IMPACT OF MONETARY POLICY ON THE GROWTH OF THE NIGERIAN MANUFACTURING SECTOR (1980-2016)

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Abstract – This research studied the impact of monetary policy on the growth of the manufacturing sector in Nigeria from 1980-2016. Secondary data were used for the study and were sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin 2016 edition. Manufacturing sector's output was used as the dependent variable while Money Supply, Exchange rate and Interest rate were the independent variables. The test for stationarity of the data showed the data are integrated of mixed order thereby necessitating the Bounds test for cointegration. The bounds test confirmed the existence of a long run relationship amongst the variables. Analyses of the data was done using the Autoregressive Distributive lag model which estimated both the short run and long run forms of the model. The result showed that money supply has a positive and significant impact on manufacturing output in Nigeria in the short and long run. Exchange rate on the other hand remained negative both in the short and long run and not statistically significant. Interest rate was positive in the short and long run but not a significant determinant of manufacturing output. The research concluded that despite the existing interest rate and money supply, manufacturers still borrow funds for production but this has not related to a significant growth in manufacturing sector's output in Nigeria. Based on the findings, the researcher recommended amongst others that monetary authority should avoid policy inconsistencies to enable long term business planning and investment by manufacturers in Nigeria. Also, the Federal government under the current managed flexible exchange rate regime should formulate policies that will strengthen the domestic currency (Naira) against the global market currency (US Dollars); policies such as diversifying the productive base of the economy, encouraging the patronage of locally produced goods etc. will go a long way towards strengthening the local currency and the manufacturing sector.
Keywords: Monetary Policy, Manufacturing Sector, Autoregressive Distributive lag, Money Supply, Gross Domestic Product, Nigeria

1. Introduction

Since the establishment of the Central Bank of Nigeria (CBN) in 1959, the use of monetary policy has become inextricable in the pursuit for achieving macroeconomic stability and economic growth in Nigeria. Over the years, the main objectives of monetary policy remained achieving internal and external balances, and the promotion of non-inflationary growth in output. Specifically, monetary policy measures are designed to ensure stability in general price level, stimulate growth in the productive sectors and reduce pressure on the balance of payments in order to maintain a stable exchange and positive interest rates. The techniques and instruments to achieve these objectives varied over the years. There have been two distinct phases in the conduct of monetary policy, namely direct era (pre-SAP) and indirect era (post-SAP).

The era of direct monetary policy was before the introduction of the Structural Adjustment Programme (SAP) in 1986. Monetary management in Nigeria then involved the use of monetary controls, and direct monetary instruments such as credit ceilings, selective credit controls, administered interest and exchange rate; cash reserve requirements and special deposits. The use of market-based instruments was not feasible because of the undeveloped nature of the financial markets and the deliberate restraint on interest rates.

Monetary policy in Nigeria has evolved over time. During the early years of independence (1961-64), which coincided with the second development plan, monetary policy actions were focused on the establishment of a strong financial base and the promotion of domestic financial infrastructure, such as the money and capital market institutions. This period witnessed intensive credit allocation to the "preferred" sectors of the economy (direct control). The policy actions were informed by the extant monetary system, in response to the priority needs of Nigeria. The CBN act was amended in 1962 in order to strengthen the Bank for effective monetary policy implementation. The major monetary policy action adopted was to enable the government borrow as cheaply as possible, for the purpose of financing the Second National Development Plan.

In the 1970s, Nigeria experienced high inflation owing to the civil war and the wage increase by the Adebo and Udoji Commission in 1971 and 1974, respectively. As a response to the observed inflationary trend, the CBN adopted a policy of direct control aimed at encouraging the DMBs to channel substantial amount of their credit to the productive sectors of the economy. The Bank also issued stabilization securities to reduce the liquidity in the banking system. The year 1992 marked the end of the direct control regime. It also introduced additional policy measures that included the special deposit that was intended to sterilize excess liquidity.

The direct control regime was abandoned as a natural reaction to the liberalization of the financial sector. The framework for monetary policy changed in line with the liberalization policy. It relied on intermediate targets to influence the ultimate objective of policy. Besides several other policy instruments, the minimum rediscount rate (MRR) was the anchor rate for monetary policy. Generally, both the direct and indirect policy regimes have the same objectives, of channelling funds from surplus to deficit sectors, with the aim of extending the frontier of growth in the manufacturing sector.

Under the Period of Indirect monetary policy regime (1993-Date) the CBN adopted a liberalized monetary policy framework through the use of market driven instruments such as the Open Market Operations (OMO), introduced in 1993. The outcomes of the policy measures indicated that monetary aggregates increased significantly. A cursory look at monetary aggregates as at end 1993 broad money (M2) on the average rose by 28.0 per cent above its average target of 14.9 per cent. Total bank credit to the private sector also rose, on average by 32.7 per cent over its target level of 29.8 per cent, while inflation rate surged to 42.8 per cent far surpassing its target of 14.5 percent. Consequently, monetary policy was pursued to curb excess liquidity in the system, stem the tide of high and rising inflation rate and improve the balance of payment position.

During the period 1998-2002, the CBN adopted some policy measures in response to the challenge of controlling excess liquidity in the economy. The measures included: intervention at the weekly OMO and foreign exchange market to moderate the effects of expansionary fiscal policies, upward review of the minimum rediscount rate (MRR) and cash reserve requirements as well as the commencement of the

medium term monetary policy framework. The outcomes showed that the growth of domestic liquidity measured by the broad money supply (M2) increased by an average of 30.4 per cent over the targeted average level of 13.5 per cent. The growth in bank credit to the private sector grew by an average of 25.0 per cent, which was below the target level of 26.7 per cent, while the inflation rate declined significantly to 12.8 per cent. Between 2003 and 2007, monetary policy measures were specifically designed to promote stable macroeconomic environment through the achievement of single digit inflation, sustained stability in the exchange rate, financial sector soundness and a noninflationary GDP growth. The Bank introduced the Monetary Policy Rate (MPR) to replace the Minimum Rediscount Rate (MRR), in 2006, as a new Monetary Policy Implementation framework. The indirect era which deals with recent times, depends on price mechanism.

In Nigeria, The effectiveness of monetary policy on the growth of the manufacturing sector and the economy has been quite unclear bas3d on previous researches. This research work answers the burning question of "to what extent have monetary policy instruments of the CBN affected the manufacturing sector in Nigeria?" A research work of this type would aim at finding out the effectiveness or otherwise of the monetary policy on the performance of the manufacturing sector in Nigeria by focusing on the key monetary policy instruments in Nigeria viz: Money supply, Interest rate, Exchange for the period 1980 to 2016.

2. Literature Review

According to Anyanwu (1993), monetary policy is "… a major economic stabilization weapon, which involves measures designed to regulate, and control the volume, cost, availability and directions of money and credit in an economy to achieve some specific macro-economic objectives". He also said that monetary policy is a government policy about money. It is a deliberate manipulation of cost, availability of money and credit by one government as a means of achieving the desired level of prices, employment, output and other economic objectives. Walter Anslem in his own explanation of monetary policy stressed the manipulation of money supply and interest rates to effect changes in the economy. Wright-man (1976) is interested in bringing in the authority that is responsible for monetary policies by stating that monetary policy is "an effort by the central bank to control the money supply and credit conditions for the purpose of achieving certain broad economic objectives".

Emerenini (2006) stated that the lowest common multiples of all the definitions of monetary policy are that:

(i)   The central bank is involved as the manipulator of the instrumental variables.

(ii)   The instrumental variables are money supply and interest rates.

(iii)   These instrumental variables aim at achieving some desirable target variables.

The objectives of monetary policy refer to the ultimate macroeconomic goals which can change from time to time, depending on the economic fortunes of a particular country. In Nigeria, the federal government has regulated the volume, flow

of price and direction of money towards the attainment of a number of objectives. Such objectives include:

1.   Maintenance of relative stability in domestic prices.

2.   Attainment of a high rate of or full employment.

3.   Achievement of a high, rapid and sustainable economic growth.

4.   Maintenance of balance of payment equilibrium.

5.   Exchange rate stability.

6.   Expansion and diversification of the export base in other to restore a healthy balance of payment position.

Instruments of Monetary Policy: Monetary policy instruments can be broadly be classified into quantitative and qualitative instrument. The qualitative instruments are also known as selective tools of monetary policy. These tools are not directed towards the quality or use of credit, rather they are used for discriminating between different uses of credit. Qualitative monetary policy instruments include: Special deposit, aggregate credit oiling, deposit ceilings, exchange controls, restriction on the placement of public deposit and stabilization securities. On the other hand, quantitative instruments also known as indirect tools or general tools of monetary policy are related to the volume of money supply and are tools for credit control. These tools which are indirect in nature are employed for influencing the quantity of credit in the economy. These indirect tools include: open markets operations

(OMO); cash reserve requirements, liquidity ratio, minimum rediscount rate and selective credit policy.

Open Market Operation (OMO): The major instrument of indirect monetary control in Nigeria is the OMO. The OMO was introduced at the end of June 1993 and is conducted wholly on Nigeria treasury bills (NTBS) including repurchase agreements. These operations involve the sale or purchase of government securities in the open market depending on whether the economy is inflationary or deflationary respectively. The effect is that when the monetary authorities sell securities to the market banks reserve decline and when

They buy banks reserves increases. In this way open market operations reduce or enhance the banking system's ability to create credit and hence monetary control in an economy with well-developed money and capital markets.

Reserve Requirement (Reserve Ratio):   The reserve requirement otherwise known as the reserve ratio can be manipulated by monetary authorities to reduce the ability of commercial bank to make loans to the public by simply increasing the ratio and enhancing their leading position by reducing the rate. In this connection reserve requirement is both an instrument for liquidity management and prudential regulation. The reserve requirements are cash reserve ratio while the former is computed as a portion of the total deposit liabilities. The case reserve requirement is a very potent instrument and has been progressively increased from 6% in 1995 to 8% in 1997 and then to 12.5% in 2001. Reserve requirement is one of the most powerful instruments of monetary control, if it changes; the requirement

reserve ratio changes the ratio by which the banking system can expand deposit through the multiplier effect. If the required reserve ratio increases it thereby reduces the liquidity position of the banking system. Cash reserve requirement was first used to reduce excess cash holding by commercial banks. The commercial banks were required to maintain a minimum cash deposit with the central bank ranging from 5% to 12% of their total demand deposit and time deposit on which they are paid interest rate below 2.5 percent.

Liquidity Ratio: This is the rate or percentage of money that banks have as reserves in form of security that can be easily turn to cash.

Discount Rate: The discount rate is the rate of interest the monetary authorities or the central bank charge the commercial banks on loans extended to them. If the central bank wishes to increase liquidity and investment it reduces the discount rate. This in turn, reduces the interest rate charged by commercial banks. Thus resulting in attractive borrowing or low cost of borrowing and hence expansion in liquidity and investment and vice versa.

Selective Credit Controls: Selective credit controls or guidelines involve administrative order whereby the central bank, using guidelines, instruct banks on the cost and volume of credit to specified sector. This selective credit controls are example of the use of monetary policy to influence directly the allocation of recourse, indicating a lack of faith in the working of the free markets.

Moral Suasion: This involves the use of persuasive instructions to the commercial banks requesting them to operate in a particular direction for the realization of specified government objective(s). For example, the central bank or the government may appeal to the banks to exercise restraint in credit expansion by explaining to them how excess expansion of credit might involve serious consequences for both the banking system and the economy as a whole.

The Performance Of The Manufacturing Sector

The manufacturing sector industry played a significant role in the transformation of the economy for example, It is an avenue for increasing productivity related to import replacement and export expansion, creating foreign exchange earning capacity; and raising employment and per capital income which causes unique consumption patterns. Furthermore, Ogwuma (1995) opines that it creates investment capital at a faster rate than any other sector of the economy while promoting wider and more effective linkages among different sectors. Acknowledge this benefit of this sector; the Nigerian government has introduced various strategies to bust the sector such as import substitution strategy, export promotion strategy, the introduction of bank of industry to induced credit facility to the sector and the National Economic Empowerment and Development Strategy (NEEDS).

Loto (2012) revealed that the Structural Adjustment Programme (SAP) introduced in May 1986 was partly designed to revitalize the manufacturing sector by shifting emphasis to increased domestic sourcing of inputs through monetary and fiscal incentives. The deregulation of the foreign exchange market was also effected to make non-oil exports especially manufacturing

sector more competitive even though, this also resulted in massive escalation in input costs. Examining the manufacturing sector over the years in Nigerian economy shows that the share of the manufacturing sector in the gross domestic product has not been impressive. The manufacturing sector contributes 34.94% to gross domestic product in 1986 after the structural adjustment programme. By 1990 and 1995 it decline to 22.84% and 10.17% respectively. The contribution of the Nigerian manufacturing sector to Gross domestic product is very insignificant between 1996 to2012. The year 2000, 2005 and 2012 recorded 6.97%, 2.80% and 1.88% respectively. The insignificant contribution of the sector to gross domestic product is as a results of continues deterioration in infrastructural facility especially the power sector. The growth rate of manufacturing sector has not been very impressive. The highest growth rate was recorded in 1988 during the SAP period. In fact negative rate was experience in 2002, 2003 and 2004.

Theoretical Review: In order to appreciate the role of money and monetary policy in the economy, it became necessary to review the varied changing views on monetary influence. These roles are achieved directly as well as indirectly through feedback for the economy. Generally, when the quantities of money supply changes in relative to money demand, there are changes in relative prices and wealth.

In Fisher's quantity theory of money, he stated that "the quantity of money is the main determinant of the price level, of the value of money" any change in the quantity of money produces an exactly proportionate change in the price level, that is, "as the quantity of money in circulation increases, the price level also increase in direct proportion and the value of money decreases and vice versa.

Irving fisher further assumed that the rise in commodity prices would precede the increase in interest rate which was regarded as the main channel of firms operating costs. Also, the rise in commodity price would lead to an increase in the firm's profits followed by increase in investment, and then demand deposit. Increase in loan demand and money stock which lead to a greater increase in community prices, investment and profits. Since interest rate is regarded as part of the operating cost of production, excess reserve for lending would run-out and even faster than commodity prices thereby leading to a rise in the cost of production. This would in turn lead to a decline in investment and profit. In his equation of exchange, Fisher specified that:

$$MV=PT \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \text{ (1)}$$

Where:

M= actual money stock

V= the transaction velocity of circulation of money.

P= the average price level

T= the number of transaction made per the period.

Fisher now imposes the assumption that the equilibrium values of V, (the velocity of money) and T (the volume of transaction) will be fairly constant in the short-run and invariant with respect to changes in the quality of money.

Given this assumption, the equation (1) can now be re-written as:

$$M\bar{V} =PT\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \text{ (2)}$$

Where bars (-) signify that V and T are constant. Given that m is exogenous, there must be proportional relationship in equilibrium between money supply (m) and the general piece level.

Empirical Review: Imoughele and Ismaila (2014) studied the impact of monetary policy on Nigeria's manufacturing sector performance for the period 1986-2012. Their Ordinary Least Square analyses revealed external reserve, exchange rate and inflation rate significantly impacted on manufacturing sector's output while broad money supply and interest rate had no significant impact on manufacturing sector's output. However, they found that interest rate, exchange rate and external reserve impacted negatively on the sector output but broad money supply and inflation rate affect the sector positively. They concluded that the monetary policy have not favoured the manufacturing sector in terms of increasing their output. Their analysis led to the recommendation that monetary authority should create and implement monetary policies that favoured efficient provider of favourable investment climate by facilitating the emergency of market based interest rate and exchange rate regimes that attract both domestic and foreign investment to the manufacturing industrial sector that are currently operating far below installed capacity.

Bakare and Osobase (2015) in their research wok on the impact of monetary policy on the performance of the manufacturing sector used error correction mechanisms and discovered that monetary policy instruments (monetary policy rate, interest rate, lending rate) have impacted expectedly on output of the manufacturing sector in Nigeria both in the short-run and long-run. They established that stabilization policy has a great impact on manufacturing sector performance and that if certain adjustments are made, it would better the lots of the people by developing the sector, through Government fiscal policy and its monetary policy measures.

Owolabi (2014) in his own research empirically examined the impact of monetary policy on industrial growth in Nigeria for the period 1970 to 2010. He employed multiple regressions to analyze data on the variables: manufacturing output, Treasury Bills, Deposit & leading and Rediscount Rate. His analysis revealed that the variables all have significant effects on the industrial growth in Nigeria. Following the outcome of his study, he concluded that Rediscount Rate, and Deposit have significant positive effect on industrial output but Treasury Bills has the negative impact on industrial output.

Igbenedion (2016) studied the nexus between monetary policy and manufacturing capacity utilization in Nigeria for the 1980-2014 using the error-correction model approach. His results reveal that both current and past values of lending rate adversely affect manufacturing performance, but manufacturing responds positively to the current period's banking credit, confirming that policy to enhance access to funds can stimulate investment in manufacturing sub-sector in Nigeria. He recommended that monetary authorities should implement policies in line with the structure of the economy to enhance contribution of manufacturing sector to overall economic growth.

Eko, Ehigocho, and Okoiarikpo (2016) researched on the impact of monetary policy shocks on industrial output in Nigeria using restricted VAR model and Granger causality test for the period 1970 to 2015. His results show that contribution of manufacturing subsector to GDP responded positively to shocks in monetary policy, commercial bank credit to industrial sector and exchange rates, while contribution of solid minerals subsector to GDP responded positively to shocks in commercial bank credit to the industrial sector and exchange rate after the first year. On the other hand, the causality test result indicated a unidirectional causality 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 on the other. They recommended a proper evaluation by the Central Bank of Nigeria on the possible responses of the different subsectors of the industrial sector in its decision regarding choice of monetary policy channels and the need for extreme caution to be taken in the management of exchange rate in Nigeria.

3. Research Method

This research work employs the Auto regressive distributive lag (ARDL) model in determining the relationship between monetary policy and manufacturing output in Nigeria. Data were sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin (2016 edition) and the Unit root test was employed to ascertain the stationarity of the data. The ARDL bounds test technique was further used to test for the long run relationship amongst the variables after which the short run and long run estimates of the model are estimated. The model used in this study is specified below.

Model Specification

Igbinedion (2016), Bakare & Osobase (2015) and Imoughele & Ismaila (2014) all established a linear relationship between monetary policy and manufacturing output in Nigeria using some monetary policy variables such as external reserve, lending rate, monetary policy rate etc. They estimated only the short run effects in their studies. However, in our study, we shall modify their models by using money supply, interest rate and exchange rate as our independent variable and Manufacturing output as the dependent variable. The model is specified thus:

$MAN = f(MS, EXR, INT)$

The model can be expressed in the econometric form below

$MAN = \beta_0 + \beta_1 MS + \beta_2 NEXR + \beta_3 INT + U_t$

Where:

β_0 = Intercept of the model

$\beta_1, \beta_2, \beta_3$ = Parameter Estimates

MAN = Manufacturing Sector's Output

MS = Money Supply

NEXR = Nominal Exchange Rate

INT = Interest Rate

U_t = Error term

4. Results and Analysis

Unit Root Test: The result of the Augmented Dickey Fuller Unit Root test is summarized below:

Table 1: ADF Unit Root Test Result

Variables	ADF t-	ADF t-	Order of	Decision

	statistic at level	statistic at 1st difference	integration	rule
MAN	-4.228107	-8.966198	I(0)	Stationary at level
MS	-3.301678	-4.319266	I(0)	Stationary at level
INTR	-2.740392	-6.300226	I(1)	Stationary at First difference
NEXR	0.468226	-5.486836	I(1)	Stationary at First difference

Source: Extracted from Eviews9 Output (5% critical value = 2.95)

The Table 1 above shows that at level, the value of the ADF statistic of Manufacturing Output and Money Supply are 4.228107 and 3.301678 respectively, and are greater than the critical value at 5%, thus reject the null hypothesis and accept the alternative hypothesis and conclude that Manufacturing Output and Money Supply are stationary at level i.e. they are both integrated at order I(0). At first difference, the absolute values of the ADF statistic of Interest Rate and Nominal Exchange Rate are 6.300226 and 5.486836, and are greater than the Critical value at 5%, thus Reject the null hypothesis, accept the alternate hypothesis and conclude that Interest Rate and Nominal Exchange Rate are stationary at first difference i.e. they are integrated at order I(1).

Bounds Test: The bounds test confirms the existence or otherwise of a long run relationship amongst the variables having been found to be integrated of mixed order i.e. at I(0) and I(1). The test is summarized below:

Table 2: Bounds Test Result

ARDL Bounds Test
Null Hypothesis: No long-run relationships exist

Test Statistic	Value	K
F-statistic	5.819317	3

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	2.72	3.77
5%	3.23	4.35
2.5%	3.69	4.89
1%	4.29	5.61

Source: Extracted from Eviews9 output

From the Table 2 above, it can be observed that the value of the F-statistic 5.819317 is greater than the 5% critical value\s at I(0) and I(1) bounds; therefore we reject the null hypothesis and conclude that a long run relationship exist amongst the variables. Therefore the monetary policy indices used in the model have long run effect on the manufacturing sector in Nigeria.

Short Run Estimates of the Model: The Autoregressive distributive lag model estimates both the short and long run forms of the model. The short run estimates are summarized below

Table 3: Short Run Result

Selected Model: ARDL(1, 0, 0, 0)
Note: final equation sample is larger than selection sample

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
MAN(-1)	0.131191	0.165096	0.794638	0.4331
MSS	0.391402	0.161448	2.424315	0.0216
EXR	-0.010529	0.036096	-0.291703	0.7725
INTR	0.712835	0.772585	0.922662	0.3635
CointEq(-1)	-0.868809	0.165096	-5.262461	0.0000
C	-0.874044	10.61755	-0.082321	0.9349

R-squared	0.897554
Adjusted R-squared	0.803894
F-statistic	3.976970
Prob(F-statistic)	0.027331
Durbin-Watson stat	2.003505

From the table 3 above, manufacturing output has a one period lag while the other variables (MSS, EXR and INTR) have no lags. The lag selection is based on the Akaike Info criterion as specified by the ARDL model above. The one period lag of manufacturing output shows that the previous year's value of manufacturing output increases itself by 0.131191 units i.e. it has a positive self-effect.

Furthermore, Money Supply has a positive short run effect on the manufacturing output. As it increases by a unit, manufacturing output increases by 0.391402 units.

Exchange Rate has a negative relationship on the manufacturing output. As it increases by a unit, manufacturing output decreases by 0.010529 units. It therefore has an inverse effect on the manufacturing output in Nigeria.

Interest Rate on the other hand has a positive effect on the manufacturing output. This is because a unit increase in Interest Rate increases manufacturing output by 0.712835 units.

From the regression line above, the intercept of the model -0.874044 shows that Manufacturing Output decreases by 0.874044 units when the explanatory variables (Exchange rate, Interest rate and money supply) are zero. This implies that in the absence of Money Supply, Interest Rate and Exchange Rate, Manufacturing output (MAN) will decrease by 0.874044 units.

The Error Correction coefficient (cointEq-1) is estimated at -0.868809; this means that the model corrects its previous periods disequilibrium at a speed of 86.9% estimated annually. In other words, increasing the monetary policy variables at a steady state of 86.9% annually, the manufacturing sector's output will improve significantly in the long run.

Long Run Estimates of the Model: The long run estimates are summarized below

Table 4: Long Run Result

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MSS	0.450504	0.193695	2.325844	0.0270
EXR	-0.012119	0.041697	-0.290647	0.7733
INTR	0.820474	0.867129	0.946196	0.3516
C	-1.006026	12.229302	-0.082264	0.9350

Source: Extracted from Eviews9 Output (See appendix)

The long run estimates of the model reveal that money supply has a coefficient of 0.450504 meaning that there is a positive long run relationship between Money Supply and Manufacturing output (MAN) in Nigeria. This means that a unit increase in money supply will increase Manufacturing output by 0.450504 units, other things held constant. This result conforms to the a priori expectation. Also, Money Supply is statistically significant with p-value of 0.0270. This implies that money supply has impacted significantly on the growth of the manufacturing sector in Nigeria for the period under review.

The negative coefficient of Nominal Exchange rate -0.012119 on the other hand means that there is a negative relationship between exchange rate and Manufacturing output in Nigeria. What this implies is that a unit increase in exchange rate will decrease Manufacturing Output by 0.012119 units, other things held constant. Exchange rate is not significant at 5% level.

Furthermore, the coefficient of Interest Rate 0.820474 shows that there is a positive relationship between Interest Rate and Manufacturing output in Nigeria. Despite the positive relationship, interest rate is no statistically significant given the p-value of 0.3516. Therefore, a unit increase in Interest Rate will increase Manufacturing sector's output by 1.237076 units; though not significantly. The intercept of the model shows that manufacturing output decreases by 1.006026 units when the explanatory variables are held constant at zero.

The monetary policy indices used in the model show joint effect on the manufacturing sector's output accounting for up to 80% of the variations in manufacturing output for the period under study. The data were tested for serial correlation using the Durbin Watson statistic and the result shows that there is no problem of autocorrelation of the error terms.

5. Conclusion and Recommendations

The role of the Central Bank in regulating the liquidity of the economy which affects some macroeconomic variables such as output of the manufacturing sector cannot be over emphasized. This study applied the Auto regressive distributive lag method to determine the impact of monetary policy on manufacturing output in Nigeria for the period 1980 – 2016. It is evident from the result that monetary policy indices (especially Exchange rate and interest rate) did not impact significantly on the manufacturing sector of Nigeria for the period under review. Money supply however showed a positive and significant impact on the manufacturing sector meaning that CBNs' supply of money has a direct effect on manufacturers who easily access funds for production purposes. In the long run, money supply remained a positive and significant determinant of manufacturing output in Nigeria. Exchange rate decreased manufacturing output showing an inverse relationship while interest rate increased manufacturing output. We can conclude from this finding that exchange rate as expected, decreased the manufacturing output owing to the high cost of obtaining foreign currencies due to the high exchange rate, this makes manufacturers to source for alternative means of production since most of their raw materials are imported. This ultimately has an adverse effect on output of the sector. Manufacturers are forced to borrow from banks despite the increasing Interest rate as seen from the long run estimates but this did not directly have a significant impact on the sector.

This study concludes therefore that the inability of monetary policy to effectively maximize its policy objectives most times is as a result of the short-comings of the policy instruments used in Nigeria and as such, limits its contribution to growth of key sectors.

Based on the findings, the following recommendations are made;

1. The monetary authority should avoid policy inconsistencies to enable long term business planning and investment by manufacturers in Nigeria.

2. The Central Bank of Nigeria should maintain a lower interest rate on loans because manufacturers and other investors who make up the deficit unit of the economy

are encouraged to borrow more when the interest rate is low thus leading to increased investment and growth.

3. The Federal government under the current managed flexible exchange rate regime should formulate policies that will strengthen the domestic currency (Naira) against the global market currency (US Dollars). Policies such as diversifying the productive base of the economy, encouraging the patronage of locally produced goods etc. These will go a long way towards strengthening the local currency.

4. For effective operation of the monetary policy measures in the Nigerian economy, the Central bank of Nigeria should be granted full autonomy on its monetary policy functions. Partial autonomy should be replaced with full autonomy for the Central bank of the developing economies at large which is invariably subjected to government interference and its policies.

5. Stability in money supply is essential to the growth of the manufacturing sector, so Government through monetary authorities should ensure a steady money supply in the economy in order to foster investments. `

6. Commercial banks and other financial intermediaries must be forced to ensure compliance with the stipulated prudential guidelines. Any deviations from the set regulations should be punished to serve as a deterrent to others.

7. Finally, since global experience has indicated that monetary policy must work in random to create the right macroeconomic framework; in other words, monetary policy to a great extent depends on coordination with fiscal policy. These two phenomena should be articulated in order to bring out effective results. Therefore, the execution of monetary policy through its techniques requires effective and prudent management on the part of the monetary authorities.

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