International Journal of Financial Management and Economics

P-ISSN: 2617-9210
E-ISSN: 2617-9229
IJFME 2020; 3(1): 53-62
Received: 18-11-2019
Accepted: 21-12-2019

Abdulkarim Yusuf
Department of Economics, School of Social Sciences, Universiti Sains Malaysia, Malaysia

Saidatulakmal Mohd.
Department of Economics, School of Social Sciences, Universiti Sains Malaysia, Malaysia

Correspondence
Abdulkarim yusuf
Department of Economics, School of Social Sciences, Universiti Sains Malaysia, Malaysia

Empirical analysis of the potency of fiscal policy variables on economic growth in Nigeria

Abdulkarim Yusuf and Saidatulakmal Mohd.

Abstract
The efficacy of fiscal policy as a tool for promoting growth has remained a controversial issue and needs further investigation. The aim of the current study is to conduct a disaggregated analyses of the impact of fiscal policy variables on economic growth in Nigeria using annual time series data spanning the period 1980-2017. The empirical investigation is based on the Autoregressive Distributed Lag (ARDL) modelling technique. The bound test results revealed that there exists a unique long-run relationship between fiscal policy variables and economic growth. The empirical results confirmed that corporate and personal income taxes, government capital expenditure, fiscal deficit, domestic and external debt affect economic growth negatively whereas government recurrent expenditure, customs and excise duties showed a significant positive effect on economic growth both in the long and short run. The structural break dummy variable had an unexpected positive effect on economic growth that was significant only in the short run while petroleum profit tax, being the most important tax element in Nigeria showed a negative impact on growth that was not significant both in the long and short run. The study recommended expanding the revenue base through an efficient tax administration and collection system, increased investment in productive sectors of the economy by increasing capital expenditure and reducing recurrent expenditure and curtailing excessive deficit financing.

Keywords: fiscal policy, economic growth, tax revenue, government expenditure, public debts, Nigeria, cointegration.

1. Introduction
Policy makers in developing countries generally attempt to address socio-economic issues such as poverty, unemployment, hunger, poor investment and illiteracy while adjusting the levels of public spending and determining tax rates. Fiscal policy has been identified as a means of generating growth. Government revenue, government spending and public debt are important channels of transmission between fiscal policy and growth. There is considerable controversy about the impacts of government fiscal policy on economic growth, particularly in developing economies. The objective of fiscal policy is principally to quicken socio-economic development by following a policy stance that guarantees a sense of balance between taxation, expenditure and borrowing that is harmonious with sustainable growth (Quashigah *et al*., 2016) [18]. Economic growth has long been considered as an important goal of economic policy. Economic growth is most frequently expressed in terms of increase in Gross Domestic Product (GDP), a measure of the economy's total output of goods and services. Nigeria, like any other nation has a key policy objective of promoting a sustainable economic growth process that could improve the living standard of the people. Nigeria is recognized globally as a country with great potentials required for achieving this broad objective of sustainable economic growth. However, available statistics indicate that the country has been struggling to grow (Okafor & Shaibu, 2016).
The data highlighting the structural weaknesses of the Nigerian economy are depressingly familiar. Despite decades of attempts to diversify, Nigeria remains dependent on oil for 90 percent of its export earnings, which owes partly to the fact that almost two-thirds of the economy remains in the informal sector. The large informal sector also causes the country's tax to be remarkably low. What is more, economic growth has remained sluggish despite a rapidly growing population (World Bank, 2018). The Nigerian economy was negatively affected by the significant fall in oil prices beginning from mid-2014 from a peak of USD114 per barrel to below USD36 per barrel in 2016 (Central Bank of Nigeria, 2017). Government budgets were put under pressure as the global oil prices dropped and their

revenues declined sharply. In order to shore up revenues, debt levels increased tremendously and resulted in increasing absolute debt figure since 2010. In less than a decade, external debt service stock quadrupled, and the domestic debt stock tripled. The sustainability of rising debt has become a problem. Interest payments on debts have increased to 63 percent of total revenue in 2018 (Arubike & Okafor, 2019). This constrained revenue space resulting from high debt burden leading to poor budget execution.

A major challenge for the Nigerian economy is its macroeconomic volatility driven largely by external terms of trade shocks and the country's large reliance on oil export earnings. By some measures, Nigeria's economy ranked among the most volatile in the world for the period 1960 to 2000 (World Bank, 2003). Public expenditures closely followed current revenues, implying that fluctuations in oil earnings were transferred directly into the domestic economy. Fluctuations in public expenditure reflected both over-reliance on oil earnings and weak fiscal discipline. Volatile fiscal spending also tended to cause real exchange rate volatility. Fiscal expansions financed by oil revenues, often resulted in domestic currency appreciation, creating 'Dutch Disease" concerns and reducing competitiveness of the non-oil economy (Barnett & Ossowski, 2002). The cost of such macroeconomic volatility was significant for Nigeria. These adverse consequences may occur via two channels. Firstly, unsteady revenue flows tend to reduce the quality and productivity of government expenditures and second, private investments tend to be reduced in a volatile environment. Overall, a pro-cyclical expenditure pattern coupled with poor management of oil earnings resulted in low growth, persistent fiscal deficits and the accumulation of debts (Okonjo-Iweala & Osafo-Kwa ako, 2007) [14].

The efficacy of government investment does contribute to growth. Macroeconomic volatility has an adverse effect on growth. Public sector spending in Nigeria often fail because of volatility in spending. Boom in project spending may lead to less careful screening of new projects and programmes. Many new spending items will end up being poorly conceived or wasteful and many assume that high revenues will continue indefinitely. When revenues fall, many projects cannot be sustained and are abandoned while those that survive are either poorly executed or are well funded only through borrowing (Arubike & Okafor, 2019). The government over the past two decades had to contend with huge budget deficits due to its inability to raise predictable revenue for the execution of its functions. The widening gap between tax revenue and the federal expenditure plan, at a time, oil revenue is on the down swing has culminated into extensive borrowings which drives up the country's debt-to-revenue ratio. The increase in government expenditure coupled with heavy dependence on unpredictable oil revenue resulted in increasing fiscal deficits (Central Bank of Nigeria, 2017).

For almost a decade, government spending has been largely supported by borrowing both from the domestic and international markets. Total debt was $81.2 billion at the end of March 2019, from about $65 billion in 2015. Debt-owed to non-Nigerian lenders was $25.2 billion. Debt jumped because of poor revenue generation. Total borrowing as a proportion of GDP is about 21 percent. Debt service costs consume more than half of actual revenues, leaving little to build badly needed infrastructure and grow the economy. Nigeria spent 2.2 trillion Naira on servicing outstanding loans in 2018, compared to 1.68 trillion Naira on infrastructure according to Central Bank of Nigeria. Without major revenue reforms, debts could rise to almost 36 percent of GDP by 2024 and interest payment could make up 74.6 percent of revenue according to IMF. The mono-dependence of Nigeria on oil revenue cannot sustain long-run growth of the economy. A diversified Nigerian economy could benefit from increased non-oil revenue, drastic reduction in external debt and their service charge, increased foreign exchange reserves and increased hedging against exchange rate risks (Arubike & Okafor, 2019). Nigeria's fiscal experience over the years illustrates the difficulties of implementing fiscal policy in an environment with highly volatile revenue flows. Over the years, there have been a strong deficit bias and pro-cyclicality in fiscal policy, driven largely by oil price developments.

Previous studies on the effectiveness of fiscal policy in promoting economic growth in Nigeria suffer from their inability to apply a combination of fiscal policy variables, testing the simultaneous effect of these variables on economic growth by taking into consideration the tax and expenditure side of fiscal policy. Any one indicator of fiscal policy variable cannot adequately account for a given fiscal policy position which results in a potentially mis-specified model. When some relevant explanatory variables are omitted from the regression model, the results from the model could be biased. Thus, this study circumvents such potential issues by testing the simultaneous impact of fiscal policy variables on economic in Nigeria by considering both the revenue and expenditure side of fiscal policy that can potentially explain the complexities of the relationship between these variables adequately Previous studies also failed to effectively disaggregate fiscal policy variables into their component parts to access the individual effect of each variable on economic growth. These leads to substantial biases in coefficient estimates and the generation of empirical results that are not very robust and informative for effective policy formulation.

Bleaney *et al*, (2000) opined that any fiscal policy-growth study, which does not take both sides of the fiscal policy into account, suffers from substantial biases of the coefficient estimates. This study not only undertook a reasonable dis-aggregation of fiscal policy variables but also adopted a combination of fiscal policy variables (government revenue, government expenditure and public debt), testing their simultaneous effects on economic growth by taking into consideration the tax and expenditure side of fiscal policy. This is unlike past Nigerian studies such as Bello *et al*. (2019) Ogar *et al*. (2019) [12] amongst others, where fiscal policy variables were lumped together, a possible explanation of why findings were not robust and informative enough in explaining the complex nature of the relationship existing between fiscal policy variables and economic growth in Nigeria. Using disaggregated data and a combination of fiscal policy indicators which sufficiently account for Nigeria fiscal policy position could provide better results about the complex relationships between fiscal policy variables and economic growth in Nigeria. This makes the present study unique compared to previous studies. On this strength, the current study disaggregated the various components of fiscal policy variables and investigated their individual impacts on economic growth in Nigeria during the period 1980-2017 using the Autoregressive Distributed Lag (ARDL) modelling

technique. The remaining of this paper is structured as follows: section two presents the theoretical basis on the relationship between fiscal policy variables and economic growth followed by section three which focuses on the methodological issues, techniques and procedures that guided the study. Section four discusses the findings and interpretation of the results followed by section five which concludes the study and provides recommendations

2. Theoretical review

2.1 Neoclassical theory of economic growth

The starting point of conventional economic growth theories is the neoclassical model developed by Solow (1956) [20] and Swan (1956) which involves a series of equations showing the relationship between labour time, capital goods, output and investment. Solow-Swan model is an economic model of long run economic growth set within the framework of neoclassical economics. This model which was developed based on Cobb–Douglas production function assumes that countries use their resources efficiently and that there are constant returns to scale, diminishing marginal productivity of capital, exogenously determined technical progress and positive substitutability between labour and capital (Solow & Swan, 1956) [20]. As a result, the model highlights the saving or investment ratio as important determinant of short-run economic growth. Technological progress, though important in the long run, is regarded as exogenous to the economic system and therefore it is not adequately examined by this model. The production function is assumed to be a function of capital, labour and technology and states that economies will conditionally converge to the same level of income if they have the same rates of savings, depreciation, labour force growth and productivity growth. The model states that an increase in saving, which is reflected in investment, will generate additional growth in the short run. However, as the ratio of capital to labour increases, the marginal product of capital will decline, and the economy will go back to a steady state which makes output, capital and labour grow at the same rate. Hence growth in per capita income continues and equals the annual rate of productivity improvements (Solow & Swan, 1956) [20].

This theory was the first attempt to model long-run growth analytically. The model believes that a sustained increase in capital investment increases the growth rate of an economy only temporarily. This is because as the ratio of capital to labour goes up (there is more capital available for each worker to use), the marginal product of additional units of capital used decline and the economy eventually moves back to a long-term growth path, with real GDP growing at the same rate as the workforce plus a factor to reflect improving productivity. A steady-state growth path is reached when output, capital and labour are all growing at the same rate, so output per worker and capital per worker are constant (Solow & Swan, 1956) [20]. Neo-classical economists believed that to raise an economy's long-term trend rate of growth requires an increase in labour supply and capital. Differences in the rate of technological change are said to explain much of the variation in economic growth between countries. According to this theory, the role of technological change is very important. The neoclassical model treats productivity improvement as an exogenous variable meaning that productivity is assumed to be independent of capital investment (Solow & Swan, 1956) [20].

2.2 Endogenous growth theories

The endogenous growth theory seeks to redress the determinants of the growth rate of productivity (μ) which is left unexplained within the neoclassical model. The crux of the endogenous growth theory can be formulated as Y= AK (Lucas, 1988, Rebelo, 1991, Romer, 1991) [9]. Here A represents various factors that affect technological progress while K denotes both human and physical capital. Diminishing returns to capital are absent from the endogenous model since they are assumed to be able to be averted through the invocation of some externality that counteract any proclivity toward diminishing returns. According to this model, increases in productivity can be achieved through investment in human and physical capital. Investment increases in the variety or quality of machinery or the intermediate input for example, would be able to halt and reverse any tendency towards diminishing returns (Lucas, 1988, Rebelo, 1991, Romer, 1991) [9]. In this respect, investment in research and development as well as improvements in the skills of the labour force are crucial to sustain long-run economic growth.

The AK model is a linear production function that is adaptable to address the problems of economic growth in developing economies. The model incorporates channels through which a range of fiscal policy variables can affect long run growth rate in an economy. It transforms the temporary growth effect of fiscal policy variables implied by the neoclassical model into permanent growth effect and hence, growth rate (Barro & Sala-i-Martin, 1992). Various extensions of the basic AK endogenous growth model have been worked out, allowing different forms of government expenditure to be productive. Barro (1990) provided an interesting extension of endogenous growth models to include government taxation and spending but with specific limitation that was corrected by Kneller, Bleaney & Gemmell (1999), Bleaney, Gemmell & Kneller (2001), Daniel & Oliver (2005). Barro (1990) believed that government expenditure on investment and productive activities is expected to contribute positively to economic growth while government consumption spending is expected to be growth retarding.

3. Research methodology

3.1 Research design

This study adopted the quantitative method and descriptive research design to provide empirical solution to the research problems using already existing data. Descriptive research designs help provide answers to the questions of who, what, when, where and how associated with a particular research problem. A descriptive study is used to obtain information concerning the current status of the phenomena and to describe "what exists" with respect to variables (William, 2006).

3.2 Data sources and descriptions

The data for this study which are purely secondary were extracted from various reports of the Federal Inland Revenue Service (FIRS), Central Bank of Nigeria (CBN) Statistical Bulletin, Debt Management Office (DMO), World Bank and the International Monetary Fund (IMF) World Development Indicators using the desk survey approach. This is because the study is country specific and the estimation of the empirical models requires the use of

time series data. All variables were taken on annual basis as obtained from their various sources in nominal terms.

3.3 Specification of the empirical model

The model designed to capture the impact of fiscal policy variables on economic growth in Nigeria expresses changes in Real Gross Domestic Product (RGDP), proxy for economic growth, as a function of the growth rate of Petroleum Profit Tax (PPT), Company Income Tax (CIT), Personal Income Tax (PIT), Customs and Excise Duties (CED), Government Capital Expenditure (GCE), Government Recurrent Expenditure (GRE), Public External Debt (PED), Government Domestic Debt (GDD), Fiscal Stance (FCS) and the structural break dummy variable (DUMSB). This study leans very closely on the newer endogenous growth theory prescription of Barro & Sala-i-Martin (1992) which allows for the assessment of the effects of budgetary variables on economic growth. The endogenous growth model here is linear and could be stated in a linear form as follows:

$$\Delta_{LOGRGDP_t} = \beta_0 + \sum_{i=0}^{q} \beta_1 \Delta LOG_{PPT_t} + \sum_{i=0}^{q} \beta_2 \Delta_{LOGCIT_t} + \sum_{i=0}^{q} \beta_3 \Delta_{LOGPIT_t} + \sum_{i=0}^{q} \beta_4 \Delta_{LOGCED_t} + \sum_{i=0}^{q} \beta_5 \Delta_{LOGGCE_t}$$

$$+ \sum_{i=0}^{q} \beta_6 \Delta LOG_{GRE_t} + \sum_{i=0}^{q} \beta_7 \Delta LOGGDD_t + \sum_{i=0}^{q} \beta_8 \Delta_{LOGPED_t} + \sum_{i=0}^{q} \beta_9 \Delta_{FCS_t} + \sum_{i=0}^{q} \beta_{10} \Delta_{DUMSB_t} + \beta_{11} LOGRGDP_t +$$

$$\beta_{12} \Delta_{LOGPPT_t} + \beta_{13} \Delta_{LOGCIT_t} + \beta_{14} \Delta_{LOGPIT_t} + \beta_{15} \Delta_{LOGCED_t} + \beta_{16} \Delta_{LOGGCE_t} + \beta_{17} \Delta_{LOGGRE_t} + \beta_{18} \Delta_{LOGGDD_t} + \beta_{19} \Delta_{LOGPED_t} + \beta_{20}$$

$$\Delta_{FCS_t} + \Delta\beta_{21} DUMSB_t + \varepsilon_t \quad \text{.....Eqn. 5}$$

Where,

β_1, β_2, β_3, β_4, β_5, β_6, β_7, β_8 and β_9 = Regression coefficients to be estimated.

FCS = Fiscal Stance (Dummy variable, 1 for Budget Deficit and 0 for Budget Surplus).

t = time trend β_0 = Intercept μ = stochastic disturbance or error term.

3.3.1 A priori expectation from the model

The theoretical expectations about the signs of the coefficients of the empirical model follow naturally from the analysis of production theory. From equation 5, the study expects the signs of the coefficients of the various tax revenues to assume either positive or negative signs. That is, β_1, β_2, β_3, and β_4 = > or < 0. β_5 and β_6 are the disaggregated coefficients of Government expenditure while β_7 and β_8 are the disaggregated parameter coefficients of public debts. The study expects the signs of the coefficients of β_5 to be either positive or β_6 to be negative. From production theory analysis, the coefficient of public debts is expected to be positively or negatively related with RGDP depending on management of debts. β_9 is the parameter coefficient for the dummy variable, Fiscal Stance. The theoretical expectation of the sign of the coefficient could either be a positive or negative sign. That is, β_9 = > or < 0. A positive coefficient signifies a positive impact of current fiscal policy on economic growth while a negative coefficient indicates otherwise.

3.4 Estimation technique

The study uses the Auto-Regressive Distributed Lag (ARDL) co-integration test popularly known as bounds test procedure, jointly developed by Pesaran *et al* (2001) [17], to empirically analyse the short and long run impact of fiscal policy variables on economic growth in Nigeria. The ARDL is utilized in this study mainly because it allows for variables integrated of order zero and order one, I(0) and I(1) respectively, to be utilized in the same model without the risk of generating spurious regressions (Pesaran *et al*, 2001) [17]. The ARDL bounds test is also robust for finite samples, even in the presence of phenomena of shocks and regime shifts. In addition, different optimal lags can be used for different variables as they enter the model, which is not applicable in the standard co-integration test. Lastly, this technique allows for the simultaneous estimation of the short and long run parameters in the model. To use this approach, the study first ensure that none of the variables in the model are I (2), as such data will invalidate the methodology. Second, formulate an "unrestricted Error Correction Model (ECM) for all general and specific objectives. Following these, estimate the equation and ensure the errors of each model are serially independent and stable. Then perform a "Bounds test" to see if there is evidence of a long run relationship between the variables and if the outcome is positive, then the study estimate a long run levels model, as well as a separate unrestricted ECM. A more elaborate econometric estimation technique of Auto-Regressive Distributed Lag (ARDL) approach was used to account for the short and long-run effects of fiscal policy on economic growth in Nigeria to generate dramatically different and robust coefficient estimates desirable for effective policy formulation.

4. Results and Discussion

4.1 Unit root test results

Most macroeconomic time series contain a unit root in their data generating process, hence econometric analysis of this study begins with the verification of the stationarity status of the study variables. Prior to investigating co-integration, researchers effect unit root test on the series under study to examine the stationarity properties of time series variables. The conventional method of Augmented Dickey-Fuller (ADF), Phillips-Perron (PP), Kwiatkowski, Phillips, Schmidt and Shin (KPSS) unit root test of stationarity are usually weak in the face of structural break. A break is an intermittent shock that has a permanent effect on time series. Failure to explicitly account for this break during the unit root testing procedure will lead to a bias that reduces the ability to reject a false unit root null hypothesis (Glynn *et al*. 2007) [6]. The conventional unit root test like ADF, PP, KPSS usually mistake the structural break for a unit root and report wrongly. Because of this, it is usually imperative for one to go for a unit root procedure that explicitly account for the possibility of structural break and the Zivot-Andrews (1992) unit root procedure is used to account for such breaks. The time series data used in this study were tested for the presence of unit roots by conducting appropriate stationarity tests with and without structural breaks.The results of the ADF, PP and Zivot-Andrews unit root tests are presented in table 1.

Table 1: ADF, PP and Zivot-Andrews unit root tests results

	ADF		PP Test			ZA		
Variables	**Level**	**1st Diff.**	**Level**	**1st Diff.**	**Remark**	**Break Date**	**t-Statistic**	**Remark**
LogRGDP	0.8172[n]	-3.3343[b]	1.5994[n]	-3.1916[b]	I(1)	2014	-5.4805[a]	I(1)
LogPPT	-1.1409[n]	-4.7956[a]	-0.7736[n]	-5.8202[a]	I(1)	2014	--5.3581[a]	I(1)
LogCIT	-0.5852[n]	-6.8171[a]	-0.5778[n]	-6.6691[a]	I(1)	2015	-7.9622[a]	I(1)
LogPIT	-0.9376[n]	-6.4892[a]	-0.8298[n]	-6.4381[a]	I(1)	2011	-7.0523[a]	I(1)
LogCED	-0.6526[n]	-6.0569[a]	-0.6495[n]	-6.0568[a]	I(1)	2003	-6.2392[a]	I(1)
LogGCE	-0.9588[n]	-6.3494[a]	-0.5908[n]	-6.3394[a]	I(1)	1999	-7.3027[a]	I(1)
LogGRE	-1.6727[n]	-7.7908[a]	-1.2415[n]	-7.6220[a]	I(1)	2011	-9.5838[a]	I(1)
LogGDD	-2.9009[c]	-1.0773[n]	-0.0271[b]	-9.2562[a]	I(0)	2015	-5.1611[a]	I(1)
LogPED	-2.6598[c]	-4.2422[a]	-2.6884[c]	-4.2422[a]	I(1)	2005	-6.1592[a]	I(0)
FCS	-5.1559[a]	-6.1644[a]	-5.1653[a]	-19.108[a]	I(0)	2012	-6.8801[a]	I(0)

Notes: a, b and c denotes the rejection of the null hypothesis at 1%, 5% and 10% significance levels respectively while n denotes Not Significant.

Source: Author's Computation using Data from Central Bank of Nigeria and National Bureau of Statistics (1980-2017)

The ADF and PP unit root test results both showed that, LOGRGDP, LOGPPT, LOGCIT, LOGPIT, LOGCED, LOGGCE, LOGGRE and LOGPED were not stationary at levels. From the ADF test results, only FCS was stationary at levels while the remaining variables achieved stationarity only after first difference. The PP unit root test results showed that FCS and LOGGDD were stationary at levels meaning that they are integrated of order zero or I(0). Hence, we conclude that these variables are stationary at first difference which imply that they are integrated of order I(1). Based on the ADF and PP unit root test results, we can conclude that all our variables are integrated of order zero, I(0) or one I(1).

From the Zivot & Andrews (1992) structural break unit root test, it is evident that breaks in data occurred in 2014 for RGDP and PPT during the oil price shock which started in mid-2014. The CIT and GDD variables exhibit the same structural break year in 2015 and are stationary at first difference. Breaks in PIT and GRE occurred in 2011 when there was a general election in Nigeria and are stationary at first difference. Breaks in CED occurred in 2003 and 1999 for GCE variable and is stationary at first difference. Public external debt however, exhibited a structural break in 2005 and is stationary at first difference. This is a period during which Nigeria and the Paris Club announced a final agreement for debt relief worth $18 billion and an overall reduction of Nigeria's debt stock by $30 billion in October 2005. The objective of the structural break unit root test is to examine the effects of shocks in government revenue sources on Nigeria's economic growth. To do this, the study carried out a multiple breakpoint test for the growth model using the Bai-Perron (2003) sequential breaks test. The results revealed the break dates of 2011, 1990 and 2003 respectively as the sequentially determined breaks of the model in order of their significance (of 1, 2, 3). As we usually use one break in the model and the Bai-Perron sequential breaks test results revealed that 2011 break dates has the most important effect on the variables included in our model, we therefore created a new dummy variable with the value of "zeros" from 1980 to 2010 and "ones" from 2011 to 2017. This dummy variable is used as structural break variable that is used as an independent variable in our model to capture the effect of structural break on economic growth in Nigeria within the study period.

4.2 ARDL bounds test to co-integration analysis

Given the unit root properties of the variables, we proceed to establish whether there exists a long run relationship between the independent variables and real Gross Domestic Product using the ARDL bounds testing procedure. The lag structure of an ARDL model is crucial for the results to be valid. The maximum dependent lags of 2, was automatically selected for our ARDL growth model on the basis of Akaike Information Criterion (AIC) from the lag length selection criteria. We therefore estimate an ARDL growth model (1, 0, 2, 2, 0, 1, 2, 1, 2, 2, 0). The results obtained from the ARDL bounds testing approach and the estimated F-test are displayed in table.

Model	**F- Statistics**	**K**	**Critical Values**		**Decision**	
			%	**Lower Bound I(0)**	**Upper Bound 1(1)**	
LOGRGDP=f(LOGPPT, LOGCIT, LOGPIT, LOGCED, LOGGCE, LOGGRE, LOGGDD, LOGPED, FCS, DUMSB.	5.767984	10	1%	2.54	3.86	Reject H_0. and accept H_A. Co-integration exist.
			2.5%	2.28	3.50	
			5%	2.06	3.24	
			10%	1.83	2.94	

***Source*:** Author's E-Views 9.5 Computation using Data Accessed from Central Bank of Nigeria and World Development Indicators.

From the ARDL bounds test of co-integration, the null hypothesis of no co-integration is tested against the alternative hypothesis of the presence of co-integration among the variables in the model. From the results in table 2, since the F-statistic (5.767984) is greater than all the upper bound values at 10%, 5% and 1% level respectively, the null hypothesis of no co-integration is rejected hence there is evidence of long run relationship among the variables in our growth model at 5% level of significance. This finding is consistent with our theoretical framework of Laffer's and Barro's endogenous growth theories which assert that productive government spending and non-

distortionary tax policies can have a long-term or permanent growth effects on countries. the study therefore proceed to estimate the short and long run coefficients of our ARDL model.

4.3 Long run co-integration results for the growth model

Since long run relationship was established from the ARDL bounds co-integration test, the study proceeded to examine the long run effect of the independent variables on economic growth by estimating the conditional ARDL long run model for economic growth and the results are presented in table 2.

Table 2: Long Run Co-integration Results of ARDL Model (1, 0, 2, 2, 0, 1, 2, 1, 2, 2, 0)

Variables	Coefficients	Std. Error	t-Statistic	Probability
LOGPPT	-0.002459	0.0222686	-0.108400	0.9155
LOGCIT	0.489881	0.061447	7.972473	0.0000
LOGPIT	-0.066276	0.018873	-3.511718	0.0043
LOGCED	0.155107	0.052446	2.957460	0.0120
LOGGCE	- 0.273715	0.041065	-6.665420	0.0000
LOGGRE	0.225847	0.067509	3.342460	0.0059
LOGGDD	- 0.439390	0.058594	-7.498841	0.0000
LOGPED	- 0.060070	0.013652	-4.400258	0.0009
FCS	-0.137937	0.052743	-2.615244	0.0226
DUMSB	0.116330	0.063891	1.820768	0.0937

***Source*:** Author's Calculation using Data from Central Bank of Nigeria and National Bureau of Statistics (1980-2017).

The long run coefficient of Petroleum Profit Tax (LOGPPT) has a negative but statistically insignificant effect on economic growth. This implies that PPT has not contributed significantly towards stimulating economic growth in Nigeria during the period under review. The negative sign of this variable is however not unexpected as a result of the over dependence of the country on unpredictable oil revenue for public spending Volatility in oil price often results in revenue volatility, expenditure volatility, output volatility and unsustainable economic growth Corruption, mismanagement, waste, oil price volatility and fixation on the sharing of oil revenue at the expense of production are unsustainable and unethical practices that have continue to stifle sustainable economic growth in Nigeria. The result is consistent with extant study of Odhiambo & Oluwatosin (2018) who found a negative and statistically insignificant effect of petroleum profit tax on economic growth in Nigeria.

The long run coefficients of Company Income Tax (LOGCIT), Customs and Excise Duties (LOGCED) both show signs of positive effect on economic growth and are both significant at one percent level. This implies that CIT and CED do have significant impact on the growth rate of Real GDP in Nigeria. Thus, an increase in government revenue generation through company income tax, customs and excise duties is associated with 0.489881 and 0.155107 increases in economic growth respectively. Tax revenue is a major source of financing government spending required to promote growth and provide needed infrastructures. This finding is in line with existing literature and findings of Venkataraman & Urmi (2018), Nonvida & Amegnaglo (2017) and Ofoegbu *et al*. (2016) who reported a significant positive long run impact of company income tax, customs and excise duties on economic growth in India, Benin and Nigeria.

The long run coefficient of Personal Income Tax (LOGPIT) portrays a negative relationship with economic growth that is significant at one percent level. The result reveals that a unit increase in personal income tax is expected to decrease economic growth by 6.63 percent ceteris paribus. Government will attempt to generate as much revenue as possible without any regard to the efficiency losses caused by taxation. Increasing tax rate beyond a certain threshold is counter-productive for raising further tax revenue and act as a disincentive to economic growth. This justifies the findings of Atems (2015), Stoilova (2017), Badri & Allahyari (2013) who have established that higher taxes have a negative impact on economic growth in 48 states of United States, 28 European countries and Iran.

The long run results further show that the coefficient of Government Capital Expenditure (LOGGCE) has an unexpected negative effect on economic growth that is significant at one percent level. This may suggest that contrary to a priori expectation, in the long run, government capital expenditure may have a net negative impact on economic growth in Nigeria. Thus, a unit increase in government capital expenditure is associated with about 27.37 percent decrease in the level of economic growth in Nigeria within the study period. Nigeria spends significant part of its revenue on servicing huge public debts, subsidizing domestic fuel consumption, fighting protracted insurgency and other violent crimes. Consequently, the country has very little left to fund critical infrastructure like education, health, transportation and communication which exerts positive effect on economic growth. This validate the findings of Iheanacho ((2016), Darma (2014) and Modebe *et al*. (2012) who found a significant negative impact of capital expenditure on economic growth in Nigeria in the long run.

The long run effect of Government Recurrent Expenditure (LOGGRE) on economic growth is positive and also significant at one percent level. From this result, a unit increase in government recurrent expenditure would lead to about 22.58 percent increase in economic growth. Hence, increase in government recurrent spending can bolster economic growth by putting money into people's pockets. The findings confirm the views of Keynes and Wagner on the impact of public expenditure on economic growth and also consistent with studies by Chikezie *et al*. (2017), Iheanacho (2016), Modebe *et al*. (2012), Josaphat & Oliver (2000) who found that increase recurrent expenditure relates positively with economic growth of Nigeria and Tanzania respectively.

Confirming a priori expectation, the long run coefficient of Government Domestic Debts (LOGGDD) demonstrates a negative effect on economic growth that is significant at one percent level. From the results, a unit increase in the level of domestic borrowings by government would lead to a decrease in economic growth by about 43.94 percent. The federal government continued borrowing from the domestic market for deficit financing is limiting the private businesses that need credits from assessing funding for business expansion and growth. Nigeria, like many developing countries, is plagued by increasing government expenditures, unmatched by government revenue. The use of government domestic debts to fund government expenditure are also found to have significant crowding-out effect on private investment. This result justifies the findings of James *et al*. (2016), Anyanwu & Erhijakpor (2014) who in their studies reported a significant negative impact of domestic debts on economic growth in Nigeria in the long and short run.

The coefficient of Public External Debt (LOGPED) also parades a significant negative effect on economic growth in the long run that is significant at one percent level. In conformity with a priori expectation, a unit increase in external debt is associated with about 6 percent fall in economic growth, ceteris paribus. Borrowing is expected to stimulate economic growth if properly managed and applied to finance the provision of critical infrastructure. However, Krugman (1988) contradicts this view by mentioning external debt as one of the factors hampering economic growth as huge borrowing leads to high indebtedness, debt traps and slowdown of economic growth. According to him, accumulated debt stock results in higher tax (tax disincentive) on future output and thus crowds out private investment. The result is in line with Sanya & Abiola (2015) [13], Mbah *et al*. (2016) and Dladla & Khobai (2018) [4] who established a significant long run impact of external debts on economic growth in Nigeria and South Africa respectively.

The long run coefficient of Fiscal Stance (FCS) exhibits a negative effect on economic growth that is significant at 5 percent level. Confirming a priori expectation, the results indicate that current fiscal policy of increased used of budget deficits to stimulate economic growth is not sustainable and would lead to a decrease in economic growth by about 13.79 percent. The finding of this study indicates that the impact of fiscal deficit on RGDP is mild but negative and significant at the 5 percent level. This contradicts the Keynesian theory, but is in accord with neo-classical theory which asserts that fiscal deficits lead to a drop in the GDP. Nevertheless, the government must strive to keep deficit under control, not to hamper growth, and expenditure. The result corroborated the findings from extant studies by Sanya & Abiola (2015) {13}, Chikezie *et al*. (2017) and Hussain and Haque (2017) who reported a significant negative impact of fiscal deficit on economic growth in Nigeria and Bangladesh respectively.

The long run coefficient of the structural break variable (DUMSB) exhibit a positive effect on economic growth that is not statistically significant. The structural break year (2011) was an election year in Nigeria. The coming to power of President Jonathan, a southerner from the Niger Delta region in 2011 brought some relative peace to the Niger Delta region that made it possible for the government to maximize oil production output in the face of rising oil prices. This led to a significant increase in government revenue that allows the government to strengthen its balance of payment position and build its foreign reserve position. Foreign inflows to the government bond market, portfolio investment inflows also increased in the absence of an oil price shock during this period contributing to the positive impact of the structural break date on economic growth.

4.4 Analysis of short-run co-integration relationship of the growth model

The results of the short run dynamics emanating from the long run relationships associated with the ARDL model is presented in table 3. The behaviour of the variables did not change much in the short run both in terms of the signs and the significance of their coefficients. All the variables in the model were statistically significant except PPT. As evident in table 3, the coefficient of the error correction model, that is, the co-integration equation (CointEq(-1)) is found to be statistically significant at 1 percent level and has the expected negative sign. This further affirms the existence of long run relationship between the variables in our model and shows the speed of adjustment to restore equilibrium following a disturbance. The results of the co-integration equation suggest that any shock to the model is totally adjusted at the rate of about 48.94 percent per year. The pace of adjustment is reasonably fast and thus, a shock will take about 2.04 years to fully recover and restore the economy back to long run equilibrium growth path.

Table 3: Short run error correction model results for ARDL (1, 0, 2, 2, 0, 1, 2, 1, 2, 2, 0) economic growth model

Variables	Coefficient	Std. Error	t-Statistic	Probability
D(LOGPPT)	- 0.001733	0.006765	- 0.256117	0.8022
D(LOGCIT)	0.151428	0.035650	4.247637	0.0011
D(LOGCIT(-1))	0.227826	0.026532	8.586870	0.0000
D(LOGPIT)	-0. 023646	0.006946	-3.404421	0.0052
D(LOGPIT(-1))	0.092550	0.010331	8.958121	0.0000
D(LOGCED)	0.068480	0.012565	5.450169	0.0001
D(LOGGCE)	-0.087012	0.010139	-8.582265	0.0000
D(LOGGRE)	0.095432	0.016683	5.720255	0.0001
D(LOGGRE(-1))	-0.069354	0.015610	-4.442909	0.0008
D(LOGGDD)	- 0.063651	0.008140	-7.819266	0.0000
D(LOGPED)	- 0.049585	0.009675	-5.125257	0.0003
D(LOGPED(-1))	0.015567	0.007908	1.968561	0.0725
D(FCS)	-0.034265	0.005858	-5.848818	0.0001
D(FCS(-1))	0.048646	0.006288	7.736668	0.0000
DUMSB	0.064943	0.019690	3.298364	0.0064
C	8.799294	0.605509	14.532067	0.0000
CointEq(-1)	-0.489363	0.033892	-14.439041	0.0000

Cointeq= LOGRGDP – (-0.0025*LOGPPT + 0.4899*LOGCIT – 0.0663*LOGPIT + 0.1551*LOGCED – 0.2737*LOGGCE + 0.2258*LOGGRE – 0.4394*LOGGDD –0.0601* LOGPED – 0.1379*FCS + 0.1163*DUMSB).

***Source*:** Author's Computation using Data from Central Bank of Nigeria and National Bureau of Statistics (1980-2017).

The short run coefficient of Petroleum profit tax D(LOGPPT) exhibit a negative effect on current level of economic growth that was not statistically significant. The inflow of oil revenue has not made any significant improvement in the lives of Nigerians and the economy as a whole. Consequently, the study findings revealed that the contribution of petroleum profit tax in Nigeria has no significant impact on economic growth in both the short and the long run.

The coefficient of the present rate of Company Income tax variable, consistent with a priori expectation, displayed a positive impact on current economic growth that is significant at 1 percent level. Specifically, a unit increase in the present CIT rate (LOGCIT) causes a 15.14 percent increase in current rate of economic growth while a unit increase in a year lag of CIT (LOGCIT(-1)) will lead to 22.78 percent increase in the current rate of economic growth in the short run. The short run coefficient of present rate of Customs and Excise Duties (LOGCED) is also positively related with the current rate of economic growth and significant at one percent level. The result shows that one percent increase in present CED rate will increase current economic growth by 6.85 percent in the short run. This is attributed to the fact that increased tax revenue invested in social and physical infrastructures promotes economic growth.

The short run coefficient of present Personal Income Tax (LOGPIT) variable in line with a priori expectation, parade a significant and negative impact on current rate of

economic growth that is significant at one percent level. Distinctively, an increase in the present PIT (LOGPIT) rate will lead to 2.36 percent decrease in current economic growth. However, a unit increase in one year lag of PIT (LOGPIT(-1)) rate will increase economic growth by 9.25 percent. Confirming a priori expectation, the short run coefficient of present Government Capital Expenditure (LOGGCE) is negatively related with current level of economic growth and significant at one percent levels. Expressly, a one percent increase in present GCE will decrease the current level of economic growth by 8.70 percent. This implies that present rate of GCE is negatively related to the current level of economic growth in Nigeria. Contrary to a priori expectation, the short run coefficient of present Government Recurrent Expenditure (LOGGRE) is positively related to the current level of economic growth and significant at one percent level. Explicitly, a one percent increase in present GRE causes an increase in the current level of economic growth by 9.54 percent. However, the immediate lag of GRE (LOGGRE(-1), reveal that a one percent increase in one period lag of the variable causes a decrease in the current level of economic growth by 6.93 percent.

Confirming a priori expectation, the short run coefficient of present level of Government Domestic Debts (LOGGDD) is negatively related to the current level of economic growth and is significant at one percent level. Exclusively, a percentage increase in the present level of government domestic debts will lead to a fall in current level of economic growth by 6.36 percent. The result suggests that high level of domestic borrowings used to finance payment of salaries and running cost of over-bloated civil service, bloated budgets and bureaucracy will negatively affect current rate of economic growth in Nigeria. Contrary to a priori expectation, the short run coefficient of present level of Public External Debts ((LOGPED) is negatively related to the current level of economic growth in Nigeria and is significant at one percent level. Expressly, a percentage increase in the present level of public external debt causes a 4.96 percent fall in the current level of economic growth. However, the coefficient of the one year period lag of the variable (LOGPED(-1)) showed a positive relationship between previous level of external debts and current economic growth that is not statistically significant.

The short run coefficient of the present level of Fiscal Stance (FCS) indicated a negative impact on current rate of economic growth that is significant at one percent level. This implies that a unit increase in the present level of fiscal stance will lead to a fall in current rate of economic growth by approximately 3.43 percent. However, a one period lag of fiscal stance (FCS(-1)) show the opposite effect of increasing current level of economic growth by 4.86 percent. The results show the changing impact of government sector on the economy over time. The coefficient of the structural break dummy variable D(DUMSB) is positively related to economic growth and significant at one percent level. The implies that the stable macroeconomic environment witnessed after the 2011 general elections contributed positively in increased government revenue arising from increase oil price and production levels in the Niger Delta region thus stimulating growth of real GDP in Nigeria.

4.5 Short-run econometric diagnostics tests

The results of the short-run diagnostics test are contained in table 4. The Jarque-Bera test was used to check the distribution of errors resulting from regression. The results of the Jarque- Bera test shows that the p-value of 0.092613 is greater than 0.05 which implies that the residuals are normally distributed The Breusch-Godfrey Serial Correlation LM test is used to check for serial correlation. Since the p-value of the F-statistic of 0.1018 is greater than 0.05, it implies that there is no serial correlation in the residuals of the model and we therefore conclude that our model is robust to serial correlation. The Breusch-Pagan-Godfrey test was used to check for heteroscedasticity in this study. The p-values of the F-statistic of 0.2447 is greater than 0.05, an indication that our model does not suffer from heteroscedasticity. This implies that the residuals of the model are homoscedastic. The Ramsey Reset test used to check for functional form, has a probability of F-statistic of 0.9920 which is also greater than 0.05 percent. We accept the null hypothesis and conclude that there is no problem of misspecification in our model. The short run models were found not to be spurious because the Durbin-Watson statistics (2.120943) is greater than the R^2 (0.998109).

Table 4: Short-run Diagnostics Tests Results

Test	Null Hypothesis	Obs. R-square	Prob. Value
Jarque-Bera	There is Normal Distribution	4.759644	0.092613
Breussch Godfrey	No Serial Auto-Correlation	4.569763	0.1018
Breusch-Pagan-Godfrey	No Heteroscedasticity	27.26892	0.2447
Ramsey RESET	No mis-specification error	0.000105	0.9920

***Source*:** Author's Computation using E-views 9.5

4.6 Stability tests

The stability of long run parameters was examined by applying Cumulative Sum of recursive residuals (CUSUM) and Cumulative Sum of Squares of recursive residuals (CUSUMSQ) tests. An inspection of the CUSUM and CUSUMSQ graphs (Figures 1 and 2) from the recursive estimates of the model reveals that there is stability and no systematic change is detected in the coefficient at 5% significant level over the sample period. Finally, the regression for the underlying ARDL model fits very well and passes all the diagnostics tests against serial correlation, normality and heteroscedasticity. We therefore conclude that this model is well specified as it passes both the residual and stability diagnostic tests.

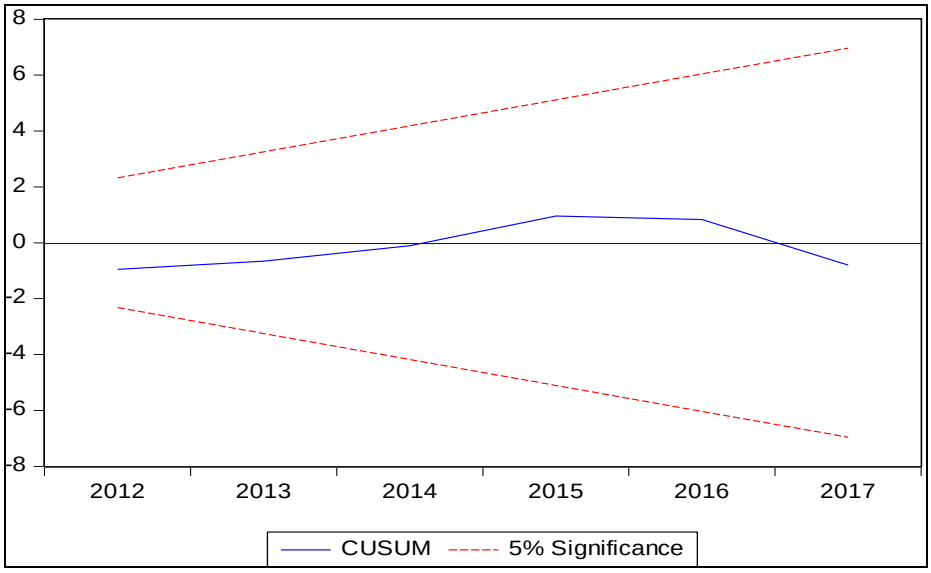

Fig 1: Stability Test, (CUSUM)

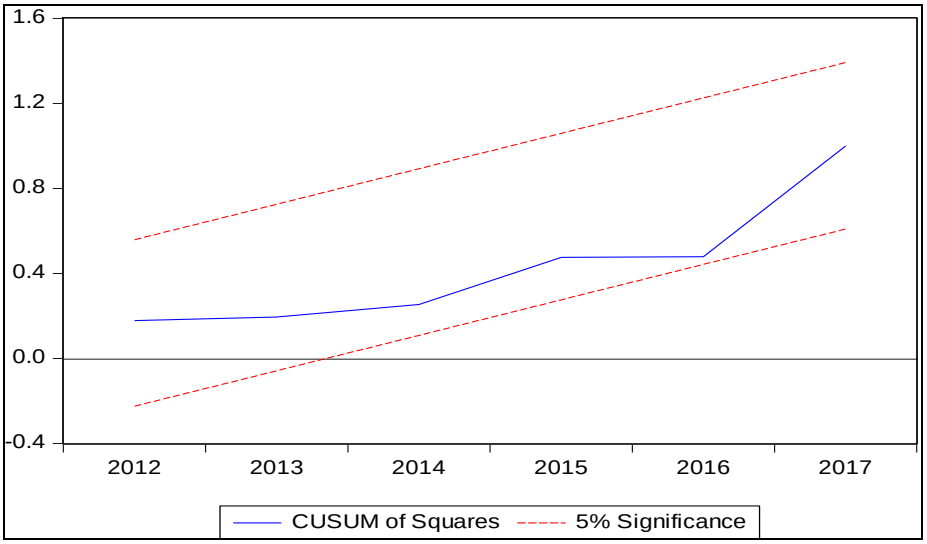

Fig 2: Stability Test (CUSUM of Squares)

5. Conclusion and Recommendations

The main objective of this study is to investigate the impact of tax revenue shocks on economic growth in Nigeria. Time series data obtained from secondary sources for the period 1980-2017 were used for the study. The Augmented Dickey Fuller (ADF) and Phillips-Perron unit root tests shows that the variables are integrated of order zero and one with none integrated of order two. The Zivot-Andrews structural break unit root test indicated revenue shocks date of 2014, 2015, 2011 and 2003 for PPT, CIT, PIT and CED while the control variables exhibited structural break dates of 1999, 2011, 2015 and 2005 for GCE, GRE, GDD and PED respectively. The ARDL bounds test results established the existence of a long run relationship between tax revenue and economic growth in Nigeria in the study period. The coefficient of co-integration equation which measure the speed of adjustment to long run equilibrium indicated that 48.93 percent short run departure from long run equilibrium are corrected each year. The study has implication for a small tax base to cover government spending. Higher tax revenue is strongly correlated with increased economic growth. The proportion of tax contribution to growth rate in Nigeria falls short of the optimal level in terms of the volume of economic activities and value of total output. Nigeria lags other African countries with respect to tax effort and as such has a huge untapped potential for enhanced revenue mobilization. The study therefore recommends that government should institute an appropriate tax system with emphasis on broadening the tax base and in some cases, reviewing upwards the tax rates in order to increase the tax effort as well as ensure optimal contribution of taxation to economic growth. The current low tax regime in Nigeria is induced by the heavy dependence on oil resources. With persistent fall in oil revenue and its volatile nature; there is need for the Nigerian government to reconsider its tax policy as a veritable source of government revenue. However, this does not necessarily imply that government should increase the rates of different taxes or create new taxes. As there is a large share of potential tax resources that is not being collected by the tax system, a credible strategy would be to look for ways to improve the tax collection system by capturing as many High Net Worth individuals as possible into the tax net. Any attempt to increase the overall tax burden by raising tax rates without improving the efficiency of the tax collection system will be counter- productive. Increase in taxes is likely to encourage

tax evasion and push economic activity under-ground. Additional efforts should be geared towards diversification of the revenue base from unpredictable oil revenue to sustainable non–oil revenue sources that will serve as shock-absorbers against oil price volatility while revenue generated from taxes should be effectively applied to develop and grow the economy. Fiscal policy adjustment that reduces unproductive expenditure and protects expenditure in the social sector can lead to faster growth. The level of government expenditure should be set so as to avoid huge deficits leading to debt financing and the crowding-out effect of private investment.

6. References

1. Barro RJ, Sala-I Martin X. Growth models with consumer optimization. Economic Growth (Second ed.), New York: McGraw-Hill, 2004, 85-142
2. Central Bank of Nigeria (CBN). Annual Report and Statistical Bulletin, Nigeria, 2015.
3. Dickey DA, Fuller WA. Distribution of the estimators for autoregressive Time-series with a unit root. Journal of American Statistical Association. 1979; 74(1):427-431.
4. Dladla K, Khobai H. The impact of taxation on economic growth in South Africa. *MPRA Paper*, No. 86219, 2018.
5. Easterly W, Rebelo S. Marginal income tax rates and economic growth in developing countries. European Economic Review. 1993; 379(2):409-417.
6. Glynn J, Perera N, Verma R. Unit Root Tests and Structural Breaks: A Survey with Applications. Journal of Quantitative Methods for Economics and Business Administration. 2007; 3(1):63-79.
7. Idowu KA. Effects of Revenue Shocks on the Relationship between Government Revenue and Economic Growth. International Journal of Management and Applied Sciences, 2018; 4(8):39-47.
8. Levine R, Renelt D. A sensitivity analysis of cross-country growth regressions. The American Economic Review, 1992, 942-963.
9. Lucas RE. On the mechanics of economic development. Journal of Monetary Economics. 1988; 22(1):3-42.
10. Musgrave RA, Musgrave PB. Public Finance in Theory and Practice. (5th ed.), New Delhi, India, Tata McGraw-Hill, 2004.
11. Nimenibo A, Samuel WA, Eyo MJ, Chika H. An Empirical Analysis of Tax Revenue and Economic Growth in Nigeria from 1980-2015. Global Journal of Human Social Science: F Political Science. 2018; 18(3):8-36.
12. Ogar A, Arikpo OF, Suleiman LG. Fiscal and macroeconomic policies dynamicsin Nigeria. Global Journal of Social Sciences. 2019; 18(1):33-51.
13. Ogunsakin S, Abiola NL. Fiscal deficit and economic growth: Nigeria experience. International Journal for Innovative Education and Research. 2015; 3(11):6-15.
14. Okonjo-Iweala N, Osafo-Kwaako P. Nigeria's economic reforms: Progress and challenges. Brookings Global Economy and Development, Working Paper, 2007, 6.
15. Onyinyechi CO, Ihendinihi JU, Ekwe MC, Azubuike JU. The impact of fiscal policy on the economy of Nigeria (1994 and 2014). European Journal of Accounting, Auditing and Finance Research. 2016; 4(7):84-105.
16. Pesaran MH, Shin Y. An autoregressive distributed lag modelling approach to cointegration analysis. Chicago, USA, The Ragnar Frisch Centennial Symposium, Cambridge University Press, 1999.
17. Pesaran MH, Shin Y. Bounds Testing Approaches to the Analysis of Level Relationships. Journal of Applied Econometrics. 2001; 16:289-326.
18. Quashigah OP, Ofori-Abebrese G, Pickson BR. Empirical analysis of thpotency of fiscal policy on economic growth in Ghana. International Research Journal of Finance and Economics. 2016; 154(10):25-36.
19. Romer PM. The origin of endogenous growth. Journal of Economic Perspectives. 1994; 8(1):3-22.
20. Solow RM. A contribution to the theory of economic growth. Quarterly Journal of Economics. 1956; 70(1):65-94.
21. Swan TW. Economic growth and capital accumulation. Economic Record. 1956; 32(2):334-361. doi: 10. 1111/j.1475-4932.1956.tb00434.x
22. Venkataraman S, Urmi A. The Impact of Taxation on Economic Growth in India: A Disaggregate Approach Using the ARDL Bounds Test to Co-integration. International Journal of Accounting and Economics Studies. 2017; 5(1):19-21.
23. Ugwuanyi BU, Ugwunta DO. Fiscal policy and economic growth: An examination of selected countries in Sub-Saharan Africa. International Journal of Academic Research in Accounting, Finance and Management Sciences. 2017; 7(1):117-130.