The Journal of Social Sciences Research
ISSN(e): 2411-9458, ISSN(p): 2413-6670
Vol. 2, No. 7, pp: 129-132, 2016
URL: http://arpgweb.com/?ic=journal&journal=7&info=aims

Bank Credits and Performance of Manufacturing Sector in Nigeria, 1970-2013

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Abstract: This study examined the impact of bank credits on performance of manufacturing sector using annual time series data from 1970-2013. Using co-integration and error correction mechanism for the analysis the study revealed that a long run relationship exists between bank credits and manufacturing sector output. Given the error correction mechanism result, the study revealed that bank credits exhibited negative significant impact on the performance of manufacturing sector in Nigeria. Based on these findings, the study recommends among others: Bank Credits to the Manufacturing Sector should be properly monitored to ensure that funds are not diverted for other purposes, intending recipients of these Bank Credits to the Manufacturing Sector should be made to undergo entrepreneurial training and how to pay back as at when due, so as to reduce the risks associated in giving out these Credits to the Manufacturing Sector and also its adverse effect on manufacturing productivity when misappropriated.

Keywords: Bank credits; Manufacturing sector performance; Error correction model; Nigeria.

1. Introduction

Bank credits are necessary tools for economy growth and development. This is based on the fact that when banks credit facilities are accessible to the productive sector - manufacturing and agriculture, it results to enhancement of productivity which by implication leads to development. Despite the credit guidelines of the Central Bank of Nigeria (CBN) which is aimed at channeling funds to the productive sector in order to stimulate the growth of the sectors, manufacturing output has not been encouraging considering the volume of credits supplied (Akinleye *et al.*, 2003). The consequence of fall in manufacturing output to a large extent account for the poor high level of unemployment, a continuous increase in import demand, inability to make investments in modern machineries, low human capacity building. This continuous increase in import demand of manufacturing products led to deficits in the current account balance. However, the answer to the question about the impact of bank credits on the manufacturing sector has remained inconclusive in the literature (Ajayi, 2007; Nwosa and Oseni, 2013; Tawose, 2012). It is against this backdrop that the study examines the impact of bank credits on manufacturing sector performance in Nigeria.

The rest of the work is structured as follows; Section two provides reviews of the related and relevant literature; Section three explains the methodology; Section four focuses on the empirical results and discussions and, section five presents the conclusions and recommendations.

2. Empirical Literature

Ogar *et al.* (2014) examined the influence of commercial bank credit on manufacturing sector in Nigeria for period of 1992-2011 using Ordinary least square of multiple regression technique. The finding of the study showed that commercial bank credit had a significant effect on manufacturing sector. It was recommended that government should endeavour to ensure that there are available and sufficient credit allocated to the manufacturing sector in Nigeria with reasonable or affordable interest rates, and for Nigeria to meet it millennium goals, she will have to depend on products and services produced within her boundaries. In their work, Nwosa and Oseni (2013) examined the impact of banks loan to Small and Medium term Enterprises (SMEs) on manufacturing output in Nigeria for the period of 1992 to 2010 using error correction technique. The result showed that banks loan to the SMEs sector had insignificant impact on manufacturing output both in the long and short run. This evidence could be as a result of lack of entrepreneurship skills on the of bank credit recipients which affected the result. However, Ajayi (2007) examined the impact of bank credits on manufacturing sub-sector performance in Nigeria from 1975 to 2003. The result revealed that bank credits and inflation negatively impacted on manufacturing sub sector. This implies that increase in bank credits retard manufacturing sector performance. Similarly, Oni *et al.* (2014) examined the impact of bank credit to output growth in the manufacturing and agricultural sub sectors in Nigeria for the period 1980-2010

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using the error correction techniques. The result of the study shows that bank credit has significant impact on manufacturing output growth in the short run. However, bank credit does not have significant impact on agricultural output growth both in the short and long run. Inflation and exchange rate depreciation exhibited negative effects on manufacturing output growth in both short run and long run.

Tawose (2012) investigated the effect of bank credit on industrial performance in Nigeria between 1975 and 2009 using co-integration and Error Correction technique. The results indicated that industrial sector performance (manufacturing sector Real Gross Domestic Product) has a long run relationship with Commercial Banks' Loan and Advances to Industrial Sector, Aggregate Saving, Interest rate and Inflation Rate. The study also revealed that commercial banks' loan and advances to industrial sector, aggregate saving, interest rate and inflation rate exerted positive significant impact on industrial sector performance in the short run while in the long run Banks' Loan and Advances to Industrial Sector exerted insignificant negative impact.

Based on the empirical literature reviewed, the impact of bank credits on manufacturing output has been inconclusive. However, this study intends to contribute to the existing literature. This is done by extending the time period of the study as against previous studies reviewed. This is as a result of policy change and as well as historical facts that most conditions that were prevalent when previous studies were undertaken had changed. The extension of time avails the opportunity to capture these changes. Also, in analyzing the impact of bank credits on manufacturing sectors performance this study follows Ajayi (2007) and, Oni *et al.* (2014) but with some modification.

3. Methodology

The study adopted a factorial experimental design. The reason for this design is that it allows for the examination of the impact of two or more independent variables simultaneously on the dependent variable and strengthens the validity of the study.

The data for this study are basically from secondary sources. Specifically, the data are sourced from Central Bank of Nigeria (CBN) statistical bulletins. The data covers the period 1970 to 2013. This period present a considerable degree of freedom that is necessary to capture the effect bank credits on manufacturing sector performance of Nigeria.

3.1. Model Specification

3.1.1. Manufacturing Sector Output Model

$$MSO = f(BCM, GEX) \quad (1)$$

Equation (1) states that manufacturing sector output(performance)(MSO) is a function of bank credits to Manufacturing(BCM) and Government Expenditure (GEX) which is a check variable.

The above equation is transformed into log form in order to reduce variability. Equation (1) is operationalized for the purpose of estimation into the following equation:

$$\text{Log MSO} = \text{Log}\alpha_0 + a_1\text{LogBCM} + a_2\text{LogGEX} + V_t \quad (2)$$

Equation (2) shows a single-equation regression model (SERM) which seek to explain the relationship between bank credits to manufacturing and government expenditure variables and manufacturing output. Where LogMSO is log of manufacturing sector output (performance), Logα is the intercept of the equation, LogBCM is log of bank credits to Manufacturing, LogGEX is log of government expenditure and V represents the residual.. The apriori expectations of the equation estimates are as follows: $a_1 > 0$, $a_2 > 0$. This shows that bank credits to manufacturing and government expenditure variables are positively related to manufacturing output.

3.2. Method of Data Analysis

The study adopted the ordinary least square (OLS) method in estimating the effect of bank credits to manufacturing sector on manufacturing sector performance. The reason for the adoption of OLS method is based on its Best, Linear and Unbiased Estimates (BLUE) of the parameters of SERM. Nevertheless, before the model was estimated, the properties of the variables were examined to substantiate the stationarity and long run relationship of the variables. This is as a result of most time series data being prone with unit roots problem. The econometric tools that were employed for these verifications are the Augmented Dickey-Fuller(ADF) test for stationarity and Johansen co-integration test for long run relationship of the variables.

4. Results and Discussions

4.1. Unit Roots Test

Due to high serial correlation, unreasonable F-statistic and coefficient of determination values observed in the OLS result which could be informed by non-stationarity of the variables, hence unit roots test was carried out on the series to ascertain the stationarity of the variables.

Table- 1. Unit Root Test Result of the MSO Model from 1970 -2013

Variables	ADF Test Statistic	1% Critical level	5% Critical level	10% Critical level	Order of Integration
LOG(MSO)	-3.0196	-3.5930	-2.9320	-2.6039	1(1)
LOG(BCA)	-7.1259	-3.5973	-2.9339	-2.6048	1(1)
LOG(GEX)	-4.1944	-3.5973	-2.9339	-2.6048	1(1)

Source: Author's computation using- E-views 7.1

The unit roots test result is reported in Table 1. The ADF test fails to reject the null hypothesis of the presence of a unit root for all the data series in levels. However, all series were integrated of order one or I(1). This shows that all the series were stationary at first difference. This now led to the test for the long-run relationship between bank credits to manufacturing sector and manufacturing sector performance and government expenditure using the Johansen and Juselius (1990) cointegration test. The result of the Johansen co-integration test is reported as follows:

4.2. Cointegration Test

The Johansen cointegration test in Table 2 shows that there is one integrating equation, suggesting that bank credits to manufacturing sector and government expenditure and manufacturing output are cointegrated.

Table- 2. Johansen Co-integration Test Result of the MSO Model from 1970 – 2013

Hypothesized No. of CE(s)	Eigenvalue	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value
None **	0.446733	28.61679	24.31	29.75
At most 1	0.084417	3.756363	12.53	16.31
At most 2	0.001243	0.052225	3.84	6.51

*(**) denotes rejection of the hypothesis at 5%(1%) significance level
L.R. test indicates 1 cointegrating equation(s) at 5% significance level
Source: Author's computation using- E-views 7.1

The result in Table 2 indicates that there exists one (1) co-integrating equation which satisfies the condition for fitting in the short run error correction model (ECM). Given that the variables are integrated of the same order, I(1) and long run relationship established, the Error Correction Model (ECM) was estimated and used for analysis.

4.3. Error Correction Mechanism

Table 3 shows that one period and two period lag of bank credits to the manufacturing sector failed to conform with the apriori expectation except the current period of bank credits to the manufacturing sector. One and two period lag of bank credits to the manufacturing sector are negatively statistically significant at 5 percent level in explaining variation in manufacturing sector output while the current period of bank credits is positively statistically insignificant. This result implies that a percentage increase in bank credits will significantly decrease the manufacturing sector output of the Nigerian economy. This could be attributed to the rising cost of doing business, credit diversion for personal use (high risks exposure) and inadequate infrastructure which tend to surpass the effect of bank credits.

Table-3. The Error Correction Model of the MSO model from 1970 - 2013

Variable	Coefficient	T-statistic	Probability
C	-3.584988	2.84973	0.0488
ΔLogBCM	0.040533	0.24825	0.1535
ΔlogBCM(-1)	-0.177631	3.81053	0.0039
ΔlogBCM(-2)	-0.434543	-2.07762	0.0472
ΔlogGEX	0.126000	0.27530	0.1775
ΔlogGEX(-1)	-0.169561	-0.91968	0.3744
ΔlogGEX(-2))	0.230897	1.16793	0.2411
ECM(-1)	-0.121523	-2.84973	0.0251

R^2 = 0.78; Adjusted R^2 = 0.77; F – statistic = 74.83; Durbin Watson = 2.16
Source: Author's computation using- E-views 7.1

Table 3 also shows that the coefficient of ECM(-1) has right negative sign and is statistically significant. This provides important information about the short run relationship between manufacturing output and bank credits and government expenditure in Nigeria. With the coefficient of -0.12, it means that about 12 percent of disequilibrium in the previous year is correct or adjusted in the current year.

5. Conclusions and Policy Recommendations

The bank credits remain crucial to the manufacturing sector performance and therefore require adequate increase and monitoring in order to enhance productivity. The findings from the work show that bank credits to

manufacturing sector exert negative significant effect on manufacturing sector performance in Nigerian economy within the period under study.

Based on the findings, the following recommendations were made:

- Bank credits to the manufacturing sector should be properly monitored by the institutions responsible to ensure that funds are not diverted for other purposes in order to boost the sector's performance.
- Recipients of manufacturing sector's bank credits should be made to pay back as at when due so as to reduce the risks associated in giving out these credits.
- Furthermore, there is need to put a mechanism that will make the recipients of these bank credits undergo entrepreneurial training to reduce the risks associated with lack of entrepreneurial skills.

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