# Fiscal Policy and Economic Growth in Nigerian Economy

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***Abstract*: - The study examined the relationship between Fiscal policy instrument and economic growth in Nigerian economy from 1980 to 2017. The study was based on the Keynesian theory in which fiscal policy has significant effect on output and employment. The study used secondary data collected from various resources and the Engle-Granger Error Correction model analysis techniques. The empirical model consists of a multiple regression model which has real gross domestic product growth as the dependent variable and government capital expenditure, recurrent expenditure, budget deficit and none-oil tax revenue as the independent variables. The test of unit root results revealed that all the variables had unit root at levels. However, they became stationary after 1st differencing. The result from the Johansen co-integration test shows that there is a long run relationship between fiscal policy instruments and economic growth. Analysis of the error correction model revealed that government expenditure, both capital and recurrent, have positive and significant impact on economic growth; while budget deficit and non-oil tax have negative and significant impact on economic growth.Changes in the size and levels of fiscal policy instruments accounted for 85% variation in the level of economic growth during the period under review. It was therefore recommended that government reduce deficit financing and non-oil tax.**

***Keywords:*** **aggregate demand, economic growth, fiscal policy, non-oil tax, stabilization**

## I. INTRODUCTION

It is now well known that the economy, left to free operations of market mechanism will not perform efficiently and produce the results that will be fair to every member of the society for optimum performance, there is the need to guide the economy and complement the operations of the market mechanism for better outcomes. One strategy of intervention in the market economy is through macro-economic policy. Macro-economic policy is broadly categorized into two. The two categories are monetary and fiscal policies. Both policies.almost, have the same broad objectives of price stability, balance of payment viability, exchange rate stability, employment generation and economic growth. While monetary policy is primarily concerned with price and exchange rate stability, fiscal policy, on the other hand, is concerned with employment generation and economic growth. (Arby and Hanit, 2010).

Modern governments usually intervene in the economy to mitigate the undesirable effects of market economy through fiscal policy. Fiscal policy action relies on the use of government taxes, expenditure, and borrowing to influence the level and or structure of aggregate demand in the economy. Hence, fiscal policy is now seen as a potential instrument in the hands of government to moderate the performance of the overall macro-economy. Nigerian government has been using fiscal policy to guide the economy. Annually, the federal government will spell out its fiscal policy stance in the national budget and actually commit resources for the implementation of these budgets.

The important question here is, has government intervention in Nigerian economy through fiscal policy been effective? That is, do fiscal policy measures in Nigerian economy have the potential to stimulate sustainable economic growth in the country? These questions necessitate the need for empirical examination of the relationship between fiscal policy and economic growth in Nigerian economy. In both theoretical and empirical literature, there is controversy regarding the effectiveness of fiscal action as instrument for macroeconomic stability. Studies by Appa (2010); and Medee and Nembee (2011) found positive and significant effect of fiscal policy on economic growth., while the study by Omotogun and Ayinla (2007) found fiscal action insignificant for macroeconomic stabilization.The absence of consensus, on theoretical and empirical grounds, on the potency of fiscal policy points to the need to re-examine the relationship between fiscal policy instrument and economic growth in Nigerian economy.

A study of this nature is very significant. The findings of the study will expose the nexus between fiscal policy instruments and economic growth in Nigerian economy. The remaining part of the study would be structured as follows: section two (2) is the literature review. Section three (3) will present the method employed in the collection of data and the analytical techniques. Section four would be devoted to analysis and discussion of empirical results, while section five would be devoted to conclusion and recommendations from the study.

## II. LITERATURE REVIEW

In theoretical literature, there is controversy concerning the use and effectiveness of fiscal policy as a means of stabilization. The argument is mainly between two broad classes of economists, viz a viz, the Classical and the Keynesian economists. .

The classical economists deduced their argument from Jean Baptize Says law. The Says Law say that supply creates its demand and therefore, there can never be over production or

under production in the economy. The offshoot of this is that the market has a self-correcting mechanism (Smith, 1776) which regulates the market. The basic assumption of this view is that there is perfect competition and flexible wages and prices. In the absence of interference in the market, flexible wages and price will guide the economy to full employment level at the potential output level. Thus, the economy, working on its own, will produce equitable results and restore any disequilibrium in the system. There is therefore, no need for stabilization policy. Stabilization policy creates distortion in economy. The role of government is to maintain law and order.

Keynes (1936) and the Keynesians criticized the classical view. They attacked the Says law of market. Keynes objected to the Says law which says supply creates its demand. In the modern economy, demand does not increase as much as supply and therefore, there can be oversupply. Individuals and businesses hold money for various reasons so money has effects on the economy. Third, the self-adjustment mechanism of the market may be slow or not work, and therefore, the economy can be trapped in under employment equilibrium. Based on these, the Keynesian highlighted the need for state intervention in the situation of over production or underproduction. Keynesian advocated the necessity of stabilization policy.Two options present their selves here: monetary and fiscal policy. However, Keynes is of the view that monetary policy is ineffective. Keynes attraction to fiscal is based on his believe in the existence of liquidity trap and the transmission mechanism of monetary policy. Therefore, Keynesian policy is otherwise known as fiscalism. The propositions of these theories have been tested in different economies at different time and this has funded a plethora of empirical literature on the relationship between fiscal policy measures and economic growth. A few of such studies are presented here for empirical review.

| Author(s)/Year | Unit of Analysis | Period of the study | Variables used | Method of analysis | Findings |
|---|---|---|---|---|---|
| Appah (2010) | Nigeria | 1991-2005 | Government Expenditure | Engle-Granger Cointegration Regression | Government expenditure has positive effect on GDP growth |
| Babalola and Aminu (2011 | Nigeria | 1977-2009 | Tax Revenue, Government Debt, Government Recurrent Expenditure, Government Capital Expenditure | Multiple Regression Analysis Techniques | Tax revenue and government debt have negative effect; while recurrent and capital expenditure have positive impact on GDP growth rate |
| Medee and Nembee (2011) | 1970-2009 | Nigeria | Federal Government Expenditure, Federal Government Revenue, Inflation Rate And Capital Inflow | ECM regression analysis techniques | Government expenditure, revenue, capital inflow, and inflation have positive and significant effect. |
| Abu-Bader and Abu-Qarn (2003) | .1980-2002 | Egypt, Israel and Syria | Government Expenditure, | Panel data regression | Government expenditure has positive impact on economic growth |
| Ghani and Din (2006) | 1973-2004 | Pakistan | Public Investment, Private Investment, Public Consumption | VAR Model Estimation Techniques | All variables have positive and significant impact on GDP growth |
| Musaba et al. (2013) | 1980-2007 | Malawi. | Government Sectoral Expenditure | ECM Regression Analysis Techniques | government sectoral expenditure does not has significant effect on economic growth |
| Badawi (2003) | 1987-2000 | Sudan | Public investment and public consumption | Multiple Regression Analysis Techniques | Public expenditure crowds out private investment |
| Bose et al. (2003) | 1970-1990 | Thirty developing countries | Public Capital Expenditure | Panel Data | public capital expenditure is positively correlated with economic growth |
| Okoro (2013) | 1980-2011 | Nigeria | Public Sector Spending | ECM Analysis Techniques | Public sector spending haspositive and significant impact on GDP growth |
| Usman et al. (2011), | 1970-2008 | Nigeria | Government Expenditure | ARDL Regression Method | Government expenditure has positive effect in the long run , but negative impact in the short run |

There are divergent results from the empirical studies. Studies by Akpan (2005) Omitogun and Oyinla (2007) found the impact of fiscal insignificant, while studies by Medee and Nembee (2010) found positive and significant relationship between fiscal policy and economic growth.

## III. METHOD OF STUDY

This section explains the method employed in the collection and analysis of research data.

*3.1 Model Specification*

The model is based on the Keynesian theory that fiscal policy has positive and significant effect on economic growth (Keynes, 1936). Following the evidence in theoretical and empirical literature reviewed above, a modified version of Osuala and Jones (2014) model of fiscal is adopted. Thus, the functional relationship between fiscal policy and economic growth in Nigerian economy could be expressed as follows:

RGDP = f(GCEX, GREX, TRV, GDB) (3.1)

The implicit function is thus transformed into explicit econometrics function as follows:

$$RGDP = \beta_1 GCEX^{\beta_2} GREX^{\beta_3} TRV^{\beta_4} GDB^{\beta_5} \mu_1 \quad (3.2)$$

The explicit econometrics functionn 3.2 above is now transformed into double log linear model as

$$LnRGDP = In\beta_0 + \beta_1 InGCEX + \beta_2 InGREX + \beta_3 InTRV + \beta_4 InGDB + \mu_I \quad (3.3)$$

Where RGDP is the Real Gross Domestic Product, GCEX is the Government Capital Expenditure

GREX is the Government Recurrent Expenditure, TVR is the Non-oil Tax Revenue, GDB is the Total Federal Government Debt as percentage ofGDP, $\beta_0$ is the Intercept Term and $\beta_1$ $\beta_2$ $\beta_3$ $\beta_4$ are partial regression coefficient of the various variables. $\mu_I$ is the error term In is the natural logarithm

The data required for the study are secondary in nature. It consists of annual time series data of the following variables in the model All data shall be collected from 1980 to 2016. The main sources of the data are: Central Bank of Nigeria (CBN) statistical bulletin (various issues).National Bureau of Statistics (NBS) and World Bank's World Development Indicator (WDI) on the internet. Supplemental materials were collected from text books, Newspapers, research journals, published and unpublished works of other researchers.

*3.2 Method of Data Analysis*

The study will adopt the classical Linear Regression (CLR) techniques for the analysis of the study data. The data analysis will make use of computer aided statistical software – E-view for the analysis.

*3.2.1 Unit Root Test*

To examine the unit root properties of the variables, the Argumented Dickey-Fuller (ADF) (Dickey-Fullery, 1988) approach would be employed. The general specification of the ADF expressed thus:

$$\Delta Y_t = \partial_0 + \partial_1 t + Y_{t-1} + \partial_2 \sum_{C-1}^{n} \Delta Y_{T-1} + \in \quad (3.4)$$

Where$\in$ is a white noise error term and $\partial$ is the coefficient of the lagged $Y_{t-1}$ The coefficient of the lagged Y is crile to be negative. Equation 3 will be listed under the null hypothesis.

$H_0$: \$ = 0 (there is unit root) against the alternative

$H_1$: \$ < 0 (There is no unit root).

According to Sabastian (2004) the ADF has low power against alternative that is close to deterministic term are included. Thus, to check these, the unit root test was complemented with the Phillips-Perron (1978) stationarity test to make the test robust.

*3.2.2 Co-integration Test*

Co-integration test was conducted to examine the equilibrium relationship among the model variables. Here it was used to examine whether there exists a stable long run relationship between fiscal policy instruments and economic growth variable. The Johansen Cointegration Approach was employed using both Trace and Maximum Eigen value statistics (Johansen, 1988). As Tang (2007) observed, the test of co-integration is the first stage: the more powerful test is the test of significance of the error correction term in the short run model. Also, Bahmani-Oskooee and Brook (1999) pointed out that the mere incidence of cointegration is not a strong evidence for stability. A more robust test of stable long run relationship cointegration is the significance of the error correction term in the error correction model. The co-integration equation is specified as follows:

$$\Delta y = \sum_{C=1}^{1=k} \Gamma_1 \Delta X_{t-1} + \prod X_{t-1} + U_0 + \mu_i \quad (3.5)$$

Where $\Gamma$ and $\prod$ are matrixes of variables, $U_0$is the intercept term $\mu_i$is the error term. Therank of the matrix is the number of cointegrating equations in the model and the number of stationary relationship in the matrix

*3.2.3 Error Correction Model*

According to Granger Representation Theories, if two or more non-stationary variables are cointegrated, then they have a valid error correction representation, and their relationship can be expressed as error correction model (ECM). Therefore, the error correction model of fiscal policy/economic growth can be expressed as:

$$\Delta RGDP = \sum_{t=1}^{n} \delta_1 \Delta RGDP_{t-1} + \sum_{t=1}^{n} \delta_2 \Delta GCEX_{t-1} + \sum_{t=1}^{n} \delta_3 \Delta GREX_{t-1} + \sum_{t=1}^{n} \delta_4 \Delta NOT_{t-1} + \sum_{t=1}^{n} \delta_5 \Delta TD + \Delta ECM_{t-1} + V_1 \quad (3.3)$$

The ECM model was estimated using the One Step Engle-Granger method.

*3.2.4 Model Diagnostic Test*

It is very important in any empirical study, such as this one, to evaluate the model and the parameter estimates for robustness. In order to justify the empirical method and build confidence in the parameter estimates, the following diagnostic analysis were performed on the model and the parameters estimates:

- *Model Specification* Test: The RamdeyRaset Test was employed for examining the model for specification bias.
- *Normality Assumption*: For normality assumption, the Jacque-Bera (JB) Test was used.
- *Serial Correlation:* To examine the incidence of serial correlation among estimated error term in the the model, the Breusch -Godfrey (BG) test was approach was adopted.
- *Heteroskedasticity:* The assumption of Homoscedasticity was tested using the ARCH-Test approach.
- *Model Stability* Test: The stability of the function is very important for effective policy implementation. The stability of the public debt-growth function was examined by examining the stability of the Error Correction Model (ECM), using the CUSUM and CUSUMSQ test of stability approach developed by Brown et al (1975). If the CUSUM and CUSUMSQ plot remain within the 5% critical line, the model is stable; otherwise, the model is not stable.

## IV. DATA PRESENTATION AND ANALYSIS

This chapter present the data collected for analysis, analyzed and discussed the empirical findings.

The regression analysis of the variable data presented in Table 4.1 above was carried out with the use of statistical software E-view 9.0. The analysis stated with unit root test as explained in section 3.4 above. The results of the unit root test are presented as follows:

*4.1 Unit Root Test Results*

Table 4.2: Unit Root Test Result

| | ADF | | | PP | | |
|---|---|---|---|---|---|---|
| **Variables** | **Level** | **1st Diff.** | **Order** | **Level** | **1st Diff.** | **Order** |
| RGDP | -1.1750 | -3.6750 | 1(1) | -0.8921 | -3.7183 | 1(1) |
| GCEX | -2.3421 | -5.8217 | 1(1) | -2.1508 | -5.1014 | 1(1) |
| GREX | -2.4479 | -4.3510 | 1(1) | -2.3603 | -3.4483 | 1(1) |
| NOT | -1.2764 | -4.7072 | 1(1) | -1.5849 | -6.8716 | 1(1) |
| TD | -1.6317 | -5.3431 | 1(1) | -2.8411 | -4.8114 | (1) |
| 1% = -3.6390 | | | 5% = 2.9541 | | 10% = -2.6440 | |

*Source: E-view 9.0 Computer Printout.*

The unit root test results of the Real Gross Domestic product (RGDP) and fiscal policy instruments of Government recurrent Total Expenditure, Total Debt, Non- Oil Tax, and Capital Expenditure is presented in Table 4.1. The results show that all the variables are not stationary at level. However, after 1st difference, all the variables became stationary. Hence, they are 1st difference stationary or 1(1) series. The important of this is to determine the order of integration of the variables and so the nature of the model. Again, the test of unit root and differencing will assist in correcting the problem of spurious regression. Having established the order of integration of the variables, the analysis proceeds to examining the differenced variables for co-integration; that is, to examine whether there is a fixed long run relationship among the variables.

*4.2 Cointegration Test Result*

Johansen (1988) co-integration approach was employed for examining the long run relationship in the model. The co-integration analysis result is presented as follows:

**Table 4.3: Co-integration Test Results (Trace Rank Test)**

| **Hypothesis:** | **=0*** | **r ≤ 1*** | **r ≤ 2*** | **r ≤ 3** | **r = 4** |
|---|---|---|---|---|---|
| Trace Statistic | 71.6396 | 34.2199 | 27.4216 | 8.3211 | 0.6793 |
| 5% critical value | 47.8561 | 29.7970 | 22.1624 | 14.5639 | 38414 |

*Source: E-view 9.0 Computer Printout.*

**Table 4.4: Co-integration Test Result (Maximum Eigen Rank Test)**

| **Hypothesis:** | **=0*** | **r ≤ 1*** | **r ≤ 2*** | **r ≤ 3** | **r = 4** |
|---|---|---|---|---|---|
| Maximum Eigen | 58.3821 | 37.4397 | 21.1316 | 14.0151 | 6.8226 |
| 5% critical value | 37.5757 | 27.5843 | 18.4331 | 15.4992 | 14.2646 |

*Source: E-view 9.0 Computer Printout.*

The co-integration analysis result presented in Table 4.3 and 4.4 above show that the variables are co-integrated; that is, the integrated 1st difference variables have fixed long run relationship. Hence, they are co-integrated. Both the Trace and the maximum Eigen value statistics show that there are at least 3 co-integrating equations in the model.

The preceding analysis has established that the variables are co-integrated. According to Engle-Granger representation theorem, if two or more variables are co-integrated, then, there is a valid error correction mechanism among them, and their relationship can be represented as Error Correction Model (ECM). Consequently, the analysis proceeds to estimation of the error correction model of the model as expressed in 3.4 above.

*4.3 Error Correction Model*

Table 4.5: Parsimonious Error correction Model Result

| Dependent Variable: DLOG(RGDP) | | | | |
|---|---|---|---|---|
| Included observations: 32 after adjustments | | | | |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| DLOG(RGDP(-1)) | 0.887610 | 0.191475 | 4.635647 | 0.0002 |
| DLOG(GREX(-1)) | 0.346287 | 0.097101 | 3.566239 | 0.0022 |
| DLOG(GREX(-2)) | 0.343242 | 0.127967 | 2.682267 | 0.0152 |
| DLOG(GCEX(-2)) | 0.092936 | 0.041305 | 2.250000 | 0.0372 |
| DLOG(TD) | -0.137311 | 0.112960 | -1.215572 | 0.2399 |
| DLOG(TD(-3)) | 0.300925 | 0.097922 | 3.073116 | 0.0066 |
| DLOG(NOT(-1)) | -0.261182 | 0.124837 | -1.939281 | 0.1314 |
| ECM(-1) | -0.337099 | 0.141706 | -2.378854 | 0.0286 |
| R-squared | 0.816453 | | | |
| Adjusted R-squared | 0.683891 | | | |

*Source: E-view computer printout.*

The parsimonious error correction Model result is extracted from the Over parametized error correction model after eliminating the highly insignificant lag. The result is presented in Table4.5.

The result show that Real Gross Domestic Product (RGDP) has positive and significant relationship with growth of government capital expenditure. In specific terms, increase in federal government capital expenditure by 1% lead to increase in real gross domestic product by about 0.35% after two periods lag. The sign of the coefficient is as expected.

The relationship between federal government of Nigeria Non- Oil Tax Revenue and Growth of the Real Gross Domestic Products is negative and statistically significant. Increase in Non -Oil Tax Revenue by 1% led to decrease in the growth rate of real gross domestic product by 0.38% after 2 periods lag. In other words, federal tax revenue has negative impact on growth of national income.

The relationship between capital expenditure and economic growth is positive, and insignificant. The sing of the coefficient as expected. The empirical results show that increase in capital expenditure by 1% led to increase in real economic growth by about 0,1% after two period lags.

Total government debt has negative and significant impact on economic growth. During the period under review, increase in total debt by 1% led to fall in real economic growth rate by 0.4% after two period lags. However, the impact was not significant.

The model R^2 value 0.8165. this implies that,government capital expenditure, recurrent expenditure, non- oil tax level, and total debt accounted for about 82% variation in real economic growth rate during the period under review. Other variables outside the model accounted for the remaining 18% of the variations.

The model ECM coefficient is -0.337099 and statistically significant. This implies that there is a valid error correction mechanism in the model. The speed of adjustment of the model to any disequilibrium is 33.7%. This implies that about 34% of any difference between the current value and it long run value is recovered within one year. This is, indeed, a moderate speed of adjustment

The results imply that capital expenditure, non-oil tax and level of total debt are the main fiscal policy variables which affect the level and rate of economic growth in the country.

*4.4 Model Diagnostic Test*

Table 4.5: Result of Model Diagnostic Test

| Hypothesis | Test | Statistic | P-value | Remark |
|---|---|---|---|---|
| 1. Residual normality | Jacque-Bera (JB) | $X^2$=0.3599 | 0.8353 | Accepted |
| 2. Serial correlation | Breusch-Godfrey (BG) | $X^2$=0.6462 | 0.4214 | Accepted |
| 3. Homoskedasticity | ARCH | $X^2$=0.2747 | 0.6002 | Accepted |
| 4. No Misspecification | Ramsey RESET | F(2,16) = 2.356 | 0.3020 | Accepted |
| 5. Stability | CUSUM and CUSUMSQ | - | - | accepted |

*Source: E-view computer printout*

*Null Hypothesis: 1 Residual normally distribute, 2. Error terms are not serially correlated 3. Variance of error terms constant, 4. Model correctly specified 5. Functional model stable throughout the period 1980 to 2015*

*Auto-Regressive Conditional Heteroscedasticity (ARCH)*

*All tests were conducted at 0.05 level*

The Jacque-Bera test result shows that the residuals are normally distributed with mean zero. The Breusch-Godfrey (BJ) test of series correlation (auto correlation) shows that there is no serial correlation. The error terms are independently and identically distributed. The Auto Regressive Conditional Heteroscedasticity (ARCH) test shows that there is no incidence of heteroscedasticity. The variance of the error terms is constant (homoscedasticity). In addition, the Ramsey RESET model specification test shows that the model employed for the empirical analysis was correctly specified. That is, the model adequately captured the true relationship among the variable.

Stability test was conducted using the Cumulative Sum (CUSUM) and the Cumulative Sum of Square (CUSUMSQ) developed by Brown et al. (1975). If the plot remains within the 5% critical band, then the model is table, otherwise, the model is not stable. The CUSUM and CUSUMSQ plot is presented as figure 4.1a and 4.1b below Throughout the period of the study both CUSUM and CUSUMSQ remained within the 5% critical band. Hence, the model was stable during the period of the study the existence of normally distributed residuals, absence of serial correlation, and heteroscedasticity implied that the residuals are independently and identically distributed with mean zero and constant variance. Hence, e~IId (0.δ).

According to the Gauss-Markov theorem, if the residual terms have the three properties above; that is, normally distributed, no serial correlation, and homoscedastic, e~IId (0.δ), then, the estimates from such regression are the best Linear Unbiased and Efficient (BLUE) estimators. Thus, by extension, implies that the estimates are dependable.

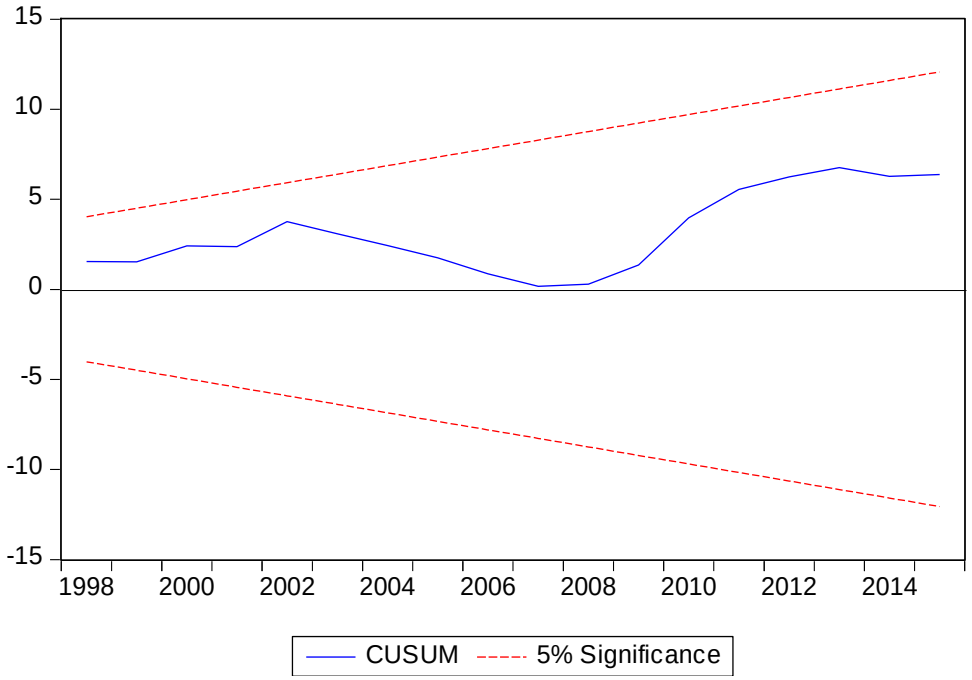


Figure 4.1a:

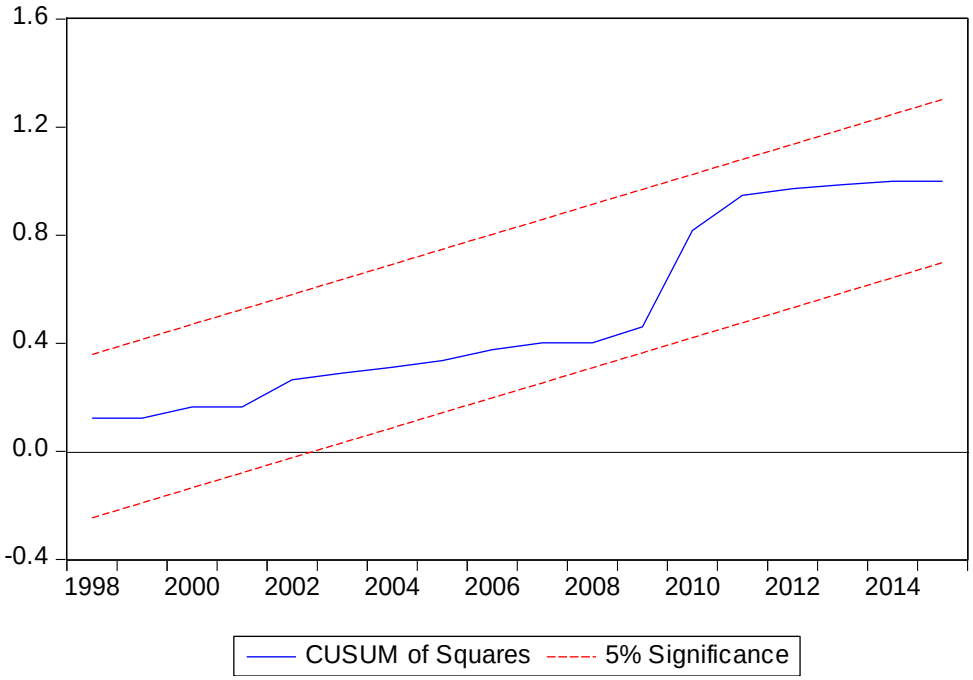


Figure 4.1b:

## V. CONCLUSION AND RECOMMENDATIONS

The aim of the study was to examine the effect of fiscal policy on economic growth in Nigeria from 1980 to 2015. The empirical model employed for the analysis was specified as error correction model. Empirical analysis of the study data was carried out using Engle-Granger Error Correction Model.The result of the empirical analysis showed that fiscal policy has significant effect on growth of the real gross domestic product. This confirms the assertion of the Keynesian economics. However, the fact that total debt and non-oil tax variables of fiscal policy have negative effect on the domestic economy implies that the use of these instruments of fiscal policy should be with great care to avoid destabilization of the economy.

From the foregone, one could conclude that fiscal policy action t is good; however, it should be formulated and implemented with caution. Emphasis should be reduced on deficit financial and non-oil tax. Instead, the government should generate more revenue from the oil production activities, however, not in a manner that will jeopardize energy output and utilization in the country. Government shouldreduce tax on non-oil activities and deficit financing in other reduce the negative impact of fiscal policy in the economy

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