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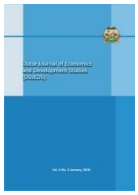

FISCAL POLICY AND MANUFACTURING SECTOR OUTPUT NEXUS IN NIGERIA

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Abstract
Fiscal policy is an economic stabilization process that involves measures taken to regulate and control the volume, cost and availability and direction of money flow in an economy. It is thus a macroeconomic management strategy employed by the government to control the economy with the aim of achieving set out economic objectives. This study investigated the nexus between fiscal policy and the Nigeria manufacturing sector output. Employing the Error Correction Model (ECM) method, time series data for the period 1986-2016 were tested to ascertain the relationship between manufacturing sector output (dependent variable) and three independent variables. Findings from the study established that government expenditure was significant and positively related to manufacturing sector output in Nigeria while government revenue was not significant. Based on these findings, encouraging expansionary fiscal policy measures, diversification of the economy to enhance the performance of manufacturing sector, improved allocation to the manufacturing sector during budget implementation so as to increase the sector performance were all recommended.

Keyword: Fiscal Policy, Manufacturing Sector, total output, ECM
JEL Code: E62, L60

Introduction

Achieving economic growth and development in any economy it has been posited, is a factor of the level of industrialization in an economy. Industrialisation acts as a catalyst that accelerates the pace of structural transformation and diversification of the economy, thus enabling a country to fully utilize its factor endowment thereby depending less on foreign supply of raw materials or finished goods for its economic growth, development and sustainability. A vibrant manufacturing sector has been posited to be the ideal industry to drive Africa's development as it offers prospects of a growing availability of manufactured products, a vehicle for increased production of goods and services, increased employment, greater efficiency, enhancement of incomes and improved balance of payments ((Olorunfemi, Tomola, Adekunjo, and Ogunleye,2013; Emerenini and Ajudua, 2014). Thus, manufacturing is seen as a deliberate combination and sustained application of appropriate technology, infrastructure, managerial expertise and other important resources has attracted considerable interest in development of economies in recent times. The importance of the manufacturing sector cannot be overemphasised as evidenced by the industrialisation level of developed countries with the manufacturing sector leading the process. Thus, there is no doubt that industrialization has brought developed nations to the enviable status which they presently occupy, and through same, developing nations aspire to climb up the ladder to economic prosperity.

In pursuance of sustainable economic growth and development through industrialisation, governments have employed several sound and effective policy with fiscal policy as one of such. Fiscal policy as an economic tool is the deliberate control of two major economic variables government taxation and government expenditure to influence economic activities. It is a compensating mechanism to deal with aggregate demand (excessive /deficit) at full employment level of income by adjusting the rate and form of taxes, the magnitude and composition of spending, and the degree and form of borrowing in a country. Furthermore, it has been posited that fiscal policy influences macroeconomic conditions through control of tax rates, interest rates and government spending, in an effort to control the economy with

set out goals including; attainment of full employment; stabilization of domestic prices; consistent economic growth and development through industrialization; achieving equity in income redistribution; achieving stable exchange rate; and increasing the rate of investment in the country (Anyanwu, 2004).

Given the importance of manufacturing sector as the bedrock of economic growth and development, Nigeria over the years has employed several strategies which were aimed at enhancing the productivity of this vital sector as a means of achieving sustainable growth. For instance, the country adopted the import substitution industrialization strategy during the First National Development Plan (1962-1968) which was targeted at reducing the volume of imports of finished goods and encouraging foreign exchange savings by producing locally some of the imported consumer goods (Ishola, 2012). The country consolidated her import substitution industrialization strategy during the second development plan period (1970-1974) and third development plan period (1976-1980), which actually fell within the oil boom era. During this time, manufacturing activities were so organized to depend on imported inputs because of the weak technological base of the economy.

However, in Nigeria, the manufacturing sector is still not vibrant. The sector is dominated by low wages, low technology, production of light consumer goods and labour intensive. Available evidence has shown that the sector has not fared well. Apart from 1982 where its contribution was 11.21%, the sector contribution to GDP has been in one figure and was put at 4.16% and 6.8% in 2012 and 2014 respectively (CBN, 2014). The genesis of the problem can be traced to its departure from a diversified economy to a mono-product economy with oil becoming almost the sole provider of foreign exchange earnings, which account for about 90 per cent. Today, many manufacturing industries in Nigeria are characterized by declining productivity rate, low employment, inadequate power supply etc.

It has also been argued that the persistent poor performance of the manufacturing sector in Nigeria is mainly due to massive importation of finished goods, inadequate financial support and other variables which have resulted in the reduction in output of the manufacturing sector of the economy. Other challenges facing the growth of Nigerian manufacturing industry as identified by various scholars include corruption and ineffective economic policies (Gbosi, 2007); lack of integration of macroeconomic plans and the absence of harmonization and coordination of fiscal policy (Onoh, 2007); inappropriate and ineffective policies (Anyanwu, 2007); lack of economic potential for rapid economic growth and development (Ogbole, 2010); and gross mismanagement/misappropriations of public funds (Okemini and Uranta, 2008). Despite the emphasis placed on fiscal policy in the management of the economy, the manufacturing sector is yet to come on the path of sound growth and development. This thus necessitated the study.

The study thus seeks to investigate fiscal policy and manufacturing sector output nexus in Nigeria. The rest of this paper is organized as follows. Section 2 looks at related literature, section 3 explains the methodology employed in the study, section 4, analysed and discussed results gotten while section five dealt with conclusion and recommendation proffered based on findings.

Theoretical Underpinnings

The Keynesian Theory

Keynes advocated for government intervention to correct market failures. Keynes alleged that the role of the government was needed to avoid depression by increasing aggregate demand through spending. This government intervention will increase public spending; thereby giving individuals, purchasing power and producers will produce more, creating more employment. The Keynesian theory posited that there exists a multiplier effect of a change in expenditure on the national income. Hence an increase in the government expenditure would lead to increased employment and investment which would improve aggregate output (Ahuja 2013). However, this must be done cautiously as too much of public expenditure lead to inflationary situations while too little of it leads to unemployment.

The Law of Increasing State Activity

Propounded by Adolph Wagner in the 19th century, the theory posits that as the economy develops over time, the activities and functions of the government increase. He asserted that the development of an industrial economy will be accompanied by an increased share of public expenditure in gross national product. With the development of an economy, new functions and activities spring up and are undertaken by the government while the old activities of the economy are performed more thorough (Ajudua and Ojima, 2015).

Wagner's Statement indicates the following points:

- In progressive societies, the activities of the central and local government increase on a regular basis.
- he increase in government activities is both extensive and intensive.
- The governments undertake new functions in the interest of the society.
- The old and the new functions are performed more efficiently and completely than before.
- The purpose of the government activities is to meet the economic needs of the people.
- The expansion and intensification of government function and activities lead to increase in public expenditure.

Musgrave and Rostow Development Model

Musgrave and Rostow in their model posited that the growth of public expenditure might be related to the pattern of economic growth and development in societies. According to them, with development the goal of a country, government expenditure tends to increase when an economy develops from a traditional economy to an industrialised economy and development process are in three stages which include;

- The early development stage where considerable expenditure is required on education and on the infrastructure of the economy (also known as social overhead capital) and where private saving is inadequate to finance this necessary expenditure (in this stage, government expenditure must thus be a high proportion of total output);
- The phase of rapid growth in which there are large increases in private saving and public investment falls proportionately; and
- High income societies with increased demand for private goods which need complementary public investment, increased need for skilled labour making education to become an investment good for society and increased population movements leading to the development of urban areas. Hence a general increase in public expenditure in relation to total output is seen.

The Savers-Spenders Theory

Savers-Spenders theory of fiscal policy was developed by Mankiw (2000) due to the perceived inconsistencies of the Barro-Ramsey (1974) theory of infinitely-lived families and Diamond-Samuelson (1965) theory of overlapping generation respectively. Savers-Spenders theory wasdeveloped to explain the behaviour of fiscal policy in the economy and is based onsome propositions that;temporary tax changes havinglarge effects on the demand for goods and services. Thus the higherincome (wages or salaries) spenders receive will be offset by higher tax payments (progressive tax), implying that consumers should realize that their lifetime resources wereunchanged and therefore, should save their extra income to meet the upward taxliability. Secondly, excess consumption reduces investment, which in turn raises marginal product of capital and as well decrease the level of economic growth. It is also of the opinion that higher interest rate margin, induces savers to save more. This implies that excess consumption and higher interest rate margin affect the growth of manufacturing sector which in turn reduce economic growth in Nigeria. Thirdly government debt increases steady-state inequality; meaning a higher level of debt will lead to a higher level of taxation to pay interest on debt. The increase in tax will affect both the savers and the spenders but the interest will have an effect only on savers implying that a higher level of debt raises the income and consumption of the savers and lowers the income and consumption of the spenders.

Empirical Literature

Ajayi (2008) in a study of the collapse of Nigeria's manufacturing sector on economic growth utilized cross-sectional research design and discovered that the main cause of collapse in the Nigerian manufacturing sector is low implementation of Nigerian budget especially in area of infrastructure. This means that low implementation of fiscal policy affects the level of growth in Nigerian manufacturing sector.

Mwafaq (2011) examined the impact of public expenditures on economic growth, using time series data on Jordan for the period 1990-2006 and found out that government expenditure at the aggregate level has positive impact on the growth of GDP which is attuned with the Keynesian theory.

Ogbole, Sonny and Isaac (2011) focused on the comparative analysis of the impact of fiscal policy on economic activities in Nigeria during regulation and deregulation period and found out that there is a difference in the effectiveness of fiscal policy in stimulating economic growth during and after regulation period. They recommended that government fiscal policy should refocus and redirect government expenditure towards production of goods and services so as to enhance GDP growth.

Peter and Simeon (2011) adopted vector auto regression (VAR) and error correction mechanism techniques to ascertain impact of fiscal policy variables on Nigerian economic growth between 1970 and 2009; they discovered that there is a long-run relationship between fiscal policy variables and economic growth in Nigeria.

Sikiru and Umaru (2011) studied the causal link between fiscal policy and economic growth in Nigeria using Engle-Granger approach and error correction model which was estimated to take care of short-run dynamic; the result indicated that productive expenditure positively impacted economic growth during the period covered.

Tomola, Adebisi and Olawale (2012) employed co-integration and vector error correction model (VECM) techniques to determine the link between bank lending, economic growth and manufacturing sector in Nigeria; they found out that manufacturing capacity utilization and bank lending rates significantly affect manufacturing output in Nigeria. This means that the growth of manufacturing output has not been enough to generate sizeable growth in the economy.

Methodology

The research adopted a factorial experimental design. The reason was that it allows the researcher to analyze the impact of one, two or more independent variables simultaneously on the dependent variable and strengthens the validity of the study. Employing time series data sourced from the Central Bank of Nigeria statistical bulletin for the period 1986-2016, the ordinary least square due to its BLUE features was used to analyse the relationship between the dependent and independent variables. Also, the Error Correction Mechanism (ECM) which correct for all short run errors so as to achieve a better long run relationship while stipulating the duration of adjustment was be employed.

Model Specification

In line with fiscal policy theories, a single model is specified with a dependent and three independent variables. The model is specified thus:

$$Y = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \mu_t \quad \text{---------- (1)}$$

Equation (1) explains that X_1, X_2 *and* X_3 are the presumed exogenous variables that explain any variation in Y, α is the intercept, α_1, α_2 *and* α_3 are output elasticities with respect to individual input or macroeconomic factor, which are the parameter to be estimated, while, μ_t is the error term of the model.

Equation 1 could be transformed as follows;

$$MSO = \alpha_0 + \alpha_1 TGE + \alpha_2 GRE + \alpha_3 INF + \mu_t \quad \text{---------- (2)}$$

Where:
MSO = Manufacturing Sector Output
TGE = Total Government Expenditure
GRE = Government Revenue
INF = Inflation Rate

Due to difference in scale of measurement, variables would be transformed into it logarithm form so as to compress the scales and thus avoid the problem of heteroskedasticity. Thus equation 3 becomes

$$LnMSO = Ln\alpha_0 + \alpha_1 LnTGE + \alpha_2 LnGRE + \alpha_3 LnINF + \mu_t \quad \text{---------- (3)}$$

The apriori expectation of these estimates is as follows: $\alpha_1 > 0$, α_2 and $\alpha_3 < 0$.

The estimation of the model specified may yield spurious regression if the variables are not stationary. The Unit Root Test to check the stationarity properties of time series data so as to overcome the problem of spurious correlation associated with non-stationary time series data was be employed. Co-integration test will also be carried out so as to confirm if the series are indeed co-integrated with economic growth.

Analysis of Result
Unit Root Test

Table1: Augmented Dickey-Fuller (ADF) Test

	LEVEL				FIRST DIFFERENCE			
Variables	ADF Test Statistic	5% Critical Value	Prob	Status	ADF Test Statistic	5% Critical Value	Prob	Status
LnMSO	-2.632604	-2.986225	1.0000	I(0)	-3.655485	-2.991878	0.0010	I(1)
LnTGE	-2.229604	-2.981038	0.2012	I(0)	-3.246598	-2.991878	0.0362	I(1)
LNGRE	-0.928868	-2.967767	0.7643	I(0)	-5.205351	-2.971853	0.0002	I(1)
INF	-1.981942	-2.998064	0.2920	I(0)	-3.687776	-3.612199	0.0422	I(1)

Source: Author's computation from output, 2018

Unit root test was conducted on the time series properties on the variables under study. The Augmented Dickey Fuller test statistic was employed to test for stationarity of all variables included in the model. The result of the test as shown in table 1 showed that all-time series data were not stationary at level but became stationary at first difference at 5 percent level of significance.

Cointegration Analysis

The Johansen co-integration test was used to determine if there exists long-run equilibrium relationship among the variables under study.

Table 2: Johansen Cointegration Test

Sample (adjusted): 1988 2016
Included observations: 29 after adjustments
Trend assumption: Linear deterministic trend
Series: LnMSO LnTGE LnGRE INF
Lags interval (in first differences): 1 to 1
Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.859735	102.6212	47.85613	0.0000
At most 1 *	0.614399	47.62305	29.79707	0.0002
At most 2 *	0.373307	20.94037	15.49471	0.0068
At most 3 *	0.244649	7.856027	3.841466	0.0051

Trace test indicates 4 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.859735	54.99814	27.58434	0.0000
At most 1 *	0.614399	26.68268	21.13162	0.0074
At most 2	0.373307	13.08434	14.26460	0.0762
At most 3 *	0.244649	7.856027	3.841466	0.0051

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values
Source: Author's computation from output, 2018

The trace statistic in table 2 above indicates 4cointegrated equations at 5% critical value. We therefore reject the null hypothesis and conclude that there exists long run equilibrium relationship among the dependent and independent variables. Similarly, the maximum eigenvalue indicated one cointegrating equation at 5% level with Max-eigen statistic of 42.22 which is greater than its 5 percent critical value of 40.08, thereby corroborating the result of the trace statistic test of long run equilibrium relationship between the dependent and the independent variables.

Error Correction Mechanism

Dependent Variable: MSO
Method: Least Squares
Date: 09/27/18 Time: 14:43
Sample (adjusted): 1992 2017
Included observations: 24 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-13.75744	109.8892	-0.125194	0.9022
D(MSO(-1))	2.862907	0.563542	5.080202	0.0002
D(MSO(-2))	3.242806	0.683179	4.746640	0.0003
D(TGE(-1))	1.342293	0.287359	4.671137	0.0004
D(TGE(-2))	1.161171	0.334936	3.466846	0.0038
D(GRE(-1))	-0.116250	0.061485	-0.264284	0.7954
D(GRE(-2))	-0.055503	0.070951	0.782279	0.4471
D(INF(-1))	2.554827	5.451350	0.468659	0.6465
D(INF(-2))	4.483094	4.690660	-0.955749	0.3554
ECM-1	-0.178007	0.663669	2.076348	0.0468

R-squared	0.721034	Mean dependent var	2501.953
Adjusted R-squared	0.685270	S.D. dependent var	2656.079
S.E. of regression	322.3555	Akaike info criterion	14.68352
Sum squared resid	1454783.	Schwarz criterion	15.17438
Log likelihood	-166.2023	Hannan-Quinn criter.	14.81375
F-statistic	171.9435	Durbin-Watson stat	1.9383
Prob(F-statistic)	0.000000		

Source: Author's computation from output, 2018

The result of the Error Correction Model estimation above revealed that the independent variables total government expenditure and government revenue were rightly signed. However, while total government expenditure was significant, government revenue was not significant. Inflation rate on the other hand was not insignificant and did not conform to expectation.

Statistically, the R^2 indicated that 72% variation in manufacturing sector output is explained by all included independent variables, and the adjusted R-square shows that if other variables that influences manufacturing output were put into consideration, the included variables will still explain 68.5% variation in manufacturing sector output. The probability of the F-statistics shows the robustness of the model at 5 per cent level of significant while the figure of the Durbin Watson statistics further shows no autocorrelation or serial correlation in the model. The ECM was rightly signed and had a speed of adjustment from the short-run equilibrium to the long-run equilibrium to the tune of -0.178007. This means that percentage of the error is corrected in each time period. The speed of adjustment implies that about 18% of disquilibrium is adjusted for yearly and it will thus take approximately six years to correct all errors/deviations and bring the economy back to equilibrium.

Stability Test

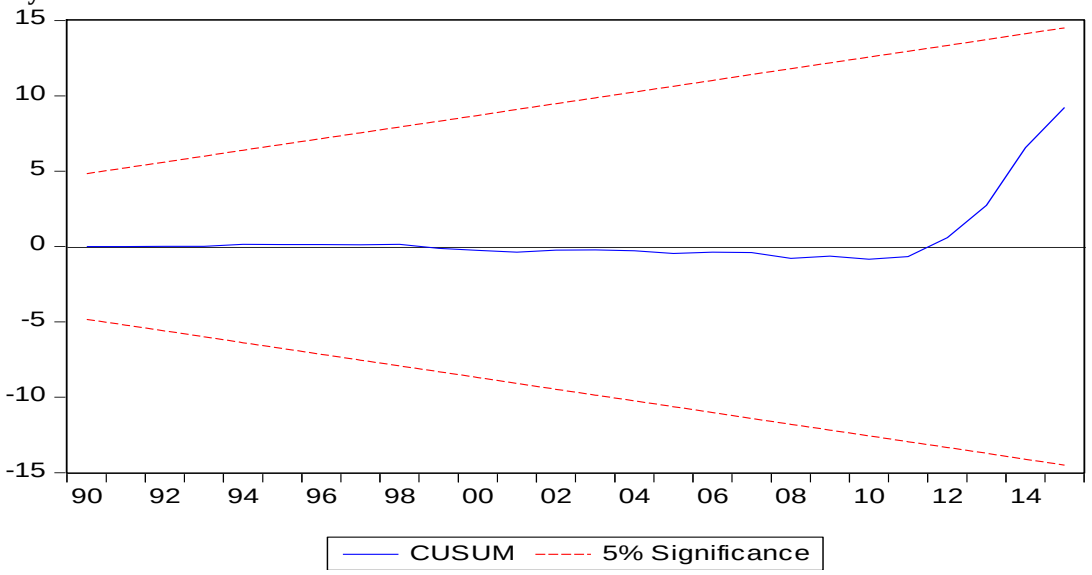

Fig. I: Test of Stability

Stability test is appropriate in time series data, especially when one is uncertain when changes might occur. The null hypothesis is that the coefficient vector is the same in every period. The stability test in figure 1 above revealed that the cumulative sum of Recursive Residuals (CUSUM) fall within the five per cent critical bound as indicated by the two lines that bounded the trend curve implying that the parameters of the model do not suffer from any structural instability over the period of study. Thus, the regression equation is stable over time and we conclude that the estimated parameters of the study are stable and useful for policy decision and analysis.

Conclusion and Recommendations

Based on our findings, it was established that government expenditure is positively related to manufacturing sector output in Nigeria such that an increase in government expenditure will result to an increase in manufacturing sector output in Nigeria; while government revenue is negatively related to manufacturing sector output in Nigeria showing that an increase in government revenue will result to a decrease in manufacturing sector output in Nigeria. Also, from the result, it has been seen that a unit increase in government expenditure will lead to an increase in manufacturing sector output by 1.34 units. While, a unit increase in government revenue will reduce manufacturing sector output by 0.12 units.

On the basis of these findings, the following recommendations are made

1. Expansionary fiscal policy measures should be encouraged as they play vital role for the growth of the manufacturing sector output in Nigeria. There is need to redirect fiscal policy measures towards making Nigeria a producer nation through manufacturing sector which in turn would lead to economic growth and development.
2. Government economic policies should be on diversification of the economy to enhance the performance of manufacturing sector, so as to create more employment opportunities, since it may be a more effective way of reducing the level of unemployment and increasing the growth of the economy.
3. Fiscal policy should be given more priority attention towards the manufacturing sector by increasing the level of budget implementation, which will enhance aggregate spending in the economy. Consistent government implementation will contribute to the increase performance of manufacturing sector.
4. The government of the nation has a role to play in the areas of regulations and protectionism.The government should encourage the availability of medium and long term funds in the capital and money markets to complement the financial institutions type of lending. This will encourage development in the industry, and they will easily integrate into global economy for competition, access to markets and benefits of international trade.

5. Government should introduce measures to give tax concession for local small and medium scale enterprise so as to encourage them to increase their output.

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