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FISCAL POLICY AND NON-OIL OUTPUT IN NIGERIA

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ABSTRACT

Numerous studies on the effect of fiscal policy on real economic activities have generated mixed and inconclusive results, and shortage of non-oil related empirical literature on this issue in Nigeria needs to be addressed. Therefore, this study examined the effect of fiscal policy on non-oil output in Nigeria. The dependent variable is non-oil output while the independent variables are fiscal policy instruments defined as government capital expenditure, government recurrent expenditure, corporate income tax revenue, external borrowing and domestic borrowing. Pre-estimation diagnostic, error correction model and post-estimation diagnostic analyses were conducted using Central Bank of Nigeria's secondary time series data spanning 1980 to 2016. The pre-tests results showed that except capital expenditures, all other variables were not normally distributed, all variables were individually integrated of order I(1) and jointly exhibited cointegrating relationships. The ECM model analysis revealed that the utilized measures of fiscal policy directly and significantly influenced non-oil output over the sampled period, except domestic and external borrowings, which were also significant but inversely related with the regressand. The ECM coefficient was consistent with theory and significant at 5 per cent, with considerably robust speed of adjustment. The various post-tests individually certified the study fit for policy. Therefore, the study recommends that fiscal policy authorities ensure deployment of quantitative fiscal easing via government's capital spending, recurrent spending, domestic and external borrowings to create the needed enabling environment for improving investment in the non-oil sector, which may translate to expanded tax base and consequent supply of sufficient real non-oil goods for higher recurrent patronage. Also, borrowings should be cut but channelled into supportive infrastructure and critical sub-sectors like agriculture, manufacturing, solid minerals amongst others.

Keywords*:* Fiscal policy, Non-oil Output, Dutch Disease, Fiscal Policy Tools, Error Correction Mechanism, Nigerian Economy.

1.0 INTRODUCTION

It is common knowledge that like numerous African countries, Nigeria is largely a producer of primary products, ranging from non-oil to crude oil and gas products. During the 1960s, the non-oil sector which was led by the agricultural sub-sector was the mainstay of the Nigerian economy. What is however experienced over the past three decades; a trajectory from non-oil to crude oil and gas dominance as the major source of government revenue and foreign exchange earner in Nigeria began in the 1970s. This structural change from the non-oil sector and its effects, technically referred to as Dutch Disease rendered the economy vulnerable to

uncertainties associated with key oil sector fundamentals (Onodugo, Benjamine and Nwuba, 2015). Consequently, the economy is plunged into grappling with persistent macroeconomic maladies which include unsustainable growth, exchange rate volatility, loss of jobs, high cost of living to mention a few, as the non-oil economy is not strengthened enough to absorb shocks occasioned by gyration in the sister (crude oil and gas) sector (Emmanuel, 2015).

The non-oil sector of the Nigerian economy comprises the collections of economic activities, excluding the activities of oil and gas industry and those directly related to it. The sector broadly includes agricultural, manufacturing and service sub-sectors. However, in terms of supporting the economy (that is already standing on the volatile legs of the petroleum and gas industry), the non-oil sector has continued to perform below its potentials. There is therefore, the urgent need for deliberate macroeconomic policy action to launch the sector on the path of broad-based production and stable/inclusive economic growth as well as international competitiveness.

Burdened by the preceding desire, the concern of successive government's fiscal policy conduct over the years has been to robustly restructure the Nigeria's economy for stable/inclusive growth via the non-oil sector (Riti, Gubak and Madina, 2016). Thus, fiscal policy is any deliberate management of revenue, expenditure and borrowings by government to influence the workings of the economy towards desired direction. Its coordination is vested in the ministry of finance which determines the appropriateness, considering the projected economic expectations. The utilization of fiscal policy instruments for restructuring and re-engineering the performance of the non-oil sector becomes necessary for important reasons. First, the cyclical nature of the international oil market with the attendant volatility of government revenue gives credence to any argument for deliberate restructuring for greater reliance on non-oil economy. Secondly, the facts that crude oil is an exhaustible asset and its facilities are often vandalized make it unreliable for sustainable development of the Nigerian economy (Utomi, 2004). Thus, the undesirable effects of over reliance on crude oil and gas economy amplified the need for diversification of the Nigerian economy towards the non-oil sector.

However, there is a dearth of empirical literature on the effect of fiscal policy on non-oil output in Nigeria. What is rather easily found in existing literature are fiscal policy and economic growth, fiscal policy and manufacturing sector output, fiscal policy and non-oil export among others (Peter and Simeon, 2011; Eze and Ogiji, 2013; Babalola, 2015; Maku, 2015; Ubesie, 2016; etc.). While some of these studies utilized the single ordinary least squares estimation technique, others applied descriptive technique, error correction mechanism, autoregressive distributed lag bounds testing approach or the vector autoregression method of data analysis, thereby producing mixed results.

In view of the lacuna in existing empirical literature, this study examined the effects of fiscal policy instruments on non-oil output in Nigeria. The study focused on the impact of government capital expenditure, government recurrent expenditure, corporate income tax revenue, external borrowing and domestic borrowing on Nigeria's non-oil output from 1980 to 2016. Other sections of this paper are organized as follows: the review of related literature and the study

methodology are presented in sections two and three respectively. Section four presented the empirical results and discussion whilst section five focused on the conclusion and policy recommendation.

2.0 REVIEW OF RELATED LITERATURE

2.1 Theoretical Framework

The implicit theoretical basis of this study is embedded in the Keynesian theory. The theory posits that fiscal policy (FP) principally influences income and output growth. The analysis of the Keynesian theory concentrates on the issue of monetary liquidity trap, but inference that money supply is only indirectly significant for growth determination through the instrumentality of interest rate (Keynes, 1936). The important implication of the liquidity trap is that when the rate of interest falls to the level at which liquidity trap occurs, additional supply of money will not reduce interest rate any further to boost private investment (Onuchuku and Adoghor, 2000). Therefore, if the level of private investment that should occur at the minimum rate of interest is still not enough to provide expenditure equal to full employment output, then monetary policy (MP) is not effective for driving investment and output during period of economic recession.

However, the Keynesians prescribed that in a liquidity trap situation, an expansionary fiscal policy is suitable for re-engineering investment and output. In fact, as long as we remain in liquidity trap, only employment of quantitative fiscal easing will generate full productive effect on economic activities as predicted by the government spending multiplier because interest rates do not rise at all and there is no crowding out of private investment to offset the effects of the increase in government expenditure (Anyanwu, 1993 and Ahuja, 2013). Hence, the Keynesians support for the efficacy of fiscal actions for boosting non-oil (economic) activities.

2.2 Empirical Literature

Although, there is paucity of directly related empirical literature that is captioned in line with the objective of this study, a good number of studies exist, especially in the perspective of economic growth. However, there are mixed results about the effects of fiscal policy instruments on aggregate output variables.

A research conducted by Ghazi and Martha (2010) applied the Johansen cointegration and vector error-correction methodology to examine the relationship between government spending and non-oil GDP in Saudi Arabia, using data spanning 1969 to 2005. The study revealed that increases in government spending positively and significantly influenced non-oil GDP growth rate in the long-run. The results suggested that contrary to popular view, recurrent expenditure proved more supportive to non-oil sector growth than capital expenditure over the period.

The study of Peter and Simeon (2011) used vector auto regression (VAR) and error correction techniques to analyze time series data covering 1970 to 2009. The study revealed that there is a long-run relationship between fiscal policy variables and economic growth in Nigeria. The effectiveness of fiscal policy in spurring economic growth in Zimbabwe from 1980 to 2010 was examined by Munongo (2012). Using Johansen cointegration and error-correction framework, the results reported that government consumption expenditure and income tax positively affected

economic growth during the period covered by the study while government's capital spending negatively related with economic growth.

Chude and Chude (2013) examined the impact of public expenditure on economic growth in Nigeria from 1977 to 2012, adopting Error Correction Model (ECM) for the analyses. They suggested from the results that total expenditure in education is highly significant for growing the Nigerian economy in the long run, and that capital spending in the educational sector is of critical importance to spurring economic growth in Nigeria.

Eze and Ogiji (2013) examined the impact of fiscal policy on the Nigeria's manufacturing sector output, applying the cointegration and error correction mechanism for the analyses of relevant time series data spanning 1990 to 2010. The results revealed that government expenditure is a significant stimulant to the Nigeria's manufacturing sector output in the long run. Thus, expansionary fiscal policy was suggested to boost growth of the manufacturing sector's output. In similar study, Falade and Olagbaju (2015) reported that from 1970 to 2013, government capital expenditure positively influenced manufacturing sector output in Nigeria as recurrent expenditure exerts inverse influence on manufacturing sector output. The report suggested appropriation of larger part of the annual budget to capital expenditure to create an enabling hard infrastructural environment to stimulate the manufacturing sector's output in the country.

In a related study, utilizing the cointegration and Error Correction Mechanism, Babalola (2015) reported that from 1981 to 2013 economic development was driven by government recurrent expenditure and government investment in both short and long run, capital expenditure in the short run while tax revenue inversely impacted on the economy in both short and long run. Similarly, Maku (2015) in a contrary approach examined the impact of fiscal policy on economic growth of the Nigerian economy, using data from 1970 to 2011, adopting ordinary least square for long-run estimate and diagnostic test for consistency of instruments. The results showed that fiscal policy significantly stimulated economic growth within the captured period, which signals that suitable fiscal measures such as the expansionary policy actions would drive economic growth in the country. Also, Ubesie (2016) employed the ordinary least square (OLS) multiple regression analysis method to study the effect of fiscal policy on economic growth in Nigeria from 1985 to 2015. The results suggested that total government expenditures were significant to government revenue within the period covered in the study. However, investment expenditures were much lower than recurrent expenditures evidencing the poor growth in the country's economy.

Onakoya and Afintinni (2016) conducted econometric study of how tax yields influenced Economic growth in Nigeria from 1980 to 2013. The Engle-Granger Cointegration and Vector Error correction model analysis were conducted and the report revealed that there is a long run relationship between taxation and economic growth in Nigeria. The study also showed a significant and positive relationship at the conventional five per cent level between Petroleum profit tax, Company Income tax and economic growth, but customs and Excise Duties negatively

related with economic growth. The tax components were however not jointly significant in boosting economic growth in Nigeria.

Applying the Autoregressive Distributed Lag Bounds Testing approach, Hasanov, Mikayilov, Yusifov and Aliyev (2016) investigated the effects of fiscal decentralization on non-oil sector development in Azerbaijan, using quarterly data from 2002 to 2013. The results revealed that share of local expenditures and revenues in total, measures of fiscal decentralization, have negative impact on non-oil GDP.

3.0 METHODOLOGY

This section captured the methods employed to obtain relevant information on effect of fiscal policy on non-oil output in Nigeria.

3.1. Data Source

Time series data covering a period of thirty-seven years, from 1980 to 2016 were obtained from Central Bank of Nigeria and Federal Inland Revenue Service.

3.2. Model Specification

The research model for this study is founded on the explicit form of the Keynesian theory which argued that fiscal policy (FP) measures are more influential for income and output growth. It is also adapted to the 2013 empirical model of Eze and Ogiji whose study expressed that;

$$MOP = f(GEXP, GTR). \quad (3.1)$$

Where MOP = Manufacturing Sector Output, GEXP = Government Expenditure and GTR = Government Tax Revenue.

However, following the theoretical underpinning with slight modification of equation (3.1), the functional relation of this study is specified as:

$$Y = f(X): NOGDP = f(FP) \quad (3.2)$$

But $FP = (GCXP, GRXP, CYTR, EXTB, DOMB)$ (3.3)

Thus, substituting (3.3) into (3.2) yielded

$$NOGDP = f(GCXP, GRXP, CYTR, EXTB, DOMB) \quad (3.4)$$

The linear form of equation (3.4) is taken to yield;

$$NOGDP_t = \beta_0 + \beta_1 GCXP_t + \beta_2 GRXP_t + \beta_3 CYTR_t + \beta_4 EXTB_t + \beta_5 DOMB_t + \mathcal{E}_t \quad (3.5)$$

Where; the dependent variable, *Y* depicts non-oil sector's gross domestic product (*NOGDP*) and the independent variable, *FP* implies selected fiscal policy tools, which are government capital expenditure (*GCXP*), government recurrent expenditure (*GRXP*), corporate income tax revenue (C*YTR*), external borrowings *(EXTB)*, domestic borrowings *(DOMB)*, $\mathcal{E}$ *is* error term which denotes other variables not specified in the model, t is the period of time and β_0 is the intercept. The parameter estimates are expected to behave in line with $\beta_1 > 0$, $\beta_2 > 0$, $\beta_3 > 0$, $\beta_4 > 0$ and $\beta_5 > 0$.

3.3. Model Estimation Procedure

The following estimation procedure was employed in this study. The first step is descriptive statistics to meaningfully understand, describe and summarize the idiosyncratic features of the time series data (Cookey, 2001) and to ascertain via their averages and Jarque-Bera values whether the variables are normally distributed.

The next step is the determination of the stability of the variables. For the purpose of this research, the Augmented Dickey-fuller (ADF) (Dickey and Fuller, 1981) unit root test is applied. This test is required because a non-stationary time series data invalidates standard empirical analyses results. The presence of a stochastic trend is determined by testing for the unit roots properties of the time series data. The general form of the ADF test statistics is estimated on the basis of the following expression:

$$\Delta Y_t = \alpha_0 + \alpha_1 t + \delta Y_{t-1} + \sum_{i=1}^{n} \alpha_1 \Delta Y_{t-1} + \varepsilon_t \qquad (3.6)$$

Where, Y_t is a time series, t is the linear time trend, Δ is the first difference operator, α_0 is the constant term, n is the optimum number of lags on the dependent variables, ε_t is the error term. The second equation includes both drift and linear time trend.

Thereafter, the Johansen co-integration test is applied to establish whether there is a long-run relationship among the variables. Cointegration test is conducted based on the test proposed by Johansen (1988). Johansen's methodology takes its starting point in the vector autoregression (VAR) of order P given by

$$Y_t = \mu + \Delta_1 Y_{t-1} + \ldots + \Delta_p Y_{t-p} + \varepsilon_t \qquad (3.7)$$

Where Y_t is an nx1 vector of variables that are integrated of order commonly denoted I(1) and ε_t is an nx1 vector of innovations, which can be rewritten as:

$$\Delta Y_t = \mu + \pi Y_{t-1} + \Gamma_1 \Delta Y_{t-1} + \ldots + \Gamma_{p-1} \Delta Y_{t-p+1} + \varepsilon_t \qquad (3.8)$$

Where, $\pi = -(\ell_n - A_1 - \ldots - A_p)\ \Gamma_i$

$= -(A_{i+1} + \ldots + A_p)$

And to determine the number of co-integration vectors, Johansen (1988) and Johansen and Juselius (1990) suggested two statistic tests, the first one is the trace test (λ_{trace}). It tests the null hypothesis that the number of distinct cointegrating vector is less than or equal to n against a general unrestricted alternatives n = r. it is calculated by the expression below:

$$\lambda_{trace(r)} = -T \sum_{r+1}^{n} \ell n\ (1 - \lambda i) \qquad (3.9)$$

where, T = The number of usable observations and the λ_i are the estimated eigenvalue from the matrix. The Second statistical test is the maximum eigenvalue test (λ_{max}) which is calculated according to the following expression:

$$\lambda_{max}\ (r, r+1) = -T\ \ell n(1 - \lambda_{r+1}) \qquad (3.10)$$

The test concerns a test of the null hypothesis that there is r of co-integrating vectors against the alternative that r + 1 co-integrating vector.

The Error Correction Model (ECM) analysis for integrating the short-run dynamics of the variables with their long-run behaviour is also analyzed. The dynamic error correction model is specified as follows:

$$\Delta NOGDP_t = \beta_0 + \sum_{i=1}^{n} \beta_{1t}\Delta GCXP_{t-1} + \sum_{i=1}^{n} \beta_{2t}\Delta GRXP_{t-1} + \sum_{i=1}^{n} \beta_{3t}\Delta CYTR_{t-1} + \sum_{i=1}^{n} \beta_{4t}\Delta EXTB_{t-1} + \sum_{i=1}^{n} \beta_{5t}\Delta DOMB_{t-1} + \delta_1 ECM_{t-1} + \mathcal{E}_t \quad (3.11)$$

Where; δ_1 is the coefficient of ECM and $\mathcal{E}$ is the error term.

Finally, some post estimation diagnostic tests were conducted to confirm the robustness and validity of the regression model for policy recommendation. They are the Wald test, Ramsey Reset's variables linearity test, autocorrelation, heteroscedasticity, normality tests and COSUM's model stability test. The E-views 9.0 software was used to conduct all the analyses. The results of the various evaluations are presented and discussed in the next section.

4.0 EMPIRICAL ANALYSES

4.1 Pre-estimation Diagnostic Tests. They include the Descriptive Statistics and the Unit root tests.

4.1.1 Descriptive Statistics Result

The data characteristics and the summary of the descriptive statistics of the variables are displayed in Table 4.1 below. The result revealed evidence of significant variation in the trends of the variables over the sample period. This is shown by the significant difference between the maximum and minimum values of the series. Regarding the statistical characteristics of the series, the results showed that all the variables are positively skewed.

Table 4.1: Descriptive Statistics Result

Variables	NOGDP	GCXP	GRXP	CYTR	EXTB	DOMB
Mean	24998.52	366.1432	1026.961	240.9176	1179.716	2038.220
Median	15896.72	241.6900	178.1000	33.30000	617.3200	560.8300
Maximum	62393.97	1152.800	4178.600	1204.800	4890.270	11058.20
Minimum	9220.060	4.100000	4.750000	0.400000	1.870000	8.220000
Std. Dev.	17148.56	380.4975	1343.782	368.3232	1384.944	2916.353
Skewness	1.036188	0.663744	1.108459	1.413129	1.313202	1.603382
Kurtosis	2.666421	1.988526	2.725795	3.524161	3.505184	4.535737
Jarque-Bera	6.792613	4.294011	7.692783	12.73799	11.02787	19.48948
Probability	0.033497	0.116833	0.021357	0.001714	0.004030	0.000059
Observations	37	37	37	37	37	37

Note: Government capital expenditure (*GCXP*), Government recurrent expenditure (*GRXP*), Corporate income tax revenue (C*YTR*), External borrowings *(EXTB)*, Domestic borrowings *(DOMB) and* Non-oil sector's gross domestic product (*NOGDP*)

Source: *Computed Result (2018), Using E-Views 9*

NOGDP, GCXP and GRXP are platykurtic in nature since their respective kurtosis values 2.67, 1.99 and 2.73 are less than 3, implying their distributions are higher than normal while CYTR, EXTB and DOMB are leptokurtic in nature as their kurtosis values 3.52, 3.51 and 4.54

respectively are more than 3, indicating flatter than normal distribution. Finally, the Jarque-Berra statistic rejected the null hypothesis of normal distribution for NOGDP, GRXP, CYTR, EXTB and DOMB at 5 percent critical value while the null hypothesis of normal distribution for GCXP was accepted at the same critical value. This may have resulted from the problem of trended data, which was examined in the unit root analysis.

4.1.2 Unit Root Test Result

The Augmented Dickey Fuller (ADF) unit root test is conducted to ascertain the status of the time series variables. The null hypothesis is rejected if the test statistics in absolute terms is greater than the test critical values in absolute terms at the conventional 5 percent level of significance chosen for the purpose of this research analysis. The results of the Unit Root tests are presented in Table 4.2.

Table 4.2: ADF Unit Root Test Results

Variables	ADF Test Critical values @ 5%	ADF Test Statistic @ level	ADF Test Statistic @ 1st Difference	Order of Integration
NOGDP	-3.544284	-0.526195	-12.71792	I(1)
GCXP	-3.544284	-2.805849	-7.734552	I(1)
GRXP	-3.544284	-0.392015	-6.429647	I(1)
CYTR	-3.587527	1.731465	-7.007348	I(1)
EXTB	-2.948404	-2.074255	-3.396977	I(1)
DOMB	-3.548490	4.921103	-5.112325	I(1)

Source: Computed Result (2018), Using E-Views 9

The above results showed that all the variables are stationary at first difference, I(1) with constant and deterministic trend, under the Augmented Dickey Fuller Test considering 5 percent level of significance. Therefore, the null hypothesis that the variables have unit root was rejected and the alternative accepted, thus conclude that the variables are integrated of order one.

Since the results of the variables were stationary at first difference, test to determine the long run relationship can be achieved with the application of the Johansen Co-integration test, which is presented in Table 4.3.

4.1.3 Cointegration Test Result

Given that all the variables are found to be integrated of order I(1), the Johansen's cointegration test is used to determine the number of cointegrating equation among the variables. This equation represents the long run equilibrium relationship among the variables. In order to determine the number of cointegrating equations, the Trace and the Maximum Eigenvalue test statistics are examined. Especially, the calculated Trace and Maximum Eigenvalue test statistics

are compared to the critical values at 5 percent level of significance to decide the existence of one or more cointegrating equations.

Table 4.3: Johansen Cointegration Test Result

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.	Max-Eigen Statistic	0.05 Critical Value	Prob.
None	0.932019	248.9746	95.75366	0.0000	94.09828	40.07757	0.0000
At most 1	0.841632	154.8764	69.81889	0.0000	64.49925	33.87687	0.0000
At most 2	0.787278	90.37710	47.85613	0.0000	54.17190	27.58434	0.0000
At most 3	0.431917	36.20520	29.79707	0.0080	19.79205	21.13162	0.0761
At most 4	0.254569	16.41315	15.49471	0.0363	10.28276	14.26460	0.1940
At most 5	0.160672	6.130392	3.841466	0.0133	6.130392	3.841466	0.0133

Trace test indicates 6 cointegrating eqn(s) at the 0.05 level

Max-eigenvalue test indicates 3 cointegrating eqn(s) at the 0.05 level

Source: *Computed Result (2018), Using E-Views 9*

The Trace statistic in Table 4.3 above rejected the null hypothesis that there is no cointegrating relationship and accepted the hypothesis that there is at least one cointegrating equation at 5 percent critical value. Also, the Maximum Eigenvalue statistic rejected the null hypothesis that there is no cointegrating relationship and failed to reject the hypothesis that there is at least one co-integrating equation at the same critical value.

Thus, given that all the variables were integrated of order I(1) and both Trace and Maximum Eigenvalue statistics indicated stable long-run relationship among the variables, the requirements for applying an error correction model are satisfied.

4.2 Model Estimation Results

4.2.1 Error Correction Test Results

Error correction modeling entails utilizing lagged residual to correct for divergence of actual values from the long-run equilibrium value (Iyoha and Ekanem, 2004). Therefore, to adjust for short-run deviations that may have occurred within the period of the study, the general-to-specific principle was followed. The over-parameterized ECM analysis was conducted to show the main dynamic processes in the model, and the lag length was set at three to avoid too short a lag length from hindering the dynamic processes as well as avoiding problems associated with low degree of freedom if higher order lags were used. More so, for data admissibility, theory consistence and convenience in interpretation of the ECM results, the over-parameterized model was transformed to obtain a parsimonious encompassing model, which may be suitable for forecasting purposes. Hence, the result of the parsimonious error correction representation is presented in Table 4.4 below.

Table 4.4: Parsimonious Error Correction Mechanism Result

Variable	Coefficient	t-Statistic	Probability
C	-316.4615	-0.658770	0.5176
D(NOGDP(-1))	0.311097	1.536586	0.1401
D(NOGDP(-2))	0.466931	2.297538	0.0325
D(GCXP)	3.591494	2.424370	0.0249
D(GRXP)	2.481974	2.420462	0.0251
D(CYTR)	9.944382	3.622814	0.0017
D(EXTB)	-0.474205	-2.080511	0.0505
D(DOMB)	-0.658348	-2.199281	0.0398
ECM(-1)	-0.430834	-3.263503	0.0039
R-squared = 0.843083	**D.W. stat**. = 2.152599	**F-statistic** = 8.954681	
Adjusted R-squared = 0.748933	**Prob(F-statistic)** = 0.000013		

Note: Government capital expenditure (*GCXP*), Government recurrent expenditure (*GRXP*), Corporate income tax revenue (C*YTR*), External borrowings *(EXTB)*, Domestic borrowings *(DOMB) and* Non-oil sector's gross domestic product (*NOGDP*)

Source: *Computed Result (2018), Using E-Views 9*

The result above suggested evidence of error correction. The coefficient of ECM has the hypothesized negative sign (-0.430834) and is statistically significant at the conventional 5 per cent critical level. This implies that there is appreciable potential for restoring long run non-oil sector equilibrium should there be short run fiscal policy distortion. The speed of adjustment as shown by the ECM factor implies that if there is distortion in the non-oil sector's equilibrium in the short run, approximately 43 per cent of the sector's output is corrected annually as the variable moves towards restoring equilibrium in the long run. This portrays that there is a strong pressure on NOGDP to restore long run equilibrium whenever there is a distortion. Also, the explanatory power of the variables - R^2 is approximately 0.84, which means that the model is a good fit. This indicates that over the sampled period, about 84 per cent variation in non-oil output is explained by systematic changes in the adopted fiscal policy tools (government capital expenditure, government recurrent expenditure, corporate income tax, external borrowings and domestic borrowings) while the remaining 16 percent is explained by factors not included but captured as the error term in the model. In overall, the regression model is statistically significant at 5 percent level given the F-statistic value 8.954681 obtained, and the Durbin Watson statistic value of about 2.153 suggests that the model has no autocorrelation problem.

Furthermore, it is apparent in the table above that fiscal policy instruments of government capital expenditure, government recurrent expenditure and corporate income tax revenue behaved in tandem with theoretical expectations except external and domestic borrowings. These suggest that quantitative fiscal easing via GCXP, GRXP and increase in CYTR directly associated with non-oil output while increase in federal government's EXTB and DOMB inversely impacted non-oil output in Nigeria during the sampled period. Nonetheless, the result indicated that over the studied period, the contemporaneous values of all utilized fiscal policy tools impacted significantly on NOGDP at the 5 per cent level, which implied that the null hypothesis is rejected

and the alternative hypotheses that the selected fiscal policy tools were statistically significant in explaining changes in non-oil output accepted at the conventional 5 per cent critical level.

4.3 Post-Estimation Diagnostic Tests

Following the significance of the adopted instruments of fiscal policy in stimulating non-oil output in Nigeria, it is pertinent to confirm if all utilized fiscal policy tools are jointly significant in explaining changes in NOGDP, the model is linearly specified, free from auto-correlation, homoscedastic and normally distributed for policy recommendation purpose. To accomplish this, the study conducted the Wald, Ramsey Reset, Auto-correlation, Heteroscedasticity and Normality tests. The results are accordingly presented below.

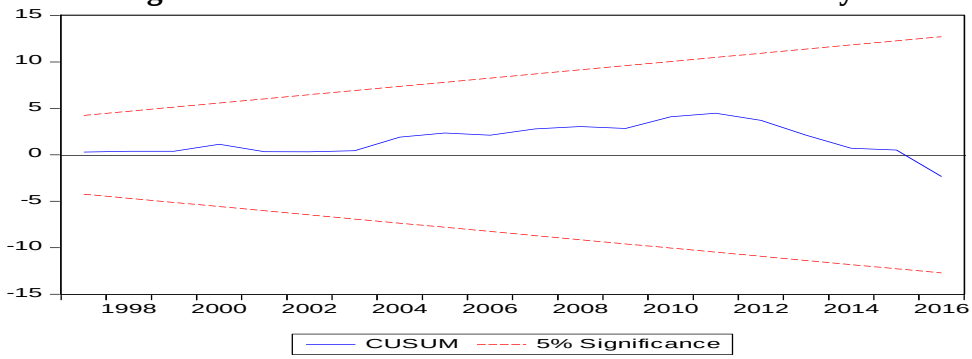
Table 4.5: Wald, Ramsey Reset, Serial Correlation LM, Homoscedasticity and Normality Tests Results

Test	F-Statistic	t-Statistic	Obs*R-Square	Prob. Value
Wald Test	16.55092	-	-	0.0000
Ramsey Reset Test	0.371173	0.609240	-	0.5496
Breusch-Godfrey Serial Correlation LM Test	1.993953	-	15.21	0.1348
Heteroskedasticity Test: ARCH	0.286245	-	0.959168	0.8349
Normality test	Jarque-Bera value = 1.163450			0.558933

Source: *Computed Result (2018), Using E-Views 9*

Table 4.5 indicated that the estimated encompassing ECM model passed all the considered post estimation diagnostic tests. Specifically, the, Ramsey Reset test, Breusch-Godfrey serial correlation LM test, Heteroscedastic ARCH test and Jarque-Bera Normality test confirmed respectively that the model was linearly specified, free from autocorrelation, homoscedastic and normally distributed since their respective probability values are higher than the conventional 0.05 per cent critical value. And the Wald test, evidenced from its F-statistic probability value of 0.0000 implied that the utilized fiscal policy tools are jointly significant in explaining changes in NOGDP in Nigeria over the sampled period. Finally, the outcome of the CUSUM residual test for model stability as displayed in Figure 4.1 below demonstrated that the plot of CUSUM for the ECM model under consideration is within the 5 per cent critical bounds.

Figure 4.1: CUSUM Residual Test for Model Stability



Source: *Graphical Result (2018), Using E-Views 9*

The graph suggests by implication that the parameters of the model did not suffer structural instability over the studied period. That is, all the coefficients in the ECM model are stable.

4.4. Discussion of Findings

The results presented above indicated that all the variables were integrated of order one and have long run relationship amongst them. The parsimonious ECM result revealed that the speed of adjustment as depicted by the ECM coefficient is in absolute terms 0.430834, which implies that in the event of distortion in fiscal policy conduct in the short run, about 43 per cent of non-oil sector's output is corrected annually as NOGDP tends towards restoring equilibrium in the long run. This portrays that there is a considerable pressure on NOGDP to restore long run equilibrium whenever there is fiscal policy shock. The explanatory power of the policies variables - R^2 indicated that about 84 per cent of variations in the non-oil output were explained by systematic changes in the fiscal policy tools. The entire model is statistically significant at 5 percent level as seen from the F-statistic value of about 8.96 and the model is serial correlation free since the Durbin Watson statistic value is about 2.15.

Furthermore, government capital expenditure (GCXP), government recurrent expenditure (GRXP), corporate income tax (CYT), external borrowing (EXTB) and domestic borrowing (DOMB) were employed to verify the effect of fiscal policy on non-oil output in Nigeria. It is evident from the parsimonious encompassing ECM result that GCXP, GRXP and CYT behaved in tandem with a priori but EXTB and DOMB did not. This connotes that increase in government capital outlay, recurrent outlay and corporate income tax revenues are pro non-oil sector output in Nigeria. Though, expansionary DOMB and EXTB are also crucial for generating productive externalities for more investment in the non-oil sector, the variables exhibited negative relationship with non-oil output in Nigeria over the sampled period. This outcome meant that high government borrowing induced net positive cost of loanable funds which transmitted to negative (crowding-out) effect on private investment in non-oil sector. Furthermore, the result may also be blamed on government's borrowing to meet her salaries and petroleum subsidies obligations instead of productive activities. However, the result interestingly indicated that fiscal

policy instruments as utilized in this study significantly associated with non-oil sector's output in Nigeria during the sampled period.

Therefore, the policy implication of the result is that adequate budgetary provision geared towards improving and expanding the conditions of productive infrastructure in the country (with effective/optimal implementation and monitoring mechanisms), will stimulate and sustain improved performance of non-oil sector's output. The result also suggests that given the investment friendly climate for the expansion of tax base, a slight increase in CYTR will in the long run spur NOGDP. Thus, expansion in non-oil output will boost supply of real non-oil goods, which will transmit to greater recurrent patronage. These outcomes are in line with the empirical results of Falade and Olagbaju (2015), Babalola (2015) and Munongo (2012). Also, tenacious efforts towards channeling domestic and external borrowings into timely development of dearly needed economic overheads and critical non-oil sub-sectors like agriculture, manufacturing, solid minerals, etc, will beam significant light on the performance of the sector under consideration. This outcome is slightly similar with the study's result of Abula and Ben, (2016).

Thus, the policy implication of the result is that conducting an expansionary fiscal policy geared towards creating the needed enabling environment that is pro non-oil sector will increase output in the long run. This is similar to the conclusions of Moayedi (2013) and Musa, Asare and Gulumbe (2015).

5. SUMMARY, RECOMMENDATION AND CONCLUSION

The structural change and consequent dominance of the crude petroleum and gas sector in the Nigerian economy with the resultant vulnerability of the economy to the cyclical behaviour of the international oil market has remained a major source of concern to policy makers and principal stakeholders in the country. Available empirical evidence revealed that research articles have hardly presented clear and conclusive results on the impact of fiscal policy on non-oil output in Nigeria, hence this investigation.

Therefore, as evident in this study, the positive and significant influence of GCXP, GRXP and CYTR on NOGDP as well as the inverse and significant impact of DOMB and EXTB on NOGDP suggest that expansionary fiscal policy significantly influenced non-oil output in Nigeria over the sampled period. However, the reductive behaviour of government borrowings contravened theoretical expectation, which may be due to wrong use of borrowed funds especially, for government's salaries obligations and petroleum subsidy payments which do not create direct productive spillover on the economy.

Given this outcome, the study recommends as remedy that while expansionary fiscal policy in the form of capital spending and external borrowings may be deployed to create the needed enabling environment for stimulating non-oil sector investment in Nigeria, policies should be conducted to encourage demand for goods produced in Nigeria so that the full multiplier effect of recurrent spending may further stimulate aggregate demand for non-oil produce. Also, tax

reforms to further plug manifest malpractices and reduce multiple tax collection should be pursued by federal government in order to increase corporate income tax yield.

In conclusion, fiscal policy is significant in driving the non-oil sector of Nigeria. This is based on the evidence that all causal policy tools: GCXP, GRXP, CYTR, DOMB and EXTB significantly impacted on NOGDP over the period captured in this study. Thus, corroborating the Keynesian prescription that fiscal policy is effective in propelling economic output.

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