

MONETARY POLICY AND DEPOSIT MONEY BANKS CREDIT ALLOCATION TO THE REAL SECTOR IN NIGERIA

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Abstract

The paper examined monetary policy and deposit money banks credit allocation to the real sector in Nigeria. Monetary policy detects the direction and trends of banking operations especially regarding the direction of credit, which in turn affects growth of the real sector. Despite changes in monetary policy initiatives in Nigeria, it has been observed that Deposit Money Banks loans and advances to the real sector in recent time has stagnated which affect real sector performances. The main objective of this study was to determine the impact of monetary policy on deposit money banks credits to the real sector, using time series data sourced from the Central Bank of Nigeria Statistical Bulletin covering the period 1981 - 2017 and analysed using the vector error correction mechanism (VECM). Findings revealed that monetary policy had significant effect on deposit money banks credit to the agricultural sector, but had insignificant impact on deposit money credits to the manufacturing sector. The monetary authorities need to be proactive in influencing increased credit to the real sector via monetary policy initiatives. This can be attained via increased liquidity ratios and loan-to-ratios of banks so as to enhance the percentage of loans advanced to the real sectors.

Keywords: *Monetary Policy, Deposit Money Banks' Loans, Real Sector*

Introduction

The real sector is where goods and services are produced through the combined utilization of raw materials and other production factors such as labour, land and capital (Sanusi, 2011). The sector, no doubt, is the major engine that drives economic transformation and growth. The role of the real sector is significant and strategic. It provides an indication on the living standard of citizens of an economy and the effectiveness of government policies, (Adebayo 2013). According to Central Bank of Nigeria (2013), the sector has metamorphosed into an emerging industrial work horse from a hitherto rudimentary agrarian economy that can hardly be ignored.

However, it is worthy of note that no nation can attain the much needed transformation and growth in its economy in the absence of credit to the real sector. Credit and its allocation has become a vital function in banking operations because of its direct effect on economic growth and business development (Ajie, 2000). Credit allocation activities of banks constitute an integral part of government policy formulation in national economic development process, especially in developing countries like Nigeria. This underscores the reason why the Nigerian government through her agencies has continued to play a catalytic role through various policy initiatives to elevate the real sector to levels that would make Nigeria an economic hub and driver of Africa's economic renaissance. In the light of the foregoing, deposit money banks in Nigeria are continually directed through monetary policies to channel a certain fraction of their deposit liabilities as credit to the real sectors.

Banks play important role in the credit allocation process with regard to the real sector because they ensure that funds are channeled to industries that make up this sector for productive purposes. However, the way and manner credit or loans are allocated to the real sector by banks at a point in a time is greatly influenced by the prevailing monetary policy. Through monetary policy framework, the monetary authorities exercise control over the deposit money banks' capacity to expand or contract the level of money supply and as well credit extension for real sector development. It is obvious that monetary policy in this regard can only be deemed successful, if it has positive impact on the production and distribution of goods and services. Real sector growth and development are to greater extent influenced by monetary policies framework, especially through bank credits. According to Mishkin (2007), monetary policy influences the economy through a variety of channels – interest rates, credit and/or bank lending and asset prices.

Monetary policy is expected to affect the real sector through bank loans which would affect investment and growth in the sector. A well-articulated policy devoid of inconsistencies that encourages bank lending to the real sector would no doubt facilitate linkages. A vibrant and productive real economy creates more linkages in the economy and promotes internal and external balance (CBN, 2014). Therefore, understanding the implications of monetary policy frameworks as regards banks credit for real sector growth and development would provide valuable policy information for the monetary authorities and government.

There are increasing concerns on the effects of monetary policy on banks credits to the real sector given that they (banks) respond to monetary policy shocks/changes. Akanji (2010) noted that the current liquidity issue and inadequate lending to the real sector that could deter economic growth has generated considerable discussions. This, not minding the fact that Central Bank of Nigeria has risen up to these challenges by ensuring that liquidity in the banking system is adequate and that sectoral allocation that will impact on the real sector growth are handled with all the attention required. “The estimated GDP, measured at 1990 constant basic prices, stood at N833.4 billion in 2011. This indicated a GDP growth of 7.40% in 2011. Non-oil, GDP recorded a growth rate of 8.90%, compared with 8.50% in 2010. The improved performance in the sector was driven largely by the real sector of which agriculture grew by 5.70%, solid minerals and manufacturing output grew by 11.50% and 7.60% respectively” (NBS).

Monetary policy detects the direction and trends of banking operations especially regarding the direction of credit. Despite the changes in the monetary policy of Nigeria by the Central Bank of Nigeria (CBN), Deposit Money Banks hardly increase the volume of bank credits to the real sector which is expected to enhance the performance of the sector and economic growth in Nigeria (Oluwatosin 2011). This in other words has raised concern on the effect of monetary policy on bank credit to the real sector. Therefore, this paper is an effort to examine the impact of monetary policy actions on bank credit for real sector development in Nigeria.

Conceptual Review

Monetary policy is a blend of measures and or set of instruments designed by the monetary authorities to regulate the volume, supply and cost of money consistent with the absorptive capacity of an economy or the expected level of economic activity without necessarily generating undue pressure on domestic prices and the exchange rate (Mordi, 2009). Monetary authorities do not regulate the cost and supply of liquidity to the economy directly, rather through instruments that impacts heavily on deposit money banks in banking operations. Such instruments are used to influence the direction, cost and volume of money in the economy. They are not limited to monetary policy rate (mpr), treasury bill rate (tbr), cash reserve ratio (crr), liquidity ratio (lr) among others. Central banks use these tools to regulate the volume, supply and cost of money in the economy with a view to achieving predetermined macroeconomic goals. The policy seeks to achieve price stability through the management of money supply. This stems from the fact that there is a relatively stable relationship between the quantity of money supply and economic activity and if the supply of money is not limited to what is required to support productive activities, inflation or deflation may set in.

Umeaka, Otiwu, Chukwu and Ojiegbe (2009) observed that monetary policy is a deliberate government policy through the Central Bank created to regulate the economy by controlling the cost, volume and direction of credit. They noted that the ultimate objectives of monetary policy thrust are not the monetary aggregates themselves, but the aggregate in the real sector of the economy.

Ojo (1993) referred to monetary policy as a combination of measures designed to regulate the value, supply and cost of money in an economy in consonance with the expected level of economic activity. The policy targets are usually achieved with the help of banks. Monetary policy operational at a point in time determines the extent to which Deposit Money Banks strive to satisfy the legitimate credit needs of various sectors in the economy of which the real sector is an integral part. Loanable funds or the amount disbursed to the real sector in form of loans to a large extent determines the level of growth and/or development witnessed in the sector. Monetary policy determines the composition and size of the loan portfolio and as well determines the general circumstance under which it is appropriate to grant loans in an economy (Adebayo, 1998).

Monetary policy plays a dominant role in credit administration of banks. It sets the stage in the market place through directives, which stipulate the sectoral flow and the cost of bank funds and credit (Agene 1995). Most times, regulatory bodies use the instruments of monetary policy through banks to create resources (loans) re-allocation to real sectors away from sectors where they are merely used for trade purposes. Re-allocation of bank credits to the real sector was in view of its importance in the growth of the national economy.

Ajie and Nenbee (2010) asserted that reserves of the banks are influenced by the Central Bank through its monetary policy instruments – cash reserve ratio, monetary policy rate, open market operations, liquidity ratio, etc. All these policy instruments affect banking operations and thus influence the cost and availability of loans to fund real sectors. Jegede (2014) affirmed that by manipulating these instruments, central banks affect the level of the money supply, interest rate, credit availability and liquidity creation of deposit money banks. These trends obviously introduce monetary imbalances on the economy and thus amount of credits allocated for real sector investments by banks.

Theoretical and Empirical Review

Vanden (2005) argued that monetary policy affects bank lending through two channels. They argued that by lowering reserves, contractionary monetary policy reduces the extent to which banks can accept deposits if reserve requirements are binding. The increase in reserve requirements will in turn lead banks to reduce lending if they cannot easily switch to alternative forms of finance or liquidate assets other than loan. On the other hand, as noted in Greg, Udude & Uwalaka (2015), the Keynesian Economists think of monetary policy as working primarily through interest rate. In Keynesian transmission mechanism, an increase in the money supply leads to a fall in interest rate to include the public to hold additional money balances. Consequently, a fall in interest rate may stimulate investments. The increased investments also increase the level of income or output through the multiplier, which may stimulate economic activities. Thus, monetary policy affects economic activity indirectly through its impact on interest rates and investment. In simple terms, the monetary mechanism of Keynesians emphasizes the role of money, but involves an indirect linkage of money with aggregate demand via the interest rate. Greg et al (2015) further observed that on a more analytical note, if the economy is initially at equilibrium and there is open market purchase of government securities by the Central Bank of Nigeria (CBN), this open Market Operation

(OMO) will increase the commercial banks reserve (R) and raise the bank reserves. The bank then operates to restore its desired ratio by extending new loans or by expanding bank credit in other ways. Such new loans create new demand deposits, thus increasing the money supply (ms). A rising money supply causes the general level of interest rate (r) to fall. The falling interest rates affects commercial bank performance and in turn stimulate investment given investors expected profit. The induced investment expenditure causes successive rounds of final demand spending by GNP to rise by a multiple of the initial change in investment. On the other hand, a fall in money supply causes the general level of interest rate (R) to rise or increase thereby increasing the commercial banks profitability (Jhingan, 2005).

Though there appears to be dearth of empirical literatures on the area of concern, there are related studies with less attention on the area of interest. Such studies examined the impact of monetary policy tools on bank lending or loans as the case may be. Jegede, (2014) in a study of the Nigerian economy using the Vector Error Correction Mechanism of Ordinary Least Square econometric technique found that monetary policy instruments are not effective to stimulate commercial bank loans and advances in the long run, while banks' total credit is more responsive to cash reserve ratio. Monetary policy employed included exchange rate, interest rate that were found to influence bank lending significantly, liquidity ratio and money supply exerts negative effect on commercial banks' loans and advances.

Amidu and Wolfe (2008) examined the constrained implication of monetary policy on bank lending in Ghana between 1998 to 2004. The study revealed that Ghanaian banks lending behaviour are affected significantly. Their findings also support the finding of previous studies that the Central Bank Prime rate and inflation rate negatively affect bank lending. Prime rate was found statistically significant while inflation was insignificant. Their study revealed that bank size and liquidity significantly influence bank's ability to extend credit when demanded.

Gambacerta and Tannoti (2005) in Somoye and Ilo (2009) investigated in Italy the velocity and asymmetry in response of bank interest rates (lending, deposit and inter-bank) to monetary policy shocks (changes) from 1985 – 2002 using an Asymmetric Vector Correction Model (AVECM) that allows for different behaviours in both the short-run and long-run. The study shows that the speed of adjustment of bank interest rate to monetary policy changes increased significantly after the introduction of the 1993 Banking Law; interest rate adjustment in response to positive and negative shocks are asymmetric in the short run, with the idea that in the long-run the equilibrium is unique. They also found that banks adjust their loan prices at a faster rate during period of monetary tightening.

In Nigeria, Oluwatosin (2011) employing the ordinary least squares (OLS) econometric tool of analysis found that of the five explanatory variables (Broad Money Supply, Monetary Policy rate, liquidity ratio, exchange rate and Dummy variable for political stability), as monetary policy instruments, only broad money supply (m_2) was positively related to volume of commercial banks loans and advance as well statistically significant in the variations of commercial banks loans and advance in Nigeria.

Methodology

The study employed the quasi-experimental research design, which was due to the nature of the data involved (time series data). The data were sourced from the Central Bank of Nigeria Statistical Bulletin, spanning the period 1981 – 2017. Principal variables used include Deposit Money Banks credits to the Real Sector (Agriculture and Manufacturing) and Monetary Policy variables. The data were analysed using the Vector Error Correction Mechanism (VECM). The analytical technique was used to estimate the models of the study.

Model Specifications

The model of the study is as stated below:

$$dlagr = f(mpr_t, lr_t, ltdr_t, omo_t) \dots \dots \dots (1)$$

$$dlmfg = f(mpr_t, lr_t, ltdr_t, omo_t) \dots \dots \dots (2)$$

The above functional relationship was further stated in econometrics form or equation as shown below:

$$dlagr = \beta_{01} + \beta_{11}mpr_{t-1} + \beta_{21}lr_{t-1} + \beta_{31}ltdr_{t-1} + \beta_{41}omo_{t-1} + \mu_{1t} \dots \dots \dots (3)$$

$$dlmfg = \beta_{02} + \beta_{12}mpr_{t-1} + \beta_{22}lr_{t-1} + \beta_{32}ltdr_{t-1} + \beta_{42}omo_{t-1} + \mu_{2t} \dots \dots \dots (4)$$

Where;

- dlagr = deposit money bank loans/credits to the Agricultural Sector
- dlmfg = deposit money bank loans/credits to the Manufacturing Sector
- mpr = monetary policy rate
- lr = liquidity ratio
- ltdr = loan –to- deposit ratio
- omo = open market operations
- β_{01}, β_{02} = intercept
- $\beta_1 - \beta_4$ = slope

Units of Measurements

The study utilized variables that comprise different units of measurements, and regression estimations requires that the units of the term (Y) on the left side of the equation be the same as those on the right side of the equation. Therefore, each of the variables was logged to bring all the data to same unit of measurement.

4.0 Data Presentation, Analysis and Results

4.1 Data Presentation

Table 4.1: Data set on Deposit Money Banks Loans/Credits to the Agriculture and Manufacturing Sector, Monetary policy rate, Liquidity ratio, Loan to deposit ratio and Open market operations (1981 – 2017).

Years	mpr%	lr%	ltdr%	omo ₦'b	dlagr ₦'b	dlimfg ₦'b
1981	6.0	38.5	74.5	5.00	0.6	2.7
1982	8.0	40.5	84.6	7.00	0.8	3.0
1983	8.0	54.7	83.8	7.00	0.9	3.1
1984	10.0	65.1	81.9	8.50	1.1	3.1
1985	10.0	65.0	66.9	8.50	1.3	3.2
1986	10.0	36.4	83.2	8.50	1.8	4.5
1987	12.75	46.5	72.9	11.75	2.4	5.0
1988	12.75	45.0	66.9	11.75	3.1	6.1
1989	18.5	40.3	80.4	17.50	3.5	6.7
1990	18.5	44.3	66.5	17.50	4.2	7.9
1991	15.5	38.6	59.8	15.00	5.0	10.9
1992	17.5	29.1	55.2	21.00	7.0	15.4
1993	26.00	42.2	42.9	26.90	10.8	23.1
1994	13.50	48.5	60.9	12.5	17.8	34.8
1995	13.50	33.1	73.3	12.5	25.3	58.1
1996	13.50	43.1	72.9	12.25	33.3	72.2
1997	13.50	40.2	76.6	12.00	27.9	82.8
1998	13.50	46.8	74.4	12.95		

					27.2	96.7
1999	18.00	61.0	54.6	17.00	31.0	115.8
2000	14.00	64.1	51.0	12.00	41.0	141.3
2001	20.50	52.9	65.6	12.95	55.8	206.9
2002	16.50	52.5	62.8	18.88	59.8	233.5
2003	15.00	50.9	61.9	15.02	62.1	294.3
2004	15.00	50.5	68.6	14.21	67.7	332.1
2005	13.00	50.2	70.8	7.00	48.6	352.0
2006	10.00	55.7	63.6	8.80	49.4	445.8
2007	9.50	48.8	70.8	6.91	149.6	487.6
2008	9.75	44.3	80.9	4.50	106.4	932.8
2009	6.00	30.7	85.7	6.13	135.7	993.5
2010	6.25	30.4	74.2	10.25	128.4	987.6
2011	12.00	42.0	44.8	16.75	255.2	1,053.2
2012	12.00	49.7	42.3	17.20	316.4	1,068.3
2013	12.00	46.2	36.3	13.34	343.7	1,179.7
2014	13.00	38.3	64.2	15.99	478.9	1,647.5
2015	11.00	42.3	69.6	12.50	449.3	1,736.2
2016	14.00	46.0	80.0	18.70	525.9	2,215.7
2017	14.00	54.8	72.8	15.72	528.2	2,171.4

Source: Central Bank of Nigeria Statistical Bulletin, 2017

Table 4.2: Log Values of the above data contained in table 4.1

Mpr	Lr	Ltdr	Omo	Dlagr	Dlmfg
0.778151	1.585461	1.872156	0.69897	-0.22871	0.424849
0.90309	1.607455	1.92737	0.845098	-0.10425	0.482531
0.90309	1.737987	1.923244	0.845098	-0.02669	0.484741
1	1.813581	1.913284	0.929419	0.022057	0.489044
1	1.812913	1.825426	0.929419	0.117338	0.509498
1	1.561101	1.920123	0.929419	0.262522	0.650812
1.10551	1.667453	1.862728	1.070038	0.385088	0.695587
1.10551	1.653213	1.825426	1.070038	0.486671	0.783761
1.267172	1.605305	1.905256	1.243038	0.540392	0.824237
1.267172	1.646404	1.822822	1.243038	0.625457	0.89673
1.190332	1.586587	1.776701	1.176091	0.700072	1.037876
1.243038	1.463893	1.741939	1.322219	0.843787	1.187631
1.414973	1.625312	1.632457	1.429752	1.03153	1.363811
1.130334	1.685742	1.784617	1.09691	1.249387	1.541869
1.130334	1.519828	1.865104	1.09691	1.402755	1.764107
1.130334	1.634477	1.862728	1.088136	1.521976	1.858766
1.130334	1.604226	1.884229	1.079181	1.446216	1.918151
1.130334	1.670246	1.871573	1.11227	1.434261	1.985573
1.255273	1.78533	1.737193	1.230449	1.492001	2.063558
1.146128	1.806858	1.70757	1.079181	1.61309	2.150126
1.311754	1.723456	1.816904	1.112298	1.746993	2.315737
1.217484	1.720159	1.79796	1.276002	1.777062	2.36824
1.176091	1.706718	1.791691	1.17667	1.793111	2.468804
1.176091	1.703291	1.836324	1.152594	1.830836	2.521287
1.113943	1.700704	1.850033	0.844788	1.686292	2.54659
1	1.745855	1.803457	0.944483	1.693669	2.649133
0.977724	1.68842	1.850033	0.839478	2.17487	2.688042
0.989005	1.646404	1.907949	0.653213	2.026753	2.969788
0.778151	1.487138	1.932981	0.78746	2.132584	2.997149
0.79588	1.482874	1.870404	1.010724	2.108585	2.994599
1.079181	1.623249	1.651278	1.224015	2.40689	3.022516
1.079181	1.696356	1.62634	1.235528	2.500187	3.02871
1.079181	1.664642	1.559907	1.125156	2.536176	3.071768
1.113943	1.583199	1.807535	1.203848	2.680256	3.216813
1.041393	1.626824	1.84247	1.09691	2.652543	3.239598
1.146128	1.662286	1.902818	1.271842	2.72094	3.345519
1.146128	1.738699	1.862378	1.196453	2.722834	3.336734

Source: author's computation

4.2 Data Presentation, Analysis and Results

Unit Root Test

Table 4.3. Augmented Dickey Fuller (ADF) Unit root test results

Variables	ADF values	ADF Critical values at 1%	ADF Critical values at 5%	ADF Critical values at 10%	Probability value at order of integration	Order of integration
Dlagr	-4.667730	-2.632688	-1.950687	-1.611059	0.0000	I(1)
Dlmfg	-10.33228	-3.632900	-2.948404	-2.612874	0.0005	I(1)
Lr	-5.951173	-2.634731	-1.951000	-1.610907	0.0000	I(1)
Omo	-5.916427	-2.632688	-1.950687	-1.611059	0.0000	I(1)
Mpr	-6.573776	-2.632688	-1.950687	-1.611059	0.0000	I(1)
Ltdr	-5.916427	-2.632688	-1.950687	-1.611059	0.0000	I(1)

Source: author's computation from e-views 10

The above table depicts the Augmented Dickey fuller unit root test results of the endogenous and exogenous variables. The unit root test result on the variables of the two models showed that the exogenous variables (liquidity ratio, open market operations, monetary policy rate, loan-to-deposit-ratio) and the endogenous variables (deposit money banks' loans to the agricultural - dlagrand manufacturing sectors - dlmfg) were all stationary at first differencing, that is integrated at order 1(1). This justifies the use of the Johansen cointegration analysis for long run relationship used for both models.

Johansen Co-integration test

$$d\text{lagr} = f(\text{mpr}_t, \text{lr}_t, \text{ltldr}_t, \text{omo}_t)$$

Date: 05/25/19 Time: 07:53

Sample (adjusted): 4 37

Included observations: 34 after adjustments

Trend assumption: Linear deterministic trend

Series: DLAGR LR LTDR MPR OMO

Lags interval (in first differences): 1 to 2

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value
None *	0.616612	78.95563	69.81889
At most 1	0.504886	46.35953	47.85613
At most 2	0.292385	22.45862	29.79707
At most 3	0.173160	10.69955	15.49471
At most 4 *	0.117105	4.234647	3.841466

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Source: e-views 10

The above Johansen test result revealed that the trace statistics indicates 1 cointegrating equation at 0.05% level of significance. This shows the existence of long-run relationship between monetary policy and deposit money bank loans to the agricultural sector.

Vector Error Correction Mechanism result

Error Correction:	D(DLAGR)
CointEq1	-0.438051 (0.17734) [-2.47018]

Source: e-views 10

The error correction term (ECT) of the VECM is appropriately signed with a negative value of -0.438051 and significant t-statistic of (-2.47018). This means that the errors or any deviation in the short run can be corrected in the long run at the speed of 43.80%. In other words, 43.80% of deviations or errors can be adjusted in the long run. This depicts the existence of long run relationship between monetary policy and banks loan to the agricultural sector.

Least Square System Equation

This test was carried out to establish the significance of the t-statistic of the error correction term and if causality can be inferred.

Dependent Variable: D(DLAGR)
 Method: Least Squares (Gauss-Newton / Marquardt steps)
 Date: 05/25/19 Time: 08:36
 Sample (adjusted): 4 37
 Included observations: 34 after adjustments

$$D(DLAGR) = C(1)*(DLAGR(-1) - 0.810638737318*DLMFG(-1) + 0.153652747227) + C(2)*D(DLAGR(-1)) + C(3)*D(DLMFG(-1)) + C(4)*D(DLAGR(-2)) + C(5)*D(DLMFG(-2)) + C(6) + C(7)*MPR + C(8)*OMO + C(9)*LR + C(10)*LTDR$$

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.438051	0.177336	-2.470179	0.0210
C(2)	0.080086	0.213023	0.375951	0.7103
C(3)	0.496526	0.322853	1.537932	0.1371
C(4)	-0.086617	0.191200	-0.453016	0.6546
C(5)	-0.359164	0.297683	-1.206531	0.2394
C(6)	0.770430	0.753270	1.022781	0.3166
C(7)	0.011124	0.248486	0.044765	0.9647
C(8)	0.192446	0.220879	0.871272	0.3922
C(9)	-0.223730	0.257991	-0.867201	0.3944
C(10)	-0.305304	0.259830	-1.175013	0.2515
R-squared	0.403082	Mean dependent var		0.080868
Adjusted R-squared	0.179237	S.D. dependent var		0.116530
S.E. of regression	0.105572	Akaike info criterion		-1.418922
Sum squared resid	0.267490	Schwarz criterion		-0.969992
Log likelihood	34.12167	Hannan-Quinn criter.		-1.265824
F-statistic	1.800723	Durbin-Watson stat		2.175628
Prob(F-statistic)	0.120506			

Source: e-views 10

The results of the least square system equation revealed that the t-statistic of -2.470179 with probability value of $0.0210 < 0.05\%$ was significant. Therefore, causality can be inferred. In other words, monetary policy initiatives have significant and long run impact on the deposit money bank loans to the agricultural sector in Nigeria. The Durbin-Watson statistics of 2.175628 depicts the absence autocorrelation, which gives the model a good fit.

Heteroskedasticity test

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.512438	Prob. F(10,23)	0.1978
Obs*R-squared	13.48819	Prob. Chi-Square(10)	0.1976
Scaled explained SS	12.26727	Prob. Chi-Square(10)	0.2676

Source: e-views 10

The Prob. F(10, 23) 0.1978 and Prob. Chi-Square (10) 0.1976 $> 0.05\%$ from Breusch-Pagan-Godfrey Heteroskedasticity Test showed that the variances constant over time. That is to say, no Heteroskedasticity problem.

Johansen Co-integration test

$$d\text{lmfg} = f(\text{mpr}_t, \text{lr}_t, \text{ltdr}_t, \text{omo}_t)$$

Date: 06/19/19 Time: 04:58

Sample (adjusted): 4 37

Included observations: 34 after adjustments

Trend assumption: Linear deterministic trend

Series: DLMFG MPR OMO LR LTDR

Lags interval (in first differences): 1 to 2

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.611046	76.94105	69.81889	0.0121
At most 1	0.438563	44.83503	47.85613	0.0935
At most 2	0.299026	25.20832	29.79707	0.1541
At most 3	0.216808	13.12864	15.49471	0.1102
At most 4 *	0.132170	4.819804	3.841466	0.0281

Trace test indicates 1 cointegratingeqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Source: e-views 10

From the above Johansen cointegration result, the trace test indicates 1 cointegrating equations at 5% level of significance. Therefore, it can be concluded that there exists a long-run relationship between monetary policy and Deposit Money Banks' loan to the manufacturing sector.

Vector Error Correction Mechanism result

Error Correction:	D(DLMFG)
CointEq1	-3.02E-18 (5.9E-18) [-0.51231]

Source: e-views 10

The error correction term for the second model is negative and appropriately signed given the value of -3.02E-18 with an insignificant t-statistic of -0.51231. In other words, the speed of adjustment is adjudged to be insignificant in correcting any short-run deviations in the long run.

Least Square System Equation

Dependent Variable: D(DLMFG)

Method: Least Squares (Gauss-Newton / Marquardt steps)

Date: 06/19/19 Time: 03:22

Sample (adjusted): 4 37

Included observations: 34 after adjustments

$$D(DLMFG) = C(1) * (DLMFG(-1) - 3.4331536745E+16 * LR(-1) + 5.68914271646E+16) + C(2) * D(DLMFG(-1)) + C(3) * D(LR(-1)) + C(4) * D(DLMFG(-2)) + C(5) * D(LR(-2)) + C(6) + C(7) * OMO + C(8) * MPR + C(9) * LTDR + C(10) * LR$$

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-3.02E-18	5.90E-18	-0.512311	0.6131
C(2)	-0.016991	0.163315	-0.104037	0.9180
C(3)	0.054698	0.151220	0.361708	0.7207
C(4)	0.217794	0.172505	1.262533	0.2189
C(5)	0.059984	0.131390	0.456534	0.6521
C(6)	0.841548	0.397795	2.115533	0.0450
C(7)	-0.327306	0.115805	-2.826354	0.0093
C(8)	0.497879	0.133264	3.736039	0.0010
C(9)	-0.148102	0.144045	-1.028166	0.3141
C(10)	-0.423352	0.142697	-2.966781	0.0067

R-squared	0.504639	Mean dependent var	0.083882
Adjusted R-squared	0.318879	S.D. dependent var	0.068384
S.E. of regression	0.056437	Akaike info criterion	-2.671440
Sum squared resid	0.076444	Schwarz criterion	-2.222510
Log likelihood	55.41448	Hannan-Quinn criter.	-2.518342
F-statistic	2.716613	Durbin-Watson stat	2.332896
Prob(F-statistic)	0.024418		

Source: e-views 10

The above estimated dlmfg system equation results indicate that monetary policy initiatives do not significantly granger cause deposit money bank loans to the manufacturing sector in Nigeria within the period under review. This is in consideration of the probability value of the coefficient of the cointegrated model (0.6131), which is > 5% level of significance.

Discussion of Findings and Concluding Remarks

The paper centred on monetary policy and deposit money banks' credit to the real sector (agricultural and manufacturing sector). Monetary policy initiatives of the government in this regard were measured by monetary policy rates, open market operations, liquidity ratios and loan-to-deposit ratios, while deposit money banks loans to the real sector were proxied by sectoral loans and advances to the agricultural and manufacturing sectors. The vector error correction mechanism (vecm) was employed in the process of data estimations/analysis. Preliminary investigations carried out on the data sourced from the Central Bank of Nigeria statistical bulletin using the Augmented Dickey Fuller unit root analysis showed that the data were stationary and reliable for estimation purposes. The Johansen cointegration results of the two models showed the existence of long run relationship between monetary policy initiatives and deposit money banks loans and advances to the real sectors of the economy. These were ascertained through the result of the trace test, which in each case showed one cointegrating equation at 5% level of significance. Specifically, it was observed that monetary policy programmes have had significant impact on banks credit to the agricultural sector in Nigeria. This was established from the vector error correction mechanism (VECM) result of the first model. The error correction term (ECT) was appropriately signed with a negative coefficient of -0.438051 and significant t-statistic of (-2.47018). This means that the errors or short run deviations can be corrected in the long run at the speed of 43.80%. However, these monetary policy initiatives have insignificant effect on deposit money banks loans to the manufacturing sector. This was evidenced by the error correction term for the second model which was negative and appropriately signed with -3.02E-18 and insignificant t-statistic of -0.51231. No wonder, Michael, Babatunde and Joseph (2017) noted that the Nigerian manufacturing sector is yet to make significant impact on the structure of the economy by way of contribution to the GDP, provision of employment, foreign exchange earnings, and promotion of effective linkages among the various sectors of the economy. The sector is still dominated by consumer goods, light industries and sole proprietorship type of establishments. The production of capital or intermediate goods is still relatively negligible. The major manufactured goods that are produced are beverages, textiles, wood and furniture, cement and cement products, chemicals, plastics, footwear, tobacco and petroleum products. On the other hand, there is no doubt that unstable flow of credits, high costs of loanable funds, policy conflicts and inconsistencies in the implementation of monetary policy programmes play major role on why monetary policy has failed to have any significant impact in influencing banks credits to the manufacturing sector in Nigeria.

In conclusion, this study has been able to establish that monetary policies have significant effect on deposit money banks credit to the real sector. This is the case especially in credit to the agricultural sector but left much to be desired in manufacturing sector credits by deposit money banks. Therefore, monetary authorities need to be proactive in influencing increased credit to the real sector via monetary policy initiatives. This can be attained via increased liquidity ratios and loan-to- ratios of banks so as to enhance the percentage of loans advanced to the real sectors of the economy for the purposes of diversification, increased productivity and significant contribution to the growth of Nigerian economy at large.

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