Fiscal Policy and Sectoral Output Performance in Nigeria

Olanipekun Emmanuel Falade
Obafemi Awolowo University, Ile-Ife, Nigeria

Abstract:- **In this study, the differential effects of fiscal policy variables on the performance of the key sectors of the economy namely; Industrial, Agricultural and Service sectors were investigated using an Autoregressive Distributed Lag (ARDL) and Error Correction Model (ECM) for the period of 1970-2018. Obtained results indicated that while both domestic and foreign debts have no significant effects on the three sectors examined in the short run, it was observed that foreign debt and government consumption expenditure have incremental effects on industrial sector's output. Similarly, it was observed that while domestic debt crowd-in agricultural and services sectors' outputs, it has a crowd-out effect on industrial output in the long run. It is also noteworthy that while government investment expenditure has positive effect on industrial output, its effects on agricultural output is detrimental in the long run. This implies that government can neutralize the negative effects of its domestic debt on industrial sector's output either by increasing its consumption expenditure or rely more on foreign debt. It is recommended that government should focus more on investing in infrastructure such as irrigation, access road to farm land, storage facilities, processing equipment like milling machine, etc. in other to boost productivity in the sector.**

Keywords: **fiscal policy, government investment expenditure, crowd-out, Autoregressive Distributed Lag (ARDL)**

JEL Classification: H30, H50, H60

I. INTRODUCTION

Theoretically, three major strands regarding the relationship between fiscal policy measures and economic growth are well established in the literature, since the emergence ofthe endogenous growth models in the mid-1980s (Grier and Tullock, 1989; Barro, 1991). To the neoclassical economists, government operations are inherently bureaucratic and inefficient and therefore stifle rather than promote economic growth. They believe that, the higher the level of public expenditure (which may result in debt procurement if it exceeds public revenue), the greater the inefficiency and the lower the level of output (Blinder and Solow 1973; Buiter 1977; Gwartney, *et al.* 1998; Pechman, 2004; Abu and Abdullahi, 2010; Bergh and Henrekson, 2011).

In contrast, the Keynesians view an increase in government activities especially in autonomous government expenditure, whether investment or consumption, as a growth booster. The theoretical foundation revolves around the propositions that the government intervention in economic activity will ensure efficiency in resource allocation, regulation of markets, stabilization of the economy, and harmonization of social conflicts (Keynes, 1936; Ram, 1986; Nourzad and Vrieze, 1995; Sanchez-Robles, 1998; Abdullah, 2000; Al-Yousif, 2000; Lopez *et al*. 2010). The Keynesians argue that increased aggregate demand as a result of increased government spending irrespective of its financing method (whether through debt financing or through increased public revenue) enhances the profitability of private investment and spurs economic growth at any given rate of interest (Turnovsky and Fisher, 1995; Dalamagas, 2000; Colombier, 2009).

Yet in the perspective of Ricardian, fiscal policy will eventually have a neutral effect on the economy as the leakages through revenue mobilization is reinjected into the economy through government spending. It is also believed that fiscal deficits are a useful device for neutralizing the impact of revenue shocks or for meeting the requirements of lumpy expenditures, the financing of which through taxes may be spread over a period of time. However, such fiscal deficits do not have an impact on aggregate demand if household spending decisions are based on the present value of their incomes that takes into account the present value of their future tax liabilities (Rangarajan and Srivastava, 2005).

Based on these theoretical propositions, quite a number of empirical studies have been done to examine the effects of fiscal policy on output growth with varying results which validate each of the three propositions depending on the economic environment being examined or the methodology adopted. However, empirical questions have been raised on whether these views on the effect of fiscal policy measures on the real aggregate output holds for the sectoral outputs as changes in the fiscal policy stance may have important supply and demand-side effects on different sectors of the economy (Aschauer, 1988 & 1999; Saibu, 2010). The possibility of a differential response between sectoral output and aggregate output to fiscal policy measures has been investigated by several authors especially for developed countries (Barth and Bradley, 1987; Loto, 2011).

However, in Nigeria, the neglect of these important issues in the existing literature created an empirical gap and indeed might have undermined the policy relevance of inferences from the empirical evidence from such studies. As noted by Sanusi (2010), the country has in the last one decade experience economic growth, but the growth has not been all inclusive, broad based and transformational as the major driver had been the oil sector. The implications of these trend

according to the author is that the economic growth witnessed in Nigeria had not resulted in the desired structural changes that would make the industrial sector the engine of growth, create employment, promote technological development, and induce poverty alleviation.

Table 1: Average Growth Rates of Sectoral Output and Government Expenditure

	Agriculture	Industry	Services	Trade	Construction	Govt. Expenditure
1981-‘85	4.0	-0.2	-20.4	-0.5	0.8	4.9
1986-‘90	5.0	6.3	5.7	5.2	4.2	36.2
1991-‘95	2.8	-1.3	3.7	1.9	3.1	38.9
1996-‘00	4.0	2.1	4.3	1.9	4.4	29.0
2001-‘05	15.9	6.1	6.1	13.0	9.7	21.9
2006-‘10	6.5	0.7	12.6	13.4	12.3	18.6
2011-‘15	4.1	2.1	11.4	5.4	6.0	4.0
2016-‘17	3.8	-3.7	- 2.5	-0.6	-0.9	32.2

The disparity in the sectoral response to fiscal policy variables may be responsible for the difficulty of conducting uniform and inclusive fiscal policy stance in Nigeria. The alternative policy approach may be to adopt sector specific policy measures within the overall fiscal policy mechanism framework. For instance, Table 1 reveals the average growth rate of total government expenditure and the average growth rate of output for the three sectors of the economy which are the agriculture, industry andservices. It was observed from the table that an increase in the average growth rate of government expenditure did not correlate with an increase in the average growth rate of output across the sectors during the study period. Remarkably, perhaps due to the economic recession in 2016 and 2017, an increase in the average growth rate of government expenditure by 32.2 per cent only correlated with a positive growth in agricultural sector output while industry andservices recorded a negative growth rates of 3.7 and 2.5 per cent respectively during the period. This is an indication that sectoral output may not respond equally to fiscal policy measures.

It is therefore imperative to analyze sectoral composition of output (especially agriculture, industry and services as these three are most critical to the developmental drive of any economy) as they respond, not only to government expenditure but also to other fiscal stimuli. Most studies that have attempted to examine the effects of fiscal policy on sectoral output performance have focused on government expenditure neglecting its composition (investment and consumption) and the possible effects of other fiscal policy instruments such as public revenue (oil and non-oil) and public debt (domestic and external) on sectoral output performance. Yet, others have examined the differential effects of fiscal policy on sectoral output with emphasis on manufacturing and agricultural sectors while paying little attention to other sectors of the economy (Oseni, 2013; Osinowo, 2015; Bakare-Aremu and Osobase, 2015; Zirra and Ezie, 2017; Arikpo, Ogar and Ojong, 2017).

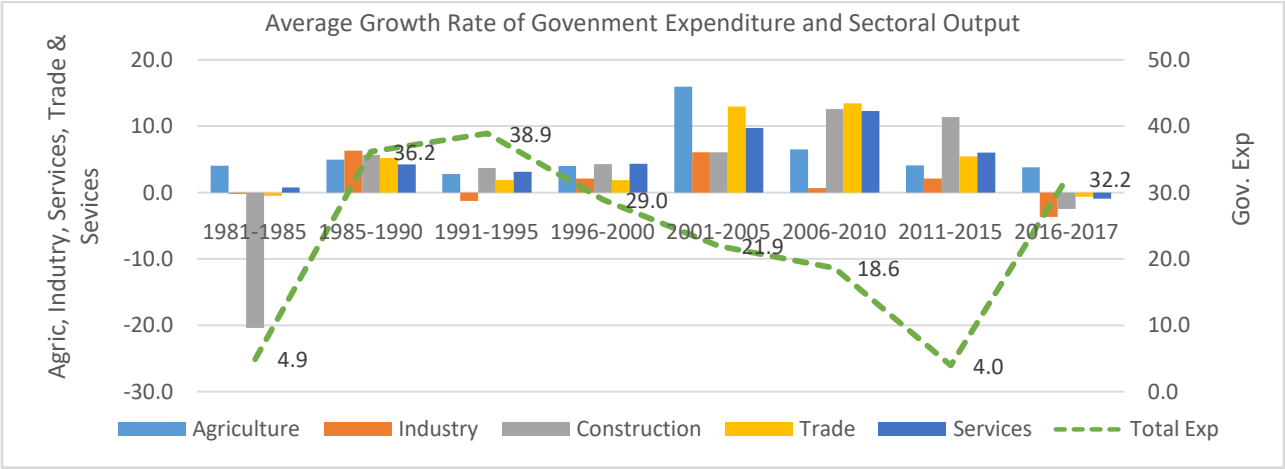

Figure 1 Average Growth Rate of Government Expenditure and Sectoral Output Source: Author’s computation

The rest of the paper is divided into five sections. Section 2 reviews existing literature on fiscal policy–real output nexus in Nigeria and Section 3 presents the methodology. Section 4 presents the empirical results while section 5 presents summary and concludes with policy implications of the findings for Nigerian economy.

II. LITERATURE REVIEW

The empirical evidence on the relationship between fiscal policy and economic growth in Nigeria which has been the focus of most studies in the literature is not significantly different from the experiences of other developing countries. In particular, the body of literature presents contrasting opinions and lack of consensus on the real effects of fiscal policy on economic growth (Ekpo, 1994; Omitogun and Ayinla, 2007; Nurudeen and Usman, 2010; Peter and Simeon, 2011; Ogbole *et al*, 2011; Oseni and Onakoya, 2012; Sikiru and Umaru, 2012; Onuorah and Akujuobi, 2012). A few other studies haave attempted to disaggregate real output by examining the effect of fiscal policy on sectoral output with emphasis on manufacturing and agricultural sectors (Adenikinju and Olofin, 2000; Arikpo, Ogar and Ojong, 2017; Zirra and Ezie, 2017).

For instance, a look at the pioneer work of Ajayi (1974) who examined this relationship concluded that fiscal policy had weak influence on economic activities in Nigeria. However, Olaloye and Ikhide (1995) refuted these findings much later by asserting that fiscal policy, especially government expenditure, exerts much influence on economic activities. They argued that fiscal policies have been more effective in Nigeria especially during recessions.

In their own part, Ezeoha and Uche (2004), while reviewing the practice of fiscal policy, concluded that fiscal recklessness has been the cause of the failure of the stabilization policies of the government, and that what the government of Nigeria needed was fiscal discipline. This position was supported by Omitogun and Ayinla (2007) with the conclusion that fiscal policy has not been effective in the area of promoting sustainable economic growth in Nigeria as a result of incessant unproductive foreign borrowing, wasteful spending and uncontrolled money supply.

Similarly, Sikiru and Umaru (2012) contributed to the argument by examining the causal link between fiscal policy and economic growth in Nigeria using Engle-Granger approach and error correction models which to take care of short-run dynamics. The result indicates that productive expenditure positively impacted on economic growth during the period covered. Their findings were corroborated by the work of Ogbole, Sonny and Isaac (2011) who also concluded that government productive expenditure has positive influence on GDP growth. These studies however did not account for the relative effect of productive government expenditure and other fiscal policy variables on different sectoral output in the economy.

Nevertheless, few studies have been conducted on the sectoral analysis of the relative effectiveness of fiscal policy. For instance, Akbar and Jamil (2012) investigates the effects of fiscal (public expenditure) and trade policies on the agricultural sector in 37 selected countries within Sub-Saharan Africa (SSA) using annual data from 1990 to 2016. The study employs a three-variable Panel Structural Vector Error Correction Model (PSVECM) in capturing the dynamic structure of the possible relationships among the variables. By imposing short- and long-run identifying restrictions, the cointegration structure of the PSVECM reveals an instantaneous impact of government expenditure and terms of trade on crop production in the transitory period in SSA. This finding implies that fiscal and trade policies are crucial in influencing agricultural productivity in countries within SSA.

Also, spurred by the growing concern on the role of fiscal policy on the output and input of manufacturing industry, Eze and Ogiji (2013), examine the impact of fiscal policy on the manufacturing sector output in Nigeria. The results of the study indicate that government expenditure significantly affect manufacturing sector output. The study implies that if government did not increase public expenditure, Nigerian manufacturing sector output will not generate a corresponding increase in the growth of Nigerian economy.

Oseni (2013) examined the impact of fiscal policy on sectoral output in Nigeria in a multivariate cointegration model over the period 1981-2011. His results showed that the five subsectors and four fiscal policy variables are co-integrated and that the fiscal policy variables have significant impact on sectoral output. Also, the study revealed that the contribution of fiscal policy variables especially the productive expenditure to building and services is below expectation despite huge amount allocated to the sector yearly. The paper however suffered from inappropriate methodology as it employed Johansen cointegration and the ECM methodology in analyzing the variables which were of different order of integration.

Osinowo (2015) attempted to improve on the analysis by re-examining the effect of fiscal policy (with emphasis on government expenditure) on sectoral output growth in Nigeria for the period of 1970-2013. The results of the Autoregressive Distributed lag (ARDL) (Pesaranand Shin, 1999). and Error Correction Model (ECM) analysis showed that total fiscal expenditure (TEXP) has positively contributed to all the sectors output with an exception of agriculture sector. The study, however, did not examine the response of sectoral output to other fiscal measures.

Detour from government expenditure as an instrument of fiscal policy, Raymond, Adigwe and Echekoba (2015) examine the effect of tax as a fiscal policy tool on the performance of some selected manufacturing companies in Nigeria. The study found that taxation as a fiscal policy instrument has a significant effect on the performance of

Nigerian manufacturing companies. The implication of the finding is that the amount of tax to be paid depends on the companies' performances. The study therefore recommend among others that the government should be sensitive to its tax environment so as to enable the manufacturing sector cope with the ever changing dynamics of the manufacturing environment.

In a more recent study, Arikpo, Ogar and Ojong, (2017) examined the impact of government revenue and expenditure on the performance of the manufacturing sector in Nigeria. The study specifically assessed the extent to which fiscal policy instruments impact on the manufacturing output in Nigeria. Using an ex-post facto research design and ordinary least square multiple regression statistical technique, they found that increases in government revenue reduce manufacturing sector output, while expenditure impacted positively on the performance of the sector.

Spurred by the importance of agricultural sector and its vital role in providing employment and generating foreign exchange earnings, Zirra and Ezie (2017) examined the effect of fiscal policy on agricultural sector outputs in Nigeria between 1995 and 2014. Using the Fully Modified Ordinary Least Square (FMOLS) regression method, their findings showed that over the years, government capital expenditure and Value Added Tax (VAT) has influenced the growth of agricultural outputs positively and significantly.

The brief literature review above shows that, although numerous studies have been done on the relationship between fiscal policy variablesand economic growth in developed and developing countries. However, it is not clear if the views on the effect of fiscal policy measures on the real aggregate output holds for each of the key sectors of the economy.

III. METHODOLOGY

Resting on the Keynesian approach in examining the relative effects of fiscal policy measures in stimulating the sectoral output growth in Nigeria, the baseline function is given as:

$$EG = f(FP) \quad (1)$$

Where EG represents Economic Growth and FP represents fiscal policy, while f is the functional form of the relationship existing between the variables. Thus, since the economy comprises of several sectors, agricultural, industrial and services sectors ($AGRIC$) being the bedrock sectors are isolated for investigation under this study, thus EG is a vector of agricultural, industrial and services sectors. Also, bringing to bear the instruments of fiscal policy by the government being identified as government spending, government debt (GD) as well as government revenue (GR). As such, equation 1 is disaggregated and rewritten as;

$$EG = f(GS, GD, GR) \quad (2)$$

Further, each of the independent variables can be disaggregated and broken down into their two major componentssuch that; government spending is divided into consumption ($GOVC$) and investment ($GOVI$), government debt is divided into domestic debts ($DOMD$) and foreign debts ($FORD$) and finally, government revenue is divided into; oil (OR) and non-oil (NOR).

$$EG = f(GOVC, GOVI, DOMD, FORD, NOR, OR) \quad (3)$$

Assuming a log-linear function serving as the long run model, equation 3 is stochastically presented in equation 4, where β_1 - β_7 are the constant and the intercepts while ε_t is the stochastic error term:

$$EG_t = \beta_1 + \beta_2 LGOVC_t + \beta_3 LGOVI_t + \beta_4 LDOMD_t + \beta_5 LFORD_t + \beta_6 LNOR_t + \beta_7 LGOR_t + \varepsilon_t \quad (4)$$

In order to estimate these models (EG_t being a vector of agriculture, services and industry), the Autoregressive Distributed Lag (ARDL) models are drawn for each of the sectors below. Thus, the ARDL specification of the short-run dynamics may be derived from the error correction representation of the form:

$$\Delta LAGRIC_t = \alpha + \sum_{i=1}^{p} \beta_i \Delta LAGRIC_{t-i} + \sum_{i=0}^{q_1} \varpi_i \Delta LGOVC_{t-i} + \sum_{i=0}^{q_2} \varphi_i \Delta LGOVI_{t-i} + \sum_{i=0}^{q_3} \phi_i \Delta LDOMD_{t-i} + \sum_{i=0}^{q_4} \psi_i \Delta LFORD_{t-i} + \sum_{i=0}^{q_4} \theta_i \Delta LOR_{t-i} + \sum_{i=0}^{q_4} \eta_i \Delta LNOR_{t-i} + \vartheta ecm_{t-i} + \mu_t \quad (5a)$$

$$\Delta LINDUS_t = \alpha + \sum_{i=1}^{p} \beta_i \Delta INDUS_{t-i} + \sum_{i=0}^{q_1} \varpi_i \Delta LGOVC_{t-i} + \sum_{i=0}^{q_2} \varphi_i \Delta LGOVI_{t-i} + \sum_{i=0}^{q_3} \phi_i \Delta LDOMD_{t-i} + \sum_{i=0}^{q_4} \psi_i \Delta LFORD_{t-i} + \sum_{i=0}^{q_4} \theta_i \Delta LOR_{t-i} + \sum_{i=0}^{q_4} \eta_i \Delta LNOR_{t-i} + \vartheta ecm_{t-i} + \mu_t \quad (5b)$$

$$\Delta LCONST_t = \alpha + \sum_{i=1}^{p} \beta_i \Delta LCONST_{t-i} + \sum_{i=0}^{q_1} \varpi_i \Delta LGOVC_{t-i} + \sum_{i=0}^{q_2} \varphi_i \Delta LGOVI_{t-i} + \sum_{i=0}^{q_3} \phi_i \Delta LDOMD_{t-i} + \sum_{i=0}^{q_4} \psi_i \Delta LFORD_{t-i} + \sum_{i=0}^{q_4} \theta_i \Delta LOR_{t-i} + \sum_{i=0}^{q_4} \eta_i \Delta LNOR_{t-i} + \vartheta ecm_{t-i} + \mu_t \quad (5c)$$

The symbol Δ is the difference operator and the error correction tern, ecm_{t-1} in this case is defined as:

$$ecm_t = LAGRIC_t - (\alpha + \beta LAGRIC_t + \varpi LGOVC_t + \varphi LGOVI_t + \phi LDOMD_t + \psi LFORD_t + \theta LOR_t + \eta LNOR_t) \quad (6)$$

The ecm_t for industrial and services sectors were also estimated. All coefficients of the short-run equation relate to the short-run dynamics indicating the model's convergence to equilibrium following a shock to the system and the symbol ϑ is the speed of adjustment parameter measuring how fast

errors generated in one period are corrected in the following period.

IV. PRESENTATION OF RESULTS

To examine the relative effects of fiscal policy measures in stimulating the sectoral output growth in Nigeria, included variables were subjected to unit root test using the Augmented Dickey-Fuller (ADF) and Philip Perron (PP) stationarity tests. The results, as shown in Table 1, reveal that all included variables are stationary after the first difference (I(1)) except for LGOVI which is stationary at levels (I(0)).

Table 2: Unit Root Test Results of the variables

variables	ADF Test Statistics		PP Test Statistics		Order of Integration
	At Level	At First Difference	At Level	At First Difference	
LAGRIC	-1.783	-4.430***	-1.812	-11.728***	I(1)
LINDUS	-1.755	-10.217***	-1.592	-10.339***	I(1)
LCONST	-0.338	-12.544***	-0.353	-12.542***	I(1)
LDOMD	-1.389	-7.232***	-1.451	-7.338***	I(1)
LFORD	-1.815	-6.086***	-2.957	-6.093***	I(1)
LGOVC	-0.929	-4.988***	-0818	-5.057***	I(1)
LGOVI	-4.193***	-	-3.954***	-	I(0)
LNOR	-1.486	-12.428***	-1.479	-12.428***	I(1)
LOR	-1.762	-7.398***	-1.700	-7.270***	I(1)
Critical Value					
1%	-3.476	-3.476	-3.475	-3.476	
5%	-2.882	-2.882	-2.881	-2.881	

Note: *, ** and *** represents 10%, 5% and 1%, respectively

Source: Author's compilation, 2019

Table 3: Lag Length Selection Criteria for the Sectoral models

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-875.6681	NA	0.001023	12.98041	13.13033	13.04134
1	625.1182	2825.010	5.47e-13	-8.369386	-7.170057*	-7.882009
2	742.8088	209.4200	2.00e-13	-9.379541	-7.130801	-8.465710
3	782.2318	66.09153	2.34e-13	-9.238703	-5.940550	-7.898418
4	824.3759	66.31487	2.66e-13	-9.137880	-4.790315	-7.371140
5	920.3737	141.1733	1.39e-13	-9.829026	-4.432047	-7.635831
6	975.4750	75.35907	1.36e-13	-9.918750	-3.472359	-7.299100
7	1021.286	57.93792	1.57e-13	-9.871858	-2.376055	-6.825754
8	1112.385	105.8349	9.63e-14	-10.49095	-1.945737	-7.018394
9	1325.938	226.1156	1.02e-14	-12.91086	-3.316231	-9.011846
10	1483.980	151.0687*	2.61e-15*	-14.51440	-3.870365	-10.18894*
11	1540.884	48.53596	3.17e-15	-14.63064	-2.937191	-9.878721
12	1598.624	43.30488	4.17e-15	-14.75917*	-2.016306	-9.580794

* indicates lag order selected by the criterion; LR: sequential modified LR test statistic (each test at 5% level); FPE: Final prediction error; AIC: Akaike information criterion; SC: Schwarz information criterion; HQ: Hannan-Quinn information criterion

Source: Author's computation, 2019

Following the result of the unit root test, the use of the Autoregressive Distributed Lag Model however, a need to identify the optimal lag length for the model therefore, lag length selection criteria were considered. As specified in

Table 3, using the Akaike Information Criterion (AIC), the Agricultural, Industrial sector andServices sector models have an optimal lag length of 12 while, the Agricultural sector model has an optimal lag length of 11.

Further, the Bounds approach to cointegration was carried and the results for the three models presented in Table 4. The result shows that all the models passed the test hence, there exist a long run relationship among the variables in the models where, the F-Statistics exceeds the upper limit of the critical statistics at 1% level of significance.

Table 4: Bounds Test Results for the Sectoral model

Sector	F-Statistics	K	I(0) – I(1) @ 10%	I(0) – I(1) @ 5%	I(0) – I(1) @ 1%
AGRICULTURAL	5.897	6	2.12 – 3.23	2.45 – 3.61	3.15 – 4.43
INDUSTRIAL	6.874	6	2.12 – 3.23	2.45 – 3.61	3.15 – 4.43
SERVICES	6.194	6	2.12 – 3.23	2.45 – 3.61	3.15 – 4.43

Source: Author's computation, 2019

In the long run model for agricultural sector, it was revealed that, apart from foreign debt (LFORD), government consumption expenditure (LGOVC) and oil revenue (LOR), all other variables were significant in explaining variation in the output of the sector in the long run. Interestingly, for industrial sector almost all the fiscal variables examined are highly significant in explaining variation in the sector's output except for non-oil revenue. For the services sector, the results show that the sector responds only to changes in public debt (both foreign and domestic) while its response to changes in government consumption expenditure is only significant at 10% level of significance.

Specifically, for a percentage increase in domestic debt, the output of the agricultural and services sectors responded positively by 0.54% and 4.16 respectively. This is unlike the response of industrial sector where a 1% increase in domestic debt decreases the sector's output by 0.54%. This implies that while domestic debt crowd-in agricultural and services sectors' output, it has a crowd-out effect on industrial output in the long run. An examination of the effects of foreign debt and government consumption expenditure on the sectors however reveals that, a 1% increase in foreign debt and government consumption expenditure increase industrial sector output by 0.19% and 0.59% respectively, while they decreases the output of the services sector by 1.69% and 3.16% respectively. The results show that, the two fiscal policy instruments have no significant effects on agricultural output in the long run.Also, government investment expenditure has positive effect on industrial output as a unit increase in the variable increases the output of the sector by 0.13% at 1% level of significance, while the effect of the fiscal variable on agricultural output is detrimental.

A look at the effect of government revenue on the output of the three sector reveals that, while non-oil revenue is significant in explaining changes in agricultural sector, as a percentage change in the variable increases the sector's output by 0.32%, it effect on industrial and servicessectors is non-significant. Oil revenue on the other hand has significant incremental relationship on industrial sector output while its effect on the other two sectors are not significant in the long run.

Table 5: Long Run Model Results for the Sectoral model

Variables	AGRICULTURAL	INDUSTRIAL	SERVICES
LDOMD	0.543** (0.211) [2.573]	-0.521*** (0.089) [-5.834]	4.158** (1.953) [2.129]
LFORD	-0.072 (0.066) [-1.081]	0.187*** (0.031) [5.947]	-1.691** (0.794) [-2.131]
LGOVC	-0.388 (0.241) [-1.606]	0.594*** (0.050) [11.980]	-3.155* (1.886) [-1.673]
LGOVI	-0.305* (0.174) [-1.748]	0.133*** (0.021) [6.410]	-1.365 (1.171) [-1.166]
LNOR	0.819*** (0.303) [2.700]	-0.049 (0.052) [-0.959]	3.010 (1.855) [1.623]
LOR	0.120 (0.196) [0.560]	0.327*** (0.035) [9.337]	-0.988 (0.843) [-1.173]

Note: *, ** and *** represent 10%, 5% and 1%, respectively. Also, ( ) and [ ] represent standard error and t statistics, respectively.

Source: Author's computation, 2019

In the short run analysis, the post-estimation test result as presented in Table 5 shows that for all the model, the residuals are normally distributed, no serial correlation, homoscedasticity exist and the model is stable except for the variance of the model which shows instability (as seen in the result of the CUSUM SQ test result). Further, an examination of the diagnostic tests of the model suggests that all the variables were able to explain a large portion of the variation in the outputs of the sectors.

Table 6: Post Estimation Tests for the Sectoral models

Test	AGRICULTURAL	INDUSTRIAL	SERVICES
Normality	0.028 (0.986)	3.361 (0.186)	2.704 (0.259)
Serial Correlation	2.111 (0.129)	0.428 (0.654)	0.044 (0.957)
Heteroskedasticity	1.293 (0.144)	0.691 (0.932)	0.739 (0.895)
Stability (CUSUM)	Stable	Stable	Stable
Stability (CUSUM SQ)	Not Stable	Not Stable	Not Stable

Source: Author's computation, 2019

As revealed in Table 7, the fiscal policy variables were jointly able to explain variations in the outputs of the three sectors to the tune of 97.3%, 98.8% and 95.2% for the agricultural, industrial and services sectors respectively. A similar result was found for the adjusted R-squared. Jointly, the variables significantly explain variations in the sectors' output and none of the models displayed the first order serial correlation as seen in the figures of the Durbin-Watson test results.

Also, the results reveal that the errors of the past as corrected in the present period showed that for that model on the Agricultural sector, 18.1% out of the past errors were corrected in the present period while for the industrial sector, past errors corrected in the present was about 63% and in the services sector only 6.8% of past errors was correct in the present period.

For the agricultural sector, past periods positively affect the output of the sector at an average of 0.2% up to the last four quarters, while from the fifth quarter period exerts a significant negative effect on the present quarter output to the tune of 0.50%. This is similar to the industrial current output response to its past period output as past months' growth in the sector contributed to the current month growth except for the fourth, seventh and eighth month that did not show evidence of statistical. The effect of past outputs in the services sector up to the eighth quarter also showed mixed results. The first and second quarters were not significant in explaining variation in the current output of the sector. However, the third and fourth quarters were significant with a negative effect in the third quarter while a positive effect ensued in the fourth. The same results were also obtained for both the seventh and the eight quarter.

Table 7: Short Run Model Results for the Sectoral models

Variables	AGRICULTURAL	INDUSTRIAL	SERVICES
Constant	0.750***	1.053***	0.605***
D(DEPENDENT(-1))	0.122**	0.906***	0.043
D(DEPENDENT(-2))	0.208***	0.472***	0.037
D(DEPENDENT(-3))	0.205***	0.223**	-0.123*
D(DEPENDENT(-4))	0.250***	0.129	0.249***
D(DEPENDENT(-5))	-0.502***	0.544**	-0.121
D(DEPENDENT(-6))	-0.003	0.771***	-0.099
D(DEPENDENT(-7))	-0.091	-0.120	-0.455***
D(DEPENDENT(-8))	-0.164*	0.014	0.740***
D(LDOMD)	0.205	-0.242***	-0.026
D(LDOMD(-1))	-0.671***	0.292***	-0.294
D(LDOMD(-2))	-0.097	0.543***	-0.354
D(LDOMD(-3))	-0.224	-0.019	0.028
D(LDOMD(-4))	-0.139	0.785***	-0.340
D(LDOMD(-5))	0.363*	0.275**	-0.076

D(LDOMD(-6))	-0.119	0.334**	-0.138
D(LDOMD(-7))	-0.245	0.316**	-0.202
D(LDOMD(-8))	-0.889***	0.341***	-1.110***
D(LFORD)	-0.081***	-0.028	-0.036
D(LFORD(-1))		-0.038	0.088*
D(LFORD(-2))		-0.076***	0.107**
D(LFORD(-3))		-0.057**	0.071
D(LFORD(-4))		-0.009	0.025
D(LFORD(-5))		-0.048*	0.055
D(LFORD(-6))		-0.048*	0.005
D(LFORD(-7))		-0.066**	-0.039
D(LFORD(-8))		-0.132***	0.168***
D(LGOVC)	0.132	0.026	-0.039
D(LGOVC(-1))	0.005	-0.362***	0.136
D(LGOVC(-2))	0.087	-0.252***	0.201**
D(LGOVC(-3))	0.043	-0.299***	0.174*
D(LGOVC(-4))	0.017	-0.376***	0.099
D(LGOVC(-5))	0.030	-0.135**	0.150
D(LGOVC(-6))	0.133	-0.150***	0.143
D(LGOVC(-7))	0.008	-0.100**	0.137
D(LGOVC(-8))	0.400***	0.088**	0.343***
D(LGOVI)	0.256***	0.016	-0.059
D(LGOVI(-1))	0.111***	-0.114***	0.102***
D(LGOVI(-2))	0.085***	0.070***	0.113***
D(LGOVI(-3))	0.016	-0.098***	0.083***
D(LGOVI(-4))	0.103***	-0.120***	0.059***
D(LGOVI(-5))	0.103***	-0.015*	0.050***
D(LGOVI(-6))	0.071***	0.021***	0.072***
D(LGOVI(-7))	-0.045***	-0.010	0.059***
D(LGOVI(-8))	-0.027**	-0.032***	0.003
D(LNOR)	0.547***	0.310***	0.464***
D(LNOR(-1))	-0.095**	-0.084***	-0.173***
D(LNOR(-2))	-0.265***	-0.009	-0.191***
D(LNOR(-3))	-0.114***	0.035	-0.181***
D(LNOR(-4))	-0.045	0.026	-0.249***
D(LNOR(-5))	0.174***	-0.029	-0.086*
D(LNOR(-6))	-0.144***	-0.120***	-0.035
D(LNOR(-7))	-0.118***	0.003	0.002
D(LNOR(-8))	-0.267***	0.012	-0.294***
D(LOR)	0.125***	0.074***	0.204***
D(LOR(-1))	-0.242***	-0.309***	-0.007
D(LOR(-2))	0.056	-0.144***	0.138**
D(LOR(-3))	0.060	-0.161***	0.292***

D(LOR(-4))	-0.234***	-0.100**	-0.110
D(LOR(-5))	-0.074	-0.136***	0.113
D(LOR(-6))	-0.003	-0.186***	0.115
D(LOR(-7))	0.080	0.130***	0.112
D(LOR(-8))	0.072	-0.046	0.149
CointEq(-1)*	-0.181***	-0.633***	-0.068***
R-squared	0.973	0.988	0.952
Adjusted R-squared	0.952	0.969	0.905
F-statistic	46.876	52.650	20.141
Prob(F-statistic)	0.000	0.000	0.000
Durbin-Watson stat	1.684	2.180	2.002

Note: *, ** and *** represents 10%, 5% and 1%, respectively

Source: Author's compilation, 2019

An examination of the effects of fiscal policy variables on the three key sectors reveals that both domestic and foreign debts do not have a significant effect on agricultural sector output for most of the quarters except for the immediate past quarter and the quarter eight for domestic debt which have a negative effect on the current output as a unit increase in domestic debt deeps the sector's output to the tune of approximately 0.67% and 0.89 respectively. The sector also responds negatively to foreign debt only in the current period while all the other periods are not statistically significant in explaining variation in the sector's output.

For the industrial sector, it was found that a percentage change in domestic debt in the current period resulted into a negative and elastic response for current output in the sector. However, the sector's output responded positively to the first and second quarters at 1 percent level of significance. The positive effects again continues in the fourth to eight quarters. As for foreign debt, the result shows that the fiscal policy variable does not have any significant effect on the industrial sector output for the current and the first quarters. However beginning from the second quarter down to the eighth quarter, foreign debt exerts negative effect on the current output of the sector. Domestic and foreign debts were not seen to be significant in explaining variation in the services sector's output for most of the periods except for the eighth quarter. During this period it was revealed that while domestic debt exerts a negative effect on services output sector, foreign debt has a positive effect on the sector's output both at 1 percent level of significance.

Also, government expenditure was disaggregated into consumption and investment expenditure with a view to examine their differential effects on the sectoral output. The results reveal that government consumption expenditure from the current period till the past seventh period has no significant effect on agricultural sector until the eight period where a percentage increase in government consumption produced an increase in current output in the sector by 0.40% at 1% level of significance. This was unlike government investment expenditure which exerts a positive effect on the sector's output from the current period up to the sixth period.

The effects of the two components of expenditure were however significant in explaining variations in the industrial and services sectors. It is however observed that while they both exert negative effects on industrial sector's output, their effects on services output was positive almost throughout the periods. This implies that government expenditure either consumption or investment crowd-out industrial sector's output while it crowd-in services sector's output. Similarly, the outlook of the result of the effects of government revenue (oil and non-oil) on the sectors' output also reveal a mixed result. Except for the current period of oil (LOR) and non-oil (LNOR) revenue which have a positive effects on the sectoral output, the two fiscal policy variables have a significantly negative relationship with the output of the three sector for most of the periods. It is noteworthy however, that oil revenue exerts a positive effects on services sector's output in the second and third periods as a unit increase in oil revenue increase the sector's output by 0.13 % and 0.29 % respectively.

V. SUMMARY AND CONCLUSION

Several attempts have been made to empirically examine the effects of fiscal policy variables on economic growth across countries with a view to verifying the three major theoretical views (positive, negative and neutral effects). Although the relationship between government actions and economic growth has been studied extensively with highly controversial results, it is however, not clear if the views on the effect of fiscal policy measures on the real aggregate output holds for each of the key sectors of the economy which makes it difficult to make a policy suggestion from either a theoretical or an empirical perspective.

Unlike most of the previous studies which have examined this relationship, this paper disaggregate the total output into sectoral output and examine the differential effects of the components of government expenditure (investment

and consumption), public debts (foreign and domestic) and government revenue (oil and non-oil) on three key sectors of the Nigeria economy, namely agriculture, industry and servicessectors' performance in Nigeria. The disparity in the sectoral response to fiscal policy variables may be responsible for the difficulty of conducting uniform and inclusive fiscal policy stance in Nigeria. The alternative policy approach may be to adopt sector specific policy measures within the overall fiscal policy mechanism framework.

For this purpose, time series data covering the 1970-2018 period on the variables of interest were analyzed by employing the unit root test, cointegration tests and ARDL. Contrary to a majority of other studies, from the estimated relationship, it was found that the fiscal policy variables examined have differential effects on sectoral output. For instance, while domestic debt and government investment expenditure crowd-in agricultural and services sectors, industrial sector responded negatively to an increase in domestic debt. Similarly, while foreign debt, government investment expenditure as well as consumption expenditure increase industrial sector's output, foreign debt and consumption expenditure have detrimental effects on services sector's output in the long run. It was also found that non-oil revenue has incremental effect on agricultural output while oil revenue boost industrial sector's performance.

Furthermore, it was revealed that government investment expenditure has positive effect on industrial output, while the effect of the fiscal variable on agricultural output is detrimental. This implies that government can neutralize the negative effects of its domestic debt on industrial sector's output either by increasing its consumption expenditure or rely more on foreign debt.Another implication from the result is that government investment expenditure has not been tailored towards improving agricultural sectors output. It is therefore recommended that government should focus more on investing in infrastructure such as irrigation, access road to farm land, storage facilities, processing equipment like milling machine, etc. in other to boost productivity in the sector.

REFERENCE

[1] Abdullah H. A. (2000). The Relationship between Government Expenditure and Economic Growth in Saudi Arabia. Journal of Administrative Science, Vol 12 (2):173-191.

[2] Abu N. and Abdullahi U. (2010). Government Expenditure and Economic Growth in Nigeria, 1970-2008: A Disaggregated Analysis, Business and Economics Journal, Volume 4. 1

[3] Adenikinju, A and Olofin, S. O (2000). Economic Policy and Manufacturing Sector Growth Performance in Africa. *The Nigeria Journal of Economic and Social Studies*, Volume 42, No 1 pages 1 -14.

[4] Akanni, K.A. and Osinowo O.H (2013). Effect of Fiscal Instability on Economic Growth in Nigeria.*Advances in Economics and Business* 1(2): 124-133, 2013. Horizon Research Publishing, United States

[5] Akbar M and Jamil F. (2012) Monetary and fiscal policies' effect on agricultural growth: GMM estimation and simulation analysis,*Economic Modelling* 29 (2012) 1909–1920

[6] Al-Yousif Y. (2000): Does Government Expenditure Inhibit or Promote Economic Growth: Some Empirical Evidence from Saudi Arabia

[7] Arikpo O. F., Ogar A. and Ojong, C. M. (2017). The Impact of Fiscal Policy on the Performance of the Manufacturing Sector in Nigeria. *Euro-Asian Journal of Economics and Finance*, Volume 5, Issue 1 Pp 11-22

[8] Aschauer D.A. (1988). The Equilibrium Approach to Fiscal Policy, Journal of Money, Credit and Banking, Blackwell Publishing, 20 (1), 41-62.

[9] _____ (1989). Is public expenditure productive? Journal of Monetary Economics, Elsevier, 23 (2), 177-200.

[10] Bakare-Aremu, T. A. and Osobase, A. O. (2015) Effect of Fiscal and Monetary Policies on Industrial Sector Performance- Evidence from Nigeria. Journal of Economics and Sustainable Development www.iiste.org ISSN 2222-1700 (Paper) ISSN 2222-2855 (Online) Vol.6, No.17, 2015

[11] Barro, R. J. (1991). "Government Spending in a Simple Model of Endogenous Growth. *Journal of Political Economy*, Vol. 98, S103-S125.

[12] Barth J.R. and Bradley M.D. (1987). The Impact of Government Spending on Economic Activity, George Washington University Manuscript.

[13] Bergh A. and Henrekson M. (2011). Government Size and Growth: a survey and interpretation of the evidence, Journal of Economic Surveys, 25, 872–897.

[14] Blinder, A.S. and Robert, M. S. (1979). Does Fiscal Policy Matter? *Journal of Public Economics*, Vol. 2: 319-337.

[15] Buiter, W. H. (1977). "Crowding Out and the Effectiveness of Fiscal Policy". *Journal of Public Economics*. Vol. 7. No. 3. Pp. 309–328.

[16] Colombier C. (2009). Growth Effects of Fiscal Policies: An Application of Robust Modified M-Estimator, Applied Economics, 41(7), 899–912.

[17] Dalamagas B. (2000). Public sector and economic growth: the Greek experience", Applied Economics, 32, 277-288.

[18] Ekpo, A. H. (1994) "A Re-examination of the Theory and Philosophy of Structural Adjustment" The Nigerian Journal of Economic and Social Studies Vol. 40, No. 1; 64-77.

[19] Eze, O. R. and Ogiji, F. O. (2013). Impact of Fiscal Policy on the Manufacturing Sector Output in Nigeria: An Error Correction Analysis. *International Journal of Business and Management Review* (IJBMR) Vol.1, No.3, pp. 35-55.

[20] Grier K. B. and Tullock G. (1989). An Empirical Analysis of Cross-National Economic Growth, 1951–80, Journal of Monetary Economics, 24 (2), 259–276.

[21] Gwartney J., Lawson R. and Holcombe R. (1998). The size and functions of government and economic growth, Joint Economic Committee, Washington, D.C., April.

[22] Johansen, S., (1988). "Statistical Analysis of Cointegrated Vectors". *Journal of Economic Dynamic and Control*, Vol. 12, pp. 231-254

[23] _____ (1991). Estimation and Hypothesis Testing of Co-integrating Vectors in Gaussian Vector Autoregressive Models, Econometrica, 59: 1551–1580.

[24] Johansen, S. and Juselius, K. (1990). "Maximum Likelihood Estimation and Inferences on Cointegration – with application to the demand for money". *Oxford Bulletin of Economics and Statistics*, Vol. 52, pp. 169-210.

[25] Keynes, J. M. (1936). "The General Theory of Employment, Interest and Money", *Oxford University Press, London.*

[26] Lopez R., Thomas V. and Wang Y. (2010). The Quality of Growth: Fiscal Policies for Better Results, IEG World Bank.

[27] Loto M. A. (2010): Impact of government sectoral expenditure on economic growth. Journal of Economics and International Finance Vol. 3(11), pp. 646-652.

[28] Nourzad F. and Vrieze M. (1995). Public Capital Formation and Productivity Growth: Some International Evidence, Journal of Productivity Analysis, 6(4): 283–95.

[29] Nurudeen A. and Usman A. (2010). "Government Expenditure and Economic Growth In Nigeria, 19702008: A Disaggregated Analysis". Business and Economics Journal, Volume 2010: BEJ-4.
[30] Obi, B. and Abu, N. (2009): "Do Fiscal Deficits Raise Interest Rates in Nigeria?" A vector autoregression approach. Journal of Applied Quantitative Methods. Vol. 4; No. 3, 263-281
[31] Ogbole F. O., Sonny N. A. and Isaac D. E. (2011): "Fiscal policy: Its impact on economic growth in Nigeria". Journal of Economics and International Finance Vol. 3(6), pp. 407-417.
[32] Olaloye, A. O., Ikhide, S. I. (1995), "Economic Sustainability and the Role of Fiscal and Monetary Policies in a Depressed Economy: The Case Study of Nigeria." *Sustainable Development*,Vol. 3. 89-100.
[33] Omitogun, O. and Ayinla, T.A. (2007). Fiscal Policy and Nigerian Economic Growth. Journal of Research in National Development. 5 (2) December.
[34] Onuorah, A. C.and Akujuobi, L.E. (2012). "Empirical Analysis of Public Expenditure and Economic Growth in Nigeria", Arabian Journal of Business and Management Review (OMAN Chapter) Vol. 1, No.11; June, 46.
[35] Oseni I. O., (2013). Fiscal Policy and Sectoral Output in Nigeria: A Multivariate Cointegration Approach. *Journal of Economics and Development Studies*, Vol. 1 No. 2, pp 26-34
[36] Oseni I. O. and Onakoya A. B. (2012). "Fiscal Policy Variables-Growth Effect: Hypothesis Testing". American Journal of Business and Management Vol. 1, No. 3, 2012, pp100-107
[37] Osinowo O. H. (2015)Effect of Fiscal Policy on Sectoral Output Growth in Nigeria. *Advances in Economics and Business* 3(6): 195-203
[38] Pechman J.A. (2004). "The Budget Deficits: Does it Matter"? Paper Presented at the City Club of Cleveland (USA).
[39] Pesaran, M. H., and Shin, Y. (1999). An Autoregressive Distributed Lag Modelling Approach to Co-integration Analysis in Econometrics and Economic Theory in the 20th Century. Cambridge University Press, Cambridge, Chapter 11, 1–31
[40] Peter N. M. & Simeon G. N. (2011). "Econometric Analysis of the Impact of Fiscal Policy Variables on Nigeria's Economic Growth (1970 - 2009)". International Journal of Economic Development Research and Investment, Vol. 2 No. 1; April, pp 171-183. [35]
[41] Ram R. (1986). Government size and economic growth: A new framework and some evidence from cross section and Time-Series Data, American Economic Review, 76, 191- 203.
[42] Rangarajan, C. and Srivastava, D. (2005). "Fiscal Deficits and Government Debt in India: Implications for Growth and Stabilization", *National Institute of Public Finance and Policy (NIPFP)*, Working Paper no 35
[43] Raymond A. E., Adigwe, P. K. and Echekoba, Felix N. (2015). Tax as a Fiscal Policy and Manufacturing Company's Performance as an Engine for Economic Growth in Nigeria. *European Journal of Business, Economics and Accountancy*, Vol. 3, No. 3, ISSN 2056-6018
[44] Saibu M.O. (2010): Output Fluctuations and Macroeconomic Policy in Nigeria, Department of Economics, Obafemi Awolowo University, Ile-Ife, Nigeria.
[45] Sanchez-Robles B. (1998). Infrastructure Investment and Growth: Some Empirical Evidence, Contemporary Economic Policy, 16 (1), 98–108.
[46] Sanusi, L.S. (2010). Growth Prospects for the Nigerian Economy. Paper delivered in a Public lecture at the Igbenedion University Eighth Convocation Ceremony, Okada, Edo State. Nigeria. Research Department, Central Bank of Nigeria.
[47] Sikiru, J. B. and Umaru, A. (2012). Fiscal policy and economic growth relationship in Nigeria. International Journal of Business Social sciences, 2(17), 244-249.
[48] Turnovsky S. and Fisher W. (1995). The composition of government expenditure and its consequence for macroeconomic performance, Journal of Economic Dynamics and Control, 19, 747-786.
[49] Zirra, C. T. and Ezie, O. (2017), Government Fiscal Policy and Agricultural Sector Outputs in Nigeria: Evidence from Fully Modified Ordinary Least Square (FMOLS), *Journal of Research in Business, Economics and Management* (JRBEM) ISSN: 2395-2210 Vol.8 Issue 3 pp 1434-1443