Impact of Fiscal Policy on Inclusive Growth in Nigeria

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Abstract

Among the macroeconomic goals of the Nigerian government are the following objectives: to stimulate economic growth, reduce unemployment, poverty, and inequality. To achieve these objectives, the government continues to alter its expenditure pattern. Despite these policy changes, the rates of unemployment, poverty, and inequality continue to increase. The objective of this study is to investigate how fiscal policy can be designed to promote inclusive growth as well as identify the most effective fiscal policy instrument that can lead to inclusive growth in Nigeria, using annual data from 1980 to 2017. The Structural Vector Autoregressive (SVAR) model was adopted for the analysis. The result shows that government capital expenditure is a more effective fiscal policy instrument for achieving inclusive growth in Nigeria. The dominance of the shocks to tax revenue has a higher impact on unemployment than on poverty and per capita GDP growth rate. Based on these findings, it is recommended that the Nigerian government should strengthen the mobilisation of tax

revenue and channel it towards government capital expenditure in order to promote inclusive growth in Nigeria.

Keywords: Economic growth, fiscal policy, inclusive growth, government expenditure

Introduction

One of the macroeconomic goals of any government should be to achieve and sustain economic growth as a means of raising living standards and improving the wellbeing of the people. Improvement in wellbeing requires policies that will lead to a reduction in poverty, create employment and reduce inequality. Poverty and unemployment have been identified as twin macroeconomic evils, especially in developing countries, including Nigeria. In the past, the Nigerian economy recorded impressive growth performance, with the growth rate rising from -6.0% in early 1980 to 6.5% in 2013, making it the highest in the world (Mobolaji, Ehigiamuose & Lean, 2015). However, the good performance masked a more complex reality, that is, economic growth associated with low standard of living in the form of rising unemployment, poverty and inequality. For instance, the proportion of the Nigerian population living on less than $1.25 a day increased from 22% in 1981 to about 85% in 2010 and 87% in 2015 while the rate of unemployment rose from less than 5% in early 1980 to 28% in 2015 (National Bureau of Statistics, NBS 2016). According to the NBS (2017), the major factor contributing to the country's misery is the high unemployment rate, increasing from 13.3% in Q3 of 2016 to 18.8% in Q3 of 2017. The simultaneously increasing growth rate of GDP, poverty, and unemployment in Nigeria is contrary to economic theory which predicts a positive relationship between economic growth and employment.

Economic growth is said to be inclusive when it is sustainable and broad-based in terms of creating job and economic opportunities for all. Discussions on inclusiveness usually focus on income distribution, the incidence of poverty and other dimensions such as well-being, a voice in the political process and participation in social life. Experiences from developed countries in Europe and Asia have shown that rapid economic growth has lifted millions of the population out of poverty and created employment using government fiscal policies. In developing countries, strong growth is not necessarily inclusive because the benefits of increased material prosperity are not always shared among the various social groups. Neither

is the strong growth even sustained over the years. Hence, as the rates of poverty, unemployment and inequality increase in developing countries, pressure mounts on the governments to make growth more inclusive.

Growth-friendly policies are known to have an associated bearing on inclusiveness. The main policy tools of government intervention are both monetary and fiscal policies. And fiscal policies have been identified as the most suitable policy instruments to tackle the problems of unemployment, poverty, and inequality in advanced economies. According to Heshmati, Kim and Park (2014), developed countries used fiscal policy to lay the foundation for macroeconomic stability, large investments in infrastructure and hence economic growth. Birdsall (2012) opined that by working towards two important goals such as a fair fiscal policy and fiscal discipline, macroeconomic policies can shape the environment and provide incentives needed for inclusive growth. It is expected that as countries grow richer, they pay attention to the quality of growth which is inclusive, critically including income equality, employment, and an increase in the standard of living as opposed to the narrowly-defined economic growth. Thus, it is necessary to examine how fiscal policy instruments can be tailored towards promoting inclusive growth in Nigeria. Also, the most effective fiscal policy transmission channels that can create employment opportunities need to be identified so as to increase per capita GDP and reduce poverty in Nigeria.

Studies such as Mobolaji et al. (2015), Heshmati et al. (2014), Nwosa (2014), Mansouri (2008) and Baunsgard (2003) have examined the potency of fiscal policy in different countries. The present study is a deviation from the previous studies in some ways. First, this study concentrated on inclusive growth rather than on economic growth as measured by real GDP or GDP growth rate. Second, previous studies on fiscal policy and inclusive growth used government total expenditure as proxy for fiscal policy while the present study disaggregated fiscal policy into government capital expenditure, government recurrent expenditure, and tax revenue, so as to identify the specific fiscal policy instrument that can promote employment and reduce poverty. Third, the present study adopted the Structural Vector Autoregressive (SVAR) framework to estimate the structural parameters and analyse the linkage between fiscal policy and inclusive growth rather than the ordinary least squares (OLS) estimation technique used by previous studies. The findings of this study, apart from contributing to the literature on inclusive growth in developing countries, will guide policymakers in

identifying the most effective fiscal policy instrument that may be manipulated to achieve inclusive growth in Nigeria.

The paper is discussed in six sections. Following this introduction is the section which contains some stylised facts on fiscal policy and inclusive growth in Nigeria. The third section is a review of the conceptual, theoretical and empirical literature and the fourth outlines the model specification and method of analysis. The fifth section presents the empirical results and discussion of findings while the final section is the conclusion and recommendations.

Some Stylised Facts on Fiscal Policy and Inclusive Growth in Nigeria

One of the objectives of government spending in Nigeria is to sustain high economic growth that is capable of generating employment and reducing poverty. The government can achieve these objectives by manipulating both monetary and fiscal policy. Fiscal policy is the main policy tool of government intervention to promote more inclusive growth (Mobolaji et al., 2015). Fiscal policy is a stabilisation instrument used by the government to influence economic activities. For instance, a decrease in public expenditure during inflation can decrease aggregate demand, national income, employment, and output, while an increase in government expenditure during depression can increase aggregate demand for goods and services and result in a large increase in income through the multiplier process. The government can manage both inflationary and deflationary periods by judicious manipulation of government spending and taxation programmes.

Despite the government's various policy focuses, the high economic growth experienced especially during the democratic era has not been accompanied by significant employment generation and poverty reduction. Government spending in relation to GDP has been contractionary. Teriba (2018) asserts that the contraction is a reflection of fiscal disconnect, that the budget shrank all through the boom and even shrank more through the bust, thereby becoming cyclical, rather than pro-cyclical or counter-cyclical. The situation had apparent implications for poverty and employment generation in Nigeria.

Table 1 reveals the trend of fiscal policy instruments and inclusive growth variables from 1980 to 2017. The trend shows increasing government

capital and recurrent expenditures and as well as tax revenue over the period. The expenditure did not translate to an impressive employment-creation rate. The unemployment rate was generally low in the period preceding the return to democratic dispensation (1980 - 1998), it was below 7% and as low as 4% on the average within the period. Then, during the democratic era 1999 to 2017, the annual unemployment rate started to rise and continued to above 18% in 2017. This shows that the number of the labour force willing to work could not find jobs, hence a waste of human resources in the country. This may be caused by the fact that most of government expenditure in Nigeria is tailored towards administrative expenses rather than projects that will help to generate employment in the economy. Similarly, the impressive growth in the economy was not associated with improved poverty reduction rate even though since the 1990s, poverty reduction has been a policy focus of governments in developing countries, including Nigeria. The proportion of the population living on less than $1.25 a day was less than 50% in the 1980s but it increased to more than 50% in the 1990s and to over 60% in 2017. The World Bank (2016) notes that poverty reduction in Nigeria has been less responsive to growth relative to poverty reduction in lower middle-income countries and the rest of sub-Saharan Africa.

Table 1: Capital and Recurrent Expenditures, Tax Revenue, Unemployment, Poverty, and GDP per capita growth in Nigeria (1980-2017)

Variables	1980	1990	2000	2010	2015	2017
Govt. Capital Exp. (₦ 'million)	6.57	24.05	239.45	883.87	818.37	979.50
Govt. Recurrent Exp. (₦ 'million)	4.85	36.22	461.60	3,109.38	3,831.95	7,138.90
Tax Revenue (₦ 'Million)	11,051.9	40,271.2	740,023.5	3,484,740	11,263,199	14,466,877
Unemployment Rate (%)	6.4	3.5	18.1	21.1	17.6	18.5
Poverty Rate (%)	40.2	50.3	64.4	54.43	55.8	61.2
GDP Per Capita Growth (%)	1.2693	8.9309	2.4196	5.1613	-0.0224	-1.78

Sources: CBN Statistical Bulletin (2017); *World Development Indicators* (2017).

The trend also shows a fluctuation in per capita GDP growth within the period. Nigeria's per capita GDP growth showed an upward positive trend from 2% in 2000 to 5% in 2014. This positive upward trend may be attributed to the increased earnings from oil export as a result of favourable oil prices in the international market. The increased revenue from the oil sector led to an increase in government expenditure and economic growth. The increased economic growth was followed by an increasing rate of unemployment and poverty contrary to economic expectations that a good fiscal policy rate should be conducive for employment. Adeleke et al. (2015) assert that this contrast arises because of low productivity in the real sector (manufacturing and agriculture). However, in 2015, the drop in international oil prices plunged the nation into a recession in 2016, with rising inflation, poverty, unemployment and negative growth. The GDP per capita growth rate reduced from 5% in 2010 to -0.02% in 2015; though it improved to -1.78% in 2017. Even before the recession in 2016, the Nigerian economy witnessed poor socio-economic performance. According to the NBS (2017), the economic performance indicator in Nigeria showed that the misery and discomfort indices were rising, with the rising unemployment rate as the major contributing factor. The unemployment rate increased from 13.9% in Q3 of 2016 to 18.8% in Q3 of 2017 (NBS, 2017). From the statistics, economic activities in Nigeria were below full employment output and could not be said to be inclusive within the period.

Review of Related Literature

Conceptual and theoretical literature review

Jhingan (2004) explained fiscal policy as a policy under which the government uses its expenditure and revenue programmes to produce desirable effects on national income, production, and employment. The government applies variations in public expenditure and taxes to offset undesirable variations in investment and consumption. Fiscal policy as a stabilisation instrument may be contractionary or expansionary. For instance, an increase in taxes can decrease disposable income as well as consumption and investment. Similarly, a decrease in taxes will increase disposable income and investment. Inflationary and deflationary periods in an economy can be controlled through a combination of public expenditure and taxation. The objectives of fiscal policy include the efficient allocation of financial resources to stimulate employment and ensure rapid economic

growth and development. The development process, through capital formation and infrastructural improvement, helps to reduce the level of poverty and inequality in an economy.

Fiscal policy in Nigeria has been pro-cyclical with government expenditure increasing due to the upsurge of the oil price progression, yet the government has not been able to reduce the rate of unemployment and poverty. Ezeoha and Uche (2010) noted that the inability of government spending to diversify and develop the economy could be attributed to the failure of different government fiscal policies. Baunsgard (2003) asserts that the difficulty in implementing fiscal policies in Nigeria can be attributed to the high volatility in revenue inflow caused by oil price shocks. International oil price and the revenue inflow resulting from oil have always directed the flow and course of government expenditure in Nigeria.

Bushan (2013) explained inclusive growth as the growth environment in which the welfare of excluded people improves faster than the average incomes in the country. Bushan further suggested the elements that may be identified when explaining inclusive growth. First is the outcome that inclusive growth seeks to achieve; second is how to approach the measurement of inclusive growth; and third are the results expected from the measurement. This means that inclusive growth involves creating social and economic opportunities such as a reduction in poverty, unemployment and an increase in per capita GDP.

The Organisation for Economic Cooperation and Development (OECD) (2012) asserts that inclusive growth requires equal sharing of growth dividends such as health, jobs, skills, clean environment and effective institutions thereby reducing the gap between the rich and the poor. This means that inclusive growth involves the removal of any form of inequality by creating economic opportunities and ensuring social inclusion in an economy. Public investment in social services such as education and health can help to eliminate all forms of social exclusion, especially to the disadvantaged. When growth is inclusive, the poor do not only benefit from growth but equally participate in the growth process through the creation of opportunities and equal access to these opportunities. Good governance and institutions that provide social safety nets to mitigate the effects of transitory livelihood shocks, prevent extreme poverty and create employment opportunities are an important part of the inclusive growth

process. However, in Nigeria, the high level of corruption, diversion of resources into private accounts and non-intentional poverty policies have made government, either by intent or omission, unable to capture real poverty reduction strategies (Alao, 2015).

The present study is rooted in the Keynesian theory of output and employment which was developed during the Great Depression of the 1930s. The theory postulates that when traditional methods of economic stimulus fail, the government sector can be used to stimulate aggregate demand, output, and employment, using fiscal policy. During the period of the Great Depression, the output of many industrialised nations nosedived, leading to unemployment in different sectors. The unemployment situation resulted in insufficient consumer income needed to stimulate consumption and aggregate demand. Hence, the government sector appeared to be the only sector available for reviving the economy through government spending and taxation. Specific changes in fiscal policy can be used to stimulate aggregate supply through capital investment in innovation, infrastructure, workforce incentives and research and development (R&D). An increase in government spending will encourage the development of technology which will further increase the potential output of the economy. Sustained growth leads to increase in average standard of living as growth dividends and opportunities are shared equally. Thus, the rates of poverty and unemployment are reduced and the gap between the rich and the poor is narrowed down not just in terms of income but in other dimensions of great concern to the people (Mobolaji et al., 2015).

Empirical literature review

Literature abounds on the effect of fiscal policy on economic growth. Mobolaji et al. (2015) examined the role of fiscal policy in inclusive growth in Nigeria from 1980 to 2013 using the Granger causality baseline growth regression model. They found that fiscal policy had a positive significant impact on inclusive growth in Nigeria within the study period. The causality test showed a unidirectional relationship running from fiscal policy to inclusive growth. Their study used aggregate government expenditure and hence did not capture the specific government expenditure that exerts much influence on inclusive growth. Using the ordinary least squares method (OLS) and General Moment Method (GMM), Adegboye (2013) examined the role of fiscal policy and political institutions in promoting the efficiency of

fiscal policy in Nigeria from 1970 to 2011. The study also estimated how fiscal policy responds to the business cycle during periods of boom and recession. The findings showed that fiscal dependence was the strongest institutional factor for promoting fiscal pro-cyclicality in Nigeria, which is more pronounced during the democratic era. The study opined that fiscal institutions that direct fiscal policy based on oil price development will not provide the expected protection against procyclical fiscal management.

Nwosa (2014) examined the effect of government expenditure on poverty and unemployment rates in Nigeria using time series data from 1981 to 2011. The data were analysed using ordinary least square regression analysis and the findings show that government expenditure had a positive and significant relationship with unemployment rate in Nigeria. The study concluded that despite increasing government expenditure, the unemployment rate has been on a steady increase. This shows that government expenditure has not been able to stimulate the growth activities that may bring about improvement in employment opportunities and reduction in the level of poverty in the country within the study period.

Mansouri (2008) examined the impact of fiscal policy on economic growth in three African countries: Egypt, Tunisia, and Morocco, for the years 1970 to 2002. He concluded that there was a long-run relationship between fiscal policy and economic growth. There have also been studies on the influence of both monetary and fiscal policy. Abata, Kehinde and Bolarinwa (2012) investigated the impact of fiscal and monetary policies on economic growth and development in Nigeria. The findings reveal a long-run relationship between fiscal policy and economic growth. Abata et al. (2012) opined that curbing the fiscal indiscipline of Nigerian governments will take more than including fiscal policy rules in the Nigerian Constitution. They recommended that for progress to be made in fiscal prudence there should be stakeholders who will be willing to challenge government fiscal recklessness.

Tagkalakis (2013) estimated an SVAR model which was used to investigate the unemployment effects of fiscal policy in Greece. The study showed that unemployment and growth effects are substantial with cuts in government spending on consumption and less on government investment, while tax increase reduces output and increases unemployment. This shows that a reduction in government consumption spending can reduce

unemployment. Chowdhury (1986) reported that fiscal policy had a greater impact on economic activities than monetary policy after investigating the impact of both monetary and fiscal policy in Bangladesh. He found that government expenditure was more effective at redistributing income despite the tax system being progressive.

From the literature, studies on fiscal policy and economic growth are numerous. The difference between the present study and previous studies is that the latter focused on the relationship between fiscal policy and economic growth as measured by real GDP. The present study concentrated on inclusive growth, encompassing poverty and unemployment rate, and growth in per capita GDP, as opposed to the narrowly-defined economic growth used by previous authors. The study also deviated from previous studies by adopting an extended model that incorporates disaggregation of fiscal policy into government capital expenditure, government recurrent expenditure, and tax revenue so as to estimate the effectiveness of each fiscal policy transmission mechanism towards inclusive growth. Moreover, the issue of inclusive growth is recent and as such has not received considerable attention from researchers. Therefore, there is a need to investigate the role of fiscal policy in driving inclusive growth in Nigeria using time series data from 1980 to 2017. This study is filling the identified gap as well as contributing to empirical studies on inclusive growth and fiscal policy in developing countries.

Methodology and Model Specification

This study used time series data from 1980 to 2017. The following variables: government total tax revenue, government capital, and recurrent expenditure are the fiscal policy instruments while unemployment rate, poverty rate and per capita growth rate are the inclusive growth variables. The data used for this study were sourced from *CBN Statistical Bulletin* (2018), National Bureau of Statistics (2017), and *World Development Indicators* (2018).

This study adopted the SVAR approach by Bernanke (1986) where the economic theory was utilised to estimate the structural parameters and recover the underlying independent structural disturbances. Identifying restrictions in SVAR requires three main approaches. One such approach is to select identification restriction that is largely in line with the desired theory; the second approach is to identify an SVAR based on established

theoretical macroeconomic models; and identification based on the stylised facts obtained from the literature. To identify orthogonal fiscal policy shocks, it is normal to impose short-run restrictions on the SVAR model based on the preferred economic theory. Therefore, for modelling the relationship between fiscal policy instruments and inclusive growth variables we assume an infinite vector-moving average representation:

$$A_0 X_t = A(L)X_{t-1} + B_{et} \quad (1)$$

The reduced-form of the VAR model is as follows:

$$X_t = A_0^{-1} A(L)X_{t-1} + A_0^{-1} B_{et} = C(L)X_{t-1} + U_t \quad (2)$$

where:

X_t is an nx1 vector of the endogenous variables which include: GDP Per capita growth rate (PGDPG), the poverty rate (POVR), unemployment rate (UNER), government capital expenditure (GCAP), government recurrent expenditure (GREC) and total tax revenue (TREV).

A_0 captures the contemporaneous relations between n endogenous variables.

$A(L)$ is a polynomial variance-covariance matrix,

L is the lag operator,

$C(L)$ is a matrix representing the relationship between lagged endogenous variables,

εt is K x 1 vector of normally distributed, serially uncorrelated and mutually orthogonal white noise disturbances, and

U_t is nx1 vector of normally distributed shocks that are serially uncorrelated but could be contemporaneously correlated with each other.

The specifications of our standard SVAR, given the restrictions assigned to the contemporaneous innovations, are as follows:

$$X_t = \begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 0 \\ b_{21} & 1 & 0 & 0 & 0 & 0 \\ b_{31} & b_{32} & 1 & 0 & 0 & 0 \\ b_{41} & b_{42} & b_{43} & 1 & 0 & 0 \\ b_{51} & b_{52} & b_{53} & b_{54} & 1 & 0 \\ b_{61} & b_{62} & b_{63} & b_{64} & b_{65} & 1 \end{bmatrix} \begin{bmatrix} PGDPG_t \\ POVR_t \\ UNER_t \\ LGCAP_t \\ LGREC_t \\ LTREV_t \end{bmatrix}$$

The coefficients on the major diagonals are normalised to one, while the zero entries denote coefficients that are restricted to zero. The coefficients b_{ij}'s that are non-zero signify that variable *j* influences variable *i* contemporaneously. Therefore, a combination of economic theory, stylised facts, and previous studies are used to determine the identification restriction in this study. We adopt the approach that fiscal policy has three fundamental areas in which it can boost inclusive growth in Nigeria: per capita GDP growth, unemployment, and poverty.

The impulse response functions (IRFs) and forecast error variance decomposition (FEVD) are utilised in examining the inter-relationships among variables of interest in a system of equations. While the IRFs measure the reactions of each variable in the model to a one standard deviation shock arising from one of the endogenous variables in the model, the FEVD computes the fraction of movement in a sequence attributed to its own shock to distinguish it from movements attributable to other variable shocks (Enders, 1995). EViews version 10 was used for the computation.

Results and Discussion

Descriptive statistics of the model variables

Table 2 contains the descriptive statistics of the variables used for the analysis. The mean value of the poverty rate is about 54% with a maximum value of 67%, while the mean value of growth rate of per capita GDP and the unemployment rate are 0.60% and 10% respectively. The standard deviation shows diverse variability in the data set, from the inclusive growth variables, the variation is highest for poverty rate, followed by the unemployment rate and is least for PGDPG. Overall, measures of skewness,

kurtosis and the Jarque-Bera statistic clearly indicate that all the series are not normally distributed. The P-values associated with the Jarque-Bera statistic, a test for departure for normality, indicate that the PGDPG, GCAP, and TREV are significantly different from their normal values.

Table 2: Summary statistics of the key variables

	PGDPG	POVR	UNER	GCAP	GREC	TREV
Mean	0.597011	53.77526	10.13684	1241.882	374.5509	2446935
Median	1.555656	54.01500	9.400000	313.8801	255.6700	273725.7
Maximum	12.45793	66.90000	21.10000	7138.900	1152.797	14466877
Minimum	-15.45478	40.20000	1.900000	0.050000	0.050000	0.050000
Std. Dev.	5.392168	6.845051	6.161231	1766.103	380.6028	3916421
Skewness	-0.908365	-0.097517	0.207253	1.652352	0.616365	1.790617
Kurtosis	4.649678	2.456963	1.473530	5.194496	1.946348	5.124314
Jarque-Bera	9.534747	0.527135	3.961384	24.91673	4.163864	27.45174
Probability	0.008503	0.768306	0.137974	0.000004	0.124689	0.000001
Observations	38	38	38	38	38	38

Unit Root Test Results

In order to check the time series properties of the variables used in the model, unit root tests were conducted using both Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests to estimate the order of integration and the results are summarized in Table 3.

The result from the ADF unit root test shows that all the variables are integrated at order one I(1) except for real per capita GDP growth rate and log of tax revenue which are stationary at the level I(0). The confirmatory test performed using the PP approach to confirm that no variable is I(2) as this would affect the validity of the estimation result, shows that all the variables are 1(0) with the exception of poverty and unemployment rate which are I(1). Therefore, the null hypotheses of the presence of unit roots in the variables are rejected; we then proceed to test for cointegration of the variables using the Johansen co-integration test approach and the result is presented in Table 4.

Table 3: Summary of Unit Root Test Results

Variables	ADF Test Statistic			Phillips-Perron Test Statistic		
	Levels	1st Diff.		Levels	1st Diff.	
	I(0)	I(1)	I(d)	I(0)	I(1)	I(0)
PGDPGP	-3.3417**	-11.3445***	I(0)	-3.4815**	- 11.9694**	I(0)
POVR	-1.8943	-6.2522***	I(1)	-1.8777	-6.2520***	I(1)
UNER	-1.1818	-5.7994***	I(1)	-1.0624	-6.5014***	I(1)
LGCAP	-1.3288	-16.0298***	I(1)	-3.9412**	- 15.4172***	I(0)
LGREC	-1.1530	-18.3929***	I(1)	-3.6016**	- 23.2650***	I(0)
LTREV	-6.0374***	- 45.0087***	I(0)	-5.0578***	- 58.7601**	I(0)
ADF Critical Values				PP Critical Values		
1%		-3.626784			-3.621023	
5%		-2.945842			-2.943427	
10%		-2.611531			-2.610263	

Note: (***) and (**) indicate significant at 1% and 5% level respectively. PGDPG = Per capita GDP growth rate; POVR = Poverty rate; UNER = Unemployment rate; LGCAP = log of government capital expenditure; LGREC = log of government recurrent expenditure; LTREV = log of tax revenue.

Test for Co-integration

Table 4: Summary of the co-integration estimate

Trace Test				Maximum Eigen Value Test			
Null	Alternative	Stat.	0.05 Critical Values	Null	Alternative	Stat.	0.05 Critical Values
r = 0	r ≥ 1	256.81	95.75	r = 0	r = 1	105.96	40.08
r ≤ 1	r ≥ 2	150.85	69.82	r ≤ 1	r = 2	61.09	33.88
r ≤ 2	r ≥ 3	89.75	47.86	r ≤ 2	r = 3	39.33	27.58
r ≤ 3	r ≥ 4	50.43	29.79	r ≤ 3	r = 4	31.39	21.13
r ≤ 4	r ≥ 5	19.04	15.49	r ≤ 4	r = 5	18.89	14.26
r ≤ 5	r ≥ 6	0.15	3.84	r ≤ 5	r = 6	0.15	3.84

The result from Table 5 shows that the null hypothesis of no co-integration for $r \leq 4$ was rejected by both the trace and maximum Eigen because the tests statistic values are greater than the critical values. Also, the null hypothesis of no co-integration for $r \leq 5$ was not rejected by both tests because the test statistic values are less than the critical values. This indicates the existence of four co-integrating equations. Thus the null hypothesis of no long-run relationships is rejected at the 5% significance level.

The lag order of the structural VAR was first determined using appropriate lag order selection criteria. The result shows that the appropriate lag length of the VAR is 3 as indicated by the SIC which is corroborated by the FPE and the LR lag order selection criteria. Hence, the study used 3 as the optimal lag length.

Impulse Responses Functions

It is believed that unanticipated fiscal policy shocks that arise from either government spending or revenue can lead to disturbances in the economy. The effect of these unanticipated shocks can be ascertained using impulse response functions. If the response is such that the short-run values converge to the long-run values, then it can be deduced that stability can be achieved in the future. This enables policy makers to predict the consequences of unanticipated shocks so as to be prepared for these changes in the future.

The results of the impulse responses of inclusive growth variables to fiscal policy shocks spanning a ten-year period were estimated (see Appendix B). The results show that, on the average, the response of per capita GDP growth rate to one standard deviation shock in fiscal policy variables (i.e., LGCAP, LGREC, and LTREV) seems to be marginal throughout the ten periods ahead. For instance, the response of per capita GDP growth rate to one standard deviation shock to government capital expenditure is marginally positive throughout the periods with greater positive responses in periods 2, 4 and 8. This implies that, on the average, any unanticipated shock to government capital expenditure will increase the per capita GDP growth rate in the next 10 periods with the peak response occurring in period 4. A standard deviation shock to government recurrent expenditure exerts negative responses in per capita GDP growth rate throughout the periods except in periods 4 and 9 where marginally positive responses are observed. Thus, shocks to government recurrent expenditure

will, on average, bring about negative growth per capita GDP in the next ten periods. Similarly, the response of per capita GDP growth rate to a standard deviation shock to government tax revenue is negative throughout the 10 periods, except in period 6 where a marginally positive response is observed.

The response of the poverty rate to a standard deviation shock to government capital expenditure is negative throughout the 10 periods with the highest negative response observed in period 3, followed by period 7 and then in period 9. The poverty rate responds positively to a standard deviation shock to government recurrent expenditure throughout the periods, with observable positive responses occurring in periods 4 and 8. The response of the poverty rate to a standard deviation shock to government tax revenue was mixed; the highest negative responses were observed in periods 4 and 9, and a positive response in period 6. It could be inferred that, on the average, the poverty rate is expected to respond negatively to standard deviation shocks to government capital expenditure, positively to standard deviation shocks to government recurrent expenditure and negatively to standard deviation shocks to government tax revenue in the next 10 periods.

The response of unemployment to a standard deviation shock to government capital expenditure is positive up until the 9^{th} period, after which it becomes negative. Within the first 5 periods, the unemployment rate responds positively to unanticipated shocks to government capital expenditure, with the highest positive response observed in period 5, after which it deteriorates steadily up till period 9, and became negative thereafter. Unemployment rate responds negatively to unanticipated shocks to government recurrent expenditure within the first 4 periods, with the highest negative response observed in period 4, after which it increases, reaching the highest positive response in period 7, and thereafter it stabilizes to further shocks to government recurrent expenditure. The response of the unemployment rate to a standard deviation shock to government tax revenue is mixed, with the highest positive response observed in period 4, while the highest negative response observed in period 6. Within the first 4 periods, a standard deviation shock to government tax revenue increases the unemployment rate, after which the unemployment rate drops gradually and becomes negative after period 5, reaching its negative peak in period 6 before rising steadily up till period 9, and stabilizes thereafter.

Variance Decomposition

The forecast error variance decomposition was conducted to determine the proportion of the movement in the dependent variable that is due to its own shocks versus shocks to the other variables in the system. It is widely known that shocks to an individual variable can generate variations in both itself and other variables, and thus the forecast error variance decomposition identifies the relative importance of these effects. The variance decomposition of the inclusive growth variables and the fiscal policy variables for h-step, ahead forecast errors are presented in Appendix A. However, the summary result is presented in Table 5.

Table 5: Selected variance decomposition analyses

Variance Decomposition of PGDPG

Horizon	S.E	PGDPG (Shock1)	POVR (Shock2)	UNER (Shock3)	LGCAP (Shock4)	LGREC (Shock5)	LTREV (Shock6)
1	3.6926	100.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	4.5092	80.4237	1.6314	3.2986	7.5871	2.0734	4.9858
10	5.2419	65.3687	5.1737	11.4655	9.7162	2.0096	7.2663
Variance Decomposition of POVR							
1	1.8712	0.6129	99.3871	0.0000	0.0000	0.0000	0.0000
5	4.2809	30.4439	46.3941	13.4829	6.6058	1.5298	1.5434
10	5.3505	30.7796	40.1789	11.0968	13.4627	2.2467	2.2352
Variance Decomposition of UNER							
1	2.6989	0.0005	16.9205	83.0789	0.0000	0.0000	0.0000
5	4.4491	22.078	19.6661	40.1273	12.6021	1.6145	3.912
10	5.1637	20.4524	18.1653	36.6386	16.48	1.5091	6.7545

Factorisation: Structural.

Table 5 shows that in the first period under per capita GDP growth rate are attributed to its own shocks since 100% of variations are explained by shocks to per capita GDP. However, when we consider the 5^{th} and 10^{th} periods, 80% and 65% respectively of variations in per capita GDP growth rate are attributed to itself, while the remaining 20% and 35% emanate from shocks to other variables. Of the 20% variations in per capita GDP growth rate attributed to other variables in the 5^{th} period, fiscal policy variables account for 14.65%, government capital expenditure accounts for 7.58%,

government recurrent expenditure accounts for 2.07% and government tax revenue accounts for 4.99%. In the 10th period, fiscal policy variables collectively account for 19% (i.e., LGCAP accounts for 9.7%; LGREC for 2% and LTREV for 7.3%) out of the remaining 35% variations in per capita GDP growth rate due to shocks to other variables other than itself. This is in line with the finding from the impulse response analysis that, on the average, the response of per capita GDP growth rate to one standard deviation shock in fiscal policy variables (i.e., LGCAP, LGREC and LTREV) seems to be marginal throughout the ten periods ahead.

Interestingly, the story seems a bit different when we consider the variations in the poverty rate attributed to its own shocks and that of other variables. In the first period, the poverty rate accounts for 99.4% variations in itself, while the remaining 0.6% is coming from shocks to per capita GDP growth rate. When we consider periods 5 and 10, we see that 46% and 40% respectively of the variations in poverty rate emanate from its own shocks, while per capita GDP growth rate accounts for 30% and 30% in periods 5 and 10 respectively. For the fiscal policy variables, government capital expenditure accounts for 6.6% and 13.4% variations in poverty rate in periods 5 and 10 respectively, while government recurrent expenditure accounts for 1.5% and 2.2% in periods 5 and 10 respectively, and government tax revenue accounts for 1.5% and 2.2% in periods 5 and 10 respectively. Thus, on the average, fiscal policy variables only account marginally for variations in the poverty rate in the next 10 periods, and this equally supports the finding earlier made from the impulse response analysis.

The results further reveal that in the first period, 83% of the variations in unemployment is attributed to its own shock, while only poverty rate accounts for the remaining 17%. However, when we consider periods 5 and 10, we could see that, respectively 40% and 36% of variations in unemployment are attributed to its own shock, while per capita GDP growth rate accounts for 22% and 20%, and poverty rate accounts for 19% and 18% in periods 5 and 10 respectively. For the fiscal policy variables, government capital expenditure accounts for 12% and 16% of variations in unemployment rate in periods 5 and 10 respectively; while government recurrent expenditure accounts for 1% and 16% in periods 5 and 10 respectively; so that the remaining 3% and 6% in periods 5 and 10 respectively emanate from government tax revenue. In general, it could be

inferred that fiscal policy variables will only account marginally for variations in the unemployment rate in the next 10 periods, and this as well is consistent with the finding earlier made from the impulse response analysis.

Stability Test Using Inverse Roots of AR

Figure 1 shows the inverse roots of AR which helps to ascertain if the estimated impulse response function and variance decomposition of VAR are stable. A cursory look at the figure reveals that none of the polynomial roots are outside the circle meaning that the estimated impulse response function and variance decomposition of VAR are stable and can be used as the basis for decision making.

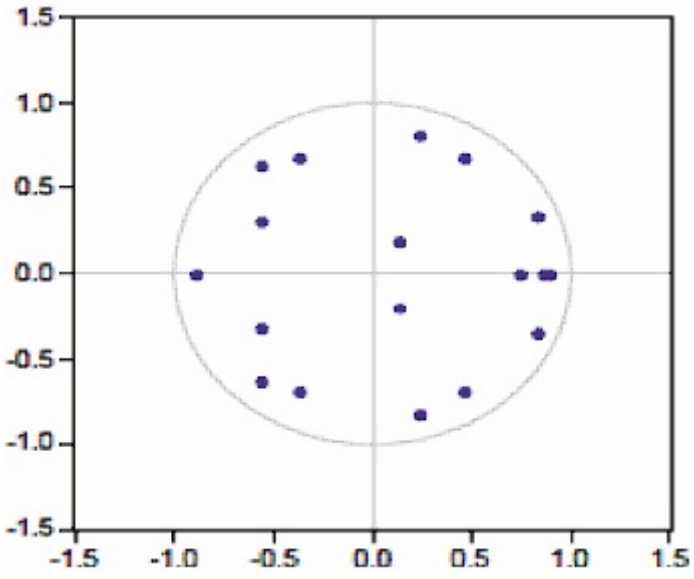

Figure 1: Inverse roots of AR characteristics

The robustness of the VAR regression estimate is shown by the serial correlation result in Table 6. The probability values of the LM-statistics at the different lags were insignificant suggesting that the residuals were normally distributed; hence the estimate can be used for policy inferences.

Table 6: VAR residual serial correlation LM tests

Lag	LM-Stat.	Prob.
1	37.528	0.3990
2	29.456	0.7715
3	48.898	0.0742
4	25.041	0.9149

Source: Author, 2019.

Conclusion and Recommendation

This study examined how fiscal policy instruments drive inclusive growth in Nigeria using time series data from 1980 to 2017. Specifically, it identified the most effective fiscal policy instrument that can drive inclusive growth, through a reduction in unemployment and poverty rates in Nigeria. The Structural Vector Autoregressive (SVAR) model was estimated while the Johansen test statistic was used to test for co-integration among the variables. The co-integration analysis confirmed the existence of five stable long-run relationships among government capital and recurrent expenditure, tax revenue, poverty, unemployment and per capita GDP growth rate. The empirical evidence from the impulse response function and forecast error variance decomposition analysis suggests that even though recurrent expenditure has a positive impact on poverty, it accounts for the least impact when compared with government capital expenditure. The implications of this finding is that though changes in fiscal policy variables such as government capital and recurrent expenditure can be used to enhance inclusive growth, the current state of government spending is not capable of promoting inclusive growth in Nigeria. Similarly, government tax revenue, if not well channelled will not achieve the objective of economic growth that is inclusive in the country.

Based on these findings, it is recommended that government should intensify efforts at mobilizing tax revenue through improved tax administration and collection. Also, government spending should be properly channelled into capital expenditure so as to enhance inclusive growth in Nigeria.

This study limits itself to an analysis of how fiscal policy variables can drive inclusive growth in Nigeria. Further studies could be conducted

in relation to how expenditure on specific sectors such as education, health, and social services could affect inclusive growth in Nigeria.

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Appendix A

Variance Decomposition using Structural VAR Factors

Variance Decomposition of PGDPG:							
Period	S.E.	Shock1	Shock2	Shock3	Shock4	Shock5	Shock6
1	3.692555	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000
2	3.883791	93.21361	0.545393	1.257010	3.690770	0.819170	0.474043
3	4.190745	90.67856	0.767722	1.080300	3.443442	0.891147	3.138830
4	4.427409	83.12767	0.969172	2.987420	7.426486	1.426912	4.062335
5	4.509202	80.42374	1.631439	3.298582	7.587074	2.073354	4.985815
6	4.611997	77.19728	2.239212	3.532191	8.567848	1.982004	6.481471
7	4.765867	77.39065	2.485109	3.630091	8.237551	2.184494	6.072104
8	4.919103	72.70281	3.441965	5.417226	10.32309	2.067646	6.047263
9	5.167991	66.46156	4.293904	10.47572	9.799097	1.999371	6.970346
10	5.241961	65.36869	4.173729	11.46547	9.716227	2.009622	7.266271
Variance Decomposition of POVR:							
Period	S.E.	Shock1	Shock2	Shock3	Shock4	Shock5	Shock6
1	1.871167	0.612855	99.38714	0.000000	0.000000	0.000000	0.000000
2	2.808288	23.47463	74.61942	0.621273	0.012246	0.192605	1.079824
3	3.493165	24.71282	62.48766	3.599656	8.249082	0.237502	0.713282
4	3.893253	31.78203	55.74430	2.902477	6.640790	1.581933	1.348468
5	4.280889	30.44399	46.39413	13.48290	6.605813	1.529798	1.543375
6	4.507981	32.15313	42.35383	14.16502	7.848934	1.663561	1.815525
7	4.706596	30.51834	42.89300	13.06621	10.08267	1.628411	1.811376
8	4.905312	31.58543	41.70315	12.02952	10.48518	2.162850	2.033875
9	5.127703	30.96110	40.48043	11.06004	12.80425	2.276931	2.417254
10	5.340490	30.77963	40.17899	11.09677	13.46267	2.246737	2.235216
Variance Decomposition of UNER:							
Period	S.E.	Shock1	Shock2	Shock3	Shock4	Shock5	Shock6
1	2.698861	0.000535	16.92051	83.07895	0.000000	0.000000	0.000000
2	3.152257	0.991670	18.29957	78.57402	1.910763	0.162283	0.061696
3	3.425008	3.789051	21.57249	66.61723	5.308009	0.320474	2.392745
4	3.907090	14.60143	21.71961	51.26757	5.385470	1.962301	5.063615
5	4.449084	22.07801	19.66606	40.12729	12.60208	1.614527	3.912033
6	4.884202	22.16845	18.97475	36.96415	15.26316	1.340848	5.288639
7	5.052623	20.74166	18.09837	36.76336	16.60311	1.407288	6.386226
8	5.115315	20.35860	17.92831	37.21518	16.54011	1.494231	6.463575
9	5.148524	20.56206	18.06447	36.85438	16.33220	1.513615	6.673264
10	5.163702	20.45243	18.16533	36.63860	16.48006	1.509066	6.754513

Variance Decomposition of LGCAP:

Period	S.E.	Shock1	Shock2	Shock3	Shock4	Shock5	Shock6
1	0.251100	20.70740	7.819053	0.041055	71.43249	0.000000	0.000000
2	0.312005	18.76751	6.624694	18.05333	55.15468	1.399367	0.000413
3	0.337705	17.52726	6.168130	18.58197	53.61373	1.746833	2.362081
4	0.384141	14.02506	5.859017	26.47942	45.35757	2.511249	5.767680
5	0.416858	11.91223	5.323891	32.02092	40.12690	4.673685	5.942382
6	0.435521	11.18989	10.93564	29.54122	37.95183	4.585618	5.795796
7	0.459687	10.54733	17.64782	26.80515	34.14470	5.493656	5.361343
8	0.474706	9.968124	20.57358	25.15984	32.60532	5.976309	5.716822
9	0.487445	9.635077	23.11603	24.42717	31.26051	6.022226	5.538997
10	0.500354	9.801418	25.47438	23.56271	29.82687	5.984239	5.350387

Variance Decomposition of LGREC:

Period	S.E.	Shock1	Shock2	Shock3	Shock4	Shock5	Shock6
1	0.172934	2.515949	10.19784	29.75996	23.53225	33.99400	0.000000
2	0.212576	3.143751	27.71736	25.66243	16.01773	23.90093	3.557791
3	0.250423	3.770602	24.54493	25.17462	11.99583	19.90316	14.61085
4	0.300702	21.10822	20.36087	23.39761	8.417820	14.07409	12.64138
5	0.326857	23.95669	18.17765	22.48271	12.53151	11.96480	10.88664
6	0.361606	31.14314	14.95370	18.54455	14.29802	10.68545	10.37514
7	0.387362	30.32371	14.21425	16.16479	18.32156	10.18713	10.78857
8	0.402923	29.28004	17.24019	14.99242	18.46570	9.658696	10.36295
9	0.416963	28.92991	18.78588	14.27783	18.66525	9.575133	9.765996
10	0.429435	29.85731	19.98304	13.62983	18.14810	9.099463	9.282248

Variance Decomposition of LTREV:

Period	S.E.	Shock1	Shock2	Shock3	Shock4	Shock5	Shock6
1	0.251775	10.46116	0.000595	15.65410	0.012209	5.974686	67.89726
2	0.314799	13.99372	6.072119	30.78754	0.542562	4.057181	44.54688
3	0.347792	11.73169	6.630771	36.99335	1.077057	5.394594	38.17254
4	0.362292	11.24654	7.136991	36.33578	1.799364	8.230215	35.25111
5	0.376243	10.64442	9.430003	36.16056	2.427908	7.640557	33.69655
6	0.405489	12.80711	11.14241	34.86041	2.571166	7.132002	31.48690
7	0.439071	16.75533	11.70622	33.67979	4.566648	6.428304	26.86370
8	0.453890	17.37828	12.23063	31.76272	6.834682	6.223741	25.56995
9	0.472339	18.80131	11.89623	29.39245	9.475338	6.570832	23.86383
10	0.486171	19.74878	12.99900	27.74512	10.56112	6.330585	22.61538

Factorization: Structural

Appendix B

Response to Structural VAR Innovations – 2 S.E.