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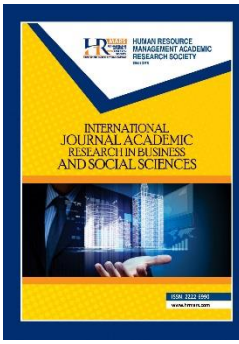
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Monetary Policy and the Performance of the Manufacturing Sector in Nigeria (1986-2017)

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Abstract

This study examined the effect of monetary policy on the performance of the Manufacturing sector in Nigeria. The explanatory variables are monetary policy rate, Treasury bills rate, Cash reserve requirement and money supply; while the dependent variable is the Manufacturing (MANU) sector output. The study adopted an ex-post facto research design and used secondary data obtained from the CBN Statistical Bulletin. The study covered a period of 32 years (1986 to 2017). The data were subjected to Augmented Dicker Fuller stationarity test to determine the best suitable econometric tool of analyses. The Autoregressive Distributive Lag (ARDL) was used for the model estimation. The results indicate that: *monetary policy tools have significant effect on the manufacturing sector output in Nigeria in the short run only. The study thus concludes that monetary policy tools may not be a long run policy instrument for the growth of the manufacturing sector output in Nigeria but rather short run instruments. This study recommended that money supply and treasury bills can be used in the short run as policy instruments to maintain macroeconomic stability in Nigeria with reference to the manufacturing sector.*

Keywords: *Monetary Policy, Performance, Manufacturing Sector, Nigeria.*

Introduction

Economic development theories have explained that industrialisation is the way to record faster growth and poverty reduction (Perkins, Radelet & Lindauer, 2006).The Nigerian government has made concerted efforts at diversifying her economy. The efforts were directed at policies that could enhance growth of the different sectors of the Nigerian economy. Monetary policy has been largely debated as indispensable tool to industrial sector growth. This study was designed to analyse the effect of monetary policy on the performance of the manufacturing sector of the Nigerian economy according to the classification by the Central Bank of Nigeria (CBN).

The term, monetary policy refers to instruments of monetary management involving a combination of measures designed by the Central Bank of a country to regulate the availability, value, supply and cost of credit/money in domestic economy with the view to achieving expected macroeconomic stability/targets (Imoisi, Olatunji & Ekpenyong, 2013). Thus, monetary policy is a deliberate action to stabilise the economy by influencing the quantity, cost and availability of money credit. The establishment of the Central Bank of Nigeria by the CBN Act of 1958, made it the sole monetary authority in Nigeria with the mandate to promote and maintain monetary stability and a sound financial system in Nigeria. The main objectives of monetary policy of the CBN are the attainment of price stability and sustainable economic growth, with full employment and stable long-term interest and real exchange rates.

Okonkwo, Egbulonu and Emerenini (2015) disclosed that Monetary Policy in Nigeria have not been effective over the years due to fiscal dominance through heavy and persistent government budget deficits, poor data quality that make econometric analysis difficult, inefficient payments system and poor banking habits where the CBN finds it difficult to control huge funds outside the banking system.

The introduction of the Structural Adjustment Programme (SAP) in 1986 and all the attendant problems, recorded the manufacturing (MANU) sector contribution to GDP at its best between 1986 and 1994. It was 28% in 1986 and had only slightly fell to 17% in 1990 and 1992 before rising to 25.34% in 1994. Between 1995 and 2009, the MANU contribution to GDP remained relatively stable at the bounds of 11% and 15%, before crashing to 6% in 2010. Since 2011 till 2017, the annual contribution of MANU to GDP was very low ranging between 7% and 9% (CBN, 2017)

All the existing literature have failed to incorporate the three core market based instruments like monetary policy rate(MPR), Treasury bills rate(TBR), and Cash reserve requirement(CRR), in one model. Most of the existing studies of (Ezeaku, Ibe, Ugwuanyi, Modebe, & Agbaeze 2018; Bakare-Aremu, & Osobase 2015; Onakoya, Ogundajo & Babatunde 2017) among others employed the Johanson cointegration test that may not adequately moderate variables with level 1(0) and first difference 1(1) stationarity in a regression estimation. Any study that employed a more robust Autoregressive Distributive Lag (ARDL) approach is most likely to produce better and more reliable empirical results as given by Harris & Sollis,(2003) and thus to be applied on monetary policy and Manufacturing sector output nexus in Nigeria.

The present study therefore utilised all the three core market based instruments in a more robust monetary policy model that could be used to engender economic stability and enhance manufacturing sector performance in Nigeria.

The study examined the effect of monetary policy on the Manufacturing sector output in Nigeria. Specifically, determined the effect of monetary policy rate, Treasury bills rate, Cash reserve requirement and money supply on the manufacturing sector output in Nigeria. The null hypothesis is that monetary policy tools have no significant effect on the performance of the manufacturing sector output in Nigeria.

LITERATURE REVIEW

Conceptual Review

Conceptually, there is a link between the market-based monetary policy tools: monetary policy rate (MPR), Treasury Bills Rate(TBR), Cash Reserve Requirement(CRR), Broad Money Supply(M2) as CBN anchor of monetary policy and the performance of the manufacturing sector output in Nigeria. The Central Bank of Nigeria (1992) in Amassoma, Nwosa and Olaiya (2011) defined monetary policy as the combination of measures designed to regulate the value, supply and cost of money in an economy, to match with the desired level of economic activities.

Monetary policy in Nigeria has experienced two main phases which are the era of direct control (1959-1986) and the era of market-based controls (1986-date). In the era of direct control, the CBN used directives targeted at specific sectors to fix or control interest rate, exchange rate, determine credit allocation to choice sectors, etc. The CBN (2018) identified the **instruments of monetary policy** currently used as monetary policy rate, treasury bills rate for OMO, Reserve Requirement, as market based instruments, while moral suasion, interest rate and control of the banking system are direct policies still applicable in Nigeria. Omotor (2007) was of the opinion that the direct control mechanism was ineffective because of the heavy influence from political consideration normally conveyed to the CBN through the Ministry of Finance.

Manufacturing is one of the industrial sub sectors in Nigeria. An industrial sector is a group of firms engaged in similar business interest and production/service line. According to the CBN (2017), the industrial activities in Nigeria are grouped in terms of “activity sector”.

Theoretical Framework

This study is anchored on the Keynesian Theory of money and prices as well as the Irving Fishers’ quantity theory of money. Keynesians believe that expansionary monetary policy increases the supply of loanable funds available through the banking system, causing interest rates to fall. With lower interest rate, aggregate expenditures on investment and interest-sensitive consumption goods usually increase, causing real GDP to rise. Hence, monetary policy can affect real GDP indirectly. Irving Fisher’squantity theory of money, posits that there is a direct link between monetary policy tools, money supply, it’s velocity of circulation and general price level of the economy.

Empirical Review

Review of Disaggregated Studies on Monetary Policy and Manufacturing Sector Performance

The empirical review of the effect of monetary policy tools on manufacturing sector in Nigeria, Okonkwo, Egbulonu and Emerenini (2015) employed the Johansson cointegration and error correction model (ECM) to investigate the effect of monetary policy variables on the manufacturing sector in Nigeria. Data covering a period of thirty two (32) years from 1981 to 2012 was obtained for the explanatory variables including money supply, credit to private sector, inflation and interest rate, while the dependent variable was the Industry contributions to GDP. The findings indicated that money supply and credit to private sector have significant positive effects on the manufacturing sector in Nigeria.

Igbinedion and Ogbeide (2016) employed the error-correction approach. To examine the relationship between monetary policy and manufacturing capacity utilization in Nigeria within a period covering

1980 and 2014. The dependent variables was manufacturing performance measured as the capacity utilisation while the independent variables included banking sector credit, real exchange rate, lending interest rate, and broad money supply. The results revealed that monetary policy variables significantly explained about 81% of variables in manufacturing sector performance. Both bank credit, money supply and exchange rate were found to have positive effect on manufacturing sector performance at levels while interest rate was found to have a negative effect on manufacturing sector performance at one year lag. General results from error term, variance decomposition and impulse response showed that monetary policies explain relatively significant variations in manufacturing performance in Nigeria.

Using the error correction model and Johansen cointegration technique, Ezeaku, Ibe, Ugwuanyi, Modebe and Agbaeze (2018) examined the monetary policy transmission channels on industry performance in Nigeria within the period 1981 to 2014. Three channels of monetary policy transmission being bank channel (private sector credit to GDD), interest rate channel (real lending rate) and exchange rate channel was regressed on real output measured as the contribution of the industrial sector to GDP. The study found a long run relationship between monetary policy and industrial output with about 72% annual speed of adjustment. However, all the channels of monetary policy transmission had an insignificant negative effects on industry performance with about 61% significant explanatory power.

Using a time series covering 1970 to 2010, Owolabi and Adegbite (2014) investigated the effect of monetary policy on the growth of Nigerian industry. The multiple regression technique was adopted to regress monetary policy tools including Treasury Bills, Deposit & leading and Rediscount Rate on manufacturing output. It was found that monetary policy tools had 81.56% significant explanatory powers in determining industrial growth in Nigeria. Further findings revealed that rediscount rate and deposit rate have a significant positive effect on industrial output while Treasury Bills had a negative impact on industrial output.

Omini, Ogbeba and Okoi (2017) employed the VAR (VECM) model and Granger causality test to investigate the impact of monetary policy shocks on industrial output in Nigeria between 1970 and 2015. The data on the contribution of the manufacturing and solid minerals subsectors to GDP was employed as the dependent variable while explanatory variables included monetary policy rate, exchange rate and bank credit to the industrial sector. Findings from the study revealed that the manufacturing sub-sector had a positive influence on monetary policy rate, commercial bank credit to industrial sector and exchange rates, while contribution of solid minerals sub-sector to GDP responded positively to shocks in commercial bank credit to the industrial sector and exchange rate after the first year. The causality test indicated a unidirectional relationship running from monetary policy rate and exchange rate to the contribution of manufacturing sector to GDP on the one hand, and commercial bank credit to the industrial sector and exchange rate to the contribution of solid mineral sector to GDP.

Imoughele and Ismaila (2014) carried out a study to find out the impact of monetary policy on manufacturing sector performance in Nigeria for the period covering 1986 to 2012. The study employed external reserve, exchange rate, inflation rate, broad money supply and interest rate as

the independent variables of monetary policy and manufacturing gross domestic product as the dependent variable. Findings from Johansson cointegration and VAR model revealed that external reserve, exchange rate and inflation rate were statistically significant to manufacturing sector output while broad money supply and interest rate were not statistically significant to manufacturing sector output in the previous and current year. However, interest rate, exchange rate and external reserve impacted negatively on the sector output but broad money supply and inflation rate affect the sector positively. The pair-wise Granger Causality results showed that real exchange rate and external reserves had a sunidirectional causal effects on manufacturing output in Nigeria.

Charles-Anyaogu (2012) examined the performance of monetary policy on the manufacturing index performance in Nigeria between 1980 and 2009. The study employed granger causality to test for impact, while VEC and OLS were used to examine the significance, magnitude, direction and relationship of some macroeconomic variables (lending rate, income tax rate, money supply, Inflation rate, and Exchange rate) on the Manufacturing index in Nigeria. The results showed that Money Supply positively affect manufacturing sector performance by 0.5% while others played negative impact to the performance of the manufacturing sector over the years.

Bakare-Aremu and Osobase (2015) investigated the impact of stabilisation policy (monetary and fiscal policies) on the manufacturing sector performance in Nigeria. The result of cointegration and ECM revealed both long and short run relationship in the study. The study thus concluded that stabilization policy has a significant impact on the manufacturing sector performance such that adjustment to monetary and fiscal policies can better the lots of the people by developing the sector.

Onakoya, Ogundajo and Babatunde (2017) investigated the extent to which sustainability of the manufacturing sector can be maintained using the monetary policy stance. The study, using a time series data covering 1981 to 2015, employed the Johansen Co-Integration and Vector Error Correction model for data analyses. The dependent was manufacturing sector output represented by sectorial contribution of manufacturing to GDP while the independent variables included the external reserves, exchange rate, Broad money supply, inflation rate and Interest Rate. The study concludes that monetary policy has significant effect on manufacturing output in Nigeria

METHODOLOGY

The study adopted an ex-post facto research design and used secondary data obtained from the CBN Statistical Bulletin 2017 which covered a period of 32 years (1986 to 2017). The explanatory variables are the market based instruments of Monetary Policy Rate(MPR), Treasury Bills Rate(TBR), Cash reserve Requirement(CRR) and money Supply as control being the CBN anchor of monetary policy in Nigeria. The dependent variable is Manufacturing (MANU) sector output in Nigeria. The data were subjected to Augmented Dicker Fuller stationarity test to determine the best suitable econometric tool of analyses. The Autoregressive Distributive Lag (ARDL) cointegration approach developed by Pesaran and Shin(1999) and pesaran, Shin & Smith(2001) was used for the model estimation due to its advantages over the traditional cointegration approach (Harris & Sollis, 2003).

Model Specification

The present study adopted the work of Owolabi & Adegbite(2014), using manufacturing sector output as dependent variable, while the explanatory variables were adapted to the model using

monetary policy rate, Treasury bills rate, then this study introduced Cash reserve requirement, and controlled by money supply. However, deposit and lending rates were removed from this study. Thus the modified Monetary Policy Tools and Manufacturing Model is:

MANU = ***f***(MPR, TBR, CRR, M2)

The equation form of the model is

MANU = b_0 + + b_1MPR + b_2TBR + b_3CRR + b_4M2 + ε

Where:

MANU = Contribution of manufacturing subsector output to Gross Domestic Product.

MPR = Monetary policy rate

TBR = Treasury Bill Rate

CRR = Cash Reserve Ratio

M2 = Ratio of broad money supply to Gross Domestic Product.

$b_0$is the constant while b_{1-4} are the coefficients of the explanatory variables (MPR, TBR, CRR and M2). ε is the error term.

DATA ANALYSES

ARDL (Bounds) Test for Long run Cointegration

The result of the Bound test aimed to examine the presence of cointegration among monetary policy tools (MPR, TBR, CRR and M2) and national output from each of the manufacturing sector (MANU). If the F-statistic of bound test is higher than the lower and the upper bound critical value at 5% significance level, the null hypothesis of no long run relationship is rejected, whereas if the F-statistic of bound test is lesser than the lower and the upper bound critical value at 5% significance level, long run relationship is accepted. The cointegration relation between monetary policy tools and the disaggregated outputs of the selected sectors are presented in Table 1. **ARDL Bounds Test for Cointegration**

Models	F-Statistic	Lower Bound @ 5% Critical Value	Upper Bound @ 5% Critical Value	Remark
MANU Model	1.1810	2.86	4.01	No long run relationship

Source: Eviews results

The results showed that the F-statistics for models MANU of 1.1810 is less than the lower and upper bounds of the critical values. Thus, the study posits that monetary policy tools (MPR, TBR, CRR and M2) have no significant long run effect on national outputs for manufacturing (MANU) sector of the Nigerian economy.

Short run Effect of Monetary Policy Tools on the Manufacturing Sector Output

From the results on Table 2, the coefficients of MANU had no statistical significance within the four periods included in the model. This suggests that the MANU model is an exogenous one.

Furthermore, MPR and CRR were found to have no significant effects on output from the manufacturing sector in Nigeria.

Table 2: ARDL for Short run effect of monetary policy on output from manufacturing sector contribution to GDP

Dependent Variable: MANU

Variable	Coefficient	t-Statistic	Prob.*
MANU(-1)	0.5543	1.6354	0.1629
MANU(-2)	-0.0872	-0.3569	0.7357
MANU(-3)	-0.2793	-1.1923	0.2866
MANU(-4)	0.3129	1.9406	0.1100
MPR	0.4482	1.6419	0.1615
MPR(-1)	0.4303	1.8054	0.1308
MPR(-2)	-0.7177	-2.0960	0.0902
MPR(-3)	0.0602	0.2052	0.8455
MPR(-4)	-0.4453	-1.4893	0.1966
TBR	-0.1159	-0.5885	0.5817
TBR(-1)	0.0426	0.2075	0.8438
TBR(-2)	0.4034	1.5910	0.1725
TBR(-3)	-0.3171	-1.2990	0.2506
TBR(-4)	-0.6011	-2.3751	*0.0335
CRR	-0.4689	-1.6455	0.1608
CRR(-1)	0.2377	0.7641	0.4793
CRR(-2)	-0.5336	-1.7613	0.1385
CRR(-3)	0.8890	2.1513	0.0841
CRR(-4)	-0.3262	-0.9012	0.4088
M2	-0.0627	-1.2488	0.2670
M2(-1)	0.0907	2.4689	*0.0466
M2(-2)	-0.0375	-0.8772	0.4205
C	3.5157	1.0234	0.3530
Adjusted R-squared	0.8133		
F-statistic	6.3471		
Prob(F-statistic)	0.0246		
Durbin-Watson stat	2.7001		

*significant at 0.05 level.

Source: Extract from Eviews 9 results

However, TBR had a significant negative effect in the fourth period while money supply(M2) had a significant positive effect in the first period. This means that a unit fall in Treasury bill rate will lead to about 60% increase in the contribution from manufacturing output to GDP in Nigeria. However, a unit increase in money supply will lead to about 9% increase in the contribution of manufacturing sector output to GDP in Nigeria.

The adjusted coefficient of determination was 0.8133. This means that about 81% of the variations in output from the manufacturing sector is explained by monetary policy tools in Nigeria. The F-statistics of 6.3471 is statistically significant at 0.0246. Thus the study posit that monetary policy tools has a short-term significant effect on manufacturing sector output in Nigeria.

DIAGNOSTIC TESTS

Multicollinearity Test

Presence of **multicolinearity** is tested using the coefficients of correlation matric presented on Table 3. High degree of correlation coefficient above 0.8 indicate possibility of multicolinearity. From Table 3, it is seen that none of the coefficients of explanatory variables is up to 0.8. This shows that there is no multicolinearity in the model.

Table 3: Test of multicolinearity of the explanatory variables in the model.

	Dependent variable	MPR	TBR	CRR	M2
Dependent variables	1.0000				
MPR	-0.1430	1.0000			
TBR	-0.3975	0.7338	1.0000		
CRR	-0.3787	0.0721	0.4325	1.0000	
M2	0.3564	0.3108	0.0044	-0.3197	1.0000

Source: Extract from Eviews output 2018.

4.3.2 Normality Test

Table 4: Normality test of the models of the study

Models	**Jarque-Bera statistic**	**P-value**
MANU	0.835930	0.6683

Source: Extract from Eviews results

The models are examined for normal distribution. The Jarque-Bera (JB) statistics is used to test for the normality of the models. The null hypothesis is that the models are normally distributed. The decision rule is to reject the null hypothesis if the p.value is less than 0.05 level of significance. The p.value of JB for MANU is 0.6683 which is greater than 0.05 the study therefore accept the null hypothesis that the model is normally distributed.

Serial Correlation Test

The presence of serial correlation is tested using the Breusch-Godfrey Serial Correlation LM Test. The null hypothesis is no presence of serial correlation. The decision rule is to reject the null hypothesis if the p.value is less than 0.05 level of significance. From result in Table 5, the p.value of the model of 0.3265 is greater than 0.05, which shows that the model is not serially corrected at 5% level of significance.

Table 5: Breusch-Godfrey Serial Correlation result of the models

Models	**F-statistic**	**P-value**
MANU	1.663546	0.3265

Source: Extract from Eviews

Heteroskedasticity Test

Presence of heteroskedasticity in linear regression analysis, implies that the model coefficients estimated using ordinary least squares (OLS) are biased. This occurs when the variance of errors or the model is not the same for all observations. The null hypothesis is that the residuals are homoscedastic and the alternate hypotheses is that the residuals are heteroscedastic. The decision rule is to reject the null hypothesis if the p.value is less than 0.05 level of significance. From result in Table 6, the p.value of the model of 0.4756 is greater than 0.05, which revealed that the model do have homoscedastic at 5% level of significance.

Table 6: Test of homoscedastic of the models

Models	**F-statistic**	**P-value**
MANU	1.165463	0.4756

Source: Extract from Eviews

Regression Specification Error Test (RESET Test)

The *Ramsey Reset test* is employed to identify the existence of any significant nonlinear relationships in the developed linear regression model. The null hypothesis is that there is linear relationship in the regression model. The decision rule is to reject the null hypothesis if the p.value is less than 0.05 level of significance. From result in Table 7, the p.value of the model of 0.2846 is greater than 0.05, which indicated that the model have linear relationships at 5% level of significance.

Table 7: Ramsey RESET Test

Models	**F-statistic**	**P-value**
MANU	1.523795	0.2846

Source: Extract from Eviews results

Hypotheses Testing

The results from ARDL long run and short run model estimation have been subjected to diagnostic tests and found to be reliable. All the models were found to have normal distribution, lacked muitcolinearity and serial correlation and no model specification errors were found. Following from this, the test of hypotheses were based on the Bound F-statistics test for long run effects and F-statistics for short run effect respectively.

Null hypothesis: Monetary policy tools have no significant effect on the manufacturing sector output.

The F-statistics for Bound test (1.1810) is within lower (2.86) and upper (4.01) critical bounds values indicating no long run effect, while F-statistics for short run ARDL model is 6.3471 with p.value of 0.0246. Since the p.value is less than 0.05, the study can reject the null hypotheses in the short run that “Monetary policy tools have no significant effect on the manufacturing sector output”. Thus the

null hypothesis is not rejected in the long run but rejected in the short run. The study posits that monetary policy tools have significant effect on the manufacturing sector output in the short run only.

Discussion of Findings

The study indicates that monetary policy tools (MPR, TBR, CRR and M2) have no significant long run effect on national outputs for the manufacturing (MANU) sector of the Nigerian economy. The study also showed that monetary policy tools have significant effect on the manufacturing sector output in the short run only. Further analyses revealed that TBR had a significant negative effect in the fourth period while money supply(M2) had a significant positive effect in the first period, with about 81% explanatory powers from all monetary policy tools in Nigeria. This study implies that money supply and treasury bills can be used in the short run as policy instruments to maintain macroeconomic stability for the manufacturing sector in Nigeria. This is in line with the theoretical propositions from the Irving Fishers' quantity theory of money that money exerts positive influence on output and growth. It was equally supported by a number of extant empirical studies including Imoughele and Ismaila (2014), Okonkwo, Egbulonu and Emerenini (2015), and Igbinedion & Ogbeide (2016). The results that Treasury bill has negative effect on output supported the work of Owolabi and Adegbite (2014).

Summary and Conclusion

This study examined the effect of monetary policy on the performance of the Manufacturing sector in Nigeria. The explanatory variables are monetary policy rate, Treasury bills rate, Cash reserve requirement and money supply; while the dependent variable is the Manufacturing(MANU) sector output. The study adopted an ex-post facto research design and used secondary data obtained from the CBN Statistical Bulletin. The study covered a period of 32 years (1986 to 2017). The data were subjected to Augmented Dicker Fuller stationarity test to determine the best suitable econometric tool of analyses. The Autoregressive Distributive Lag (ARDL) was used for the model estimation. The results indicate that: monetary policy tools have significant effect on the manufacturing sector output in Nigeria in the short run only. The study thus concludes that monetary policy tools may not be a long run policy instrument for the growth of the manufacturing sector output in Nigeria but rather short run instrument.

Recommendation

This study recommended as follows:

1 That money supply and treasury bills can be used in the short run as policy instruments to maintain macroeconomic stability in Nigeria with reference to the manufacturing sector.

2 Since money supply was seen to have positive effects on the manufacturing sector output, the study recommended that the CBN should employ an expansionary monetary policy that can increase money supply to the real sectors and boost output performance of the manufacturing sector in the Nigerian economy.

3 The CBN should target the Interest rate to be one digit in order to encourage manufacturing in Nigeria. Interest rate of more than one digit could be counter-productive and discourage investment.

4 The CBN should stop financing the government budgets through the banking system. This has become necessary as such practice put pressure on bank reserves and deposit which result to financial repression and subsequently real interest rate will go up which will eventually crowd out private investment and businesses. This will affect manufacturers adversely.

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APPENDIX 1:

GROSS DOMESTIC PRODUCT AND MANU SECTOR OF THE NIGERIAN ECONOMY

SN	Year	MANU (N'Billion)	GDP (N'Billion)	SN	Year	MANU (N'Billion)	GDP (N'Billion)
1	1986	38.7	134.60	19	2004	1,516.1	11,411.07
2	1987	43.2	193.13	20	2005	1,778.7	14,610.88
3	1988	63.5	263.29	21	2006	2,082.5	18,564.59
4	1989	72.9	382.26	22	2007	2,401.2	20,657.32
5	1990	84.3	472.65	23	2008	2,761.6	24,296.33
6	1991	110.6	545.67	24	2009	3,170.8	24,794.24
7	1992	153.5	875.34	25	2010	3,578.6	54,612.26
8	1993	221.2	1,089.68	26	2011	4,527.5	62,980.40
9	1994	354.7	1,399.70	27	2012	5,588.82	71,713.94
10	1995	414.1	2,907.36	28	2013	7,233.32	80,092.56
11	1996	478.0	4,032.30	29	2014	8685.43	89,043.62
12	1997	546.7	4,189.25	30	2015	8973.77	94,144.96
13	1998	620.2	3,989.45	31	2016	8903.24	101,489.49
14	1999	713.8	4,679.21	32	2017	8903.24	113,711.63
15	2000	826.0	6,713.57				
16	2001	989.1	6,895.20				
17	2002	1,127.2	7,795.76				
18	2003	1,304.1	9,913.52				

Source: CBN Statistical Bulletin, 2017

APPENDIX 2:

PROPORTION OF GROSS DOMESTIC PRODUCT FROM MANUFACTURING (MANU) SECTOR OF THE NIGERIAN ECONOMY

SN	Year	MANU (%)		SN	Year	MANU (%)	
1	1986	28.71		19	2004	13.29	
2	1987	22.38		20	2005	12.17	
3	1988	24.13		21	2006	11.22	
4	1989	19.07		22	2007	11.62	
5	1990	17.83		23	2008	11.37	
6	1991	20.27		24	2009	12.79	
7	1992	17.53		25	2010	6.55	
8	1993	20.30		26	2011	7.19	
9	1994	25.34		27	2012	7.79	
10	1995	14.24		28	2013	9.03	
11	1996	11.85		29	2014	9.75	
12	1997	13.05		30	2015	9.53	
13	1998	15.55		31	2016	8.77	
14	1999	15.26		32	2017	7.83	
15	2000	12.30					
16	2001	14.34					
17	2002	14.46					
18	2003	13.15					

Source: Computed from Appendix 1

APPENDIX 3:

DATA FOR SELECTED MONETARY POLICY VARIABLES IN NIGERIA

SN	Year	MRR/MPR	CRR	Maximum TBR	M2 Growth Rate
1	1986	10.00	2.00	8.50	4.23
2	1987	12.75	2.00	11.75	22.92
3	1988	12.75	2.50	11.75	34.99
4	1989	18.50	3.00	17.50	3.54
5	1990	18.50	3.00	17.50	45.92
6	1991	15.50	3.50	15.00	27.43
7	1992	17.50	4.00	21.00	47.53

8	1993	26.00	4.00	26.90	53.76
9	1994	13.50	4.00	12.50	34.5
10	1995	13.50	5.00	12.50	19.41
11	1996	13.50	5.00	12.25	16.18
12	1997	13.50	6.00	12.00	16.04
13	1998	13.50	8.00	12.95	22.32
14	1999	18.00	9.80	17.00	33.12
15	2000	14.00	10.80	12.00	48.07
16	2001	20.50	10.60	12.95	27
17	2002	16.50	10.00	18.88	21.55
18	2003	15.00	8.60	15.02	24.11
19	2004	15.00	9.70	14.21	14.02
20	2005	13.00	4.20	7.00	24.35
21	2006	10.00	5.00	8.80	43.09
22	2007	9.50	3.00	6.91	44.24
23	2008	9.75	3.00	4.50	57.78
24	2009	6.00	1.25	6.13	17.6
25	2010	6.25	1.00	10.25	6.91
26	2011	12.00	8.00	16.75	15.43
27	2012	12.00	12.00	17.20	16.39
28	2013	12.00	12.00	13.34	1.32
29	2014	13.00	16.30	15.99	7.2
30	2015	11.00	24.00	15.9	5.9
31	2016	14.00	22.50	20.11	18.45
32	2017	14.00	22.50	20.11	18.45

Source: CBN Statistical Bulletin, 2017