

Macroeconomic Variables and Manufacturing Sector Output in Nigeria

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ABSTRACT

Management of macroeconomic variables has been noted as instrumental to a well performing manufacturing sector. This study thus examined the effect of macroeconomic variables on the manufacturing sector in Nigeria within a liberalised economic era of 1986 to 2018. The Autoregressive Distributive Lag model was employed for data analysis. The results revealed that macroeconomic variables has 93% significant short run policy effect but no significant long run effects on manufacturing sector output in Nigeria. The endogenous dynamics of manufacturing sector previous year outputs exerted a significance influence on the macroeconomic variables long run relationship effect on current year. The explanatory variables suggested that money supply (M2), interest rate (INTR) and credit to private sector (CPS) exerted positive effects on manufacturing sector output at short term trends. The study thus posits that macroeconomic variables have varying levels of effects on the manufacturing sectors of Nigerian economy. The monetary authority should employ the monetary policy stance in a pattern that increases money supply in order to boost investment in manufacturing sector which would eventual bring about improved output to Nigeria.

KEYWORDS: Money supply, manufacturing sector output, Nigeria, inflation, interest and exchange rate

INTRODUCTION

Manufacturing sector is widely viewed as a critical tool for accelerating economic growth and development. Manufacturing sector drives faster output and modernization in which the excess payoff spread to other sectors of the economy. Manufacturing sector involves industries making chemical, mechanical, physical material transformations, substances and components into consumer and industrial goods. According to Adebayo (2010), those industries that are involved in the manufacturing and processing of items and indulge or give free rein in either the creation of new commodities or in value addition are referred to as the manufacturing sector. The final products produced by the manufacturing sector can serve as finished goods for sale to customers or as intermediate goods used in the production process. Loto (2012) on his own side see manufacturing sector as a path for increasing productivity in relation to import replacement and export expansion, an avenue for earning foreign exchange rise in employment and per capita income which causes unrepeatable consumption pattern. In developing countries, manufacturing sector accounts for a significant share of the industrial sector (Dickson, 2010). The process adding value to raw materials by turning them into products (Mbelede, 2012).

Industrial revolution came into being from the occurrence of the technological and socioeconomic transformations in the Western countries in the 18th-19th centuries. Mechanization and use of fuels replaced the labour intensive textile production. The manufacturing sector is largely driven to rapid sustainable growth and development in any economy

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via industrial capacity, technological innovation and enterprise development.

The inefficient and ineffective management of macroeconomic variables is detrimental to the growth of various sectors of an economy. Macroeconomic variables are factors that are pertinent to a broad economy at regional or national level and affect a large population rather than a few select individuals (Blanchard, 2000). These variables including money supply, exchange rate, inflation, interest rate and credit to private sector have not been adequately managed in Nigeria. The dwindling growth in the Nigeria economy can be attributed to these factors.

Investment in the manufacturing depends upon the rate of interest involved in getting the fund from the financial institutions. In developing countries, credit is considered as a key to economic growth since it lubricates the economy. Therefore, the role of bank credit in economic growth has been accepted by many researchers as various economic agents are able to invest money in various investment opportunities. Anytime the financial position of private sector operators is galvanized by way of providing them with operational funds, the economy gets better.

High interest rates restrict the growth of credit. The central banks or reserve banks of countries generally tend to lower interest rates when they wish to expand investment and consumption in the country's economy. Interest rate in Nigeria is influenced by the CBN Monetary Policy Rate

(MPR). The higher the MPR, the higher the cost of credit and vice versa. Higher interest rates crowds out investment and impinges output of an economy.

Effects of Inflation in an economy can be positive or negative. An increase in the opportunity cost of holding money, discouragement in investment and savings due to uncertainty, shortage of goods as consumers begin hoarding commodities hoping that prices will increase in the future are some of the negative effects of inflation. Persistent high inflation rate would make prices of locally produced goods more expensive relative to foreign substitute. As a result, consumers will demand more of foreign substitute and hence, foreign currencies to purchase them. Changes in the rate of exchange causes uncertainty in the purchasing power and this adversely impact negatively on investment in import of manufacturing inputs. These will, in effect, cause less consumption or purchase of foreign input for production. Tomola, Adebisi and Olawale (2012) opined that that decline in the performance of manufacturing sectors in Nigeria are due to excessive importation of finished goods, lack of financial support, and other exiguous variables which has resulted in the reduction in capital utilization and output of the manufacturing sector of the economy.

One of the strategies to boosting manufacturing sector output is the unbalanced growth model that attempts to ensure imbalances in the economy. The imbalances are deliberately created to create opportunities for investment for the private sector to stimulate investment and industrialization. Both balanced growth and unbalanced growth could not create enough opportunity for industrialization to take place. There were not enough opportunities for business firms to mass produce and enjoy economies of scale. To overcome this problem, the strategies of import substitution and export promotion became handy. In import substitution, firms produce and sell in domestic economy goods which were earlier imported. The advantage of this strategy is that there is an existing market outlet for the goods produced. The problem with the method is that since the firms produce for domestic market, they do not prepare for market competition and so they are not efficient and so they are at disadvantage when in competition with foreign companies. They, therefore, rely on state protection.

A variant of the above strategy is export orientation. In this strategy, goods are produced for sale in foreign countries. This method is aimed at competing with foreign made goods; it produces at efficient and cost efficient manner. It is the method used by Japan, the Asian Tigers, and more recently, Malaysia, Indonesia, China, South Africa, Turkey, Philippines, Mexico, Costa-Rica and Elsalvador. In support of this approach, (Clunies-Ross, Foresyth & Hug, 2010) said that the world had a lot of opportunities for developing countries. The world presented a huge potential market for simple, fairly, standardized manufactures, such as textile and clothing. The price elasticity of demand for all these goods are high. If a low income country can produce these goods at reasonable low price, it can have a huge market at its disposal. Bolaky (2011) summarizes most of the empirical and theoretical arguments in favour of industrialization, that support level of industrialization as driver of per capita income for developing countries. This study thus aimed to examine the effect of macroeconomic variables on the manufacturing sector output in Nigeria.

Empirical Review

An ample of studies have been done across economies to ascertain the effect of macroeconomic variables on the manufacturing sector. Amongst these studies is the work of Enuma, Mphil and Mphil (2013) that studied the impact of macroeconomic indicators on industrial production in Ghana, 1975-2010, using the ordinary least squares estimation technique. Real petroleum prices, real exchange rate, import of goods and services and government spending were the key macroeconomic factors identified by the study that influence industrial production in Ghana. Based on the findings, the study recommended that the government of Ghana should continue to stabilize the macroeconomic environment of Ghana in order to achieve industrial growth and development.

Akinlo (2006) examined the effects of macroeconomic factors on productivity in 34 sub-Saharan African countries for the period 1980 to 2002. Findings from the study revealed that external debt, inflation rate, lending rate among others negatively influenced productivity. Human capital, credit to private sector % of GDP, foreign direct investment % of GDP, manufacturing value added as a share of GDP have significant positive influence on productivity

Cheptot (2014) studied the effect of macroeconomic variables on profitability of small and micro enterprises industry in Nairobi, 2009-2013 and Descriptive Research Design was adopted by the study. The result of the study revealed that interest rates and inflation rates have significant effect on profitability of small and micro enterprises industry in Nairobi County and that exchange rates are also negatively related to SMEs profitability even though the effect if not statistically significant. The study further showed that GDP growth had strong positive relationship with SMEs profitability where growth in real GDP leads to higher SMEs industry profitability. Changes in profitability of SMEs industry could be attributed to changes in the macroeconomic variables. Formulations of policies that will stabilize macroeconomic variables were recommended by the researcher.

Lam Lim, Loh and Nicholas (2015) studied the impact of macroeconomic variables on Manufacturing sector growth in Malaysia. This study employs a Vector Error Correction Model (VECM) to analyze the impact of specific macroeconomic variables on manufacturing sector growth in Malaysia and Granger causality test to establish causality between them over a time period of 32 years which is from 1979 to 2010. Net inflows of foreign direct investment and consumer price index all have significant positive relationships with manufacturing sector growth, while real effective exchange rate has a significant negative relationship with manufacturing sector growth. Broad money supply is found to be statistically insignificant. The government should enact policies to stabilize the political and business climate of the country in order to maintain manufacturing sector growth in this period of increasing political risk and uncertainty.

Adegbemi (2018) investigated the impact of the changes in the macroeconomic factors on the output of the manufacturing sector in Nigeria from 1981 to 2015. The variables of the study included manufacturing output and each of GDP as the dependent variables, and exchange rate,

broad money supply and unemployment rate as the independent variables. The regression results showed that negative relationship existed amongst inflation rate, interest rate, exchange rate, broad money supply, and manufacturing output. The inflation rate and interest rate were statistically insignificant. However, significant and positive relationship existed between GDP of the previous year and unemployment on the one hand and manufacturing output on the other, at 5 percent level. Therefore, the study showed that manufacturing sector is an unquestionable engine for economic growth.

Mensah, Ofori-Abebrese and Pickson (2016), studied impact that macroeconomic factors have on industrial performance in Ghana over the period 1980 to 2013. The study employed Autoregressive Distributed Lag Model to examine the long run and the short run dynamics of macroeconomic factors and industrial output. The data were industrial output, lending rate; Inflation rate; real, effective exchange rate; employment rate; government expenditure (measured as general government final consumption expenditure as a% of GDP); Imports tariff rate on intermediate goods; excise tax rate. The study showed cointegration relationship between industrial output and the macroeconomic factors. The results showed that the major macroeconomic factors that affect industrial performance in Ghana are lending rate, inflation, employment and government expenditure. The study therefore recommends that government should stabilize the macroeconomic environment of Ghana so as to achieve industrial growth and development.

Odior (2013) tried to establish the influence that macroeconomic factors have on manufacturing production in Nigeria and conducted a study for a period of 36 years, 1975 to 2011. The stationarity properties of the variables were explored by using the Augmented Dickey Fuller Test then the actual estimation. The error correction mechanism model was also estimated. Manufacturing sector credit and foreign direct investment based on the results have the potential to enhance production in the manufacturing sector of Nigeria, while broad money supply demonstrated a minimal impact on manufacturing production in Nigeria. The study therefore recommended that monetary authorities should ensure a cut margin between lending and deposit rates.

Akinlo, (2016) conducted a study in Nigeria to ascertain what determines capacity utilization in the manufacturing industry of Nigeria between the period 1970 and 2015. The study showed that government capital expenditure on manufacturing, per capita real income and exchange rate all have positive impacts on manufacturing capacity utilization. Again, loans and advances to manufacturing as well as inflation revealed negative relationship with the capacity utilization of the manufacturing sector. In conclusion, the

research believe that enhancing the capacity utilization of the manufacturing sector will give rise to a substantial growth of the industrial sector and eventually lead to industrial development in Nigeria.

Elhiraika (2010) used quarterly data from 1998:1Q to 2008:3Q to study the impact which macroeconomic policies have on the production of the manufacturing sector in Croatia. The study used multiple regressions to analyse the data. Foreign demand, government consumption, investment, interest rates, the real effective exchange rate, fiscal deficit and personal consumption were used to see how they affect the production of 22 manufacturing sectors. The study revealed that low technologically intensity industries are affected by the variations in the real effective exchange rate, fiscal conditions, and personal consumption. Furthermore, output in high technological intensity industries is highly responsive to changes in fiscal policy, foreign demand and investments. Again, the study established that manufacturing output is highly influenced by fiscal policy with regards to the degree of elasticity. The study also found that production in contracts in medium high technological intensity industries contracts in periods where there is exchange rate depreciation while production in low technological intensity industries on average increases with the exchange rate depreciation.

Sehgal and Sharma (2012) studied the inter-temporal and inter-industry comparison of total factor productivity of the manufacturing sector in the Indian State of Haryana. They adopted diverse categories of manufacturing industries pooled data for the time period 1981-2008. Total factor productivity was measured by the Malmquist productivity index. The variables utilization of assets, manufacturing firms finance mix, abundance of funds reserve and government intervention, efficiency of operation, capital reserve and government policies were the variables that are significant determinants of manufacturing firm's growth in Nigeria. The study showed that total factor productivity in the manufacturing sector was highly influenced by technical efficiency change during pre-reforms period. The study further revealed that trade liberalization had a positive impact on technological advancement of the manufacturing sector of the state.

METHODOLOGY

The study adopted *ex-post facto* research design. This implies that the events that are being observed have taken place already and the researcher has no control over the variables, and the data from it are duly documented in official records of well acclaimed institutions like the Central Bank of Nigeria. The data covers a period of thirty three (33) years, spanning from 1986 to 2018. The time period covered considered the deregulated economy when macroeconomic variables are determined largely by market forces.

Table 1: Variables of the study and their sources

Variable (s)	Description	Source	Status
Manufacturing Sector Output	Proportion of Gross Domestic Product for manufacturing sector	Table C.1.1: Gross Domestic Product at Current Basic Prices	Annual (₦' Billion)
Exchange rate	Value of one currency for the purpose of conversion to another	Table D.4.1: Monthly Average Official Exchange Rate of the Naira	(N/US\$1.00)
Money Supply (M2)	The broad money supply	Table A.7.2: Selected Financial Deepening Indicators	Annual (₦' Billion)
Credit to Private Sector (CPS)	Total financial services provided to the private sector annually	Table A.7.2: Selected Financial Deepening Indicators	Annual (₦' Billion)
Inflation	Percentage change in the average annual Consumer Price Index.	Table A.1.3: Monetary Policy Targets and Outcomes	Growth Rates
Interest Rate	Prime lending rate of the Deposit Money Banks in Nigeria	Table A.4.4: Weighted Average Deposit and Lending Rates of Deposit Money Banks	Percent

Model Specification

The model was adopted from the theoretical assumption that macroeconomic variable scan have positive effect on manufacturing sector. This postulation was adapted from the models as used in previous studies such as Mensa, *et al* (2016) who studied the macroeconomic factor on industrial performance. Their model is specified thus:

$IG = f(LR, INF, EXR, GOVT, TR, ET)$ representing industrial sector growth, lending rate, inflation rate, government expenditure, tariff rate, excise duty tax

Then the model is modified as

$$SOP_{mas} = f(MS, EXR, INFL, INT, CPS)$$

Where:

SOP_{mas} = Sectoral output on Manufacturing sector

MS = Money Supply

EXR = Exchange rate

INF = Inflation rate

INT = Interest rate

BCPS = Bank credit to private sector

The relationship can be explicitly formulated into an econometric equation thus:

$$SOP_{mas} = b_0 + b_1MS + b_2EXR + b_3INFL + b_4INT + b_5CPS + \mu$$

Where b_0 is a constant or intercept, b_1, b_2, b_3, b_4 and b_5 are the coefficients of the explanatory variables, μ is stochastic error term.

A’p priori Expectation

This is based on the principle of finance theory, Here our results can be checked for their reliability with both the size and sign of finance a’ priori expectation. It is expected that macroeconomics variables will exhibit the positive effect on sectoral output in Nigeria except inflation, interest rate and exchange rate.

VARIABLES	SIGN
MS	+
EXR	+ -
INF	-
INT	-
BCPS	+

Method of Data Analysis

The Autoregressive Distributive Lag (ARDL) approach was employed for the regression analysis. This ARDL is the most appropriate regression technique when the time series for each model have variables are stationarity at both level 1(0) and first differences 1(1) (Narayan, 2005). The ARDL test has the capacity to accommodate both the short and long run trends in testing the relationship between the dependent and independent variables and is relatively more efficient in the case of small and finite sample data sizes (Harris & Sollis, 2003).The core statistics employed for the analyses from the regression results are the coefficient of regression, coefficient of determination, F-statistics, t-statistics and their corresponding probability values, as well as the autocorrelation test.

RESULTS AND DISCUSSIONS

Table 2: Stationarity of the variables used in the study

Variables	At Level		First Difference		Order of Integration
	t-Statistic	Prob.	t-Statistic	Prob.	
LogSOPMAS	-2.434035	0.1408	-3.537579	0.0135	1(1)
LogM2	-2.318267	0.1728	-3.478318	0.0155	1(1)
EXR	1.300393	0.9981	-3.986222	0.0045	1(1)
INFL	-2.710941	0.0832	-4.919486	0.0005	1(1)
INTR	-4.606132	0.0009	-	-	1(0)
LogCPS	-1.359530	0.5889	-3.910687	0.0054	1(1)

The stationarity test was done to determine whether the variables can be successfully manipulated in the regression process to produce a robust result. Most time series data are susceptible to instability that can distort normal trends and affect the reliability of regression analyses. The variables were therefore subjected to stationarity test using the Augmented Dickey-Fuller (ADF) Tests, to determine whether they are stationary series or non-stationary series. The null hypothesis of the ADF is that the variables have unit root. Presence of unit root implies that the variable is not stationary. The results of the stationarity tests are presented on Table 2.

The ADF results revealed that INTR is stationary at level 1(0) while other variables including LogSOPMAS, LogM2, EXR, INFL and LogCPS become stationary at their first differences 1(1). From the results of the ADF tests, it can be seen that the variables that made up each of the models have a combination of level 1(0) and first difference 1(1) stationarity. The variables stationary at level implies that they are not time variant while the ones stationary at first difference suggest that they respond to changes in time periods. Under this situation, the ARDL is the most suitable regression technique for the study.

Model Estimation

The test of cointegration for the presence of a long-run relationship in the models is shown in Table 3. The ARDL results compared the bound critical values with the F-statistics values. The decision rule is: If the F-statistic is above the upper and lower critical bound values, then there is a long run relationship in the model; but where the F-statistics is below the upper and lower bound critical values, it is inferred that there is no long-run effect (relationship). The null hypothesis is that “No long-run relationship exists”.

Table 3: ARDL Bounds Test for long run effect of Macroeconomic variables on manufacturing sector output

ARDL Bounds Test		
Sample: 1989 2018		
Included observations: 30		
Test Statistic	Value	K
F-statistic	3.573617	5
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
5%	2.62	3.79
1%	3.41	4.68

From the results in Table 3, the critical bound values were computed at 5% level of significance. The lower critical bound value is 2.62 while the upper critical value is 3.79. The F-statistics being 3.573617 is greater than the Upper (3.79) and Lower (2.62) critical bound values. Thus the null hypotheses is rejected. The study posits that macroeconomic variables (money supply, exchange rate, inflation rate, interest rate and credit to private sector) do not have significant long-run effect on sectoral output of the manufacturing sector in Nigeria.

Estimation of Short Run Effect of Macroeconomic Variables on Selected Sectoral Output

The short-run effects of macroeconomic variables on manufacturing sectoral output is analysed using the Auto-regressive Distributive Lag (ARDL) model.

Table 4: Short Run Model of the Relationship between Macroeconomic Variables and Manufacturing Sector in Nigeria

Dependent Variable: SOPMAS				
Method: ARDL				
Dynamic regressors (3 lags, automatic): M2 EXR INFL INTR CPS				
Fixed regressors: C				
Variable	Coefficient	Std. Error	t-Statistic	Prob.*
SOPMAS(-1)	0.681399	0.331651	2.054569	0.0701
SOPMAS(-2)	0.865176	0.363742	2.378540	0.0413
SOPMAS(-3)	1.404025	0.588907	2.384120	0.0410
M2	0.267932	0.220020	1.217766	0.2543
M2(-1)	-0.785025	0.403237	-1.946805	0.0834
M2(-2)	-0.494628	0.325550	-1.519363	0.1630
M2(-3)	1.038208	0.270826	3.833487	0.0040
EXR	-0.002189	0.000887	-2.467925	0.0357
EXR(-1)	0.000128	0.000475	0.269022	0.7940
EXR(-2)	0.001439	0.000545	2.643146	0.0268
EXR(-3)	-0.002080	0.000469	-4.433128	0.0016
INFL	0.001918	0.000736	2.607401	0.0284
INFL(-1)	0.001267	0.001233	1.027413	0.3310
INFL(-2)	0.003300	0.001098	3.004381	0.0149
INFL(-3)	-0.001898	0.000838	-2.265847	0.0497
INTR	0.016473	0.005825	2.828086	0.0198
INTR(-1)	0.012001	0.004467	2.686500	0.0249
CPS	0.306108	0.154637	1.979531	0.0791
CPS(-1)	0.245979	0.179179	1.372815	0.2030
CPS(-2)	-0.478550	0.163639	-2.924434	0.0169
C	-1.059189	0.419142	-2.527041	0.0324
R-squared	0.930592	Durbin-Watson stat		2.146522
Adjusted R-squared	0.928685			
F-statistic	1102.565			
Prob(F-statistic)	0.000000			

The ARDL result of the short-run effect of macroeconomic variables (M2, EXR, INFL, INTR and CPS) on manufacturing sector output in Nigeria is presented in Table 10. The coefficient of the dependent variable (SOPMAS) introduced as an endogenous variable in the model showed a positive value at lag 1, 2 and lag 3 but significant effects only at lags of 2 and 3 years. This indicates that a unit increase in manufacturing sector output will lead to increase in the subsequent year outputs after two and three years respectively. This suggests that manufacturing sector output is an endogenous variable in the model. This implies that previous manufacturing sector outputs predict current output in Nigeria.

Table 4 further revealed that Money Supply (M2) has positive relationships at current period and lag 3 but negative relationship at lags 1 and 2. However, only the lag 3 short run result has significant effect. This suggests that a unit change in money supply would bring about a 1.04 unit positive change in manufacturing sector after three years. Again Exchange Rate (EXR) was found to have a positive relationship with manufacturing sector output (SOPMAS) at lag 1 and 2; and a negative relationship at current year and lag 3. The p-values show that the coefficients are statistically significant in the current year, lag 2 and 3. This indicates that

a unit increase in EXR leads to 0.002 units of fall in manufacturing sector output in the current year and after three (3) years; and an increase in manufacturing sector output after two years.

More so, Inflation rate (INFL) showed a positive relationship at current year, after lag 1 and 2 but negative relationship at lag 3. However, the p-value indicated significant effect in the current period, and at lags 2 and 3. This indicates that inflation rate has a significant positive effect on manufacturing sector output in the current period and at two year but negative effect at year 3.

The result of the Interest Rate (INTR) revealed positive effects at both current year and after one year. This implies that a unit increase in interest rate leads to about 0.02 and 0.01 increases on manufacturing sector outputs in the current year and after one year.

However, Credit to Private Sector (CPS) had no significant effect on manufacturing sector output in the current year and at lag 1. It became statistically significant at lag 2 with a negative coefficient of -0.4786. This indicates that a unit increase in credit to private sector brings about a 0.47 units of fall in the manufacturing sector output in Nigeria.

On the overall, the adjusted coefficient of determination (Adj R²) revealed that about 93% of the change in manufacturing sector output can be explained by macroeconomic variables in Nigeria. This is confirmed by a significantly significant p-value of 0.0000 from the F-statistics (1102.565). The Durbin-Watson statistics of 2.1465 suggests that the result is reliable.

Summary of Results and Discussion

The results showed that macroeconomic variables has 93% significant short run policy effect but no significant long run effects on manufacturing sector output in Nigeria. The endogenous dynamics of manufacturing sector previous year outputs exerted a significance influence on the macroeconomic variables long run relationship effect on current year. The explanatory variables suggested that money supply (M2), interest rate (INTR) and credit to private sector (CPS) exerted positive effects on manufacturing sector output at short term trends. However, the results of the exchange rate tactically assumed a fluctuating effects swinging between negative in the first year, positive in the second year and return on negative thereafter. Similar scenario played out with inflation rate having positive effect in the current period and second year but negative effect thereafter. These fluctuating effects suggest that inflation and exchange rate policies are critical to the growth or fall of manufacturing sector contribution to national output in Nigeria. It is easy for policy makers to manipulate monetary, interest rate and credit policies to enhance growth in manufacturing sector output than inflation and exchange rates issues. These may explain the lack of significant cumulative effects of the selected macroeconomic variables on manufacturing sector outputs in Nigeria. The periodic fluctuations on the effect of macroeconomic variables on manufacturing sector output suggests that policy stance to boost growth, especially in the manufacturing sector, should short-term, closed-monitored strategic policy.

This finding does not wholly follow the postulations of the Solow-Swan brand of the neoclassical theory. Hence, despite that money supply, and credit to private sector, would have a positive effect as expected, interest rate can thwart the process with a positive influence as well. Following the findings of exchange rate and inflation rates, this study believes that concerted efforts must be in place to strategically position an economy in the path of improved output and growth.

Enuma, Mphil and Mphil (2013), are all of the opinion that macroeconomic variables influence manufacturing sector output (industrial production). Specifically, the work of Akinlo (2006) averred that inflation and interest rate would have adverse effects on productivity. As well as, Odior (2013) noted that bank credit had positive effects. These findings, at one point tend to disagree with the present study. What is however, certain is the position of Elhiraika (2010) which stated that the degree of influence and direction from macroeconomic variables is elastic over time.

Conclusion and Recommendations

The study has shown that macroeconomic variables have varying levels of effects on the manufacturing sectors of Nigerian economy. The monetary authority should employ

the monetary policy stance in a pattern that increases money supply. This is because money supply was found to impact positively on the manufacturing sectors. Hence, money supply, when employed to boost investment in manufacturing sector would eventual bring about improved output to Nigeria. More so, the entrepreneurs in the manufacturing sub-sector should be encouraged to access credit for productive activities.

REFERENCES

- [1] Adebayo, R. I. (2010). Poverty alleviation: A lesson for the fiscal policy makers in Nigeria. *Journal of Islamic Economics, Banking and Finance*, 7(4), 26-41.
- [2] Adegbebi, B. O. (2018). Macroeconomic dynamics and the manufacturing output in Nigeria. *Mediterranean Journal of Social Sciences*, 9 (2), 23-33.
- [3] Akinlo, E. A. (2006). Improving the performance of the Nigerian manufacturing subsectors after adjustment: Selected issues and proposals. *Nigerian Journal of Economics and Social Studies*. 38 (2), 91-110.
- [4] Akinlo, A.E. (2016). Macroeconomic factors and total factor productivity in sub-Saharan African countries. *International Research Journal of Finance and Economics*, 1(6), 62-79.
- [5] Blanchard, O. (2000). *Macroeconomics*, 2nd edition. New Jersey: Prentice Hall.
- [6] Bolaky, B. A. (2011). The role of industrialization in economic development: theory and evidence. UNCTAD.
- [7] Cheptot, K. A. (2014). The effect of macroeconomic variables on profitability of small and micro enterprises industry in Nairobi, a research project submitted in partial fulfillment of the requirements for the award of the degree of master of business administration, school of business, university of Nairobi
- [8] Clunies-Ross, A. Foresyth, O. & Huq, M. (2010). *Development economics*. London: McGraw Hill.
- [9] Dickson, D. A. (2010). The recent trends and patterns in Nigeria's industrial development. *Council for the Development of Social Science Research in Africa*.
- [10] Elhiraika, A. B. (2010). Promoting manufacturing to accelerate economic growth and reduce volatility in Africa. African economic conference Globalisation, *Institutions and Economic Development of Africa*, 4 (3), 12 - 14.
- [11] Enuma, P. Mphil, E.H. & Mphil, P.A. (2013). Impact of macroeconomic factors on industrial production in Ghana. Methodist University College Ghana and University of Ghana, *European Scientific Journal*, 9 (2) 8-19.
- [12] Lam, W. J., Lim, S. N., Loh, Z. & Nicholas, W. W. (2015). Impact of macroeconomic variables on manufacturing sector growth in Malaysia's research project submitted in partial fulfillment of the requirement for the degree of bachelor of economics (Hons) financial economics university tunku abdul rahman faculty of business and finance department of economics.

- [13] Loto, M. A. (2012). Global economic downturn and the manufacturing sector performance in the Nigerian economy. *Journal of Emerging Trends in Economics and Management Sciences*, 3(1), 38-45.
- [14] Mensah, F, Ofori-Abebrese, G. & Pickson, R.B. (2016). Empirical analysis of the relationship between industrial performance and macroeconomic factors in Ghana. *British Journal of Economics, Management & Trade*, 13(4), 1-11.
- [15] Odior, E. S. (2013). Macroeconomic variables and the productivity of the manufacturing sector in Nigeria: A Static Analysis Approach. *Journal of Emerging Issues in Economics, Finance and Banking*, 1 (5), 362-380.
- [16] Sehgal, S, & Sharma, S. (2012). Total factor productivity of manufacturing sector in India: A regional analysis for the state of Haryana. *Economic Journal of Development Issues*, 13 (4), 97-118.
- [17] Tomola, M. O. Adebisi, T. E. & Olawale, F.K. (2012). Bank lending, economic growth and the performance of the manufacturing sector in Nigeria. *European Scientific Journal*, 8 (3), 19-34.

