EMPIRICAL INVESTIGATION OF THE IMPACT OF MONETARY POLICY ON MANUFACTURING SECTOR PERFORMANCE IN NIGERIA (1986 – 2012)

By

IMOUGHELE, Lawrence Ehikioya.

Main Library, Ambrose Alli University,

Ekpoma, Nigeria.

Tel: 08096952572

Email: **ehis.lawrence@yahoo.com**

&

ISMAILA, Mohammed

Department ofEconomic,

Ambrose Alli University,

Ekpoma, Nigeria.

Tel: 08033938190

Email: **ismaco@outlook.com**

Abstract

Monetary policy is one of the macroeconomic instruments with which monetary authority in a country employed in the management of their economy to attained fundamental objectives of price stability, maintenance of balance of payments equilibrium, and promotion of employment, output growth and sustainable development. These objectives are necessary for the attainment of internal and external balance of value of money and promotion of long run growth of the real economic sectors such as the manufacturing sector. It is against this background, that this study examines the impact of monetary policy on Nigeria's manufacturing sector performance for the period 1986-2012. Data were collected from the Statistical Bulletin and Annual Report and Statement of Accounts of the Central Bank of Nigeria as well as the Annual Abstracts of statistics (various issues) published by the National Bureau of Statistics (NBS). Unit root test, Granger Causality test, co integration and VAR model were some of the econometrics techniques used for data estimation. Augmented Dickey Fuller (ADF) test statistic revealed that the time series properties of the variables attained stationarity at level and first order. The variables were co integrated at most 2 with at least 3 co integrating equations. The individual variables: 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 suggest that real exchange rate and external reserves granger cause Nigeria's manufacturing output to each other unidirectional. The paper also found that the manufacturing sector contribute insignificantly to the Nigerian economy. Therefore, the study recommended among others 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. However, in order to maintain and exploit the current investment climate, the Central Bank of Nigeria should introduce more monetary instruments that are flexible enough to meet the supply and demands needs of the manufacturing sector.

Key words: Monetary policy, Fiscal Policy, Monetary Instruments, Monetary Authority and
           Manufacturing Sector Output.

INTRODUCTION

The manufacturing sector in Nigeria epitomises a major plank in government plan to reorganize the economy and diversify its productivity based. The manufacturing sector is one of the lending sectors in an emerging economy such as Nigeria. It serves as an avenue for increasing productivity in relation to import replacement and export expansion, creating foreign exchange earning capacity, rising employment and per capita income, which causes unique consumption patterns. As a result of these, the Nigerian government has embarked on various policies to address this issue. Some of the policies involved the use of monetary and fiscal policy. However, Anderson and Jodon (1968) postulated that monetary policy has grater and faster impact on economic activity thus suggesting that greater reliance be place on monetary measures than fiscal measure in the conduct of stabilisation policy. Uniamikogbo and Enoma (2001) asserted that monetary variable is more effective and dependable than fiscal variable in affecting changes in economic activities such as the manufacturing sector.

Monetary policy is one of the macroeconomic instruments with which monetary authority in a country employed in the management of their economy to attain desired objectives. It entails those actions initiated by the Central Bank which aim at influencing the cost and availability of credits (Nwankwo, 1991 and Wrightsman 1976).

For most economies, the fundamental objectives of monetary policy include price stability, maintenance of balance of payments equilibrium, and promotion of employment, output growth and sustainable development. These objectives are necessary for the attainment of internal and external balance of value of money and promotion of long run economic growth. Ajisafe and Folorunso (2002) noted that the objectives of monetary policy include increase in Gross Domestic Product growth rate, reduction in the rates of inflation and unemployment, improvement in the balance of payments, accumulation of financial savings and external reserves as well as stability in Naira exchange rate, the policy as well as instruments applied to attain these objectives, however, have until recently been far from adequate. Economic development is one of the major objectives of many countries in the world and economic growth is fundamental to economic development. However, Wanaset (2009)shows that high inflation (and its associated high variability) distorts the decisions of private agents concerning investment, saving, production and ultimately slower the economic performance.

Fasanya, Onakoyaand Agboluaje (2013)asserted that since the establishment of the Central Bank of Nigeria (CBN) in 1959 has continued to play the traditional role expected of a central bank, which is the regulation of the stock of money in such a way as to promote the social welfare. This role has facilitated the emergence of active money market where treasury bills, a financial instrument used for open market operations and raising debt for government has grown in volume and value becoming a prominent earning asset for investors and source of balancing liquidity in the market. This role is anchored on the use of monetary policy that is usually targeted towards the achievement of full-employment equilibrium, rapid economic growth, price stability, and external balance.

Nwosa, Agbeluyi and Saibu (2011) established that there have been various regimes of monetary policy in Nigeria some times, monetary policy is tight and at other times it is loose mostly used to stabilize prices and enhance the real sector performance such as the manufacturing sector. The economy has also witnessed times of expansion and contraction but evidently, the reported growth has not been a sustainable one as there is evidence of decline in manufacturing output which is the main engine of growth according to Kaldor's first law and the growing poverty among the populace. CBN (2008) reveals that the contribution of manufacturing sector to the Nigerian economy is insignificant as compared to the oil and the agricultural sector. With this, there is a growing concern on the decline of the output of the manufacturing sector in Nigeria in recent times, despite the fact that the monetary authority embarked on several strategies aimed at improving industrial production and capacity utilization of the sector.Therefore, this study intends to investigate the impact of monetary policy on Nigeria's manufacturing output and the policy concerned it engenders. Accordingly, this study is divided into six sections. The next section is theoretical perspective/literature review. Section three is concerned with the performance of the manufacturing sector. Section four is the methodology of the study while the results and discussion is the focus of section five. The last section is the Conclusion and Recommendations.

THEORETICAL PERSPECTIVE/LITERATURE REVIEW

The attainment of macroeconomic objectives, namely full employment, price stability, high and sustainable economic growth and external balance, from immemorial, has been a policy precedence of every economy, whether developed or developing. Adefeso and Bolaji (2010) revealed that the realization of these goals undoubtedly is not automatic but requires policy guidance. This policy

guidance represents the objective of economic policy. Sanni, Amusa and Adgbeyagi (2012) noted that fiscal and monetary policy instruments are the main instruments of achieving the macroeconomic objectives.

Friedman (1969) defines monetary policy as the action taken by the monetary authorities usually the Central Bank to affect monetary and other financial conditions through influence over the availability and cost of credit in pursuit of the broad objectives of sustainable growth of output, price stability and a healthy balance of payments position. The discretionary control of the money stock to him involves the expansion or contraction of money and influencing interest rate to make money cheaper or more expensive depending on the prevailing economic conditions and thrust of policy. He went further to classify the instruments of monetary control into two broad categories – direct and indirect instruments. Under a system of direct monetary control, the Central Bank uses some criteria to determine monetary, credit and interest rate targets that would achieve the goals of economic policy. In a regime of indirect monetary control, the monetary base (specifically bank reserves) is managed while the market is left to determine interest rates and credit allocation while Folawewo and Osinubi (2006) opined that monetary policy as a combination of measures designed to regulate the value, supply and cost of money in an economy, in consonance with the expected level of economic activity.For most economies, the objectives of monetary policy include price stability, maintenance of balance of payments equilibrium, promotion of employment and output growth, and sustainable development. These objectives are necessary for the attainment of internal and external balance, and the promotion of long-run economic growth.

There are two major control mechanisms of monetary policy used by Central Banks at any point in time and this control mechanism are usually referred to as tools/instruments of monetary policy and they have effects on the proximate targets. Monetary instruments can be direct or indirect. The direct instruments include aggregate credit ceilings, deposit ceiling, exchange control, restriction on the placement of public deposit, special deposits and stabilisation securities while indirect instruments include Open Market Operation (OMO), cash reserve requirement, liquidity ratio, minimum discount rate and selective credit policies. Monetary policy has vital roles in the short-run i.e. it is used for counter-cyclical output stabilisation, while in the long run, it is used to achieve the macro-economic goals of full employment, price stability, rapid economic growth and balance of payments equilibrium.

Macroeconomists have established the theoretical relationship between real output and monetary policy measures. According to the Keynesians school of thought, a discretionary change in money supply permanently influences real output by lowering the rate of interest and through the marginal efficiency of capital, stimulate investment and output growth (Athukorala, 1998). In contrast to Keynesian policy prescription, McKinnon (1973) and Shaw (1973) in there hypothesis of finance led growth advocated that market force induced higher interest rate, would enhance more investment by channelling saving to productive investment and stimulate real output growth such as the manufacturing sector.

Monetary policy is one of the prime economic management tools that governments use to shape economic performance. Measured against fiscal policy, monetary policy is said to be quicker at resolving economic shocks (Uniamikogbo and Enoma, 2001). Deliberating on the impact of monetary policy on private sector investment Kahn (2010), observes that monetary policy objectives are concerned with the management of multiple monetary targets among them price stability, promotion of growth, achieving full employment, smoothing the business cycle, preventing financial crises, stabilizing long-term interest rates and the real exchange rate. That these

objectives are all not consistent with each other is obvious, as the preference of monetary policy objectives is anchored upon the weights assigned by monetary authorities or country priorities. Experience shows that emphasis is usually placed on maintaining price stability or ensuring low inflation rates.

Abdurrahman (2010) empirically examined the role of monetary policy on economic activity in Sudan for the period which spanned between 1990 and 2004 and found that monetary policy had little impact on economic activity during the period under consideration. Mangani (2011) assessed the effects of monetary policy in Malawi by tracing the channels of its transmission mechanism, while recognising several factors that characterise the economy such as market imperfections, fiscal dominance and vulnerability to external shocks. Using vector autoregressive modelling, Granger-causality, block exogeneity and innovation accounting analyses to describe the dynamic interrelationships among monetary policy, financial variables and prices. The study established the lack of unequivocal evidence in support of a conventional channel of the monetary policy transmission mechanism, and found that the exchange rate was the most important variable in predicting prices.

Karimi and Khosravi (2010) investigated the impact of monetary and fiscal policies on economic growth in Iran using autoregressive distributed approach to co-integration between 1960 and 2006. The empirical results indicated existence of long-run relationship between economic growth, monetary policy and fiscal policy. The results further showed exchange rate and inflation as proxies for monetary policy have inverse impact on economic growth.

Olweny and Chiluwe (2012)explores the relationship between monetary policy and private sector investment in Kenya by tracing the effects of monetary policy through the transmission mechanism to explain how investment responded to changes in monetary. The study utilises quarterly macroeconomic data from 1996 to 2009 and the methodology draws upon unit roots and cointegration testing using a vector error correction model to explore the dynamic relationship of short run and long run effects of the variables due to an exogenous shock. The study showed that monetary policy variables of government domestic debt and Treasury bill rate are inversely related to private sector investment, while money supply and domestic savings have positive relationship with private sector investment consistent with the IS-LM model. Based on the empirical results the study suggests that tightening of monetary policy by 1 % has the effect of reducing investment by 2.63% while the opposite loose monetary policy tends to increase investment by 2.63%.

Alam, and Waheed (2006) examine channels of monetary transmission in Pakistan across seven sectors (agriculture, mining and quarrying, manufacturing, construction, wholesale and retail trade, finance and insurance, and ownership of dwellings) of the economy; the finding of the study revealed that the manufacturing, wholesale and retail trade, and finance and insurance sectors declined more in response to the interest rate shocks while the agriculture, mining and quarrying, construction, and ownership of dwellings were observed to be insensitive to interest rate changes.

Saygin and Evren (2010) evaluate sectoral growth cycles and the impact of monetary policy in the Turkish manufacturing industry. The main objective of the study is to investigate the response of output in Turkish manufacturing industries to monetary policy shocks. According to the VAR results, all manufacturing sectors respond to a tightening monetary policy shock with a reduction in absolute output. The total manufacturing output declines very quickly after the shock, reaching its minimum value within three quarters. The degree of this output reduction, however, is not the same for all manufacturing sectors. Some of the sectors are more severely affected whereas others are not deeply affected at all and concluded that a contractionary monetary policy shock has a limited effect on Turkish manufacturing industries.

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.Sayera (2012) investigates the relative importance of monetary and fiscal policies in altering real output growth in Bangladesh. Broad money supply (M2) and government consumption expenditure have been used as a proxy for monetary and fiscal policies while GDP growth at constant prices is used as proxy for real output growth. Various charts, graphs, correlation, granger causality test, co-integration and vector error correction approach were used to examine the validity of St. Louis equation in measuring relative effectiveness of monetary and fiscal policies in Bangladesh. The empirical results show that both the monetary and fiscal policies have significant and positive impact on real output growth in Bangladesh with varying degree. The outcomes of the study demonstrated that monetary policy has relatively stronger impact than that of fiscal policy in altering output growth in Bangladesh. This support the view of the proponent of St. Louis Model that affirmed monetary policy is relatively more effective than fiscal policy in stimulating real economic activity.

Rina, Tony and Lukytawati (2010) examined the impact of fiscal and monetary policy on industry and growth of economy in Indonesian using the computable general equilibrium (CGE) model. It was found that fiscal and monetary policy have a positive impact on Indonesian macroeconomic performance in terms of change in GDP, investment, consumption and capital rate of return.

In Nigeria contest, Sanusi (2002) noted that the role of the Central bank in regulating the liquidity of the economy which affects some macroeconomic variables such as the output, employment and prices cannot be over-emphasised. The Central Bank of Nigeria over the years has adopted different monetary policy management techniques to keep the economy in a stable state. Before the structural adjustment of 1986 which ushered in a period of financial deregulation, it adopted a system of direct control through the issue of credit guidelines and interest rate fixation but from the later part of the 1980s, it adopted indirect control system of management by resorting to open market operations, adjustment of legal reserves requirement and the rediscount rate. But in all these, the attainment of the desired objectives of monetary policy has been affected by domestic and external environments which include fiscal dominance, underdeveloped nature of the financial markets, external debt overhang and volatility in oil price. Onyeiwu (2012) studied the effect of Central Bank of Nigeria's (CBN) monetary policies on selected macroeconomic variables – gross domestic product, inflation rate and balance of payment between 1981 and 2008. Using the Ordinary Least Squares Method (OLS) to analyse data, the result shows that monetary policy proxy by money supply exerts a positive impact on GDP growth and Balance of Payment but negative impact on rate of inflation. He recommended that monetary policy should facilitate a favourable investment climate through appropriate interest rates, exchange rate and liquidity management mechanism.

Ajayi (1974) highlighted that in developing economyNigeria inclusive, the emphasis is always on fiscal policy rather than monetary policy. In his work, he estimated the variables of monetary and fiscal policies using ordinary least square (OLS) technique and found out that monetary influences are much larger and more predictable than fiscal influences. This result was confirmed with the use of beta coefficients that changes in monetary action were greater than that of fiscal action and concluded that greater reliance should be placed on monetary actions. Ajisafe and Folorunso (2002) examined the relative effectiveness of monetary and fiscal policy on economic activity in Nigeria for the period 1970-1998. Employing cointegration and error correction modelling techniques estimate. The study found that monetary rather than fiscal policy exerts a great impact on economic activity in Nigeria and concluded that the emphasis on fiscal action of the government has led to

greater distortion in the Nigerian economy and recommended that both monetary and fiscal policies should be complementary in the management of the Nigerian economy.

Furthermore, Aigbokhan (1985) employed the elasticity version of the St. Louis equation and found that monetary policy exert greater impact on economic growth in Nigeria. Sanni, Amusa and Agbeyangi (2011) empirically investigated the use of fiscal policy and monetary policy in controlling the economic activities in Nigeria for the period from 1960 to 2010. This was done with the aim of finding out which of the two policies is superior to another. Using Error Correction Mechanism (ECM) method of the analysis, the findings showed monetary policy instruments exert more influence on the economic activity and concluded that proper mix of the policies may enhance a better economic growth.

Ezeji and Michael (2013) investigated the impact of monetary and fiscal policies on Nigerian Economic Growth: 1990-2010. Employing econometric methodology of analysis of unit root test, co integration and VAR model, the study revealed that the time series properties of the variables attained stationarity at first order. The variables were co integrated at most 1 with at least 2 co integrating equations. The findings of the study confirm that fiscal policy measures exert greater effect than monetary policy measures on the level of economic development in Nigeria and concluded that monetary and fiscal policies measures are jointly statistically significant to level of economic activities in Nigeria. Ditimi, wosa andOlaiya (2011) appraised monetary policy development in Nigeria and also examined the effect of monetary policy on macroeconomic variables in Nigeria for the period 1986 to 2009. The study adopted a simplified Ordinary Least Squared technique and also conducted the unit root and co-integration tests. The study showed that monetary policy have witnessed the implementation of various policy initiatives and has therefore experienced sustained expansion over the years. The results also shows that monetary policy had a significant effect on exchange rate and money supply while monetary policy was observed to have an insignificant influence on price instability. They noted that the implication of this finding is that monetary policy has had a significant influence in maintaining price stability within the Nigeria economy. The study concluded that for monetary policy to achieve its other macroeconomic objective such as output performance; there is the need to reduce the excessive expenditure of the government and align fiscal policy along with monetary policy measure.

Adebiyi (2006) explored financial sector reforms, interest rate policy and the manufacturing sub-sector in Nigeria, using vector auto-regression and error correction mechanism (ECM) technique with quarterly time series spanning 1986:1 to 2002:4. Unit root and co-integration test were also performed. The study revealed that the real deposit rate and inflation rate are significant for the growth of the manufacturing sub-sector in Nigeria. In addition, the study revealed that the predominant sources of fluctuation in the index of manufacturing production are due largely to own shock and to a lesser extent, to real deposit rate. The study also showed that in the long run the index of manufacturing production is insensitive to inflation rate, commercial banks' credit to the manufacturing sector, interest rate spread and exchange rate.

Unaimikogbo and Enoma (2001) evaluate the impact of monetary and fiscal policies on manufacturing industry in Nigeria with a simulation equation model 1986 to 1997. Using Ordinary Least Square (OLS) estimation technique of data analysis, the study found that both policies contribute significantly to the growth of the manufacturing industry. They concluded that monetary variable is more effective and dependable than fiscal variable in affecting changes in economic activities.

Obamuyi, Edun and Kayode (2010) examine the effect of bank lending and economic growth on the manufacturing output in Nigeria. The study employed the unit root, cointegration and vector error correction model (VECM) on a time-series data from 1973 to 2009. The findings of the study show

that manufacturing capacity utilization and bank lending rates significantly affect manufacturing output in Nigeria. However, the relationship between manufacturing output and economic growth could not be established in the country. They, therefore, call for concerted effort by the government, manufacturers and the lending institutions to reviewing the lending and growth policies and provide appropriate macroeconomic environment, in order to encourage investment-friendly lending and borrowing by the financial institutions.Ekpeyong (1992) as reported in Simon-Oke andAwoyemi (2010) noted that the rate of interest, as well as the inflation rate prevailing in an economy can affect the level of output in industrial sector. He asserted that these two key monetary factors determine the amount of loan and advances that can be made available to investors and producers to improve their productivity and efficiency.

Ukoha (2000) examined the determinants of capacity utilization in the Nigerian manufacturing industry between 1970 and 1998. He found that the exchange rate, federal government capital expenditure on manufacturing and per capita real income has positive effects on manufacturing capacity utilization. However, inflation and loans and advances to manufacturing were found to have negative effect and concluded that improving capacity utilization in the Nigerian manufacturing sector will enhance growth of the sector which will subsequently result in industrial development in Nigeria.

Odior (2013) empirically investigates the impact of macroeconomic factors on manufacturing productivity in Nigeria over the period 1975 to 2011. The analysis starts with examining stochastic characteristics of each time series by testing their stationarity using Augmented Dickey Fuller (ADF) test and estimate error correction mechanism model. The findings were reinforced by the presence of a long-term equilibrium relationship, as evidenced by the cointegrating equation of the VECM. The study showed that credit to the manufacturing sector in the form of loans and advances and foreign direct investment have the capacity to sharply increase the level of manufacturing productivity in Nigeria, while broad money supply has less impact and concluded that expansionary policies are vital for the growth of the manufacturing sector in Nigeria which in turn would lead to economic growth.

Nwosa and Saibu (2012) investigated the transmission channels of monetary policy impulses on sectoral output growth in Nigeria for the period 1986 to 2009. Secondary quarterly data were used for the study while granger causality and Vector Auto-regressive Method of analysis was utilized. The results showed that interest rate channel was most effective in transmitting monetary policy to Agriculture and Manufacturing sectors while exchange rate channel was most effective for transmitting monetary policy to Building/Construction, Mining, Service and Wholesale/Retail sectors. The study concluded that interest rate and exchange rate policies were the most effective monetary policy measures in stimulating sectoral output growth in Nigeria.

Nneka (2013) examined the performance of monetary policy on manufacturing sector in Nigeria for time frame 1986 to 2009. She noted that the main focus of monetary policy in relation to the manufacturing sector has always been the stimulation of output, employment and the promotion of domestic and external stability, while that of fiscal policy has been the generation of revenue for the government and the protection of domestic infant industries against unfair competition from import and dumping. Vector Error Correction (VEC) and Ordinary Least Square (OLS) estimation were used to study the models for significance, magnitude, direction and relationship. The study revealed that money supply positively affect manufacturing output index while company lending rate, Company income tax rate, Inflation rate, Exchange rate has a negative impact to the performance of the manufacturing sector over the years. They recommended that expansionary policies are vital for the growth of the manufacturing sector in Nigeria which in turn would lead to economic growth.

Sanusi (2002) opines that the ability of the CBN to pursue an effective monetary policy in a globalised and rapidly integrated financial market environment depends on several factors. These include: instituting appropriate legal framework, institutional structure and conducive political environment, which allows the Bank to operate with reference to exercising its instrument and operational autonomy in decision- making; the degree of coordination between monetary and fiscal policies to ensure consistency and complementarity; the overall macroeconomic environment, including the stage of development, depth and stability of the financial markets as well as the efficiency of the payments and settlement systems; the level and adequacy of information and communication facilities; and the availability of consistent, adequate, reliable, high quality and timely information to the Bank. He stressed that seeking a proper role for monetary policy in promoting strong and sustainable growth in a stable macroeconomic environment in Nigeria is an on-going challenge for the Central Bank. However, Familoni (1989) argued that before monetary policy can produce the desired results as maintained by the classical economists, highly integrated and monetized economy and regular information network system are indispensable. He, however, lamented that the Nigerian economy lacks the fundamental flexibilities (in respect to interest rate, treasury certificates, etc) which could have aided a much more effective use of monetary policy. He therefore denounced the classical preference of monetary policy over fiscal policy on the basis of their empirical evidence and predicted that it would only work for a developed economy and suggested, where necessary, the mixture of both policies for better performance in a developing economy like Nigeria.

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 EconomicEmpowerment 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. As can been seen in appendix 1, 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 as shown in appendix 1. The average growth rate of the sector under the study period was 12.17%. This implies that the Nigeria manufacturing sector has not improved in terms of its growth rate. Obamuyi, Edun and Kayode (2010) asserted that the growth rate of manufacturing sector in Nigeria has been constrained due to inadequate funding, either due to the inefficient capital market or the culture of the Nigerian banks to finance mainly short term investment. The long term funds from the banking sector are not easily accessible as a result of the stringent and restrictive credit guidelines to the sector. The manufacturing sector average capacity utilisation recorded fluctuational value as shown in appendix 1. As at 1986 the average value of capacity utilisation was 38.8% and increased to 40.3% in 1990. It further decreased to 29.29% and 36.1% in 1995 and 2000 respectively. The value of the average capacity utilisation in 2005, 2010 and 2012 was 54.8%, 56.44% and 55.82% respectively. The dismal performance of the sector in Nigeria is mainly due to massive importation of finished goods and inadequate financial support for the manufacturing sector, which ultimately has contributed to the reduction in capacity utilization of the manufacturing sector in the country. The graphical illustration is presented in appendix 2.

METHODOLOGY OF THE STUDY

Sources of Data

The annual time series data from 1986 to 2010 used in this study were obtained from Statistical Bulletin and Annual Report and Statement of Accounts of the Central Bank of Nigeria as well as the Annual Abstracts of statistics (various issues) published by the National Bureau of Statistics (NBS).

Method of Data Analysis:

The method of data analysis employed in this study is both descriptive and analytical. The descriptive tools include the use of graphs, tables and percentages. The analytical tool used is the Ordinary Least Square (OLS) regression technique. These econometric techniques include: unit root test, co-integration test and vector autoregressive mechanism.

Model Specification

The objectives of this study are basically to examine the effectiveness of monetary policy on Nigeria's manufacturing sector output. In order to realize the aims of this study an econometric investigative procedure is adopted to understand the behaviour of the time series data before suitable model can be developed. The operationalization and analytical procedure is based on the assumption of Keynesian IS – LM function. The following relationship model is derived:

MGDP = ƒ (EXRE, INT, MS2, EXR, INF) -- *(1)*
The log and operational form of the model is stated thus:
LMGDP = β₀ + β₁LEXRE + β₂LINT + β₃LMS2 + β₄LEXR + β₅LINF + Uₜ----------------- *(2)*
Where: *MGDP*= manufacturing gross domestic product, *EXRE*= external reserves, *INT* = interest rate, *MS₂*= Broad money supply, *EXR*= exchange rate, *INF* = inflation rate and Ut= error term.
The apriori expectation:

$\beta_1, \beta_3 > 0; \beta_2, \beta_4, \beta_5 < 0$

Estimation Procedure

This paper adopts technique to test for presence of stationarity at level order using time series properties of the variables subjected to Augmented Dickey Fuller (ADF) test statistic and performed co integration to examine long run convergences of the variable in the equations. VAR model for multivariate analysis of the identified variables (LINT, LINF, LMS_2, LEXRE and LEXR) on LMGDP is used to determine their relationship and also test the significance level of each variable on MGDP. The Causal effect and significant relationship among (LINT, LINF, LMS_2, LEXRE and LEXR) LMGDP is determined by the Granger Causality Test procedure (Johansen 1995; Granger and Jin-Lung Lin 1994).

RESULTS AND DISCUSSION

The results of econometrics analysis and discussions are presented below:

Statistical Properties of Data Series

To examine the existence of stochastic non stationary in the series, the study establishes the order of integration of individual time series through the unit root test. We subjected all the variables in the model to stationary test. Granger and Newbold (1974), Granger (1986), have demonstrated that if time series variables are non -stationary, all regression results with these time series will differ from the conventional theory of regression with stationary series. That is the regression coefficients with non-stationary variables will be spurious and misleading.

To get over this problem, we test for stationarity of the time series. Augmented Dickey Fuller (ADF) test will be used to investigate whether the variables used in the study have unit root or not. The results of the unit root test are presented in table 4.1 below.

Table 1: Augmented Dickey Fuller (ADF) Test for stationary.

Variable	ADF Calculated value at level	ADF calculated value at 1st Difference	McKinnon 5% Critical value	Order of integration
LEXR	-0.4316	-4.8226*	-2.9850	1 (1)
LEXRE	-1.2435	-7.6119*	-2.9850	1(1)
LINF	-2.9693	-3.8650*	-2.9850	1(1)
LINT	-4.8817*	-	-2.9798	1(0)
LM2	-0.9498	-8.9333*	-2.9850	1(1)
LMGDP	-3.1360*	-	-2.9798	1(0)

Sources: Authors Computation

*significant at 5

In the table above, Time series of the variables i.e LEXR, LEXRE, LINF and LMS_2 were non-stationary in levels I (0) since the ADF value of each variable at level is less than the McKinnon 5% critical values but become stationary after first differencing, or integrated of order one, I(1). Since the ADF value of each variable at first difference is greater than the McKinnon 5% critical values

while LINT and LMGDP are stationary at level Since the ADF value of each variable at level is greater than the McKinnon 5% critical values.

Long run Effect of Monetary Policy on Nigeria Manufacturing Sector

Table 2: Johansen Co-Integration Test

Date: 12/27/13   Time: 23:50
Sample: 1986 2012
Included observations: 26
Series: LMGDP LINT LINF LMS2 LEXR LEXRE

Lags interval: No lags

Eigenvalue	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value	Hypothesized No. of CE(s)
0.760845	91.26318	68.52	76.07	None **
0.595598	54.06646	47.21	54.46	At most 1 *
0.513575	30.52745	29.68	35.65	At most 2*
0.292683	11.78996	15.41	20.04	At most 3
0.101640	2.786796	3.76	6.65	At most 4

*(**) denotes rejection of the hypothesis at 5 %(1%) significance level

L.R. test indicates 3 cointegrating equation(s) at 5% significance level

Table 2 shows that the trace statistic and likelihood function values are greater than critical value at 1% and 5% suggesting that there is co-integration at most 2 with an implication of at least 3 co integrating equations among the variables which were rejected in favour of the alternative hypotheses at 1 and 5 per cent critical level as their values exceed the critical values at the 0.01 and 0.05 which implies that a long-run relationship existing among the variables (LINT, LINF, LMS2, LEXR, LEXRE and LMGDP).The Johansen co integration shows that there is no presence of full rank given that subtraction of the number of co integrating equations and the variables under study is not equal to zero, therefore implying that the model is good and is in functional form. There is no presence of multi co linearity as the value of the log likelihood is positive. Based on this vector autoregressive (VAR) is performed to estimate the parameters of the model (Johansen 1995; Granger and Jin-Lung Lin, 1994).

VAR Result

Table 3: VAR Model

Date: 12/27/13 Time: 23:54
Sample(adjusted): 1988 2012
Included observations: 25after
adjusting endpoints
Standard errors & t-statistics in parentheses

	MGDP
LMGDP(-1)	1.005687
	(0.24005)
	(4.18943)
LMGDP(-2)	-0.252895
	(0.18883)
	(-1.33928)
C	1.358056
	(0.49751)
	(2.72968)
LEXR	-0.840830
	(0.27247)
	(-3.08591)
LEXRE	-0.070312
	(0.03386)
	(-2.07669)
LINF	0.173740
	(0.10112)
	(1.71816)
LINT	-0.203071
	(0.14061)
	(-1.44421)
LMS2	0.024918
	(0.04366)
	(0.57078)
R-squared	0.886628
Adj. R-squared	0.851122
Sum sq. resids	0.027423
S.E. equation	0.040164
F-statistic	179.1845
Log likelihood	49.71709
Akaike AIC	-3.337367
Schwarz SC	-2.947327
Mean dependent	5.517323
S.D. dependent	0.292315

Sources: Authors computation.

LMGDP = 1.006LMGDP$_{t-1}$ -0.253LGDP$_{t-2}$ +1.358 –0841LEXR-0.070LEXRE + 0.174LINF - 0.2031LINT+0.025LMS$_2$-- (3)

The vector autoregressive model shows that LMGDP is statistically significant in the current year (-1) as the probability of the t-ratios (4.189) is greater than critical value of 5% and 10% level of significance while the previous year (-2) is insignificant as the probability of the t-ratios (1.339) is less than the critical value of 5% and 10% level of significance.

The R-square is 0.887 showing that the explanatory variables explained 89% of changes in the dependent variable. It remains strong after adjusting for degree of freedom to 85% (Adjusted R-square). This reveals high goodness of fit meaning that the variable chosen are strong in explaining the growth of manufacturing output (LMGDP) in the Nigerian economy.

In terms of the signs and magnitude of the coefficients which signify the effect of monetary policy variables on manufacturing output, it was observed from the model that interest rate (LINT), money supply (LMS2) and exchange rate (LEXR) had their expected signs while inflation rate (LINF) and external reserves (LEXER) had signs contrary to the apriori expectation. In addition to the above, the coefficient of individual variables is examined to determine the nature of the relationship between monetary policy and the growth of Nigeria manufacturing sector output. The co-efficient of inflation was observed to be positive and significant while the coefficient of external reserves and exchange rate was observed to be negative and significant. From the table, a unit change in previous LMGDP brings about 1.005 growths in manufacturing sector in present LMGDP at 5% and 10% significance level. Also, a unit change in inflation brings about 0.174units increase in manufacturing sector output level at 10% significance level which showed a positive impact on the growth of the sector but does not conform to the theoretical expectation. A unit change in exchange rate brings about 0.841units decrease in the growth of the manufacturing sector output and it is significant at 5% and 10% level while a unit change in external reserve brings about 0.07decrease in manufacturing sector performance at a significant level of 5% and 10% level. Contrary to the above, the coefficients of both money supply and interest rate were observed to be insignificant at 10% significance level such that a unit increase in money supply will bring about 0.025 unit increase in the Nigeria manufacturing sector output while a unit increase in interest rate will leads to 0.203 decrease in the sector output all things being equal. The significant relationship between inflation rate, exchange rate and external reserve reflect the potency of the variables as an important conduct in transmitting monetary policy impulses to the manufacturing sector in the Nigerian economy. In contrast, the insignificant relationship between money supply and interest in Nigeria, suggest that monetary policy as a policy option had been inactive in influencing these macroeconomic variables to induce the performance of the manufacturing sector. This could be as a result of dominance of fiscal measures especially government expenditures in stimulating such macroeconomic variables. More so, the insignificant relationship between these variables could be explained by the underdeveloped nature of the financial institutions in transmitting monetary policy to the ultimate variables in the economy which is usually to stimulate the growth of the real sector of the economy such as the manufacturing sector. The insignificant effect of broad money supply is a consequence of the autonomy that is granted monetary authority in the management of price instability in Nigeria and also the various policy initiatives that have been adopted (such as financial regulation, interest rate and exchange rate deregulation and inflation targeting) to mitigate price instability in Nigeria. This also point to the fact of the stringent policies and information asymmetry in accessing credit facility in the manufacturing sector.

Causality Tests

Table 4: Granger Causality Test

Pairwise Granger Causality Tests
Date: 12/28/13 Time: 03:06
Sample: 1986 2012
Lags: 1

Null Hypothesis:	Obs	F-Statistic	Probability
LEXR does not Granger Cause LMGDP	26	0.20952	0.65144
LMGDP does not Granger Cause LEXR		4.72582	0.04026
LEXRE does not Granger Cause LMGDP	26	4.4E-05	0.99476
LMGDP does not Granger Cause EXRE		9.93504	0.00446
LINF does not Granger Cause LMGDP	26	1.40210	0.24847
LMGDP does not Granger Cause LINF		0.34722	0.56144
LINT does not Granger Cause LMGDP	26	0.00082	0.97739
LMGDP does not Granger Cause LINT		3.50174	0.07408
LMS does not Granger Cause LMGDP	26	0.47247	0.49873
LMGDP does not Granger Cause LMS2		3.90109	0.06038
LEXRE does not Granger Cause LEXR	26	3.88845	0.06076
EXR does not Granger Cause EXRE		1.78725	0.19434
LINF does not Granger Cause LEXR	26	3.14857	0.08923
LEXR does not Granger Cause LINF		0.19111	0.66607
LINT does not Granger Cause LEXR	26	0.03231	0.85892
LEXR does not Granger Cause LINT		3.41034	0.07770
LMS2 does not Granger Cause LEXR	26	3.41316	0.07758
LEXR does not Granger Cause LMS2		8.51244	0.00775
LINF does not Granger Cause LEXRE	26	17.8784	0.00032
LEXRE does not Granger Cause LINF		0.50791	0.48321
LINT does not Granger Cause LEXRE	26	1.08220	0.30902
LEXRE does not Granger Cause LINT		4.31207	0.04920
LMS does not Granger Cause LEXRE	26	7.52837	0.01157
LEXRE does not Granger Cause LMS		7.21936	0.01316
LINT does not Granger Cause LINF	26	0.21850	0.64459
LINF does not Granger Cause LINT		5.56544	0.02719
LMS does not Granger Cause LINF	26	0.01961	0.88986
LINF does not Granger Cause LMS		10.1653	0.00409
LMS does not Granger Cause LINT	26	4.56878	0.04342
LINT does not Granger Cause LMS		0.56206	0.46103

Source: Authors computation

Based on the granger causality test result among the macroeconomic variables understudy in relation to manufacturing output in Nigeria it was very obvious that only LEXR and LEXRE granger cause LMGDP in a unidirectional form indicating short run effect. The analysis also revealed thatLMS2 Granger cause LEXR and LEXRE bi directionally while LINF Granger causesLINT, LEXRE and LMS unidirectional. Furthermore LEXR and LMS Granger cause LINT independently.

CONCLUSION AND RECOMMENDATIONS

The premise of this study has been the effectiveness of monetary policy and manufacturing sector output performance in Nigeria. The work covers the period of 1986–2012, using Granger Causality test,the Vector Autoregressive Model and Johansen co-integration test procedure. The results show that growth in Nigeria's manufacturing sector is highly responsive to exchange rate, external reserve and inflation. A long run relationship was also found to exist between manufacturing sector output and monetary policy variables included in the study, indicating that the model has a self-adjusting mechanism for correcting any deviation of the variables from equilibrium. Furthermore, the pair-wise Granger Causality results suggest that real exchange rate and external reserve granger cause Nigeria's manufacturing output to each other unidirectional. The implications of this reflect the potency of the variables as an important conduct in transmitting monetary policy impulses to the manufacturing sector in the Nigerian economy. The paper also found that the manufacturing sector contribute insignificantly to the Nigerian economy. It therefore suggested that policy makers should not totally rely on this policy instrument to induced manufacturing sector performance, but should use it to complement other macro-economic policies. More so, policies should be put in place to increase domestic manufacturing production of export commodities to enhance stability in Nigeria external reserves and contribute positively to the sector output and economic growth.
Furthermore, Monetary authority should create and implement monetary policies that favoured efficient providerofmore 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. However, in order to maintain and exploit the current investment climate, the Central Bank of Nigeria should introduce more monetary instruments that are flexible enough to meet the demands of the manufacturing sector. This will allow for the existence of different measures that will deal with different situations. The Central Bank should make more stringent punishment for non-compliance to the monetary policies by financial institutions mostly especially in the provision of credit facility to the manufacturing sector.

REFERENCES
Abdulrahman, B.M.A. (2010). The Role of Monetary Policy on Economic Activity in Sudan: An Empirical Investigation, 1990-2004. *Journal of Human Science*, Issue 44.

Adebiyi, M.A. (2006). Financial sector reforms and the transmission mechanism of monetary policy in Nigeria: A vector auto-regression mechanism. *China Finance Research Network (CFRN).*

Adefeso, H.andMobolaji, H. (2010) 'The fiscal- monetary policy and economic growth in Nigeria: further empirical evidence', *Pakistan Journal of Social Sciences,* 7(2): 137-142

Aigbokhan, B.E. (1985). The Relative Impact of Monetary and Fiscal Action on Economic Activity: Evidences from Developed and Less Developed Country. Economic and Management Working Paper: No2, Department of Economic, Paiseley College, Paisley, Scotland.

Ajayi, S.I., (1974). An Economic Case Study of the Relative Importance of Monetary and Fiscal Policy in Nigeria.*Bangladesh Economic Review,* 2(2): 559-576.

Ajisafe, R.A. and B. Folorunso (2001).The Relative Effectiveness of Fiscal and Monetary Policy in Macroeconomic Management in Nigeria.*The Nigeria Economic and Financial Review,* 3(2): 147-160

Ajisafe, R.A. and B. Folorunso (2002).The Relative Effectiveness of Fiscal and Monetary Policy in Macroeconomic Management In Nigeria. *The African Economic and Business Review,* 3(1): 23-40.

Alam, T., and Waheed, M. (2006).The Monetary Transmission in Pakistan. A Sectoral Analysis: Pakistan Institute of Development Economics. *Munich Personal RePEc Archive* (MPRA) No. 2719.

Anderson, L.C. and Jordan, J. L. (1968). Monetary and Fiscal Actions: A Test of Their Relative Importance in Economic Stabilization. Federal Reserve Bank of St. Louis Review, 80: 29-45.

Ditimi, A. wosa P.I and Olaiya, S.A (2011).An Appraisal of Monetary Policy and Its Effect on Macro Economic Stabilization in Nigeria.*Journal of Emerging Trends in Economics and Management Sciences (JETEMS), 2* (3): 232-237

Ezeji, C.E and Michael, N. (2013).The Impact of Monetary and Fiscal Policies on Nigerian Economic Growth: 1990-2010. *European Journal of Business and Management*, 5 (2):13-26.

Familoni, K.A, (1989). *Development of macroeconomic policy.*Lagos, Nigeria, Concept Publications.

Fasanya, I.O.,Onakoya, A.B and Agboluaje, M.A. (2013).Does Monetary Policy Influence Economic Growth in Nigeria? *Asian Economic and Financial Review*, 3(5):635-646

Folawewo, A and Osinubi, T. (2006). Monetary policy and macroeconomic instability in Nigeria: A Rational Expectation Approach. *Journal of Social Science,* 12(2): 93-100.

Friedman, M. (1969).The Role of Monetary Policy.The Optimum Quantity of Money, ed. Milton Friedman. Chicago: Aldine.

Granger, C. and Newbold, P (1974).Spurious regressions in econometrics.*Journal of Econometric*s, 2: 111-120.

Granger, C.W. and Jin-Lung Lin (1994).Causality in the Long Run.*Econometric Theory*, 11:530-536

Johansen, S. (1995) *Likelihood-based inference in cointegrated vector autoregressive models,* Oxford: Oxford University Press.

Khan, S.M. (2010).The Design and Effects of Monetary Policy in Sub-Saharan African Countries, *Working Paper*, Series Peterson Institute for International Economics.

Loto, M. A. (2012). Global Economic Downturn and the Manufacturing Sector Performance in the Nigerian Economy (A Quarterly Empirical Analysis) *Journal of Emerging Trends in Economics and Management Sciences (JETEMS),* 3(1):38-45

Mangani, R. (2011).The Effects of Monetary Policy on Prices in Malawi.University of Malawi, Proceedings of Chancellor College, Department of Economics, Zambia, Malawi.

McKinnon, R. (1973). Money and Capital in Economic Development. Washington DC: Brooklings institutions.

Modigliani, F. (1963) 'The monetary mechanism and its interaction with real phenomena', *Review of Economics and Statistics*, Supplement, February, 79-107

Nneka, C.A. (2012). Investigating the Performance of Monetary Policy on Manufacturing Sector in Nigeria: 1980-2009.*Arabian Journal of Business and Management Review (OMAN Chapter),* 2(1):12-25.
Nwankwo, G. O.(1991). The Money and Capital Market in Nigeria.

Nwosa, P. I., Agbeluyi, M. A. and Saibu, M. O. (2011), "Causal Relationships between Financial Development, Foreign Direct Investment and Economic Growth: The Case of Nigeria. *International Journal of Business Administration* (IJBA), 2 (4): 93-102

Nwosa, P.I,and Saibu (2012) The Monetary Transmission Mechanism in Nigeria:A Sectoral Output Analysis. *International Journal of Economics and Finance,* (4)1: 204- 213

Obamuyi, T.M, Edun, A.T and Kayode, O.F. (2010).Bank lending, Economic Growth and The Performance of the Manufacturing Sector In Nigeria.*European Scientific Journal*, 8 (3): 19-36.

Odior, E.S. (2013). Macroeconomic Variables and the Productivity of the Manufacturing Sector in Nigeria: A Static Analysis Approach. *Journal of Emerging Issues inEconomics*, *Finance and Banking* (JEIEFB), 1(5): 362-380.

Ogwuma, P. A. (1995). *Revitalizing the Manufacturing Sector in Nigeria.* Enugu. Oxford University Press.

Olweny, T and Chiluwe, M. (2012).The Effect of Monetary Policy on Private Sector Investment in Kenya.*Journal of Applied Finance & Banking*, 2 (2): 239-287

Onyeiwu**,** C. (2012).Monetary Policy and Economic Growth of Nigeria**.***Journal of Economics and Sustainable Development,* 3 (7): 62-71

Rotimi, S.M , Adebayo, A.N. andAdisa, A.B. (2012). Potency of Monetary and Fiscal Policy Instruments on Economic Activities of Nigeria (1960-2011). *Journal of African Macroeconomic Review,*3(1): 161-177

Sanusi, J. (2002). Central Bank and the macroeconomic environment in Nigeria'.Being a Lecture delivered to participants of the senior executive course No. 24 of the national Institute for policy and strategic studies (NIPSS), Kuru on 19th august.

Sayera, Y. (2012). Relative Effectiveness of Monetary and Fiscal Policies on Output Growth in Bangladesh: A Co integration and Vector Error Correction Approach. Deputy General Manager of the Research Department of Bangladesh Bank.

Saygın, 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, E. (1973). Financial Deepening in Economic Development Oxford: *Oxford University Press.*

Simon-Oke, O.O.andAwoyemi, O. V. (2010).Manufacturing Capacity Utilization and Industrial Development in Nigeria: An Assessment (1976 – 2005). *African ResearchReviews*, 4 (2): 265-275

Ukoha, O. O. (2000). Determinants of Manufacturing Capacity Utilization in Nigeria, 1970 1998.*The Nigeria Journal of Economics and Social Studies,* 42 (2): 121-130.

Uniamikogbo, S.O and Enoma, A.I. (2001).The Impact of Monetary Policy on Manufacturing Sector in Nigeria.*The Nigeria Economic and Financial Review*, 3(2): 37-45

Vizek, M. (2006). Econometric Analysis of Monetary Transmission Channels in Croatia. *Privrednakretanjaiekonomskapolitika*, 109(16): 28-61.

Wrightsman, D.(1976). *An Introduction to Monetary Theory and Policy.*New York: The Free Press.

Appendix 1: The Performance of Nigeria Manufacturing Sector (1986-2012)

YEAR	Gross Domestic Product At current market price (#, M) 1	Manufacturing Output (#,M) 2	2 of 1 %	Growth rate Manufacturing Output (%)	Average Manufacturing Capacity utilisation (%)
1986	134603.3	47034.66	34.94		38.8
1987	193126.2	54425.14	28.18	15.71	40.4
1988	263294.5	81182.62	30.83	49.16	42.4
1989	382261.5	87217.95	22.82	7.434	43.8
1990	472648.8	107969.4	22.84	23.79	40.3
1991	545672.4	123647.9	22.66	14.52	42
1992	875342.5	144366.9	16.49	16.76	38.1
1993	1089680	165891.9	15.22	14.91	37.2
1994	1399703	219852.1	15.71	32.53	30.4
1995	2907358	295801.2	10.17	34.55	29.29
1996	4032300	350603	8.695	18.53	32.46
1997	4189250	382625	9.133	9.133	30.4
1998	3989450	395768	9.92	3.435	32.4
1999	4679212	426212	9.109	7.692	34.6
2000	6713575	468025.8	6.971	9.811	36.1

2001	6895198	535796.4	7.771	14.48	42.7
2002	7795758	507836.8	6.514	-5.22	54.9
2003	9913518	465811.7	4.699	-8.28	56.5
2004	11411067	349316.3	3.061	-25	55.7
2005	14610881	408367.5	2.795	16.9	54.8
2006	18564595	478524.1	2.578	17.18	53.3
2007	20657318	520883	2.522	8.852	53.38
2008	24296329	585573	2.41	12.42	53.84
2009	24794239	612308.9	2.47	4.566	58.26
2010	33984754	643070.2	1.892	5.024	56.44
2011	37409861	694814.2	1.857	8.046	56.38
2012	40544100	761467	1.878	9.593	55.82

Appendix 2: The Average Manufacturing Capacity Utilisation in Nigeria, 1986 – 2012.