

Empirical Investigation on the Relationship between Bank Credit and Manufacturing Sector Growth in Nigeria, 1981-2014

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ABSTRACT

The study examined the empirical relationship between bank credit and manufacturing sector growth in Nigeria for the period of 34 years, 1981-2014. The study adopted time series data obtained from Central Bank of Nigeria Statistical Bulletin. Five variables were employed for this study. These are manufacturing Sector Output proxied for manufacturing Sector Growth as the dependent variable; whereas, Broad Money Supply, Credit to the Private Sector, Interest Rate and Inflation Rate as the explanatory variables. Augmented Dickey-Fuller and Philips-Perron tests were used to establish the stationarity of the data; and, it revealed that all the variables of the study are stationary at first difference. Johansen co-integration tests were conducted to establish the long-run relationship among the variables. It showed the existence of at least one co-integrating relationship at 5% level of significance. Vector Error Correction Model (VECM) tests were carried out to investigate the dynamic behaviour of the variables. The study revealed that bank credit has no short-run equilibrium significant relationship with manufacturing sector growth in Nigeria. Granger causality tests were employed to determine the direction of the causality. The result indicated that bank credit has no causal relationship with manufacturing sector growth in Nigeria. The study concluded that bank credit had not significantly contributed to manufacturing sector growth in Nigeria. The study recommended that for the economy to grow, the manufacturing sector should be encouraged in form of concessional and reduced interest rate. The study suggested that regulatory authorities should stabilize the interest rate which is capable of ensuring price stability and maintaining inflation to a single digit. This may build confidence in the banking institutions and will enable them to introduce innovations to boost manufacturing sector output in the economy. CBN and policy makers should adopt vibrant economic policies such as interest rate stability, flexible exchange rate, indigenization and economic diversification which will encourage the banks in financing the manufacturing sector.

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Introduction

The growth and development of the manufacturing sector in a modern economy also greatly depends on the efficient and effective performance of the banking system in an economy (Nwakoby, 2004). This is consistent with the financial intermediation theory by Gurley and Shaw (1967), which explains the role of bank credit in an economy. The theory is supported by the empirical work of Oluwafemi, Akinlo and Elumilade (2014) who established a positive significant relationship between that bank credit and private sector growth in Nigeria. This can be achieved through efficient and effective savings mobilization from the surplus units to the deficit units of the sector. Banking institutions are to perform the complementary role to render intermediation services; thus, by extending loan facility to the real sector in Nigeria (Aniekan & Bablola, 2009).

The manufacturing sector seems to have failed to meet the expectations of the Nigerian society in terms of its contributions to the Gross Domestic Product (GDP); because, the sector is unable to provide the required needs for the economy (Oluitan, 2013). Hence, Nigeria, like many other developing countries, is not a strong economy in the area of manufacturing. Thus, the sector has remained a major consumer of foreign exchange, rather than being a leading growth sector in socio-economic transformation in Nigeria. As a result, this might lead to poor industrial technologies that will bring about low competitive markets and reduced general welfare of the citizenry.

These theoretical views contradict the work of Obamuyi, Edun and Kayode (2013), which

indicates a positive significant relationship between bank lending and manufacturing sector output in Nigeria. The findings conclude that bank credit has the potential to stimulate manufacturing sector growth and is consistent with the supply-leading hypothesis. This corroborates the works of

Mushin and Eric (2000), Dermigue-Kunt and Levine (2008) that an efficient financial market is a necessary requirement for the overall achievement of private sector growth and development.

Statement of the Problem

Several empirical studies have been conducted in Nigeria on bank credit and manufacturing sector growth nexus by Ujuamani (2013); Emejeoka and Ugbeanu (2014); Alajide (2014); Oluwafemi, Akinlo and Elumilade (2014); Ayani (2014); Imoughele and Ismaila (2014); Ogar, Nkemare and Effiong (2015). These studies reveal a positive significant relationship between bank credit and manufacturing sector growth. While some other studies which were carried out by Abuka and Egesa (2007) in Uganda; Aurangzeb (2012) in Pakistan; Uurty, Sailaja and Demissie (2012) in Ethiopia; OLweny and Chiluwe (2012) in Kenya indicate a negative significant relationship between bank credit and private sector growth with similar time series characteristic of data. Hence, the empirical evidence by the work of Nzotta and Okereke (2009) also established that the financial system had not sustained an effective intermediation, especially credit allocation and a high level of monetization in Nigeria.

The complementary roles played by banks through effective and efficient financial intermediation in order to achieve a sound private sector-led economy in Nigeria have become imperative (Lemo, 2002). Unfortunately in Nigeria, the sector is still struggling under the shackles of under-development when compared with her counterparts in Asia (Malaysia, Pakistan, Indonesia, Iran, India, Thailand and Bangladesh), which Nigeria was ranked ahead of in the 1960's in terms of private sector growth potentials (Egbon, 2008). The performance of this sector for the past years was characterized by conflicting

evidences of the relationship between bank credit and manufacturing sector growth in Nigeria, despite the increased number of banks in the economy. Therefore, these conflicting results and problems create a knowledge gap in this study; and, it is against this background that the study attempts to investigate empirically the relationship between bank credit and private sector growth in Nigeria.

Objectives of the Study

The main objective of the study is to examine the empirical relationship between bank credit and manufacturing sector growth in Nigeria. The specific objectives of the study are to:

- i. Evaluate the extent of relationship between bank credit and manufacturing private sector output in Nigeria.
- ii. Examine the extent of relationship between interest rate and manufacturing sector output in Nigeria.
- iii. Investigate the extent of relationship between broad money supply and manufacturing output in Nigeria.
- iv. Ascertain the extent of relationship between inflation rate and manufacturing sector output in Nigeria.
- v. Evaluate the extent of relationship between credit to the private credit and manufacturing sector output in Nigeria.

Research Hypotheses

The hypotheses formulated for this study are as follows:

Ho₁: Bank credit has no positive significant relationship with manufacturing sector output in Nigeria.

Ho₂: Inflation rate has no positive significant relationship with manufacturing sector output in Nigeria.

Ho₃: Interest rate does not have a positive significant relationship with manufacturing sector output in Nigeria.

Ho₄: Broad money supply has no positive significant relationship with manufacturing sector output in Nigeria.

Ho₅: Credit to the private sector has no positive significant relationship with manufacturing sector output in Nigeria.

Bank Credit

The term credit specifically refers to the faith placed by a lender on a borrower by granting a loan usually in form of money, goods or securities to debtors (Ikeora, 2006). Credit can therefore be defined as a transaction between two parties in which creditor supplies money, goods and services or securities in return for promised future payments by the borrower. Credit is the extension of money from a surplus to a deficit units; it implies a promise by one party to pay another for money borrowed or goods and services received (Lemo, 2002). The major types of credit could be distinguished namely: commercial credit, consumer credit, investment credit and guarantees by banks (Nzotta, 2014). Credit cannot be divorced from the banking sector as banks serve as a conduit for funds to be received in form of deposits from the surplus units of the economy and passed on to the deficit units who need funds for productive purposes.

Banks are therefore debtors to the depositors of funds and creditors to the borrowers of funds. Bank credit serves as the borrowing capacity provided to an individual, government, firm or organization by the banking institutions in form of loans and advances. Agu and Basil (2013) stated that the amount of loans and advances, including guarantees (fund based and non-fund based exposure of banks) given by the banking sector to economic agents constitute bank credit. Hence, bank credit often accompanied with some collateral that helps to ensure the repayment of the loan in the event of default as a cushion on the accompanying risk. Bank's channels savings into

productive investment thereby encouraging private sector growth and development (Andabai, 2011). Thus, the availability of credit allows the function of intermediation to be carried out, which contributes to the growth of the productive sectors of the economy.

Manufacturing Sector Output

The manufacturing sector seems to have failed to meet the expectations of the Nigerian society in terms of its contributions to the Gross Domestic Product (GDP); because, the sector is unable to provide the required needs for the economy (Oluitan, 2013). Nigeria, like many other developing economies such as India, Indonesia, South Africa and Bangladesh etc., is not strong in the area of manufacturing. Afolabi (2004) argues that rather than being a leading growth sector and a key factor in socio-economic transformation in the Nigerian economy, the sector has remained a major consumer of foreign exchange, with a high level of dependence on imported raw materials and capital goods, thus making relatively minor contributions to foreign exchange earnings. These theoretical views contradict the empirical results of Obamuyi, Edun and Kayode (2013) who found a positive significant relationship between manufacturing sector output and bank lending in Nigeria. Their findings are also in line with the empirical work of Yusuf and Ahmed (2012) who posit a positive significant relationship between private sector credit and manufacturing sector growth in Nigeria.

Theoretical Framework

This study is anchored on the financial intermediation theory by Gurley and Shaw (1967). The theory explains the role of bank credit in an economy. According to the theory, the business of financial intermediation in any modern economy is to provide a mechanism to draw financial flows from financially exceeding agents to those having a financial need in the economy. This means that

banking institution can influence private sector growth by extending credit to the sector.

Recent studies such as Eyas and Abdelraheem (2014), Emecheta and Ibe (2014), Nwaru and Okorontah (2014) reveal that bank credit also promotes the function of financial intermediation in the private sector-led economy. They conclude that the function of financial services had enhanced private sector growth and development through an effective capital accumulation and investments in the sector. Their argument further corroborate the work of Chang, Jai and Zhicheng (2010) which state that financial institutions acts as a shock absorber to growth and development of productive sector. Eatzaz and Malik (2009) stated that the under-development of the financial sector is one of the reasons why, private sector investment in developing countries tend to produce lower output than that of advanced countries.

Lemo (2002) observed that the role of bank credit to private sector in stimulating economic growth and development cannot be over emphasized. As a result, this is one of the most important sources of financing firms; especially, in countries where capital markets are not fully developed. Nzotta (2014) posits that bank credit is one of the important aspects of financial intermediation that provide funds to economic entities that can put them to the most productive investment in an economy. They conclude that credit availability for consumption and investment are capable of raising the level of private sector output and create employment opportunities in the economy. Hence, banks should finance any positive net present value project if the cost of investment is below the expected returns. Based on these contributions, there is a justification for anchoring this study on endogenous growth model and financial intermediation theory.

Empirical Literature

Leonard (2012) adopted time series econometrics technique to establish the relationship between private sector credit and manufacturing sector growth in Italy which spanned a period of 25 years (1986-2010). Variables used for the study includes Gross Domestic Product, Bank Credit to the Sector, Lending Rate and Exchange Rate. The study reveals a negative significant relationship between private sector credit and manufacturing sector growth in Italy.

Obamuyi, Edun and Kayode (2013) used a Vector Error Correction Model (VECM) to investigate the relationship between bank lending and the performance of the manufacturing sector output in Nigeria of a period of 36 years (1973-2009). Manufacturing Production, Lending Rate, Exchange Rate, Inflation, Gross Domestic Product and Financial Deepening Rate were used as variables for the study. The study shows a positive significant relationship between manufacturing sector output and bank lending in Nigeria. Based on the foregoing results, the importance of financial system as a catalyst for manufacturing sector growth and development cannot be over-emphasized.

Ogar, Nkamare and Effiong (2014) determined the relationship between commercial bank credit and its contributions to the manufacturing sector growth for a period of 21 years (1992-2012). Ordinary Least Square (OLS) was used for the analysis. Commercial Loan to the Private Sector, Interest Rate and Broad Money Supply were used as variables for the study. Commercial bank credit has a positive significant relationship between manufacturing sector output. Their findings show that commercial bank credit needed to be channeled to the credit worthy customers.

Yusuf and Ahmed (2012) adopted time series econometrics techniques to investigate the relationship between private sector credit and manufacturing sector growth in Nigeria over the

period, 1985-2011. Gross Domestic Product, Lending Rate, Credit to the Private Sector, Broad Money Supply and Interest Rate were used as variables for the study. The results show a positive significant relationship between private sector credit and manufacturing sector growth in Nigeria.

Aliyu and Yusuf (2013) used a multiple regression analysis to ascertain the impact of private sector credit on the real sector growth in Nigeria over the period of (1986-2010). Gross Domestic Product, Demand Deposit, Credit to the private sector and Lending Rate were used as the variables for the study. The study shows a positive significant impact of bank credit to private sector on the real sector growth in Nigeria.

Ogujobi and Chizoba (2015) adopted time series econometrics techniques to examine the activities of bank credit and manufacturing sector growth in Nigeria for a period of 30 years (1984-2013). The study used three variables namely: Gross Domestic Product, Broad Money Supply and Credit to the Private Sector. The results indicate a positive significant relationship between bank credit and the growth of the manufacturing sector in Nigeria. The study concludes that the sector has remained a major consumer of foreign exchange, with a high level of dependency on foreign products and capital goods, therefore, making relatively low contributions to foreign exchange earnings in Nigeria.

Methodology

The study applied *ex-post-facto* research design to source requisite information. An *ex-post-facto* research design is a systematic empirical inquiry that requires the use of variables which the researcher does not have the capacity to change its state or direction in the course of the study (Kerlinger, 1973 & Onwumere, 2009). Data for this study were sourced from the Central Bank of Nigeria Statistical Bulletin, 2014, Online Edition available in: www.cenbank.org. Data collected

and used for the variables form the basis of this study which covered the period of 34 years (1981-2014). The variables classified in the model specification were drawn from the objective of the study. The variables used for this study are stated as follows: MFSG, CPS, INT, M₂ and INFL. Where: MFSG = Manufacturing Sector Output as the dependent variable of the study. Bank lending variables (explanatory variables) include: CPS= Credit to the Private Sector. INT=Prime Lending Rate. M₂=Broad Money Supply. INFL= Inflation Rate.

Model Specification

Multivariate linear regression models are used to test each of the null hypotheses proposed for the study. Based on the formulated hypotheses, a model is developed for the study as follows: This model was adopted from the work of Ogujobi and Chizoba (2015) stated as:

$$GDP = f(CPS, M_2)$$

Where:

GDP = Gross Domestic Product as proxy for manufacturing sector output and used as the dependent variable

CPS= Credit to the Private Sector

M₂ = Broad Money Supply

The above model is modified in this study by introducing manufacturing sector output as proxy for GDP was employed as dependent variable; whereas, interest rate and inflation rate as explanatory variables are also introduced. Interest rate and inflation rate are introduced because multicollinearity does not exist. The modified model was stated as:

$$MFSG = f(CPS, INT, M_2, INFL) \dots \dots \dots (1)$$

The equation becomes:

$$\ln MFSG = d_0 + d_1 \ln CPS + d_2 \ln M_2 + d_3 INT + d_4 INFL + \mu \dots \dots \dots (2)$$

Where:

MFSG = Manufacturing Sector Output is proxy for Gross Domestic Product as dependent variable

CPS = Credit to the Private Sector

M₂ = Broad Money Supply

INT= Interest Rate (Prime Lending Rate) is the control variable and this is added to capture the reaction of investors to changes in the investment decision (cost of investment).

INFL= Inflation rate is also the control variable and this is added to capture the reaction of economic trend to aggregate private sector output from the manufacturing sector.

d₀ = intercept and d₁, d₂, d₃ and d₄ are the coefficients of the regression equation. μ is the stochastic or error term, while Ln is the natural log of the variables.

Log transformation is necessary to reduce the problem of heteroskedasticity; because, it compresses the scale in which the variables are measured, thereby reducing a tenfold difference between two values to a twofold difference (Gujarati, 2003).

Data Analysis and Results

An of observations 34 years of time series data for the period, 1981-2014 were collected from CBN Statistical Bulletin and presented as follows: Annual time series data for manufacturing Sector Output (MFSG), Credit to the Private Sector (CPS), Broad Money Supply (M₂), Interest Rate (Prime Lending Rate) (INT) and Inflation Rate (INFL) were collected from Central Bank of Nigeria Statistical Bulletin as indicated in appendix 1.

Unit Root Test

The test for stationary of the variables was done using the Augmented Dicker Fuller (ADF) Unit Root Tests. The results in table 1 show that all the variables are integrated of order one i.e. 1(1) at the 5% level of significance. Notes: (1)*1% level of significance, **5% level of significance, ***10%

level of significance.(2)The tests accepted at 5% critical value should be larger than the test level of significance. (3) Decision rule -The statistical value for unit root to exist.

Table 1: Unit Root Tests Analysis

The ADF Unit Root test for Stationarity						
Variables	(with constant, no trend)		With Constant and Trend		Order of Integration	Decision
	At Level	First Difference	At Level	First Difference		
MFSO	** -3.30472	** -10.35238	** -4.17040	** -10.45640	1(1)	Stationary
CPS	-1.219722	** -4.506493	-2.402723	** -4.664460	1(1)	Stationary
M ₂	-1.123973	** -4.074232	-1.388240	** -4.065040	1(1)	Stationary
INFL	2.427345	** -4.2026578	-1.5553829	** -4.352436	I(1)	Stationary
INT	4.653833	4.6578397	1.6253294	1.542462	1(1)	Stationary
Critical values	1%	-3.4289	-3.4353	-4.0412	-4.0505	
	5%	-2.2472	-2.7499	-3.8426	-3.2468	
	10%	-2.1118	-2.8133	-3.5032	-3.1056	

Source: Researcher's Estimation using E-views 8.0

Note: * (**) denotes rejection of hypothesis at 5% (1%) significance level.

Co-integration Test

Having established that all the variables in the model are stationary, the study then moves on to test for long-run relationship between the dependent and the independent variables using the Johansen Co-integration test (Johansen, 1991).

Table 2: Co-integration Test for MFSO, CPS, M₂, INT, INFL

Hypothesized No. of CE(s)	Max-Eigen		Trace	
	Statistic	Critical Value	Statistic	Critical Value
None	41.31151*	33.87687	76.47553*	69.81889
At most 1	19.24901	27.58434	35.16402	47.85613
At most 2	11.40328	21.13162	15.91502	29.79707
At most 3	4.475003	14.26460	4.511735	15.49471
At most 4	0.036732	3.841466	0.036732	3.841466

Trace test indicates 1 co-integrating equation (s) at 5% significant level

Max-eigenvalue test indicates 1 co-integrating equation (s) at 5% significant level

* denotes rejection of the hypothesis at 5% significant level

Source: Author's computation from E-views 8.0

The result in table 2 examines the presence of long-run relationship among bank credit variables (CPS, M₂, INFL and INT) and manufacturing sector growth (MFSO). Based on the FPE and AIC lag selection criteria, the lag length adopted for the model is 1 to 2. From the results in table 2,

Max-Eigen and Trace statistics indicate the presence of one co-integrating equation in the model. This implies that there is a co-integration among the variables of bank credit and manufacturing sector growth in Nigeria. Co-integrating equation derived from the long-run relationship is shown below:

MFSO =	1.3804CPS	+0.0562INFL	-1.2422M ₂	-0.0961INT	
	(2.3146)	(0.0079)	(2.4465)	(0.0342)	-1.9330
	[0.5963]	[7.1504]	[-0.5078]	[-2.8131]	

() is standard error and [] are the t-statistics

From the equation above, it is evident that CPS and INFL have a positive significant long-run relationship with manufacturing sector output (MFSO). This shows that a positive change in CPS and INFL will lead to a positive change in MFSO and vice versa. This implies that a unit increase in CPS will lead to a unit increase in MFSO by 1.38; and, a unit increase in INFL will lead to a unit increase in MFSO by 0.10. Following the rule of the thumb, the t-statistics of the coefficient of INFL is above 2. Thus, the study indicates that manufacturing sector growth has a positive significant long-run relationship with INFL only.

Furthermore, the coefficient of INT and M₂ indicate a negative long-run relationship with MFSO. This means that a negative change in INT; and, M₂ will lead to negative change in MFSO and vice versa. This implies that a unit decrease in M₂ will lead to a unit decrease in MFSO by 1.24. While a unit increase in INT leads to a unit decrease in MFSO by 0.10. Following a rule of

the thumb, the t-statistics of the coefficients of M₂ is below 2.0, while that of INT is above 2.0. Thus, the study reveals that interest rate has a negative significant long-run relationship with manufacturing sector growth. While broad money supply has insignificant negative long-run relationship manufacturing sector growth (MFSO). Hence, long-run relationship exists among the variables.

Vector Error Correction Mechanism

Given the existence of co-integrating equations in the model employed for this study, it becomes ideal to carry out Error Correction Mechanism (ECM) test in order to determine the short-run dynamics of the relationships. Thus, the Vector Error Correction Mechanism (VECM) was conducted to determine the speed of adjustment between bank lending and manufacturing sector growth relationship in Nigeria. Hence, this is to find out whether short-run disequilibrium can be returned to long-run equilibrium trend.

Table 3: Vector Error Correction Mechanism Test for Bank Credit and MFSO

Error Correction:	D(MFSO)	D(CPS)	D(INFL)	D(M ₂)	D(INT)
CointEq1	0.008221 (0.04781) [0.17195]	-0.020475 (0.01383) [-1.48024]	-14.97666 (2.44279) [-6.13096]	-0.023053 (0.00839) [-2.74877]	-0.234144 (0.80706) [-0.29012]

() is standard error and [] are the t-statistics

Source: Author's computation from E-views 8.0

Table 3 shows the result of the short-run relationship between bank lending and manufacturing sector growth in Nigeria. The error correction term coefficient is (0.008221). The result of the error correction term coefficient is positive and therefore not rightly signed. This

shows that the short-run adjustment to long-run equilibrium is not statistically significant. The study therefore, concludes that bank lending has no significant short-run relationship with manufacturing sector growth in Nigeria.

Granger Causality Analysis

Granger causality test is used to examine the causal direction; that is, which of the variables (dependent and independent variable) influences the relationship between them. The null hypothesis is: Independent variable does not granger cause the dependent variable. The decision rule is to reject the null hypothesis, when the Chi-Square statistics and their corresponding probability values are less than (5%) level of significance. Otherwise, do not reject the null hypothesis.

Table 4: Granger Causality/Block Exogeneity Wald Test for Bank Credit and Manufacturing Sector Growth

Variable	Chi-sq	Df	Prob.
CPS	0.049327	1	0.8242
INFL	6.31E-05	1	0.9937
M ₂	0.185218	1	0.6669
INT	0.585647	1	0.4441
All	0.934623	4	0.9195

Note: Dependent variable: MFSO, * denotes significant at 1%, ** denotes significant at 5%; *** denote significant at 10%. Source: Author’s computation from E-views 8.0

Table 4 indicates the result of granger causality test between bank lending variables (CPS, INFL, M₂, and INT) and manufacturing sector growth (MFSG). Based on the Chi-Square statistics and their corresponding probability values, none of the bank lending variables (CPS, INFL, M₂, and INT) has a causal relationship with manufacturing sector growth in Nigeria. The joint Chi-Square values and its corresponding probability values also indicate that bank lending variables do not jointly granger-cause manufacturing sector output. Hence, the study concludes that bank lending variables (CPS, INFL, M₂ and INT) do not have a causal relationship with manufacturing sector growth in Nigeria.

Table 5: Variance Decomposition Test for Bank Credit and Manufacturing Sector Output

Period	S.E.	Variance Decomposition of MFSO:				
		MFSO	CPS	INFL	M ₂	INT
1	0.221505	100.0000	0.000000	0.000000	0.000000	0.000000
2	0.290789	98.64270	0.065978	0.154981	0.324956	0.811381
3	0.343086	98.00228	0.151311	0.161470	0.779471	0.905469
4	0.396111	96.95470	0.147410	0.497953	1.198231	1.201708
5	0.446422	96.13108	0.117132	0.732651	1.641084	1.378048
6	0.491817	95.59562	0.099414	0.897071	1.925138	1.482756
7	0.533442	95.24754	0.087993	1.001094	2.115075	1.548298
8	0.571687	95.01464	0.078816	1.067762	2.246406	1.592374
9	0.607339	94.84444	0.071159	1.115692	2.343212	1.625492
10	0.640961	94.70948	0.064879	1.153534	2.419784	1.652324

Source: Author’s computation from E-views 8.0

Table 4.32 presents Variance Decomposition results of bank credit and manufacturing sector output (MFSO). This examines the movements of

shocks to bank credit variables on the dependent variable (manufacturing sector output). Hence, this explains the proportion of the movements in the manufacturing sector output that is accounted

for, by own shocks vis-a-vis the shocks to explanatory variables (CPS, INFL, M_2 and INT) in the short and long-runs respectively. The second period (year 2) was used as a short-run indicator; whereas, the tenth period (year 10) as a long-run indicator. The result shows positive shocks in MFSO, CPS, INFL, M_2 and INT in the short-run (year 2). Thus, the shocks in MFSO cause fluctuations of about 98.64% in MFSO (own shocks); while, the bank credit (variables) accounted for about 1.36% of the error variance. The shocks in CPS cause fluctuations of about 0.07% in MFSO; whereas, the shocks in INFL, M_2 and INT cause fluctuations of about 0.15%, 0.32% and 0.81% respectively to the manufacturing sector output (MFSO)

Hence, in the long-run (year10) this will change and the shocks in MFSO contribute fluctuations of about 94.71% in MFSO (own shocks); while, bank credit accounted for about 5.29% only. This little contribution of shocks to MFSO is distributed among the bank credit variables as: 0.07%, 1.15%, 2.42% and 1.65% for CPS, NFL, M_2 and INT respectively. Based on these analyses the results show that, the variance of shocks to manufacturing sector output is explained predominantly by its own respective innovations as 98.64% in the short and 94.71% in the long-runs respectively. This implies that bank credit variables are not statistically significant in

explaining manufacturing sector output fluctuations in Nigeria.

Validation of Hypotheses - Bank Credit and Manufacturing Sector Output

This is to confirm whether bank credit has significant positive relationship with manufacturing sector output as presented in table 2, table 3 and table 4. Hence, the results in table 4.8 indicate is a significant long-run equilibrium relationship between bank credit and

manufacturing sector output in Nigeria. The result of normalized equation as in table 2 indicates that interest rate has a negative long-run significant relationship with manufacturing sector output. While money supply have insignificant negative relationship with manufacturing sector output.

The result of Vector Error Correction Mechanism (VECM) in table 3 reveals that bank credit lacks short-run adjustment mechanism and thus there is no significant short-run relationship between bank credit and manufacturing sector output in Nigeria. Thus, bank credit does not have causal relationship with manufacturing sector output in Nigeria as shown in table 4. The Variance Decomposition results in table 5 shows that bank credit variables only explain shocks to manufacturing sector output by on 1.36% in the short-run and 5.29% in the long-run. This indicates that bank credit variables are not statistically significant in explaining manufacturing sector output fluctuations in Nigeria. Based on the results therefore, the null hypothesis that “Bank credit has no significant positive relationship with manufacturing sector output in Nigeria” is accepted.

Conclusion

The findings indicate that bank lending has no significant relationship with manufacturing sector growth in Nigeria. This is consistent with the argument by Oluitan (2013) that the manufacturing sector seems to have failed to meet the expectations of the Nigerian society in terms of its contribution to the growth of the Gross Domestic Product. Hence, there is no short-run equilibrium significant relationship between bank lending and manufacturing sector growth in Nigeria. This implies that economic policies that are geared to increase credit to the manufacturing sector have not significantly improved productivity in the sector within a short period in Nigeria.

The Policy Implications and Recommendations.

The study recommends that government should formulate functional policies such as price stability, full employment, exchange rate stability, economic growth and favourable balance of payment in order to cushion short-run economic problems such as inflation rate, interest rate and exchange rate fluctuations in the manufacturing sector-led economy. The regulatory authorities should encourage the manufacturing sector through concessional and reduced interest rate. Though, low interest package for the private sector has been provided by the Bank of Industry (BOI); thus, efforts should be made by government at all levels to encourage investors in the sector to access these funds. The monetary authorities should stabilize the interest rate which is capable of ensuring price stability and maintaining inflation to a single digit. This may build confidence in the banking institutions and will enable them to introduce innovations to the sector's output in the economy. The study suggest that CBN and the policy makers should have a common ground in order to establish specialized banking institutions that will be responsible for financing the manufacturing investments in the economy. CBN should reduce the legal reserve and liquidity ratios respectively in order to increase the flow of investable funds which may improve the capacity of banks to extend credit to the manufacturing sector.

Contribution to Knowledge

The study was able to modify the model and expanded the existing literatures and updated data that will enable researchers and scholars to use it for further studies. Hence, from the results this study has also contributed to knowledge by discovering that bank credit has no significant positive relationship with manufacturing sector output in Nigeria. The factors responsible for this can be traceable to economic and political

instability and inability to implement the formulated policies by the regulatory authorities.

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Appendix 1: Bank Credit and Manufacturing Sector Output in Nigeria (1981-2014)

Years	Manufacturing Sector Output (N' Billion)	Lending Rates (Prime)%	Broad Money Supply (N' Billions)	Inflation Rate %	Credit to the Private Sector (N' Billions)
1981	31.7	7.75	14.47	20.9	8.57
1982	36.7	10.25	15.79	7.7	10.67
1983	42.3	10.00	17.69	23.2	11.67
1984	38.4	12.50	20.11	17.3	12.46
1985	47.2	9.25	22.30	12.7	13.07
1986	32.0	10.50	23.81	13.7	15.25
1987	46.4	17.50	27.57	9.7	21.08
1988	61.2	16.50	38.36	61.2	27.33
1989	77.2	26.80	45.90	44.7	30.40
1990	40.8	25.50	52.86	3.6	33.55
1991	98.6	20.01	75.40	23	41.35
1992	144.4	29.80	111.11	48.8	58.12
1993	165.9	18.32	165.34	61.3	127.12
1994	219.9	21.00	230.29	76.8	143.42
1995	295.8	20.18	289.09	51.6	180.00
1996	350.6	19.74	345.85	14.3	238.60
1997	382.6	13.54	413.28	10.2	316.21
1998	395.8	18.29	488.15	11.9	351.96
1999	426.2	21.32	628.95	0.2	431.17
2000	468.0	17.98	878.46	14.5	530.37
2001	535.8	18.29	1,269.32	16.5	764.96

2002	507.8	24.85	1,505.96	12.2	930.49
2003	465.8	20.71	1,952.92	23.8	1,096.54
2004	349.3	19.18	2,131.82	10	1,421.66
2005	408.4	17.95	2,637.91	11.6	1,838.39
2006	478.5	17.26	3,797.91	8.5	2,290.62
2007	520.9	16.94	5,127.40	6.6	3,668.66
2008	585.6	15.14	8,008.20	15.1	6,920.50
2009	612.3	18.99	9,419.92	13.9	9,110.86
2010	643.1	17.59	11,034.94	11.8	10,157.02
2011	694.8	16.02	12,172.49	10.3	10,660.07
2012	761.5	16.79	13,895.39	12	14,649.28
2013	823.9	16.72	15,158.62	8.0	15,778.31
2014	8,685.43	16.55	17,680.52	8	17,128.98

Source: Central Bank of Nigeria Statistical Bulletin (1981-2014).