana are not particularly receptive to external participation in their operations. A little over half (56.0 per cent) of the total sample indicated a preference for debt to equity finance, a third preferred equity finance to debt finance. Medium-sized enterprises were the most likely to accept equity finance; only 18.0 per cent would refuse an equity partner to help finance an expansion. Newer firms tended to be more receptive to equity

participation in their firms than older ones. Among firms with fewer than thirty employees, however, 40.0 per cent would regard a local equity partner as undesirable even if they could not obtain a large enough loan for their expansion projects. Many expressed the view that they “cannot trust partners who would only put a little bit of money into an enterprise and want to control it”. Nevertheless, SMEs in Ghana were more receptive to an equity finance arrangement if it came from an institution that did not seek to control the daily operation of the establishment. Many entrepreneurs expressed a desire to have foreign firms or institutions participate in their enterprises, on the presumption that foreign participants would be better able to provide adequate investment capital than local co-investors, while leaving their Ghanaian partners to run the business.

II.2.2 Effect of Credit and Credit Support Programmes on Growth of MSMEs

The use of bank credit can affect firm growth positively if credit allows a firm to address its liquidity constraint, thereby increasing profitability and growth. This is why governments and donor agencies have funded credit expansion programmes, particularly, targeting the disadvantaged sectors of the economy like agriculture and MSMEs. Some empirical evidences on how credit uses have affected the growth of MSMEs in Nigeria and elsewhere are discussed below.

Tella (1998) investigated the level of involvement of commercial banks in rural activities in Nigeria. The paper measured in terms of the bank's provision of loans and advances for agricultural activities (being the dominant occupation) in the rural sector. The essence of the investigation was to determine the justification of the Central Bank of Nigeria in downplaying the rural banking scheme in favour of community banking then, which he believed, cannot be a replacement for the commercial banks, given the latter's huge assets and banking experience. The study was carried out using an econometric method of analysis to determine the relationship between loans and output in the agricultural sector and its sub-sectors. The overall results showed that the loans had a positive impact on all the sectors except fisheries. Based on the result, he proposed a reinforcement of the rural banking scheme and selective transformation and restructuring of commercial banks to practice universal banking.

Nkurunziza (2005) carried out an empirical study on the effect of initial size and access to credit on Kenyan firms' rate of growth. He used various estimation methods, namely; Ordinary Least Square (OLS), Non-linear Least Square (NLS), Instrumental Variable (IV), Fixed Effects (FE), Generalised Method of Moments (GMM), and Heckman's Selection

Model. The results showed that the use of credit increased surviving firm managers' claim that access to credit is one of the main problems they face. Furthermore, the author found evidence that small firms have higher rates of growth (or lower rates of decline) than large ones.

Salvatore and Marco (2006), investigated whether Italy's State-funded guarantee scheme for SMEs (SGS) was an effective means to overcome the main difficulties faced by small firms in accessing the bank credit market. This meant assessing whether SGS was able to increase credit access for SMEs, reduce credit cost and achieve financial sustainability. Results of their econometric tests provided evidence that the fund's guarantee raised the amount of credit SMEs received from the banking system, and lowered the SMEs borrowing cost to a substantial extent. Furthermore, it limited defaults covered by the guarantee to a very low percentage and mobilised a significant amount of bank loans to the advantage of SMEs by leveraging a relatively small amount of public financial resource.

Raji (2000) studied equity participation, productivity and loan default factors in externally funded agro and non-agro allied enterprises in Nigeria. The study analysed equity participation, productivity and loan default factors among entrepreneurs benefiting from improved production technology in the agro and non-agro allied sub-sectors of the Nigerian economy. The main objective was to provide empirical evidence on the productivity gains inherent in the use of external loan capital and human resources, given the equity funding level of the beneficiaries. Major analytical tools employed included the capital-labour intensity model which was used to analyse the effect of technological advancement on labour productivity. The production relationship between output and the independent variables, namely: equity contribution, loan, wages and cost of raw materials was captured with the Cobb Douglas production function, while the multivariate discriminate analysis was employed to identify factors separating defaulters from non-defaulters. The result indicated that domestic resource based industries dominated by agro-allied enterprises showed relatively higher utilisation rates at 42.0 per cent compared with 39.0 per cent recorded by industries with high import content. The growth rates of capital-labour ratio (an index of labour productivity) showed that the labour productivity increased annually by 39.9 per cent in the agro-allied sector compared with 32.5 per cent in the non-agro-allied sector from 1983 to 1997. On the other hand, the value added-labour ratio revealed an annual growth rate of 37.6 per cent for the agro-allied sector as against 26.2 per cent for the non-agro-allied sector in the same period. The Cobb-Douglas production function analysis revealed that the equity fund

and quantity of labour available to the enterprises were found to have significantly influenced the value added in each enterprise. Hence, the equity funding level was the most critical factor influencing the productivity of the different enterprises. The factors discriminating defaulters from non-defaulters of externally funded enterprises in order of economic importance were loan experience, value of product, product type, income from sources apart from production, and number of supervision times.

Akinyosoye (2006) analysed the relationship between plant size and factor productivity in agro-allied industries in Nigeria and the nature and efficiency of their production process using production frontiers analytical techniques. The outcome of the technical efficiency analysis showed that small to medium sized firms were more technically efficient than the large firms. The overall result of the study pointed to the fact that government needed to encourage more rural based SMEs, especially food processing firms, in order to generate more employment in the country. In this vein, the emphasis will have to be placed on improving basic infrastructure (roads and electricity) and access to the international market as well as introducing friendly tax regimes and credit markets for SMEs. This study further confirms the importance of access to credit by SMEs.

II.2.3 Financial Sector Development and Economic Growth in Nigeria

Adebiyi (2004) empirically investigated the impact of interest rates and other macroeconomic factors on manufacturing performance in Nigeria using vector autoregression and an error correction mechanism (ECM) technique with quarterly time series spanning 1986:1 to 2002:4. Unit root test and Johansen cointegration tests were performed. Result of the error correction model revealed that real deposit rate had a positive impact on the growth of the manufacturing sub-sector while the impact of inflation rate in the second quarter was negative. He therefore recommended that government must create an enabling environment to promote savings and pursue institutional reforms that encourage savings mobilisation. He also recommended that the CBN adopt a number of measures to lower interest rate such as giving government deposits to banks that offer lower rates to the manufacturers and lend to the real sector of the economy. He cited the case in the United States of America, where the Community Reinvestment Act (CRA), provided for targeted lending (to underdeveloped communities), that Nigerian Government could adopt similar measures to promote lending to the manufacturing sub-sector.

Ukeje and Akpan (2007) carried out an empirical investigation of the relationship between financial development and economic growth in Nigeria. They specified a

model with the annual growth rate of the gross domestic product as the dependent variable and the independent variables were; real interest rate, ratio of gross domestic savings to GDP, the ratio of domestic credit to private sector to GDP (which have been widely used as prime indicators of financial development). The other variables adopted include; the ratio of liquidity liabilities to GDP, the ratio of gross fixed capital formation to GDP and trade openness as a ratio of GDP. The empirical results showed that there is substantial positive relationship between financial development and economic growth in Nigeria. The ratio of credit to the private sector to GDP was said to be significant and rightly signed.

Finally, Akpokodje (1998) explored the association between private investment and macroeconomic policies (including fiscal policy, exchange rate policy, monetary policy, etc.) with particular reference to Nigeria. His results confirmed that macroeconomic policy variables do actually affect private investment in Nigeria. Government's monetary policy, as gauged by credit to the private sector was said to have strong positive and significant impact on private investment. Furthermore, the paper confirmed the negative impact of real exchange rates and high domestic inflation rates on private investment in Nigeria and highlighted the adverse impact of large budget deficits on private capital accumulation. He, however, cautioned that in view of the complementarity between private and public investment, reducing the budget deficit through contraction in public investment may be counterproductive.

III. Methodology

III.1 Scope of the Study This paper focused on the commercial banks' loans and advances to the agricultural and manufacturing sub-sectors of the Nigerian economy between 1970 and 2010 and therefore covers the MSMEs being the most dominant in the country's real sector (CBN/FOS/NISER, 2001; CBN/NISER, 2004; SMEDAN, 2007).

III.2 Type and Sources of Data

Secondary data that spanned 1970 to 2010, sourced from the National Bureau of Statistics and the Central Bank of Nigeria were used for the study. The secondary data collected include; total gross domestic product, agricultural gross domestic product, other manufacturing gross domestic product, total credit to the economy by commercial banks, credit to the agricultural sector, credit to the manufacturing sector, total deposits and savings with commercial banks, prime lending rate, inflation rate, nominal effective exchange rate, manufacturing capacity utilisation rate, index of electricity consumption, GDP per capita, employment rate, life expectancy at birth, adult literacy rate and poverty incidence in Nigeria.

III.3 Analytical Techniques

A combination of analytical tools was employed in order to achieve the objective of the paper. These include descriptive statistics including measures of central tendency and dispersion, proportional analysis, growth rate and trends. These were used to examine the trend in DMBs' financing of MSMEs in Nigeria. The evaluation of the effect of credit on the performance of MSMEs was carried out with a regression analysis (employing vector autoregression and error correction mechanism (ECM) techniques).

III.4 The Model

In this paper, the ECM technique was employed to capture the long-run and short-run dynamics of the MSMEs' contribution to economic growth in Nigeria. This was in line with studies by Adebisi, 2004; Rasheed, 2005; Onwioduokit, 2007; and Ukeje and Akpan, 2007; and several others. There are different indicators to measure the performance of the real sector of the economy where the MSMEs are very dominant as in Nigeria (Tella, 1998 and Adebisi, 2004). As indicated by Adebisi (2004), the various measures of the performance of the manufacturing sub-sector included: index of manufacturing production, contribution of manufacturing to gross domestic product, employment in the manufacturing sub-sector, capacity utilisation in the manufacturing sub-sector and value-added. Hence, this study takes the contributions of agriculture and other manufacturing to the gross national product as the dependent variable because changes in performance of the MSMEs arising from government policies can be easily observed. The explanatory variables include; commercial banks' credit to agriculture and manufacturing, average capacity utilisation rates, total savings with the commercial banks, prime lending rate, index of electricity consumption, inflation rate, and the nominal effective exchange rate. The multivariate model is specified in the log form in line with the Cobb-Douglas production function, except for prime lending and inflation rates, as follows:

$$\ln GAM = \beta_0 + \beta_1 \ln CAM + \beta_2 \ln TSV - \beta_3 PLR - \beta_4 IR + \beta_5 \ln IEC + \beta_6 \ln MCU - \beta_7 \ln NER + \varepsilon_t$$

Where,

$\ln GAM$	=	log of the aggregate of agricultural gross domestic product (AGDP) and other manufacturing GDP
$\ln CAM$	=	log of credit to agriculture and manufacturing
$\ln TSV$	=	log of total savings with the commercial banks
PLR	=	Prime lending rates of DMBs

IR	=	Inflation rate in the economy
ln IEC	=	log of the index of electricity consumption
lnMCU	=	log of manufacturing capacity utilisation
lnNER	=	log of the nominal effective exchange rate in Nigeria

The *a priori* expectations of the explanatory variables are as expressed below:

$$\beta_1 > 0; \beta_2 > 0; \beta_3 < 0; \beta_4 < 0; \beta_5 > 0; \beta_6 > 0; \beta_7 < 0$$

As in the Cobb-Douglas production function, the β s are the parameters. The value of the β is the elasticity which tells us the magnitude by which the changes in the respective independent variable affects the dependent variable (Mordi, 1992).

III.5 Unit Root Test

Before estimating the equation, it was useful to determine the order of integration of the variables considered (Asteriou and Hall, 2007). In using time-series data, it was a requirement that the time-series properties of such data be assessed since there was a possibility of obtaining spurious results. In doing this, test for stationarity using the Augmented Dickey-Fuller (ADF) test statistic was conducted.

III.6 Cointegration Test

Cointegration analysis helps clarify the long-run relationships between integrated variables (Johansen and Juselius, 1990). Cointegration theory has it that if two data series are non-stationary, the residuals from their linear combination, namely their long-run cointegration regression are likely to be stationary, in which case such a relationship (between the two series), can most appropriately be characterised, or more formally, be represented or specified by an error correction model. The error correction model includes the first lag of the residuals from the long-run cointegrating regression as explanatory variable in the regression model, the coefficient of which is referred to as the ECM, and which necessarily must carry a negative sign, which further lends credence to the assumed cointegrating relationship between the series.

The Johansen's cointegration test was employed to establish the long-run relationship between the integrated variables. This was because the technique is VAR-based and performs better than single equation methods (Rasheed, 2005). The ECM is therefore

characterised by both differenced and long-run equilibrium models, thereby allowing for the estimates of short-run dynamics as well as long-run equilibrium adjustments process. The estimation was conducted using econometric computer software package, EViews 7.0.

IV. Results and Discussion

IV.1 Examination of Trend in Deposit Money Banks' Credit to MSMEs in Nigeria

An examination of Table 2 indicated that from 1970 to 2009, total deposit liabilities of the DMBs in Nigeria averaged ₦882.1 billion, while total credit to the Nigerian economy averaged ₦837.0 billion. This meant that banks gave out 94.9 per cent of the total deposits mobilised as credit for productive activities in the Nigerian economy in the period under review. However, the Table also revealed that demand deposits constituted almost half of the banks' total deposit liabilities from which loans were granted to the economy (as time deposits constituted 56.6 per cent of total deposit liabilities), and these had implications for tenure of these loans.

**Table 2: Commercial Banks Selected Performance Indicators
(Averages, 1970-2009, in ₦' Million)**

Total Credit to the Economy(A)	Demand Deposits	Time, Savings and Foreign Currency Deposits(B)	Total Deposit Liabilities (C)	B as a proportion of C	A as a proportion of C
836,995.45	382,923.58	499,172.44	882,096.02	56.59%	94.89%

Further analysis of commercial banks loans and advances revealed that credit to agriculture and manufacturing sectors combined grew from ₦83.4 million in 1970 to ₦1,129,158.30 million in 2009 and averaged ₦149,106.08 million per annum. Similarly, total commercial banks loans and advances to the whole economy grew from ₦351.5million in 1970 to ₦9,667,876.70million in 2009, averaging ₦836,995.45million per annum. Consequently, commercial banks loans and advances to agriculture and manufacturing constituted 17.81 per cent of total commercial banks loans and advances to the Nigerian economy on the average between 1970 and 2009 (Table 3).

Table 3: Commercial Banks Loans and Advances to Agriculture and Manufacturing as Proportion of Loans to the Economy

Year	Average loans & Advances to Agric. & Manufacturing(A)	Average Total Loans to the Economy(B)	A as a Proportion of B
1970-2009	₦149,106.08m	₦836,995.45m	17.81per cent

IV.2 Trend Analysis of Selected Macroeconomic Indicators

A trend analysis of selected macroeconomic indicators was undertaken in comparison to commercial banks' lending to the MSMEs from 1970 to 2009 in Nigeria (Table 4). From table 4, it can be seen that though credit to MSMEs as well as MSME gross domestic product grew during the period, capacity utilisation declined before assuming an upward trend. Similarly, prime lending rate and inflation rate trended upwards and later moderated. Index of electricity consumption had a mixed trend but improved significantly to 172.7 from 2001 to 2009, compared with 92.9 during the period 1989 to 2000. The increase in credit to MSMEs as well as the improvement in the index of electricity consumption and inflation rate could be said to be responsible for the improvement in capacity utilisation.

Table 4: Trend in Commercial banks' credit to MSMEs and Selected Macroeconomic Variables

Year	Credit to MSMEs by Commercial Banks (₦' million)	MSMEs Gross Domestic Product (₦ ' million)	Capacity Utilisation Rate (Per cent)	Prime Lending Rate (Per cent)	Index of Electricity Consumption	Inflation Rate (Per Cent)
1970-77	350.35	5,448.18	77.57	6.63	33.46	15.29
1978-88	4,368.86	28,355.11	54.91	10.57	105.84	17.19
1989-2000	74,983.87	601,234.43	35.59	21.04	92.85	29.52
2001-2009	557,064.06	5,538,384.34	53.46	18.74	172.71	12.92

IV.3 Trend in Socio-Economic Indicators in Nigeria

A trend analysis was also carried out on socio-economic indicators in Nigeria from 2000 to 2010 for which consistent data were available. An analysis of the socio-economic indicators revealed that per capita income in Naira have been growing, from ₦ 39,851.5 in 2000 to ₦185,759.5 in 2010. Similarly, adult literacy rate has improved from 57.0 per cent in 2000 to 66.9 per cent in 2010. The incidence of poverty which was reported to have declined from 70.0 per cent in 2000 to 54.0 per cent in 2009 by the Central Bank of Nigeria, have been reported by the World Bank to have declined once again to 68.0 per cent in 2010. However, life expectancy at birth has remained stagnant at 54 years, while unemployment rate has been on the increase, from 11.9 per cent in 2005 to 21.1 per cent in 2010 (Table 5).

Table 5: Trend in Socio-Economic Indicators

Years	GDP per Capita(₦)	GDP per Capita(US \$)	Life Expectancy at Birth(Yrs)	Adult Literacy Rate(Per cent)	Unemployment Rate(Per cent)	Incidence of Poverty
2000	39,851.5	388.1	54	57	n.a	70
2001	59,388.0	530.7	54	57	n.a	n.a
2002	65,232.2	839.1	54	57	n.a	n.a
2003	80,320.1	620.9	54	57	n.a	n.a
2004	89,866	673.2	54	62	n.a	54.4
2005	109,155.1	826.31	54	63.1	11.9	54.4
2006	132,604.3	1,030.34	54	57.2	12.3	54
2007	144,474.5	1,223.49	54	66.9	12.7	54
2008	170,515.0	1,286.29	54	66.9	14.9	54
2009	165,633.9	1,106.77	54	66.9	19.7	54
2010	185,759.5	1,235.92	54	66.9	21.1	68*

Sources: Central Bank of Nigeria Annual Report and Statement of Account, Various issues

*World Bank, 2012.

IV.4 Econometric Investigations

In the attempt to establish the effect of DMBs' credit on the performance of agricultural and non-agricultural MSMEs in Nigeria, a regression analysis was carried out (employing auto-regression and error correction mechanism (ECM) technique) as explained earlier in Sections 3.4 to 3.6. Unit root tests were performed using the Augmented Dickey Fuller (ADF) test. The Johansen's Cointegration Test was also employed to establish the long-run relationship between the integrated variables. The ECM is therefore characterised by both differenced and long-run equilibrium models, thereby allowing for the estimates of short-run dynamics as well as long-run equilibrium adjustments process. The result of this analysis is presented below.

IV.4.1 Unit Root Test Results

Most time series variables are said to be non-stationary and using non-stationary variables in the model might lead to spurious regressions (Asteriou and Hall, 2007). All the variables were tested at levels for stationarity using the Augmented Dickey-Fuller (ADF) test. With the exception of inflation rate and index of electricity consumption which were stationary at levels, $I(0)$, all the other variables were stationary at first difference, $I(1)$. The stationary test results are summarised in Table 6. As shown in table 6, at 5 per cent level of significance, all the other variables were found to be integrated of order 1.

Table 6: Unit root test – Augmented Dickey-Fuller

Variable	ADF		
	Level	1 st Difference	Remarks
LGAM	-0.1178	-9.0492**	I(1)
LCAM	-0.5316	-3.7288**	I(1)
LTSV	2.3896	-4.0400**	I(1)
PLR	-2.0619	-8.2573**	I(1)
LIEC	-2.7697*		I(0)
LMCU	-2.0181	-3.4856**	I(1)
IR	-3.8458**		I(0)
LNER	-1.5420	-5.3228**	I(1)

Note: * Significant at 5%

** Significant at 1%

Source: Authors' computation

Table 7: Unit root test of the residual

RES1 residual of the cointegrating variables

Null Hypothesis: RES1 has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=8)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-7.408490	0.0000
Test critical values: 1% level	-3.639407	
5% level	-2.951125	
10% level	-2.614300	

*MacKinnon (1996) one-sided p-values.

Source: Authors' Computation

The result of the stationary test of the residual from the cointegrating variables is shown in table 7. The result showed that the series individually exhibited random walk as it was stationary at level, I(0) at 1.0 per cent level of significance. There exists a stable long-run relationship among the variables.

IV.4.2 Cointegration test using Johansen-Juselius Technique

The cointegration tests were undertaken based on the Johansen and Juselius (1990) maximum likelihood framework. The essence was to establish whether long-run relationships exist among the variables of interest. The Johansen's technique was chosen not only because it is vector autoregression (VAR) based, but also, because it performs better than the single equation and is alternative multivariate method. This method produces asymptotically optimal estimates since it incorporates a parametric correction for serial correlation. The nature of the estimator means that the estimates are robust to simultaneity bias, and it is robust to departure from normality.

Table 8: Unrestricted Cointegration Rank Test Results

Null Hypothesis	Trace Statistic	Critical value at 5 per cent	Null Hypothesis	Maximum-Eigen statistic	Critical value at 5 per cent
0*	273.9491	169.5991	*0	81.25699	53.18784
1*	192.6921	134.6780	*1	66.92161	47.07897
2*	125.7705	103.8473	2	39.47379	40.95680
3*	86.29668	76.97277	3	31.15427	34.80587
4*	55.14241	54.07904	4	20.56161	28.58808
5	34.58079	35.19275	5	15.11257	22.29962
6	19.46823	20.26184	6	9.815097	15.89210
7*	9.653131	9.164546	7*	9.653131	9.164546

Notes: r represents number of cointegrating vectors. Trace test indicates 5 cointegrating equations at the 0.05 level while max-eigenvalue test indicates 2 cointegrating equations.

*denotes rejection of the hypothesis at the 0.05 level

Source: Authors' Computation

Johansen method detects a number of cointegrating vectors in non-stationary time series. It allows for the hypothesis testing regarding the elements of cointegrating vectors and loading matrix. The cointegrating test include GDP of MSMEs, credit to MSMEs, index of electricity consumption, manufacturing capacity utilisation rate, exchange rate, interest rate and savings. The result is as shown in Table 8. The test statistics strongly reject the null hypothesis of no cointegration in favour of more than one cointegration relationships.

IV.4.3 Error-correction Modelling (ECM)

In order to capture the short-run deviations that might have occurred in estimating the long-run cointegrating equation, a dynamic error-correction model was formulated. The ECM was estimated with respect to the dependent variable, LGAM, using ordinary least squares. Given that the primary objective of the study was to investigate the relationship between contribution of the MSMEs to the GDP and its determinants, the aim of this section was to analyse the parameters of the variables and the error correction term. The error correction term depicted the speed of convergence to equilibrium once the equation was shocked. All the variables (first order differenced) in the equation were stationary and therefore OLS method gave consistent estimates.

The negative sign of the ECM indicated long-run convergence of the model to equilibrium as well as explaining the proportion and the time it took for the disequilibrium to be corrected during each period in order to return the disturbed system to equilibrium.

As is the tradition, the over-parameterised model was reduced to achieve a parsimonious model (Table 9). Parsimony maximised the goodness of fit of the model with a minimum number of explanatory variables. The reduction process was mostly guided by statistical considerations, economic theory and interpretability of the estimates. Thus, the parsimonious reduction process made use of a stepwise regression procedure (through the elimination of those variables and their lags that were not significant), before finally arriving at interpretable model. The parameter estimates along with the standard errors, t-values and the corresponding critical values were also given in Table 9.

By examining the table, it was observed that all the parameter estimates did better in the parsimonious model compared with the over-parameterised model. An important feature to note was the coefficient of the parameter of the error correction term. It carried the correct sign and it was statistically significant at one per cent (Table 9). The significance of the ECM supported cointegration and suggested the existence of long-run steady-state equilibrium between MSMEs contribution to GDP (GAM) and the independent variables. An examination of the overall fit indicated that the parsimonious model (Table 9) had better fit compared with the over-parameterised model, with a higher value for the adjusted R-squared (0.77 compared with 0.63 respectively), and good Durbin-Watson statistic. The Adjusted R^2 of about 0.77 indicated that 77.0 per cent of the variation in GAM was explained by the exogenous variables that entered the parsimonious model. The D-Watson statistics of 1.93 showed the absence of serial correlation in the model

Table 9: Parsimonious model

Dependent Variable: D(LGAM)

Included observations: 32 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LCAM)	1.056955	0.337220	3.134317	0.0045**
D((LCAM(-2)))	-0.820740	0.358062	-2.292172	0.0310*
D(LIEC)	-1.121139	0.291517	-3.845880	0.0008**
D((LMCU(-1)))	1.109486	0.579925	1.913155	0.0677*
D((LMCU(-2)))	-1.051129	0.563458	-1.865496	0.0744*
D((LGAM(-1)))	0.618194	0.188143	3.285770	0.0031**
D((LGAM(-2)))	0.422303	0.135635	3.113524	0.0047**
RES1(-1)	-1.852348	0.251388	-7.368476	0.0000**
R-squared	0.825043	Mean dependent var	0.094667	
Adjusted R-squared	0.774013	S.D. dependent var	0.246108	
S.E. of regression	0.116995	Akaike info criterion	-1.241052	
Sum squared resid	0.328508	Schwarz criterion	-0.874618	
Log likelihood	27.85683	Hannan-Quinn criter.	-1.119589	
Durbin-Watson stat	1.930275			

Notes: * Significant at 5%, ** Significant at 1%**Source:** Authors' Computation

In line with theory and previous empirical studies (Tella, 1998; Nkurunziza, 2005; and the Urban Institute, 2008), credit had a positive effect on GDP of MSMEs in Nigeria as the coefficient of CAM (credit to MSMEs) was positive (1.06) and significant at one per cent level. Similarly, the coefficient of the first lag of manufacturing capacity utilisation, MCU was positive (1.11) and significant at the five per cent level confirming a positive relationship between GDP of MSMEs and the first lag of manufacturing capacity utilisation. Also the coefficients of the first and second lag of GDP were positively signed (0.62 and 0.42 respectively) and significant at the one per cent level indicating a positive relationship between previous years GDP and current GDP.

Contrary to *apriori* expectation, the coefficient of the index of electricity consumption (IEC) was negative (-1.12) and significant at one per cent. This might not be unconnected with inadequate and epileptic electricity supply in the country as most MSMEs relied on generators to carry out their operations. In fact, a survey conducted by the Manufacturers Association of Nigeria (MAN) between January to May, 2010, revealed that on the average, the Power Holding Company of Nigeria Plc (PHCN) supplied only 7.8 hours per day of total energy required by manufacturers while the latter had to generate the remaining balance of 16.2 hours per day through own electric generators. The implication of this situation according to the MAN survey was that, the much needed capital required in maintaining and increasing production was

locked up in purchasing and fuelling generators. This led to increase in overhead and operating costs (MAN, 2010).

V. Conclusion

This paper set out to assess the effect of DMBs credit on the performance of agricultural and non-agricultural MSMEs in Nigeria. The definition of MSMEs in Nigeria as contained in the national policy on MSMEs in Nigeria was given as well as the importance of MSMEs in the economic growth and development of nations. In addition, the role of credit to the performance of MSMEs in various jurisdictions was presented, as well as the problem of sourcing credit by MSMEs due to their peculiarities. After sourcing secondary data from both the CBN and NBS, descriptive statistics were used to examine the trend in DMBs credit to MSMEs as well as other macroeconomic and socioeconomic indicators in Nigeria. The evaluation of the effect of credit on the performance of MSMEs in Nigeria was carried out with the aid of multivariate analytical technique.

From the analysis, the coefficient of CAM (which was the credit to MSMEs as specified in the model) was positive and significant suggesting that credit had a positive effect on GDP of MSMEs in Nigeria. Similarly, the coefficient of the first lag of MCU was positive and significant. Thus, an increase in the manufacturing capacity utilisation rate would increase the contribution of MSMEs to GDP.

The paper, therefore, recommended that effort should be made to improve access to credit by MSMEs, for the generation of employment as well as creation of wealth to alleviate poverty. Furthermore, all the funding institutions, schemes and funds directed at the MSMEs in Nigeria, such as the Bank of Industry, the Bank of Agriculture, The Agricultural Credit Guarantee Scheme Fund, the Small and Medium Enterprises Credit Guarantee Scheme Fund (SMECGS) which has replaced the SMEEIS, etc., should be sustained, in order to improve the access of MSMEs to credit. The problem of inadequate power supply needed to be urgently tackled as it hampered MSMEs activities. The CBN, the Federal Ministry of Finance and other government agencies should intensify efforts to provide a conducive macroeconomic environment for MSME operations.

As stated by the World Business Council for Sustainable Development (WBCSD), "the key to poverty alleviation is economic growth that is inclusive and reaches the majority of people. Improving the performance and sustainability of local entrepreneurs and micro, small and medium enterprises (MSMEs), which represent the backbone of

global economic activity, can help achieve this type of growth" (WBCSD, 2004). In this vein, the activities of government institutions focused on MSMEs in Nigeria such as the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN), as well as those in the organised private sector such as the NASME, LCCI, NASSI, etc. should be encouraged, particularly given the high incidence of unemployment and poverty in Nigeria.

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