

IMPACT OF MONETARY POLICY ON THE PERFORMANCE OF THE MANUFACTURING SECTOR IN NIGERIA

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ABSTRACT

This study examined the impact of monetary policy on the performance of the manufacturing sector in Nigeria. To achieve these objectives, relevant literatures were reviewed. An ex-*post facto* research design was adopted for the study. Time series data were collected from the CBN statistical Bulletin using the desk survey method from 1986 to 2015. The study conducted a unit root test using Augmented Dickey fuller test. The data were analyzed using the ordinary least square multiple regression statistical technique. Money supply has a positive but insignificant relationship with the output of the manufacturing sector in Nigeria; issuance of treasury bills had a positive and significant relationship with manufacturing output in Nigeria, monetary policy rate had an inverse and significant relationship with the manufacturing sector output in Nigeria and finally exchange rate has an insignificant inverse relationship with manufacturing output. Based on these findings, it was recommended that the monetary authorities should reduce the monetary policy rate of deposit money banks as this will enable the manufacturing sector to access the loans and advances of banks for increase productivity and expansion; there is need for the monetary policies of the CBN to be restructured in such a way that businesses and indeed manufacturing sectors will be impacted positively by these policies and finally the government through the CBN to regulate money supply in a manner that will not hamper the price system as this may affect the cost of production of the manufacturing sector.

Key words: monetary policy rate, manufacturing output, monetary policy, Treasury bill, money supply

1. INTRODUCTION

Monetary policy includes a number of policies by which a country controls its money stock so as to achieve macroeconomic goals. It is a major economic stabilisation tool which involves measures designed to regulate and control the volume, cost, availability and direction of money and credit in an economy with the aim of achieving some specific objectives (Anyanwu 1993). It involves all action taken by the monetary authorities to affect the monetary base through influencing the availability and cost of credit in pursuance of sustainable growth of output, price stability and a healthy BOP position (Iyoha & Oriakhi 2002).

According to Ahuja (2013), the objectives of monetary policy include price stability, maintenance of balance of payments equilibrium, employment creation, output growth and sustainable development. While the objectives of monetary policy include price stability, full employment and economic growth, targets of monetary policy refer to the variables such as supply of money or bank credit, interest rates which are sought to be changed through the monetary policy instruments such as open market operation and selective credit control etc, so as to attain the laid out objectives.

The choice of what monetary policy instruments and the degree of application is partly dependent on the prevailing circumstances within the economy. For instance, during economy boom, a Contractionary monetary policy could function predominantly. However, where there is perceived depression or pessimism within the economy, the expansionary monetary policy gets uncovered. As posited by Nzotta & Okereke (2009) the success of monetary policy in an economy depends on the operating economic environment, the institutional framework and the level of its implementation with a view that there is a stable relationship between the quantity of money in an economy and her economic activities. The principal aim being to make sure that there is balance between money supply and the growth rate of the economy without committing errors.

The manipulation of monetary policy through money supply and interest rate is done by the CBN as the monetary authorities of a country through the use of monetary policy instrument which include Minimum Rediscount Rate, Open Markets Operations (OMO); Cash Reserve Requirements, Liquidity Ratio, among others (Ajudua, Davis & Osmond, 2015). Depending on the aim, the central bank reduces or increases the monetary policy rate if the aim is to increase or reduce liquidity and investment, while the commercial banks in turn, increasing or reducing the interest rate charged to borrowers so as to attract borrowing at low interest rate or wade them off. Open Market Operation also involves the buying and selling of treasury bills,

treasury certificates, commercial papers etc by the CBN so as to determine the level of money in circulation (Ajudua, Davis & Osmond, 2015). The reserve requirement also known as the reserve ratio requires commercial banks to put a certain fraction of their reserves behind their demand and time deposit liabilities. This can be manipulated to reduce the ability of commercial bank to make loans to the public by simply increasing the ratio and enhancing their lending position by reducing the rate (Jhingan 1997).

The qualitative instruments are tools not directed towards the quality or use of credit, but are used for discriminating between different uses of credit (Ajudua, Davis & Osmond, 2015). They include special deposits, interest ceilings, stabilisation securities, selective credit controls; direct credit controls. They are guidelines or administrative order given by the central bank to guide the activities of commercial banks while moral Suasion involves the use of friendly but persuasive instructions by the central bank to persuade commercial banks to adopt a particular policy and operate in a particular direction for the realization of specified government objectives (Gbosi 2005). Monetary policy thus becomes an indispensable and inevitable tool in controlling manufacturing activities and the industrial sector in general.

The Manufacturing sector could be conceived as any economic unit that processes or creates new commodities through the transformation of raw materials or semi-finished goods (Andy, 2004), as cited in Eze & Ogiji (2013). Adebayo (2010) conceived manufacturing sector as those industries which are involved in the manufacturing and processing of items and which indulge or give free rein in either the creation of new commodities or in value addition. Manufacturing plays a vigorous role in the economic transformation of any nation, whether developed or developing. In Nigeria, Loto, (2012) refers to manufacturing sector as an avenue for increasing productivity in relation to import replacement and export expansion, creating foreign exchange earning capacity, raising employment and per capita income which causes unrepeatable consumption pattern. It occupies a leading position in promoting productivity, investment, import substitution, export expansion, employment and per capita income at a faster rate than any other sector (Ogwuma, 1995; Shebeb, 2002). It provides wider and more efficient linkage among different sectors (Ogwuma, 1995).

In spite of these numerous roles played by the manufacturing sector, scholars have argued that the shocks in monetary policy distort manufacturing activities (Adebiyi, 2001). Okafor (2012), in Eze & Ogiji (2013) further buttresses this fact by saying that the level of Nigerian manufacturing sector's performance will continue to decline because of poor implementation of monetary and fiscal policy and the difficulties in accessing raw materials. Hence this study is designed to examine the

impact of monetary policy on the manufacturing sector in Nigeria. The inability of monetary policy to enhance manufacturing sector's performance has been blamed on corruption, diversion of borrowed fund, lack of integration of macroeconomic plans, inept policy implementation, financial hoarding and illiteracy and lack of economic potential for rapid economic growth and development.

This has led to adverse inflationary trend, undulating foreign exchange rates, fall and rise of gross domestic product, unfavourable balance of payments and over reliance on oil revenue. Others include policy reversal, poor sectorial output and arbitrary interest charges on loans and low compensations on deposits. This has furthered increase the leakages of funds from the financial sector, rendering monetary policy impotent to control the output and activities of the economy in general and manufacturing sector in particular.

In view of the above, one begins to wander if monetary policy has any significant effect on manufacturing activities and the economy in general. This therefore is the target of this study to investigate the impact of monetary policy on manufacturing performance amidst this numerous challenges.

Research hypotheses

The following alternative hypothesis is formulated for this study:

H₁: There is a significant impact of monetary policy on manufacturing performance

The remainder of this study covers literature review and theoretical framework, methodology, results and discussion and last summary of findings, conclusion and recommendations.

2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

Theoretical framework

Keynesian theory

Keynes in his book published in 1936 "The General Theory of Employment, Interest and Money" formulated a monetary theory centred on output rather than prices. He disagreed with the classical view and posited that there is an indirect and non-proportional relationship between change in money and price level (Nwaru 2014).

Keynes posited "that economics has been divided into two compartments with no doors or windows between the theory of value and the theory of money and prices."

This dichotomy between the relative price level (as determined by demand and supply of goods) and the absolute price level (as determined by demand and supply of money) arises from the failure of the classical monetary economists to integrate value theory with monetary theory.

Consequently, changes in the money supply affect only the absolute price level but exercise no influence on the relative price level (Afolabi 1998).

According to the Keynesian monetary transmission mechanism, given the assumption that the economy is at less than full employment equilibrium, the built-in-policy transmission mechanism works through the financial system to the real sector via interest rate thus, de-emphasizing the role of money direct impact on the real sector. Keynes posited through his assumptions that the quantity of money has an indirect relationship with prices via interest rate, thus an increase in quantity of money will lead to a fall in interest rates which increases volume of investments and raises effective demand through the multiplier effect thereby increasing output, income and employment (Gbosi 2005). Hence we anchored our study on this theory.

Classical theory

The classical monetary theory in their study of money, posited that there is a direct and proportionate relationship between changes in the quantity of money and general price level. The theory had its roots with the work of Jean Boldin in the 16th century, John Locke in 1690 who examined the effects of money on trade, the role of interest rate and demand for money in the economy. However, the classical quantity theory of money is today, hinged on the theory of Irvin Fisher (1867-1947). He posited that “ Other things remaining unchanged, as the quantity of money in circulation increases, the price level also increases in direct proportion while the value of money decreases and vice versa” (Jhingan 1997). If the quantity of money is doubled, the price level will also double and the value of money will be one half.

Fisher’s theory also known as equation of exchange is stated thus,

$$MV=PT \dots\dots\dots (1)$$

Where:

M= actual money stock or money supply

V= the transaction velocity of circulation of money.

P= the average price level

T= the real volume of all market transactions made during a period of time.

Fisher posited that the quantity of money (M) times the velocity (V), must equal average price level (P) times the aggregate transaction (T). The equation equates the demand for money (PT) to the supply of money (MV).

In the equation, T is better replaced with Q “quantity of goods involved” hence the Fisherian equation can be written as $MV = PQ$
(2)

Fisher further stated that the average price in the economy (P) multiplied by the amount of transaction (T) when divided by the money stock (M) gives us a volitional element called the average turnover of money or money velocity (V). i.e. $PT/M = V$.

Doubling the money stock will lead to a doubling of the price level since T and V do not change. Velocity is seen as constant because factors that would necessitate a faster movement in the velocity of money evolve slowly. Such factors include among others, population density, mode of payment (weekly/monthly), availability of credit sources, nearness of stores to individuals etc. Thus it is seen that there exists a direct and proportional relationship between money stock and price level. The theory is based on the assumption of neutrality of money.

Monetarist theory

The monetarist school of thought hold the view that money matters in all economic activities and as such monetary policy is a more viable economic stabilisation measure than fiscal policy. Led by the work of Milton Friedman in 1968, the monetarist argued that money is the most important regulatory instrument in an economy and an excessive expansion of the money supply is inherently inflationary, and as such, the monetary authorities should focus solely on maintaining price stability. Monetarists argue that if the money supply rises faster than the rate of growth of national income then there will be inflation. However, if money supply increases in line with inflation then there will be no inflation. The argument is that when money supply increases, it will eventually decompose itself as increase in the cash balance of individuals and economic agents. People will then find that they hold excess liquidity and will have to spend the excess to restore them to the desired level. Thus he posited that inflation is always and everywhere a monetary phenomenon.

Empirical review

Chigbu and Okonkwo (2014) in their work monetary policy and Nigeria’s quest for import substitution industrialization” using the error correction mechanism came to

the conclusion that money supply exact tremendous pressure on industrial output in Nigeria, thus, collaborating the monetarists preposition which suggest that money supply is directly proportionate to real output.

Gertler and Gilchrist (1994) examined movements in sales inventories, and short-term debt for small and large manufacturing firms, confirmed that the effects of monetary policy changes on small firm variables are greater when the sector as a whole is growing more slowly.

Okonkwo, Egbulonu & Emerenini (2015) examined the impact of monetary policy on manufacturing in Nigeria. Their findings revealed that money supply (MS) and credit to private sector (CPS) exert tremendous pressure on manufacturing. Abdurrahman (2010) empirically examined the role of monetary policy on economic activity in Sudan for the period 1990 to 2004 and found that monetary policy had little impact on economic activity during the period under consideration.

Olorunfemi and Dotun (2008) examined the impact of monetary policy on the economic performance of Nigeria using simple regression. The study found out that there was a negative relationship between interest rate and GDP on the one hand and inflation and GDP on the other. The study did not disaggregate the impact of monetary policy on the various sectors of the economy like the industrial sector.

Ahuja (2011) explained that monetary policy is valid only for a highly monetized economy. Thus, if the economy is not highly monetized, the efficacy of monetary policy is restricted, for instance, in an undeveloped economy where a large proportion of output is produced in a subsistence sector would be independent of money supply. Hence, monetary policy therefore, would not be a better tool to manage a developing economy like Nigeria.

Olanipekun and Akeju (2013), examining the relationship between money supply, inflation and capital accumulation in Nigeria ran two models using the error correction techniques, one model was ran using Narrow money supply (M1) and the other broad money supply (M2). For both models, changes in money supply have negative and non significant relationship to inflation in Nigeria.

Folawewo and Osinubi (2006) using the GARCH model to investigate how monetary policy objectives of controlling inflation and intervention in the financing of fiscal deficits affects the variability of inflation and real exchange rate revealed that monetary policy affects both the rate of inflation and real exchange rate and as such causing volatility in these rates in Nigeria.

Mengesha and Holmes (2013) in examining the monetary policy and transmission mechanisms in Eritrea, came to the conclusion that monetary policy is less effective, while official foreign exchange market in Eritrea is inactive, suggesting that there is an effective black market exchange rate channel in Eritrea.

Saygin and Evren (2010) evaluated sectoral growth cycles and the impact of monetary policy in the Turkish manufacturing industry. They found out that all manufacturing sectors respond to a tightening monetary policy shock with a reduction in absolute output.

Vizek (2006) analyses monetary transmission in Croatia using the Granger causality test and error correction model and concludes that monetary policy affects industrial output through changes in the exchange rate and money supply, while interest rate changes do not have any influence.

Using the Ordinary Least Squares Method, Onyeiwu (2012) studied the effect of monetary policies on selected macroeconomic variables GDP, inflation rate and balance of payment between 1981 and 2008. His findings show that monetary policy exerts a positive impact on GDP growth and Balance of Payment but negative impact on rate of inflation.

According to (Nwaobi 1997), in his article unit root of variables Dickey-Fuller (DF) test and Augment Dickey-Fuller (ADF) tests confirm that the model assumed the irrelevance of anticipated monetary policy for short-run deviations of domestic output from its natural level. Therefore, only the unanticipated components of external price changes in the level of external economic activity leads to the deviation of domestic output from natural and observed that monetary tightening once anticipated in an economy would have no effect on real domestic output in the short-run.

Also, (Anyanwu 1996) in his study of Nigeria's urban unemployment analyzed the monetary and fiscal policy implication Nigeria's full employment level. However, on the other hand, all the fiscal variables significantly reduced unemployment in Nigeria. This except one was highly significant in reducing the level of unemployment generation in Nigeria than monetary policy measure.

3. RESEARCH METHODOLOGY

This study adopts the exploratory and ex-post facto design. The exploratory design was used to gather relevant materials from text books, journal articles and so on while the ex-post facto design was adopted on the basis that it does not provide the study an opportunity to control the variables mainly because they have already occurred

and cannot be manipulated. The data in this study consist mainly of secondary time series data for the period 1990 to 2014; sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin, Journals and the internet and other relevant publications and collected using desk survey method.

Techniques of data analysis

The analytical and interpretational tools employed comprise simple statistical as well as comparative analyses using tables representative. The ordinary least square multiple regression analytical technique and its interpretation will be used. The adoption of this technique is justified by its feature as the best linear unbiased estimate with built-in validation criteria used in establishing relationships among variables. Finally, the study applied the Augmented Dickey Fuller test complementarily with the Philips Peron test to check the stationarity of the data.

Model Specification.

The specified model for this study is the ordinary least square multiple regression model. The relationship between the variables studied is expressed functionally thus:

$$MO = F (MS, TB, MPR, EXR)$$

The ordinary least square model was obtained from the above equation, the variables were converted to their natural log to cover for their elasticity thus:

$$LMO = a_0 + b_1LMS + b_2LTB + b_3MPR + b_4EXRR + e_t$$

Where:

MO= manufacturing output

a_0 = Regression Constant.

$b_1, b_2, \& b_3$ b_4 = Regression Parameters

LMS = Log of money supply

LTB = Log of Treasury bill

MPR = Log of monetary policy rate

EXR = Exchange rate

e_t = Disturbance term

4. RESULTS AND DISCUSSION

Data analysis

TABLE 4.1: Unit root test using the Augmented Dickey-Fuller (ADF) statistics

Variables	ADF Test Statistics		Order of integration
	Level	@ 1 st & 2 nd Differenced	
LMO	-0.015362	-7.405668	I(2)
LMS	-0.868400	-4.679508	I(1)
TB	-2.993752	-4.199939	I(2)
MPR	-2.861810	-2.061457	I(0)
EXR	-0.502111	-5.091221	I(1)

Test critical values at level: 1% = -3.596616, 5% = -2.933158, 10% = -2.604867

Test critical values at 1st Diff: 1% = -3.689194, 5% = -2.971853, 10% = -2.625121

Test critical values at 2st Diff: 1% = -3.699871, 5% = -2.976263, 10% = -2.627420

Source: Researcher's Computation from E-views 9, 2016.

This study started by examining the time series properties of each variable employed in the model using both the Augmented Dickey Fuller (ADF) to test whether or not the time series are stationery to avoid spurious regression. Here, manufacturing output and Treasury bill rate were integrated at second difference. Money supply and exchange rate were integrated at first difference while monetary policy rate was integrated at level.

TABLE 4.2: Descriptive statistics

	LMO	LMS	TB	MPR	EXR
Mean	2.913967	6.598074	628.9367	13.57300	76.92528
Median	2.717904	6.611111	413.6500	13.50000	97.39930
Maximum	3.694116	9.780219	2815.500	26.00000	158.5526
Minimum	2.449279	3.104587	8.500000	6.130000	0.893800
Std. Dev.	0.394957	2.189639	767.5429	3.989253	62.60957
Skewness	0.783466	-0.112439	1.582350	0.819086	-0.003250
Kurtosis	2.156612	1.727106	4.669461	4.575444	1.212071
Jarque-Bera	3.958227	2.088538	16.00304	6.457043	3.995917
Probability	0.138192	0.351949	0.000335	0.039616	0.135612
Sum	87.41900	197.9422	18868.10	407.1900	2307.759
Sum Sq. Dev.	4.523750	139.0411	17084543	461.5100	113678.8
Observations	30	30	30	30	30

Source: Researcher's Computation from E-views 9, 2016.

The result of table 4.2 shows that manufacturing output (MO) had a mean value of 2.91, while the overall manufacturing output value ranged from a minimum of 2.44 to a maximum of 3.69. Money supply (MS) was observed to have a mean value of 6.59 while the overall Money supply value took a minimum of 3.10 to a maximum value of 9.78. Treasury Bill (TB) was observed to have a mean value of 628.94 and an overall minimum value of 8.5 and a maximum value of 2815.5. Monetary Policy Rate (MPR) had a mean value of 13.57, while the overall Monetary Policy Rate value ranged from a minimum of 6.13 to a maximum of 26.00. Finally, Exchange Rate had a mean value of 76.93, its mean ranges from a minimum value of 0.89 to a maximum value of 158.55. While Manufacturing output, Treasury bill rate and monetary policy rate were observed to be positively skewed, money supply and exchange rate were negatively skewed. The Jarque-Bera statistics was found to have values above 3 for manufacturing output, treasury bills rate, monetary policy rate and exchange rate,

signifying that the sample observations were not normally distributed while money supply had a value less than three evidencing that the data set is normally distributed.

TABLE 4.3: Regression result

Dependent Variable: LMO				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.349164	0.225878	10.40015	0.0000
LMS	0.101431	0.041663	2.434570	0.0224
TB	0.000259	6.34E-05	4.085363	0.0004
MPR	-0.014179	0.007648	-1.853984	0.0756
EXR	-0.000973	0.001435	-0.677853	0.5041
R-squared	0.874332			
Adjusted R-squared	0.854225			
F-statistic	43.48413	Durbin-Watson stat	0.316843	
Prob(F-statistic)	0.000000			

Source: Researcher's Computation from E-views 9, 2016.

From table 4.3 money supply and Treasury bill rate have positive and direct relationship with manufacturing sector output. One percent increases in money supply and Treasury bill, resulted in 0.101 billion naira and 0.0003 percent increase in manufacturing output respectively. This finding is in agreement with economic theory. The result also revealed that there is an inverse relationship between monetary policy rate, exchange rate and manufacturing sector output. Here a one percent increase in monetary policy rate results in a 1.42 and 0.97 percent decrease in manufacturing output in Nigeria. This also agrees with economic theories.

The goodness of fit of the model as indicated by the R^2 adjusted value of 0.8542 or 85.42 percent indicates that the model fits the data well, the total variation in the observed behaviour of the manufacturing output as a measure of performance is

jointly predicted by the variations in money supply, Treasury bill rate, exchange rate and monetary policy rate and up to 85.42 percent. The remaining 14.58 percent is accounted for by the disturbance term.

The overall significance of the model was also tested using the ANOVA or f-statistics. Here the high significance of the f-statistics value of 43.484 confirm that the high predictability of the model did not occur by chance; it actually confirmed that the model fitted the data well. The individual significance of the parameters of the respective, independent variables was also tested. All the parameters of the independent variables were statistically significant at 5 percent level except exchange rate. This is so as their calculated t-statistics values of 2.4345, 4.085 and 1.85398 for money supply, Treasury bill rate and monetary policy rate respectively were found to be greater than the table t-static value of 1.48 at 5% level of significance.

We also tested for the presence of autocorrelation in the residual of the model using the d-w statistics, the test revealed that the calculated d-w value of 0.3168 fell within the negative autocorrelation region of the d-w table. Based on this region, we conclude that the model is not free from autocorrelation problem.

4.3 Test of Hypotheses

Hypothesis one

H₀: Money supply has no significant impact on the manufacturing sector output in Nigeria.

H₁: Money supply has a significant impact on the manufacturing sector output in Nigeria

Decision Rule

Accept H₀: if calculated t-statistics value < table t-statistics value.

Reject H₀: if calculated t-statistics value > table t-statistics value.

From the regression result,

Calculated t-statistics value = 2.4345

Table t-statistics value = 1.48

Since the calculated t-statistics value of 2.4345 is greater than the table t-statistics value of 1.48 at 5% level of significance, we reject the null hypothesis and accept the

alternative hypothesis. It therefore means that Money supply has a significant impact on the manufacturing sector output in Nigeria

Hypothesis two

H₀: Treasury bill rate does not significantly affect the output of the manufacturing sector output in Nigeria

H₁: Treasury bill rate significantly affects the output of the manufacturing sector output in Nigeria.

Decision Rule

Accept H₀: if calculated t-statistics value < table t-statistics value.

Reject H₀: if calculated t-statistics value > table t-statistics value.

From the regression result,

Calculated t-statistics value =4.085

Table t-statistics value =1.48

Since the calculated t-statistics value of 4.085 is greater than the table t-statistics value of 2.074 at 5% level of significance, we reject the null hypothesis and accept the alternative hypothesis. It therefore implies that Treasury bill rate significantly affects the output of the manufacturing sector output in Nigeria

Hypothesis three

H₀: Monetary policy rate has no significant influence on the manufacturing sector in Nigeria.

H₁: Monetary policy rate has a significant influence on the manufacturing sector in Nigeria.

Decision Rule

Accept H₀: if calculated t-statistics value < table t-statistics value.'

Reject H₀: if calculated t-statistics value > table t-statistics value.

From the regression result,

Calculated t-statistics value =1.85398

Table t-statistics value =1.48

Since the calculated t-statistics value of 1.8539 is greater than the table t-statistics value of 1.48 at 5% level of significance, we reject the null hypothesis and accept the alternative hypothesis. It therefore implies that monetary policy rate has a significant influence on the manufacturing sector output in Nigeria

Hypothesis four

H₀: Exchange rate has no significant influence on the manufacturing sector in Nigeria.

H₁: Exchange rate has a significant influence on the manufacturing sector in Nigeria.

Decision Rule

Accept H₀: if calculated t-statistics value < table t-statistics value.'

Reject H₀: if calculated t-statistics value > table t-statistics value.

From the regression result,

Calculated t-statistics value = 0.6778

Table t-statistics value =1.48

Since the calculated t-statistics value of 0.6778 is less than the table t-statistics value of 1.48 at 5% level of significance, we reject the alternative hypothesis and accept the null hypothesis. It therefore implies that exchange rate has no significant influence on the manufacturing sector output in Nigeria

4.4 Discussion of findings:

From the above analysis, it was discovered that monetary policy exerts a serious influence on manufacturing productivity in Nigeria. Findings from hypothesis one and two revealed a positive and strong relationship between money supply, Treasury bill rate and as manufacturing output in Nigeria. Here, increase in money supply and Treasury bill rate brings in a more than proportionate increase in manufacturing output. This finding is supported by Ajudua, Davis and Osmond (2015) who studied the relationship between monetary policy and manufacturing sector output in Nigeria, applying the OLS model, the study found a strong relationship between monetary policy and manufacturing output in Nigeria.

Findings from hypothesis three showed inverse and significant relationship between monetary policy rate and the output of agricultural sector in Nigeria. This finding has been supported by Imoughele and Ismaila (2014) who examined the relationship between sectorial output and monetary policy variables (exchange rate, interest rate, broad money, external reserve and monetary policy rate and inflation rate), they found out that a long run relationship exist between agricultural sector output and monetary policy variables.

Findings also show that there is an inverse but insignificant relationship between exchange rate and manufacturing output in Nigeria. In other words, an increase in exchange rate results in a less than proportionate decrease in manufacturing output in Nigeria. This also means that exchange rate as an instrument of monetary policy does not exert any significant influence on manufacturing sector output. Hence, the manipulation of exchange rate by the monetary authority reduces the manufacturing productivity insignificantly.

5. SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

Summary of findings.

This research study was carried out to examine the impact of monetary policy on the output of the manufacturing sector in Nigeria. The Ordinary Least Square (OLS) model was adopted to examine the relationship between money supply, treasury bill rate and monetary policy rate, exchange rate and manufacturing output in Nigeria. Consequently, the following findings were made:

Money supply has a positive and significant relationship with the output of the agricultural sector in Nigeria;

treasury bills rate had a positive and significant relationship with agricultural output in Nigeria;

monetary policy rate had an inverse and significant relationship with the agricultural output in Nigeria;

Exchange rate had an inverse and insignificant relationship with the output of the manufacturing sector in Nigeria.

Conclusion

The study examined the impact of monetary policy on the performance of manufacturing sector in Nigeria. While treasury bills rate and money supply exert positive influence on manufacturing output, monetary policy rate and exchange rate exerts an inverse relationship on the output of the manufacturing sector. Based on these findings, we therefore conclude that monetary policy impact significant on manufacturing performance in Nigeria.

Recommendations.

Based on the analyses and findings of this study, the study recommends efforts should be made by monetary authorities to increase manufacturing productivity through the provision of necessary infrastructure to manufacturers, investment in research and other facilities, provision incentives such as low interest rate credits, trainings, and reduction of monetary policy rate with the view to enhance manufacturing output in Nigeria

REFERENCES

- Adebayo, R. I. (2010). Zakat and poverty alleviation: A lesson for the fiscal policy makers in Nigeria. *Journal of Islamic Economics, Banking and Finance*, 7(4): 26-41.
- Adejugbe, E. (2002). Tax incentives for business investment: A primer for policy makers in developing countries. *World Development*, 30 (9): 1497–1516.
- Afolabi, L. (1998). *Monetary economics* (1st revised ed.). Lagos: Perry Barr Ltd,
- Ahuja, H. L. (2011). *Macroeconomics: Theory and policy*. New Delhi: S. Chand & Company Ltd.
- Ajayi, S.I. (1974). An Econometric Case Study of the Relative Importance of Monetary and Fiscal Policy in Nigeria. *The Bangladesh Economic Review*, 2(2): 559-576.
- Ajisafe, R.A and Folorunsho, B.A (2002). The relative effectiveness of fiscal and monetary policy in macroeconomic management in Nigeria. *The African Economic and Business Review*, 3(1). Ezeoha, A and Uche, C (2010). Rethinking Monetary and Fiscal Policies in Nigeria.
- Ajudua, E. I., Davis, O. J. P. and Osmond, N. O. (2015). A review of monetary policy and the Nigerian agricultural sector performance. *International Journal of Academic Research in Progressive Education and Development*, 4(3), 70-86.
- Akpapan, E. B. (1994). *How to save the naira in Nigeria, macroeconomics action*. Abak: Belpot Nig. Co.
- Andersen, M. and Jordan, S. (2008). The association between government expenditure and manufacturing sector the granger causality test of the U. S. data, 1974-2002. *Finance, Manage*, 20(4), 439-452.
- Andy, C. K. (2004). Government expenditure and economic growth in Nigeria 1970-2008: A disaggregated analysis. *Business and Economic Journal*, 4(3), 330.
- Anyanwu J. C. (1993). *Monetary economics: Theory policy and institution*. Onitsha: Hybrid Publishers Limited

- Anyanwu, C. M. (2004). Productivity in the Nigerian manufacturing industry. *Central Bank of Nigeria, Research Department Publication*. 450
- Anyanwu, J.C. (1993). *Monetary economic theory, policy and institution*. Onitsha: Hybrid publisher limited,
- Balten, U. S. and Hafer, Z. (1983). Government expenditure and growth implications in less developed countries: An empirical study for 1960-1980. *Econ. Dev. Cult. Change*. 35, 36-75.
- Chowdhury, A.R. (1986). Monetary and fiscal impacts on economic activities in Bangladesh A Note. *The Bangladesh Development Studies*.14 (2): 101-106.
- Dewald B. and Marcchon (1978). Public expenditure and economic growth: A disaggregated analysis for developing countries. *Journal Public Finance*, 2 (1), 12-18.
- Elliot, O. J. (2006). *Government economic policy and nigerian capital market behaviour: A causalty analysis*. J. Dev. Alternatives Area Stud., San Antonio, USA.
- Eze, O. R., and ogiji, F. O. (2013). Impact of fiscal policy on the manufacturing sector output in Nigeria: an error correction analysis. *International Journal of Business And Management Review (IJBMR)*,1(3), 35-55.
- Ezeoha, A and Uche, C (2010). Rethinking Monetary and Fiscal Policies in Nigeria.
- Folawewo, A.O. and Osinubi, T.S. (2006). Monetary Policy and Macro-Economic Stability in Nigeria. A Rational Expectation Approach: *Journal of Social Science*, 12 (2), 93-100.
- Gbosi, A. N. (2005). *Money monetary policy and the economy*. Uyo: Abigab Associates Ltd.
- Ishola, C. (2008). Government expenditure and sectorial performance: Evidence from India. *The ICFAI University Journal of Public Finance*, 6(3), 60-69.
- Iyoha, M. A. and Oriakhi, D. (2002). Explaining African economic growth performance: The case of Nigeria. *A Revised Interim Report on Nigerian Case Study prepared for the African Economic Research Consortium Research*.
- Jhingan, M.L. (1997). *Macro-economic theory*. Delhi: Vrinda Publication (P) Ltd.

- Loto, M. A. (2012). Global economic downturn and the manufacturing sector performance in Nigeria. *Nigerian Journal of Management and Administration*, 5(7): 34-56.
- Mengesha and Holmes, M .J. (2013). Monetary policy and its transmission Mechanisms in Eritrea. *Journal of Policy Modeling*, 35, 766-780
- Nnanna, O. J. (2001). Financial Small-Scale Business under the New CBN. Directive and its likely Impact on Industrial Growth, in *CBN Bullion* ,25 (3), 33-40.
- Nnanna, O. J. (2001). Financial Small-Scale Business under the New CBN. Directive and its likely Impact on Industrial Growth, in *CBN Bullion* ,25 (3), 33-40.
- Nwaru N. M. (2014). *Lesson notes on monetary economics*. Owerri: Kricel Publishers
- Nzotta, S. M. & Okereke, E. J. (2009). Financial deepening and economic development of Nigeria: An empirical investigation. *African Journal of Accounting, Economics, Finance and Banking*, 5(5), 52-66.
- Ogwuma (1995). Revitalizing the Manufacturing industry in Nigeria. Bullion publication of the Central Bank of Nigeria, April/June.
- Okafor, U. O. (2012). Analysis of the impact of fiscal policy measures on capital formation
- Oke, B. A. (1995). The conduct of monetary policy by the Central Bank of Nigeria, 1959-1995. *Central Bank of Nigeria Economic and Financial Review*, 33(4), 289-294.
- Okonkwo, O. N., Egbulonu, K. G., and Emerenini, F. M. (2015). Monetary policy and the manufacturing sector in Nigeria. *SSRG International Journal of Economics and Management Studies (SSRG-IJEMS)* 2 (1).
- Oktaviani, G. O. (2010). Government expenditure and economic growth in Nigeria. *J. Econ. Manage*, 2(1), 1
- Olaloye, A. O. and Ikhida, O. (1995). *Public finance in theory and practice*. New York: McGraw Hill.
- Olanipekun B.O and Akeju F.K.(2013). Money supply, inflation and capital accumulation in Nigeria. *Journal of Economics and Sustainable Development* , 4(4).

- Olorunfemi, S. and Dotun, F.(2008). Stationarity analysis of the impact of monetary policy on economic performance in Nigeria. *Pakistan Journal of Social Sciences* 5(6), 562-566.
- Onyeiwu, C. (2012). Monetary policy and economic growth of Nigeria. *Journal of Economics and Sustainable Development*, 3 (7), 62-70.
- Saygin, S. and Evren, E. C. (2010). Understanding sectoral growth cycles and the impact of monetary policy in the Turkish manufacturing industry. *Central Bank of the Republic of Turkey, Working papers No 10/13*.
- Shaw, G. K. (1977). *An introduction to the theory of macroeconomic policy*. Oxford: Martin Robertson, Third edition
- Shebeb, B. (2002). Productivity growth and capacity utilization in the Australian Gold Mining Industry: A Short-Run Cost Analysis”, *Economic Issues*, 7(2).
- Slavin, S. (1991). *Introduction to economics*. IRWIN,
- Soderbom, N. H. and Teal, J. U. (2002). Public policy and the economics of development, *Alfred Marshall Lecture, Libson European Economic Association*.
- Soludo, C. and Adenikinju, U. (1996). Causality between income, public expenditure and manufacturing performance in Nigeria. *Public Finance/Finances Publishers*, 31(3), 393-413.
- Umole, J. A. (1986). *Monetary and banking systems in Nigeia*, Adi Publishers.
- Vizek, M. (2006). Econometric analysis of monetary transmission channels in Croatia. *Privrednakretanjaiekonomskapolitika*, 109(16): 28-61.