

Does Fiscal Policy Matters For Economic Growth? An Empirical Assessment of the Nigerian Situation

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Abstract

This study has been to examine whether fiscal policy matters for the development process in Nigeria. The main objective of this study is to empirically investigate the impact of fiscal policy on the level of economic growth in Nigeria. The study covered the period between 1980 and 2013. The co integration technique with its implied ECM was used for the study. The result indicated that the three components of fiscal policy used in the study which includes petroleum profit tax, government expenditure and external debt had a positive and significant impact on the level of economic growth in Nigeria. An indication that if well managed, fiscal policy has the potentials of improving the level of economic growth in Nigeria. The study recommends fiscal prudence amongst others.

Keywords: government expenditure, petroleum profit tax, external debt, cointegration

1. Introduction

No doubt, the government of any country, Nigeria inclusive is an institution saddled with numerous responsibilities. Before the Great Depression of the 1930s, there was the general belief by the managers of economies that the market system was self correcting and efficient. However,, following the emergence of Keynes in 1936, the argument was altered in favour of at least some forms of government intervention since aggregate demand exceeded aggregate supply. This is contrary to the notion that supply creates its own demand (Peter and Simeon, 2011). This changed both economic and political thinking. Governments across the World began to adopt stabilization policies including diverse macroeconomic policies to prevent what happened during the great depression. Fiscal policy entails government's management of the economy through changes in income and spending powers to achieve desired macroeconomic objectives, one of which is economic growth.

Taxation, government spending, external debt and internal debt were the major fiscal policy instruments. Fiscal policy is key to the sustenance of any economy since the spending power of government affects the disposable income of citizens and cooperation as well as the general business environment (Akanni and Osimowo, 2013). However, despite the important role of fiscal policy in economic management, the Nigerian economy is yet to show meaningful signs of economic progress. Increased government spending, high tax revenue and huge external debt have failed to reduce the problem of unemployment, increasing inflation rate and high dependence on foreign technology coupled with mono-cultural foreign exchange earning which is crude oil dominated. Since independence, the resource of Nigeria seems to have been mismanaged.

For instance, it has been observed that government deficits have posed a significant problem for the country since the oil boom in the 1970s. Expansionary fiscal policy caused by favourable crude oil earnings resulted in large fiscal deficits and the increased build-up of both foreign and domestic debts.

With expenditure consistently rising faster than income, deficits grew from an average of 5.0 percent of Gross Domestic Product (GDP) in the 1983-1986 period to 10.3 percent in the 1991 – 1994 period before declining to 4.9 percent between 1999 and 2010 and has been increasing since then. This has been due mostly to the rise in government's recurrent expenditure which is higher than her capital expenditure as a result of huge government departments with sometimes overlapping functions. The recent fall in oil prices in the international community has even worsened the situation in recent times. This is certainly not a good omen for a country that boasts to be the so-called giant of Africa. This fall in international oil prices has exposed the weakness of fiscal policy in Nigeria as a tool of aggregate demand management. This seemingly fiscal recklessness has worsened the problem of deficit financing in Nigeria. This has led to the drastic withdrawals from the external reserves and the withdrawals of funds saved in the Excess Crude Accounts (ECA) for the rainy days. Worse off, is the inability of the government to properly collect and utilize tax revenue, particularly, petroleum profit tax. The rising profile of Nigeria's international indebtedness with commensurate level of economic growth speaks volume of fiscal indiscipline in Nigeria. The objective of the study is thus to empirically investigate the impact of fiscal policy on the level of economic growth in Nigeria.

2. Literature Review

Theories on fiscal policy and its components have shown mixed outcome on economic growth. The Keynesian model, which is the most prominent of the theories states that expansionary government fiscal policy through increased government expenditure has the tendency of accelerating economic growth. The endogenous growth theory didn't assign significant role to government in the growth process. Also, there seems to be a direct link between government budget policy and economic growth and this has been primarily associated with tax policy. The structure of tax policy has important implications for economic growth. Solow's theory incorporated the population component of fiscal policy, but unlike the endogenous model ignored the importance of technology and innovation. The debt overhang hypothesis which indicates the negative impact of external debt burden on growth is based on the premise that if debt exceeds the country's repayment ability, expected debt services is expected to be an increasing function of a country's output.

Akanni and Osinowo (2013) investigated the effect of fiscal instability on economic growth in Nigeria. The study covered the period between 1970 and 2010. Using the Ordinary Least Squares (OLS), they found that the variation in total fiscal spending was relatively stationary while real output was still relatively unstable. Onyemaechi, (2014) using the cointegration technique found a positive and significant relationship between government's expenditure on administration and social services and economic growth in Nigeria. Nathan, (2012) assessed the impact of fiscal policy on the Nigerian economy. The study which covered the period between 1970 and 2010 used the cointegration technique and found that a significant causal relationship exists between fiscal policy indicators and economic growth. Oseni and Onokoya, (2012) studied fiscal policy variables growth nexus. The study which used the cointegration technique and covered the period between 1981 and 2010 invalidates claim that only productive expenditure, distortionary taxes and fiscal deficit contributes to economic growth. Patricia and Izuchukwu (2013) examined the impact of government expenditure on economic growth in Nigeria.

Using data covering the period between 1972 and 2012 and using the Error Correction Mechanism (ECM) revealed that total expenditure on education had a positive and significant impact on the level of economic growth. Agu, Idike, Okwor and Ugwunta (2014) studied fiscal policy and economic growth in Nigeria. Using the OLS, the studies showed that government expenditure tend to increase with government revenue. Ilaboya and Mgbawe (2012) studied indirect tax and economic growth using the Engel-Granger two step procedure. The result showed a negative and significant relationship between indirect tax and economic growth in Nigeria. Using data covering the period between 1970 and 2013, Osinubi and Olalero (2006) studied budget deficits, external debt and economic growth in Nigeria. The result confirmed the existence of the debt Laffer curve and the non-linear effects of external debt on economic growth in Nigeria. Peter and Simeon (2011) investigated the impact of fiscal policy variables on economic growth in Nigeria. Using data covering the period between 1970 and 2009 and the Vector Auto regression (VAR), the result revealed that there exists a long run equilibrium relationship between economic growth and fiscal policy variables in Nigeria. Fiscal policy and economic growth relationship was the focus of the study by Sikuru and Unuru (2012).

Using time series data covering the period between 1977 and 2009 found that productive expenditure have positive impact on the level of economic growth. Mutiu and Olusijibum (2013) investigated public expenditure and economic growth nexus in Nigeria.

Using the structural break cointegration technique, the study showed that economic growth and development were the main objectives of government expenditure, especially investment in infrastructure and human resources, all of which falls under social and community services. Ogunmuyiwa (2011) investigated external debt an economic growth. The study covered the period between 1970 and 2007. Using Vector Error Correction model, the study showed that causality does not exist between external ebt and economic growth. The study by Nworji, Okwu and Obiwuru (2012) was on the effects of public expenditure on economic growth in Nigeria. The study covered the period between 1970 and 2009. The OLS result showed that capital and recurrent expenditure on economic services have insignificant and negative effect on economic growth. Also, capital expenditure on transfers had insignificant and positive effect on economic growth. Capital expenditure on social services and community services a recurrent expenditure on transfers had significant and positive effect on economic growth. The study by Okafor (2012) was on tax revenue generation and Nigerian economic development. The study was between 1981 a 2007. The OLS was used for the study and the result indicates that the actual tax revenue fell below the level expected in most years. Otu and Theophilus (2013) studied the effects of tax revenue on economic growth in Nigeria. The time series data covering the period between 1970 and 2011 and the OLS was used. The study showed that domestic investment, labour force and foreign direct investment have positive and significant effect on economic growth in Nigeria.

3. Statistical Procedure

The Vector Error Correction Model (VECM) was used for the analysis because it restricts the long run behaviour of the endogeneous variables to converge to their cointegrating relationships while allowing for a short run adjustment (Gujaratti, 2003). The VECM is of the form:

$$\Delta y_t = \alpha\beta' y_{t-1} + \sum_{j=1}^J \Gamma_j \Delta y_{t-1} + \pi + \zeta_t, t = 1, \dots, T$$

Where y_t is a vector of endogenous variables which include Real Gross Domestic Product, external debt, petroleum profit tax and government expenditure. α s parameters measures the speed of adjustment through which the variables adjust to their long run values and the β' vectors are estimates of the long run cointegrating relationships among variables in the model. π is the drift parameter and is the matrix of the parameters associated with the exogenous variables the stochastic error term is also included in the specification.

Model Specification

Arising from the theoretical underpinnings, the need to have a concise functional model to capture the impact fiscal policy variables on economic growth in Nigeria is tasking. Peter and Simeon (2011) while investigating fiscal policy and economic growth in Nigeria used economic growth as the dependent variable and government expenditure, government revenue, inflation an capital inflow as independent variables. The model for this research however differs from that of Peter and Simeon since it used Real Gross Domestic Product, which reflects the actual welfare of the country instead of the GDP. The most important source of government revenue, which is the Petroleum Profit Tax, external debt and government expenditure are the independent variables. The model used for the study is thus stated below:

$$RGDP = b_0 + b_1PPT + b_2GEX + b_3EXD + ut$$

$$b_2, b_2, b_3 > 0$$

Where:

RGDP=Real Gross Domestic Product

PPT=Petroleum Profit Tax

GEX=Government Expenditure

EXD=External debt

Ut=Error Term

Findings and Discussion

As indicated earlier the cointegration technique with its implied Error Correction Mechanism (ECM) was used in the study. The first step is thus to test whether the variables are stationary or not and their order of integration using the unit root test. The Augmented Dickey Fuller (ADF) unit root test was used for this purpose. The result of the ADF test is shown below:

Table 1: Summary of ADF Unit Root Test Result

Variables	Level data	First Difference	1% Critical Value	5% Critical Value	10% Critical Value	Order of Integration
PPT	-0.85	-5.25*	-3.66	-2.96	-2.62	I(1)
RGDP	1.97	-4.18*	-3.66	-2.96	-2.62	I(1)
GEX	2.59	-5.18*	-3.66	-2.96	-2.62	I(1)
EXD	-2.22	-3.91*	-3.66	-2.96	-2.62	I(1)

NB: * Indicates significance at the 1 percent level

The result of the ADF unit root test indicates that all the variables were originally non stationary. They however became stationary after the first difference was taken. All the variables were stationary at the 1 percent level. This thus permits us to proceed to the next stage which is the cointegration test.

The Johansen methodology which has the advantages amongst others of allowing allows for more than one cointegrating equations was used to test the long run relationship among the variables. The result of the Johansen cointegration test is shown below:

Table2: Summary of Johansen Cointegration test result

Hypothesized No. Of CE(s)	Eigen value	Trace Statistic	5 percent Critical value	1 percent critical Value
None*	0.91	125.19	47.21	54.46
At most 1**	0.71	51.88	29.68	35.65
AT most 2	0.29	13.99	15.41	20.04
At most 3	0.11	3.54	3.78	6.65

Hypothesized No. Of CE(s)	Eigen value	Max-Eigen Statistic	5 percent Critical value	1 percent critical Value
None*	0.91	73.31	27.07	32.24
At most 1*	0.71	37.90	20.97	25.52
At most2	0.29	10.45	14.07	18.63
At most 3	0.11	3.54	3.76	6.65

Both the trace statistic and the max-eigen statistic indicates two cointegrating equation in each case. This result indicates the existence of a long run relationship among the variables. But which of the variables constitute these cointegrating equations? This is the focus of the next stage which borders on identifying the true cointegrating equations.

The Vector Error Correction (VEC) in this case is used to identify the true cointegrating equation(s). The relevant section of the VEC result for this purpose is shown below:

Table 3: Summary of VEC result

Cointegrating Eq:	CointEq1			
LRGDP(-1)	1.000000			
LPPT(-1)	-0.594639 (0.14470) [-4.10946]			
LGEX(-1)	-0.014725 (0.27528) [-0.05349]			
LEXD(-1)	0.295332 (0.12236) [2.41361]			
C	-9.061746			
Error Correction:	D(LRGDP)	D(LPPT)	D(LGEX)	D(LEXD)
CointEq1	-0.030266 (0.03619) [-0.83623]	-0.844548 (0.38922) [-2.16987]	-0.401879 (0.18991) [-2.11612]	-0.603292 (0.50033) [-1.20579]

The result indicates that the PPT equation and the government expenditure equation constitutes the true cointegrating equation.

Overparameterize ECM

The overparameterize ECM was formed by including two lags each of the explanatory variables. The result of the overparameterize ECM is shown below:

Table 4: Summary of overparameterize ECM modeling: DLR GDP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLPPT	0.004271	0.021264	0.200864	0.8428
DLPPT(-1)	0.039020	0.028697	1.359708	0.1891
DLPPT(-2)	0.568950	0.090592	6.280353	0.0000
DLGEX	0.575769	0.146632	3.926614	0.0003
DLGEX(-1)	0.393607	0.043769	8.992859	0.0000
DLGEX(-2)	0.045017	0.035271	1.276341	0.2165
DLEXD	0.027558	0.015939	1.728970	0.0992
DLEXD(-1)	-0.346186	0.101355	-3.415567	0.0020
DLEXD(-2)	0.006101	0.017163	0.355464	0.7260
ECM(-1)	-0.437715	0.198675	-2.203171	0.0395
C	0.130495	0.037226	3.505441	0.0022

$R^2 = 0.59$, $DW = 2.11$, $AIC = 3.04$, $SC = 2.53$

Parsimonious ECM was gotten by deleting the insignificant variables from the overparameterize ECM model. The Akaike Information Criterion (AIC) and the Schwarz criterion (SC) as well as economic theory were used to select the appropriate lag length. The result of the parsimonious or preferred ECM is shown below:

Table 5: Summary of Parsimonious ECM Result. Dependent variable: DLR GDP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLPPT(-2)	0.181737	0.076316	2.381369	0.0221
DLGEX	0.243388	0.060003	4.056269	0.0002
DLGEX(-1)	0.107842	0.048819	2.209029	0.0330
DLEXD(-1)	0.669523	0.165125	4.054645	0.0004
ECM(-1)	-0.466654	0.111772	-4.175055	0.0003
C	0.082052	0.027002	3.038711	0.0055

$R^2 = 0.77$, $DW = 2.02$, $AIC = -3.02$, $SC = -2.74$,

R^2 shows that 7.7 percent of the total variation in the Real Gross Domestic Product has been explained by government expenditure, external debt and petroleum profit tax taken together.

The result indicates that the petroleum profit tax was statistically significant in explaining the changes in the level of economic growth in Nigeria. This is not surprising given the significant role played by the petroleum sector in the Nigerian development process. The result showed further that government spending is statistically significant and has positively influenced the level of economic growth in Nigeria. The statistical significance of external debt at the one period lag provides some level of credibility of deficit financing in Nigeria. The significance of the ECM shows a satisfactory speed of adjustment. It shows that about 48 percent of the error is corrected each period.

Diagnostic checks

The tests under this category include the Jarque-bera normality test, the Breusch Godfrey serial correlation, LM test and the white heteroskedasticity test. The results are shown in the table below:

Table 6: Diagnostic checks

White Heteroskedasticity test		
F statistic	0.48	Probability 0.88
Breusch – Godfrey Serial Correlation LM test		
F statistic	0.12	Probability 0.89
Jarque-bera		
Jarque-bera	0.03	Probability 0.99

The white heteroskedasticity test indicates that the residuals are homoskedastic.. The result of the Breusch-Godfrey serial correlation test indicates no serial correlation in the residuals. The Jarque-bera normality test also indicated the validation of the null hypothesis that the residuals are normally distributed.

The result of the Cumulative Sum of Recursive Residuals (CUSUM) and Cumulative Sum of Squares of Recursive Residuals (CUSUMQ) are shown below:

Figure 1: CUSUM Stability Test

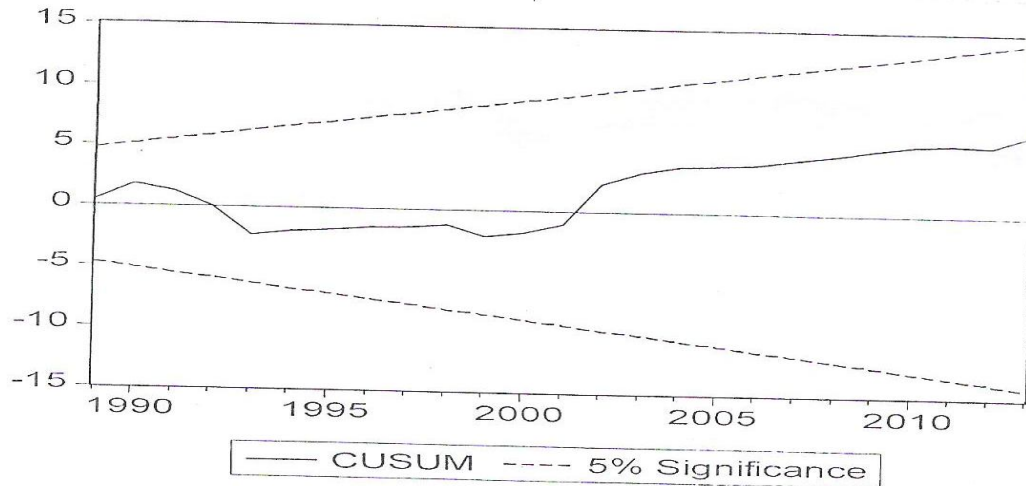
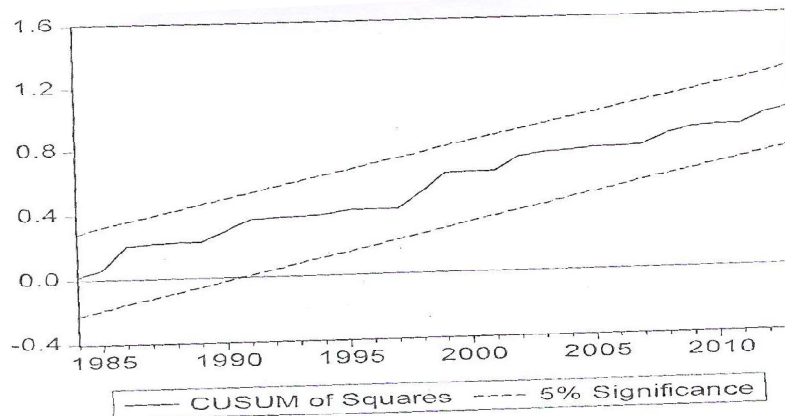


Figure CUSUMQ Stability Test



The result indicates residual stability since in cases, the CUSUM and CUSUMQ lines fell in-between the two 5 percent lines.

This result permits us to estimate the variance decomposition which forms the next stage of the research.

Cholesky Variance Decomposition

The variance decomposition assesses the impact of shocks of any of the explanatory variables on the dependent variable. The result is shown below:

Variance Decomposition of LRGDP:					
Period	S.E.	LRGDP	LPPT	LGEX	LEXD
1	0.039884	100.0000	0.000000	0.000000	0.000000
2	0.067759	98.16091	0.028096	0.926046	0.884946
3	0.093417	88.95344	0.784364	5.754796	4.507402
4	0.117224	80.93829	1.654421	7.734142	9.673146
5	0.142549	74.15254	2.245356	9.497644	14.10446
6	0.166978	69.33347	2.530596	10.93175	17.20419
7	0.189954	65.64444	2.639483	12.04814	19.66793
8	0.211376	62.81761	2.662763	12.87117	21.64845
9	0.231374	60.64404	2.663778	13.50496	23.18721
10	0.250011	58.97949	2.656028	13.99292	24.37156

Variance Decomposition of LPPT:					
Period	S.E.	LRGDP	LPPT	LGEX	LEXD
1	0.428901	2.683008	97.31699	0.000000	0.000000
2	0.617692	10.43845	79.44608	0.000426	10.11505
3	0.706599	13.69317	70.31070	0.092280	15.90385
4	0.759360	14.47642	65.79387	0.202880	19.52683
5	0.811561	14.03899	63.25692	0.348409	22.35568
6	0.869843	13.36357	60.84518	0.614537	25.17672
7	0.928904	12.85617	58.25431	0.911213	27.97831
8	0.985201	12.44037	55.85338	1.184223	30.52203
9	1.038570	12.04599	53.86340	1.427640	32.66297
10	1.089944	11.68514	52.22985	1.645076	34.43994

Variance Decomposition of LGEX:					
Period	S.E.	LRGDP	LPPT	LGEX	LEXD
1	0.209277	0.408086	5.205282	94.38663	0.000000
2	0.246227	4.471977	3.942454	80.15922	11.42635
3	0.320102	2.646074	3.494431	69.92885	23.93064
4	0.383996	1.856879	4.153125	66.19102	27.79897
5	0.446987	1.401612	4.375403	63.29583	30.92716
6	0.505428	1.135312	4.162046	61.09756	33.60508
7	0.561832	0.955105	3.980851	59.54912	35.51492
8	0.614220	0.823710	3.863437	58.40517	36.90768
9	0.663069	0.728447	3.768872	57.53417	37.96851
10	0.708706	0.657260	3.683006	56.88031	38.77942

Variance Decomposition of LEXD:					
Period	S.E.	LRGDP	LPPT	LGEX	LEXD
1	0.551343	4.301688	3.615618	2.192921	89.88977
2	0.939297	6.002271	9.608032	9.108949	75.28075
3	1.267587	4.153107	10.28400	12.17580	73.38709
4	1.545852	2.993125	10.88916	12.55732	73.56039
5	1.782117	2.387765	11.43130	12.70220	73.47874
6	1.982228	2.016325	12.06149	12.78275	73.13943
7	2.158291	1.747868	12.71788	12.75787	72.77638
8	2.316869	1.544860	13.33233	12.67124	72.45156
9	2.461580	1.388336	13.85914	12.57891	72.17361
10	2.595355	1.264497	14.30973	12.48961	71.93616

Cholesky Ordering: LRGDP LPPT LGEX LEXD

The result indicates that shocks to Real Gross Domestic Product explained 100 percent to changes in itself in the first period. This however reduced to 5% percent in the last period. Shocks to external debt explained 5 percent of shocks to economic growth in the third period. This increased to 24 percent in the last period. Shocks to government expenditure explained 6 percent of changes in economic growth in the third period. This increased to 14 percent in the last period. Shocks to petroleum profit tax explained 2 percent of changes in economic growth in the fifth period which increased to 3 percent in the last period. Shocks to economic growth explained 10 percent of changes in petroleum profit tax in the second period. This increased to 12 percent in the last period. Shocks to economic growth explained 4 percent of changes in government expenditure in the second period and it decreased to 1 percent in the last period. Shocks to economic growth explained about 4 percent of changes in external debt in the first period and it reduced to 1 percent in the last period.

4. Conclusion and Recommendations

The study has been on fiscal policy and economic growth in Nigeria. The cointegration technique with its implied ECM was adopted. The ADF results indicate that the entire variable become stationary after the first difference was taken. The Johansen cointegration test indicates a long run relationship among the variables. The result further indicates that the three components of fiscal policy (Government expenditure, petroleum profit tax and external) debt used in the study had positive and significant impact on the level of economic growth in Nigeria. An indication that if well managed the government expenditure, external debt and petroleum profit tax could bring about the desired level of economic growth in the society. The result recommends prudence in the conduct of fiscal policy in Nigeria to ensure stabilization. This prudence most however not be a complete avoidance of external debt as a means of financing budget deficits. Rather, there should be a conscious and carefully planned schedule of acquisition, deployment and retirement of external debts contracted for development purpose. Government should also direct its expenditure towards productive sectors of the economy like education and manufacturing. The government should also improve the collection of petroleum profit tax by ensuring that oil companies don't falsify the profit figures.

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