

Onwioduokit, Emmanuel A.; Esu, Godwin Essang

**Article**

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# FISCAL FEDERALISM IN NIGERIA: IMPLICATION FOR GROWTH<sup>1</sup>

Emmanuel A. Onwioduokit<sup>2</sup> and Godwin Essang Esu<sup>3</sup>

## Abstract

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Nigeria has been a federation before 1963. This was expected to foster speedy growth and development, but military interferences seem to have bedevil this dream. However, an uninterrupted democracy for about 20 years should have produced a significant result, but not much has changed. Many have argued that the need is “true federalism” which includes the re-engineering of the fiscal decentralization structure of the nation, as well as regional control of resources. The debate seems to a call for a paradigm shift from the first-generation theory (FGT) of fiscal federalism to the second generation theory (SGT) of fiscal federalism. This study therefore attempts to empirically assess the state of Nigeria’s fiscal federalism in terms of its impact on economic growth, so as to uphold or refute the claims of the defects in the present status quo. Time series data were employed from different secondary sources. The designed models were estimated using Autoregressive Distributed Lag (ARDL) technique, and the elasticities of the estimated equations showed that fiscal decentralization could actually foster economic growth, but this growth may have been inhibited by corruption, ineffective leadership, unconducive macroeconomic environment as well as other upheavals. The recommendation that Nigeria should consciously make and implement laws that will foster effective, balanced and inclusive fiscal federalism; make, strengthen and implement laws that will be very hostile to corruption and every other forms of unwholesome practices, if it must enjoy the progress that characterize a federal state.

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**Key Words:** Fiscal Federalism; growth; Nigeria

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<sup>2</sup> Emmanuel A. Onwioduokit is a Professor of Economics, Faculty of Social Sciences, University of Uyo, Uyo, Nigeria. Email address: eonwioduokit@gmail.com

<sup>3</sup> Godwin Esu is a Ph.D. student at the Department of Economics, Faculty of Social Sciences, University of Uyo, Uyo, Nigeria

## 1. INTRODUCTION:

Fiscal federalism has to do with public finance arrangement and the division of governmental functions and financial relations among the tiers of government in a federation. As an approach to governance, fiscal federalism is seen to have guaranteed development and civilization across nations, especially in countries where federalism is adopted as a form of government. In these countries, devolution of both tax assignment and responsibilities between the centre and the sub-national units enhance the improved performance of the public sector. Since fiscal federalism may be seen, mainly, as a distribution concept, it is about the allocation of resources and by extension taxing power to the various tiers of government. Thus, the clamour for 'true federalism' is generally underpinned by the quest for equitable distribution and control over resources arising from the gross imbalances in resource management. It is further fueled by the outcry over the issue of marginalization, which seems to be reflected in the central government's inability to deliver quality services equitably. Fiscal federalism can therefore, be summarized as a system of government that is fiscally decentralized to achieve development exigencies. It pivots around the scope and structure of the tiers of governmental responsibilities and functions, which necessitates the allocation of resources among the tiers of government to aid the performance of the respective responsibilities and functions (Ewetan, 2012; Aigbokhan, 1999; Oates, 1972; Tanzi, 1995; Chete, 1998).

In Nigeria, the poor performance of the public sector over the years has necessitated the call for effective operation of fiscal federalism in the country's political space and policy fine-tuning. According to Ewetan (2012), for decades now, Nigerians have contended with not only deteriorating real incomes but also intolerable levels of unemployment and inflation, decay in social amenities and failure to maintain, not to talk of improving, the nation's infrastructures. This dismal performance of the public sector has prevented the creation of opportunities for a resilient and sustainable growth and development of the Nigerian economy. Scholars believe that this should be the objective of rational and functional fiscal federalism (Ewetan, 2012; Aigbokhan, 1999). It is therefore argued, that the long years of military dictatorship and the centralized nature of the military hierarchical structure created the financial domination enjoyed by the federal government over the thirty-six states and the seven hundred and seventy-four local governments Areas. Ijaiya (1999) is, therefore of the opinion that government resources would be allocated more efficiently if responsibility for each type of public expenditure were given to the level of government that is closest to the beneficiaries of these expenditures.

In recent times, the objective of fiscal federalism in many countries is to promote economic growth. It has become the current policy interest in fiscal reforms among federations, especially developed countries like Australia and the United States of America. Bodman (2008), corroborated this argument when he opined that, except in recent times, debates about the normative design of fiscal systems and analyses of their performance were not particularly concerned with the objective of whether they enhanced economic growth or otherwise. There is therefore, an open question as to whether fiscal federalism actually plays a significant role in enhancing or inhibiting living standards and the rate of economic growth. A study of the relationship between fiscal federalism and economic performance such as this, seems timely as an attempt at answering such question.

In Nigeria, like many other countries in the world, federalism has been accepted as a desirable approach to governance that guarantees development and civilization. Fiscal federalism has been identified as one of the major drivers of such development and progress in the nations that have recorded success in their practice of federalism. Our motivation for this study, therefore, stems from our desire to find out why very little has been achieved in Nigeria's federalism, despite efforts at re-engineering its fiscal redistribution system. This paper, therefore, investigates empirically the implication of fiscal federalism for economic growth in Nigeria.

The rest of the sections of this paper are arranged thus: section two presents an abridged review of relevant literature, and conceptual issues regarding fiscal federalism. The model of this work is developed in section three, and data used for analyses are also stated in that section. The results and analysis of findings from the data estimates, are presented in section four, while section five concludes the study, rolling out suggested policy directions based on the findings, thereby concluding the study.

### 1.1. Fiscal Assignment

Monetary and Fiscal policies are major policies that are used in directing and stabilizing the economy. While the former is handled by the Central Bank of a country, the latter is coordinated by the central government through the Ministry of Finance (as in the case of Nigeria). In most countries, the national government regulates the fiscal policy due to its macroeconomic implications – especially in the area of taxation, which is a major source of government revenue. It is therefore not surprising to observe that majority of federal or national governments employ measures to retain a great deal of control over the use of fiscal policy. Correspondingly, the division of the fiscal powers and responsibilities converges powers in the hands of the federal government. In Nigeria, the federal government exercises total control over items in the Exclusive Legislative lists such as Aviation, Defence, custom and excise duties, export duties, Passports and Visas, patents and trademarks etc. while the Concurrent Legislative list, which presents matters over which the national and the state have room for cooperation, are limited to matters such as motor licensing, housing, secondary healthcare, social welfare etc. Table 1 shows fiscal relations among the different tiers of government of selected countries and Nigeria.

Table 1: Tax assignment among 3-tiers of government

	<i>Imp /Ex p tax</i>	<i>E xci se dut y</i>	<i>Payroll</i>	<i>Royal ty</i>	<i>Sales tax</i>	<i>Social Security</i>	<i>Company tax</i>	<i>Personal income tax</i>	<i>Property tax</i>
Austria	F	F	S/F	S/F	S/F	F	F/S	S/F	S/F
Belgium	F	F	S/F	S/F	S/F	F	F/S	S/F	F
Canada	F	F	S/F	S/F	S/F	F	F/S	S/F	S/F
Germany	F	F	S/F	S/F	S/F	F	F	F/S/L	F
Hungary	F	F	S/F	S/F	S/F	N/A	F	S/F	F
Israel	F	F	S/F	F	S/F	N/A	F	S/F	F
Mexico	F	F	S/F	S/F	S/F	N/A	F/S	S/F	F
Spain	F	F	S/F	S/F	S/F	N/A	F	S/F	F/S/L
Switzerland	F	F	S/F	S/F	S/F	F	F/S	S/F	F/S
Nigeria	F	F	S/F	S/F/ L	S/F/ /L	N/A	F/S	S/F	F/S/L
S/Africa	F	F	S/F	L	S/F	N/A	F/S	S/F	F/S

L:

S: Lo

F: Federal State cal NA: Not Applicable

Source: Computed by author from different sources

Table 1, indicates that though fiscal distribution, in terms of tax powers, is among Federal, States and the local authorities; the federal government tends to control many of the important taxes. It can also be seen that intergovernmental fiscal relations in each country have their peculiar features which distinguish them from other federations. A consideration of tax base will shed more light on the process of control and jurisdiction.

## **1.2. Tax Bases**

The distribution of fiscal responsibilities among the various tiers of government in the federal system and its arrangements differ among the selected countries, especially as their federal structures vary. Besides the structural variation, differences in responsibilities may also be due to changing economic realities, constitutional provisions or interpretations by the judiciary. In the case of Nigeria, such changes in the vertical fiscal gaps are set by revenue commission like the National Revenue Mobilization, Allocation and Fiscal Commission (RMAFC).

A comparative assessment of the practice of fiscal federalism in Nigeria and other selected countries is present in figure 1. The figure depicts diverse federal structure and assignment of tax powers to the tiers of government. Hungary and Israel use dual federalism (central and local governments) with strong central government. Others – Austria, Belgium, Canada, Germany, Mexico, Nigeria, Spain, Switzerland and South Africa – maintain a tripartite structure (central, state, and local governments) of federal system. Responsibilities are distributed among these tiers of government with the central government being the highest in the hierarchy. In theory, Germany operates a cooperative federalism model due to the interdependency relationship among the tiers of government, that is, the federal government controls policy making mechanism but allows the states and the local governments as implementation vehicles. Nigeria, on the other hand, operates a coordinating model of a 3-tier structure. The implication of Nigeria type of federalism is that while the central and state governments enjoy a substantial autonomy, the local government is simply an administrative progeny of the state. In practice, state power has denied the local government its autonomy and direct relationship with the central government.

Another notable issue is the fiscal gap among the selected federal countries. Table 2a&b (in the appendix) depicts a high vertical fiscal gap across Austria, Belgium, Hungary, Israel, Spain, Mexico and Nigeria. This suggests a possible influence of the central government in the fiscal arrangement among these countries. Interestingly, Canada records minimal vertical gap between the central and state government following a fair distribution of tax assignments (see figure 1). According to Shah (2006), fiscal gap is a non-issue to Canada and Switzerland because the state government have sufficient fiscal powers to overcome such gaps. Specifically, Canadian federal government uses tax abatement and tax incentives for tax-base sharing to shore off the fiscal gap.

Apart from the imbalances between federal and states, vertical gaps can be observed between states and local governments. Figure 1 shows a wider gap between states and local governments among Belgium, Nigeria, Canada, Germany, Switzerland, and Mexico. With this observation, it is possible to suggest that the local authorities in these countries do not have fiscal autonomy, but regarded as extension of the state government. In Nigeria, states influence on local government fiscal autonomy has led to serious abuse, exploitation and threat to the benefits of a federal system – due to possible lack of fiscal discipline and accountability from states.

Before we close on the comparative review in this section, it is important to highlight that the central government may be unwilling, for political reason, to amend revenue sharing arrangement despite rapidly changing economic reality. In the Nigeria federal system, the allocation of functions and tax assignment is more of political than economic exercise, as there appears to be no stated principles underlying the allocation. Instead, Nigeria has adopted the use of fiscal transfers (which reverse the government fiscal position from surplus to deficit), and a general revenue sharing formula with several



## 2. REVIEW OF SELECTED RELEVANT LITERATURE

### 2.1. Theoretical Issues

As Ewetan (2012) concludes, the initial theory of fiscal federalism seems to have been founded by the thinking of three outstanding economists: Samuelson (1954, 1955), Musgrave (1959) and Arrow (1970). Their arguments – which was later known as “Decentralisation Theorem” (Ozon-Eson, 2005) – underlined three roles for the government sector. These roles were (1) to adjust for the correction of diverse market failures, (2) create and maintain macroeconomic stability and (3) dampen income inequality as much as possible. It was argued, that of these three roles, central government holds a duty to correct market failures as well as maintain macroeconomic stability, while subnational government jointly fights the plague of income inequality with the national government (Ozon-Eson, 2005; Ewetan, 2012). This conclusion underlines the foremost role of fiscal decentralization, that provided a levelled ground for the argument for fiscal federalism.

The picture therefore, is that each tier of government seems to utilize efforts at maximizing social welfare of the citizens within its jurisdiction. This welfare-motivated quest becomes a veritable tool in the push for the provision of public good, where consumption is believed to be local than it is national in character. Thus, the argument is that “local outputs targeted at local demands by respective local jurisdictions clearly provide higher social welfare than central provision” Ewetan (2012). This is the principle Oates (1972) called “Decentralisation Theorem” and it is the basis for what may be referred to as the first generation theory (FGT) of fiscal federalism (Oates, 2006a; Bird, 2009).

The first generation theory (FGT) of federalism hinges on functional and tax assignments between the tiers or structures of government. It is the normative fiscal federalism theory that spanned between the 1950s and the 1970s. It assumed that decision makers are benevolent actors and that they would always intervene to provide public goods efficiently in the case of market failure (Inman and Rubinfeld 1997; Oates 2005; Weingast 2014; Ejibowah, 2018). As established by the theory, national government should provide national public goods that are deemed necessary, take a principal role in macroeconomic stabilisation policy and draw up measures for income redistribution. The theory concludes that the intergovernmental transfer payments and grants that would make for correcting vertical and horizontal imbalances are inherent in the interventionist roles of the national government (Ejibowah, 2018). This position firms up the argument of responsibility decentralization, though it is not clear what formula fiscal transfers and revenue to be retained by tiers of government should be.

The claims of benevolent government administrators by the FGT has been brought under scrutiny by the emerging theory of fiscal federalism known as Second Generation Theory (SGT) of fiscal federalism. Instead of emphasizing benevolence in the interest of the public like the FGT counterpart, SGT argued that actors have divergent goals. Thus, SGT augments rather than magnifies the issue of institutional incentives that induce or constrain the behaviour of officials as they interact within and across the tiers of government (Weingast 2014; Ejibowah, 2018). One of its fundamental claims is that intergovernmental transfers and bailouts encourage sub-national governments to spend freely and to divest the cost of their recklessness on the national government. These actions are deemed to possibly undermine macroeconomic stability. Consequently, SGT prescribes minimal intergovernmental transfers and a no-bailout policy. While the argument of reckless spending by the proponents of the SGT is factual, the theory seems not to evaluate the avenues through which the recklessness is fueled as well as proffer ways to close those loopholes.

Ejibowah (2018) corroborates the foregoing position when he came to unique conclusions regarding the arguments of SGT. He opined that:

- a) There is merit in the claim that intergovernmental transfers and bailouts foster a culture of over spending;
- b) the prescriptions of SGT, while reasonable in some respects, are fundamentally at odds with the peculiarities of a multinational federation founded on a fiscal regime of intergovernmental transfers; and,
- c) SGT theory is an attempt at reviving nineteenth century American fiscal federalism, and modelling it as a universal standard, while for America, that had since collapsed.

Ejobowah (2018) develop the above arguments by reviewing Nigerian fiscal federalism. He argued that there are three good reasons for having Nigeria at the centre of the picture. First, that Nigeria as Africa's oldest federation has a fiscal arrangement that is defined by intergovernmental transfer payments, which SGT considers to be soft budget constraints that breed sub-national fiscal indiscipline and buttress otherwise insolvent governments (Wildasin 1997; Rosas 2006). Secondly, Nigeria experienced sharp declines in export revenues when oil prices collapsed in 2015. The decline significantly reduced monthly intergovernmental transfer payments, and threatened the functioning of state governments, plunging the country into a painful economic recession, and compelling the centre to provide three consecutive bailouts in 2015, 2016, and 2017.

Thirdly, Nigeria's public discourse is fragmented by clamours for what a wide spectrum of local actors refers to as "true federalism". Central to this call is the devolution of fiscal autonomy to the component states of the federation. The clamour for "true federalism" reflect the arguments of SGT for an ideal fiscal arrangement in which sub-national governments have autonomous taxing powers and each takes care of its own fiscal situation, without relying on intergovernmental transfers or bailouts. The conclusion is therefore that, FGT argued that, for reason of efficiency, higher tier governments should provide goods that are non-congestible, meaning those goods that a non-paying individual cannot be prevented from enjoying -- e.g. national defence.

Also for reason of efficiency, lower tier governments should have responsibilities over those goods that benefit local consumers, and which residents of their respective jurisdictions prefer, given that the tastes for goods are local-specific, and local authorities may have more accurate information about what the locals want (Tiebout 1961; Oates, 1972; McLure, 2001). Also, the theory suggested that income redistribution be assigned to the first order of government. Thus, corporate income taxes and progressive personal income taxes, the main instruments for income redistribution, are assigned to the federal level while taxes that have little or no consequence for macroeconomic stability (e.g. sales tax and property tax) are assigned to sub-national governments (Musgrave 1959).

In summary, the theories stress two outstanding themes: firstly, the central government would always be benevolent enough to handle market inconsistencies whenever they occur – the situation SGT believes will only lead to resource imprudence by subnational authorities. Secondly, performance, SGT argues, should always be induced by possible benefits and/or necessities (meaning that there are no benevolent administrators anywhere). Thus, every strata of the federal system should run their affairs and manage their failures, with central government handling its statutory obligation of providing national public goods, example, defence. This study comes in handy, therefore, to investigate if the current operation in Nigeria, which seems to conform in some ways to FGT, is growth – inducing or otherwise. This may give direction as to whether the call for "true federalism" is an issue to make with.

## 2.2. Empirical Literature

Fiscal federalism is simply considered as relating to the degree of independent decision-making powers devolved to the federating units of a federation, with regards to expenditure and revenue operations. Fiscal federalism, from the perspective of statics, describe systems in which fiscal responsibilities are



shared among tiers, rather than in the dynamic sense of becoming decentralised. Thus, the extent of fiscal decentralisation is directly a function of the ability of lower levels of government to make independent revenue and expenditure decisions regarding the provision of public goods and services within their domain, without interference by the central government. Musgrave (1959) identified three main objectives of government in a federated system to include efficiency, income redistribution and macroeconomic stability. Thus, the literature on fiscal federalism and economic growth implicitly assumes that fiscal federalism affects growth through these three mechanisms. According to Bodman (2008), therefore, the case is whether or not changes in efficiency, macroeconomic stability and income redistribution resulting from increased (or decreased) fiscal decentralization have a significant impact on economic growth.

However, though theoretical models exist, not much have established direct relationship between fiscal federalism and economic growth. Together with Onwioduokit and Obiora (2007), efforts have been made by scholars to formally defining the relationship between fiscal decentralisation and growth, but there seems to be little through the channels of efficiency, equity and macroeconomic stability. (Bodman (2008) corroborates this argument. Using endogenous growth model with overlapping generations to explore the relationship between fiscal federalism and economic growth, Brueckner (2005) established that there is no direct relationship between the duo, but that transmitted from the demand for public good by young and old, to savings incentives, to investment in human capital and then to growth of the economy. However, Sylvester and Ade (2017) using the technique of error correction mechanism, found a direct and positive relationship, has opposed to Brueckner (2005)'s and Bodman (2008)'s conclusion. Usman (2011) also found a positive relationship between fiscal federalism and economic growth, but Feld, Kirchgassner and Schaltegger (2004) had concluded that, though tax differentials have not shown any harmful effect on the economy along growth path, that it had not impact significantly on the growth process of the economy of the Swiss cantons. However, for Gabriel and Charles (2015), the results were mixed, indicating ambiguity in their conclusion.

Another side to the argument is generated from centre-periphery model of regional economics. The sub-national government manages to attract centre of productive activity benefit from a relatively faster accumulation of physical capital due to agglomeration forces (Baskaran, Feld and Schnellenbach, 2016; Baldwin and Martin 2004). These agglomeration forces themselves may be at least partially influenced by regional policies; for instance, the importance of specific human capital whose presence can be influenced by education and other policies (Camagni, 1995). Scholars have also related the standard notion of fiscal competition with agglomeration effects. Justman et al. (2002) established that regional politicians have an incentive to differentiate the provision of public infrastructure in different regions in order to alleviate the pressure of fiscal competition (Baskaran, Feld and Schnellenbach, 2016).

In other related studies, Woller and Phillips (1998), in a sample of a few African countries, could not find a robust direct interaction between decentralization and economic growth, but Akinlo (1999), in a cross-sectional analysis of expenditure responsiveness of states to federal allocation, especially in the civilian era, found that state government expenditure was stimulated by inflows from the federal government. This unfavourable skewness underlines the imbalances in the fiscal independence of subnational government vis-à-vis economic growth. Yilmaz (2000), in his study of the impact of fiscal decentralization on macroeconomic performance for the period 1971-1990, found that decentralization of expenditures to the subnational units fostered economic growth in unitary states than their federal counterparts. Martinez-Vazquez and McNab (2002) corroborated Yilmaz's conclusion, in a cross-country study of the relationship between fiscal decentralization, inflation and growth. These findings are nonconforming with the assertion of fiscal federalism fostering economic prosperity of regions and by extension the federation.

However, studies have found a positive outcome in fiscal federalism - growth nexus. Jimoh (2003) found that more fiscal decentralization especially in terms of increased local governments and increased transfer of revenues to lower tiers of government would stimulate economic activities and by extension, economic growth in Nigeria. Other studies (e.g. Akinjuobi and Kalu 2009; Usman 2011 and Dang 2013) corroborated this outcome, except that Usman (2011) did not find any significant contribution of the revenues generated by the federating units in fostering economic growth. This of course, negated the findings of Akinlo (1999) and Akinjuobi and Kalu (2009). They concluded that the revenues from the states and local governments contributed significantly to increased national output.

Following through the tour of the empirical literature, there is near unanimity by scholars of fiscal federalism, that decentralisation of both revenue and expenditure responsibilities in federations brings about economic growth and development (Boadway and Watts, 2004; Kincaid, 2001; Oates, 1999; Ter-Minassan, 1997; Watts, 2003). Other divergent outcomes found in the literature notwithstanding, the big question is how sustainable this conclusion is, forms the nucleus of our investigation in this paper, we draw from the fact that Nigeria, like other developing economies practicing federalism, has not been faring very well, unlike their counterpart-federal states in the developed world. It has been argued that this is because some of the critical elements in federalism are lacking. These factors which have affected the economic performance of many of the poor federations include the absence of a functioning federal system. That is, it infers that federalism seems to be practiced in a way that inhibit growth in Nigeria and indeed other African states.

### 3. METHODOLOGY AND DATA

#### 3.1. The Model

There is no one single or simple measure of fiscal federalism. It is multidimensional thus, specification of a formal hypothesis for empirical testing requires looking at the picture from the perspective which provides only a narrow share of the panorama (Bodman, 2008; Guess, Loehr, & Martinez-Vazquez, 1997). The first dimension of fiscal federalism considered in this study concerns the formal division of expenditures and revenues between levels of government. The second, is the extent to which fiscal decision-making is decentralised. This decentralisation is measured by the fiscal responsibility cum management that rest on the shoulders of each tiers of government. However, following the theoretical framework of Keynesian growth model, which holds that expansion of government expenditure would result in accelerated economic growth, the data, proxied by the variables in this work, shall be assessed.

Various growth theories have recognised the robustness of capital in fostering economic growth, in which case revenue expansion for the tiers of government can be so considered, within the ambit of this paper. This work, therefore follows Onwioduokit and Obiora (2007), Konte (2011); and Esu (2016). But to analyse how fiscal decentralisation contributes to explaining long term growth in the Nigerian economy, which is the central focus of this paper, we glean from the efforts of Brueckner (2005); Bodman (2008); Usman (2011); Feld et al. (2004); Gabriel et al. (2015) and Baskaran et al. (2016), given that often times, the core growth theory associates growth performance with changes in investment in human and physical capital. These core variables as well as the revenue allocation, internally generated revenue, public expenditures and all other variables discussed in 3.2. are included in the model. Thus, the baseline growth equation is specified as:

$$RGDP_t = f(L_t, K_{it}, F_t, GR_t, EXP_t, V_{it}, \gamma_{Dt}) \dots\dots\dots(1)$$

Where  $RGDP_t$  represents the real GDP for Nigeria at time  $t$ ,  $F_t$  represents allocations to the three tiers of government from the federation account, retained revenue by the federal government and internally generated revenue by tiers of government, which capture the issues of fiscal federalism and the

robustness of the sub-national capacity to cater for the assigned/existing expenditure gaps within states. Grants ( $GR_t$ ) to both central and regional governments are included to check for the impacts of external and internal flows into government covers.  $EXP_t$  captures the expenditure profile vis-à-vis the expenditure assignment of the tiers of government.  $L_t$  is the labour force in the economy, capturing labour input for the output process. It is proxied by the total number of the employed (labour force) within the economy.  $K_{it}$  is the capital, and is divided into investment capital, which is otherwise known as physical capital, and human capital. Thus,  $K_{it}$  is a vector of capital in the model. Also,  $V_{it}$  is the vector of control variables included in the model for stability and robustness. These are inflation ( $INF_t$ ) and population ( $POP_t$ ), while  $\gamma_{Dt}$  represent government regimes, with the aim of assessing the impact of military rule and democracy on fiscal federalism and their implication for economic progress of Nigeria.

The estimated outcome of the model expressed in equation (1) is expected to address the fiscal-federalism-economic-growth question for Nigeria. In line with the argument in the literature, the impact of fiscal federalism (fiscal allocation or decentralisation) is expected to be positive and significant, a priori, though most of the outcomes as presented in the literature has been mixed, with a few being positive and others being negative. Following basic growth theories, the abundance of 'natural' capital should expand the manufacturing subsector of the economy, diversify exports and quicken the entire real sector of the economy (e.g., Konte, 2011, and Esu, 2016&2017). While internally generated revenue is expected to explain the robustness of the fiscal capacities of the states and local government, it is expected underline the extent of their fiscal independence as well as their responsibilities thrusts, which SGT advocates (e.g., Baskaran, Feld and Schnellenbach, 2016; Baldwin and Martin, 2004; Gabriel et al., 2015; etc.). Other variables in the model are expected to be well-behaved, responding to theoretical expectations. However, equation (1) can be stated more explicitly thus:

$$RGDP_t = f(L_t, Kh_t, Kph_t, F_t, GR_t, EXP_t, INF_t, POP_t, \gamma_{Dt}) \dots\dots\dots (2)$$

Where all variables are as were described above, with time series properties being taken into full consideration and will be discussed subsequently.

### 3.2. Method of Estimation

For equation (2) above to be amenable for regression analysis, the econometric form of the equation has to be specified. But we began by log-linearising the specification for stable elasticities of the coefficients as well as consistent and efficient estimates. Empirically therefore, equations (2) is rewritten as:

$$\ln RGDP_t = \delta_1 + \delta_2 \ln F_t + \delta_3 \ln GR_t + \delta_4 \ln EXP_t + \delta_5 \ln L_t + \delta_6 \ln Kh_t + \delta_7 \ln Kph_t + \delta_8 \ln INF_t + \delta_9 \ln POP_t + \delta_{10} \gamma_{Dt} + \mu_t \dots\dots\dots (3)$$

Equation (3) is the econometric form of equation (2), written more compactly with the variables being identified in the form above for simplicity. All variables are as was earlier described, except for the logarithm form they now appear.  $\delta$  is the parameter to be estimated, while  $\mu_t$  captures the idiosyncratic error term with its well-behaved properties and  $t$  measures the time lags for the time series.

Ordinarily, equations (3) could be estimated using OLS – a basic econometric technique, but it may not yield efficient estimates of the parameters. This is not unrelated to fundamental problems associated with the estimation of time series data. To this end, the Autoregressive Distributed Lag (ARDL) bounds test procedure introduced by Pesaran, Shin and Smith (2001) is used to test the long run equilibrium relationship between fiscal federalism characteristics and economic growth, as well as other explanatory

variables for Nigeria over the period 1981 - 2016. As is clear in the existing literature, a variety of cointegration techniques for testing cointegration between series exist, but the ARDL bounds test technique is mostly preferred for its copious advantages over other techniques of cointegration. Some of these advantages are presented below.

First, ARDL can be applied, the order of stationarity of the underlying variables notwithstanding, as long as they are within the order  $I(0)$ ,  $I(1)$  or a combination of both (Pesaran and Pesaran, 1997, Jalil and Feridun, 2010). Second, the model takes a sufficient number of lags to capture the data generating process in general to specific modelling frameworks (Jalil and Feridun, 2010; Esu, 2016). Third, empirical studies with fewer observations find this econometric technique more appropriate as compared to traditional cointegration techniques (Haug, 2002, Satti, Farooq, Loganathan and Shahbaz, 2014). This implies that, the small sample properties of the ARDL approach are far superior to those of the Johansen and Juselius cointegration technique (Pesaran and Shin, 1999). Fourth, the error correction model (ECM) can be derived from ARDL through a simple linear transformation, which integrates short run adjustments with long run equilibrium without losing long run information (Jalil and Feridun, 2010; Esu, 2016). Fifth, the problem of endogeneity does not constitute a menace when employing the ARDL technique because the technique is free of residual correlation. As Pesaran and Shin (1999) show, the appropriate lags in the ARDL model are corrected for both serial correlation and issues of endogeneity (Jalil and Feridun, 2010). Finally, the technique can identify between dependent and independent variables in a series (Esu, 2016). The ARDL procedure therefore requires the estimation of equation (3) in the form of equation (4) as thus:

$$\Delta \ln RGDP_t = \beta_i + \delta_1 \ln RGDP_{t-1} + \delta_2 \ln F_{t-1} + \delta_3 \ln GR_{t-1} + \delta_4 \ln EXP_{t-1} + \delta_5 \ln L_{t-1} + \delta_6 \ln Kh_{t-1} + \delta_7 \ln Kph_{t-1} + \delta_8 \ln INF_{t-1} + \delta_9 \ln POP_{t-1} + \sum_{i=1}^p \delta_i \Delta \ln RGDP_{t-i} + \sum_{j=1}^q \delta_j \Delta \ln F_{t-j} + \sum_{k=1}^r \delta_k \Delta \ln GR_{t-k} + \sum_{l=1}^s \delta_l \Delta \ln EXP_{t-l} + \sum_{m=1}^u \delta_m \Delta \ln L_{t-m} + \sum_{n=1}^v \delta_n \Delta \ln Kh_{t-n} + \sum_{o=1}^w \delta_o \Delta \ln Kph_{t-o} + \sum_{p=1}^x \delta_p \Delta \ln INF_{t-p} + \sum_{q=1}^T \delta_q \Delta \ln POP_{t-q} + \varepsilon_{it} \dots \dots \dots (4)$$

V i = 1, 2, 3, ..., T

Where  $\beta_i$  are the drift components,  $\varepsilon_{it}$  captures the white noise in period  $t$  and  $\Delta$  is the differenced operator. The terms with summation signs represent the error correction dynamics, while the first parts of the equation correspond to the long run relationship. The first step in the ARDL bounds test approach is to engage F-tests in tracing the existing long-run relationship among variables. The null hypothesis that there is no long-run relationship between the variables in Eq. (4) is  $H_0: = 0$ , against the alternate hypothesis that there is, i.e.  $H_1: \neq 0$ . The calculated F-statistic will be compared with two asymptotic critical values structured by Pesaran, Shin and Smith (2001). The decision whether the variables are cointegrated for long run relationship or not depends on the upper critical bound (UCB) and lower critical bound (LCB) of these critical values. It is more appropriate to use LCB to test the cointegration between the series if all the variables are stationary at  $I(0)$ . Similarly, UCB is applied to investigate the long run relationship between the series if the variables are integrated at  $I(1)$  or  $I(0)$  or  $I(1)/I(0)$  (Satti, Farooq, Loganathan and Shahbaz, 2014). If the calculated F-statistic exceeds the upper critical value, the null hypothesis of no cointegration will be rejected irrespective of whether the variables are  $I(0)$  or  $I(1)$ . If it is below the lower value, the null hypothesis of no cointegration cannot be rejected. If it falls within the critical value band, the test is inconclusive (Pesaran and Pesaran, 1997).

In choosing the optimal lag length for each variable, the ARDL technique estimates  $(P + 1)k$  number of regressions, where  $P$  is the maximum number of lags and  $k$  is the number of variables in the equation. The model can be selected on the basis of the Schwartz–Bayesian Criteria (SBC) and the Akaike Information Criteria (AIC). The SBC is known as a parsimonious model, selecting the smallest possible lag length, while the AIC is known for selecting the maximum relevant lag length. However, considering the fact that our sample size is small, consisting of 35 observations for the period 1980 – 2014, the

critical values generated by Pesaran, Shin and Smith (2001) are unsuitable, hence the use of upper and lower critical bounds generated by Narayan (2005). Satti, Farooq, Loganathan and Shahbaz (2014) point out that the critical bounds generated by Pesaran, Shin and Smith (2001) are appropriate for large samples (e.g.,  $N = 500$  to  $N = 4,000$ ). Narayan and Narayan (2004) hold that the critical values computed by Pesaran, Shin and Smith (2001) might provide a biased decision about cointegration between the series. The critical bounds by Pesaran, Shin and Smith (2001) are extensively downwards. The upper and lower critical bounds calculated by Narayan, (2005) are more suitable for small samples ranging from  $N = 30$  to  $N = 80$  (Satti, Farooq, Loganathan and Shahbaz, 2014).

As soon as the existence of cointegration among the variables is identified, then the need for the assessment of causal relation arises for the period 1981 to 2016, hence the equation:

$$\begin{aligned} \Delta \ln RGDP_t = & \varphi_i + \sum_{i=1}^p \varphi_{11} \Delta \ln RGDP_{t-i} + \sum_{j=1}^q \varphi_{22} \Delta \ln F_{t-j} + \sum_{k=1}^r \varphi_{33} \Delta \ln GR_{t-k} + \\ & \sum_{l=1}^s \varphi_{44} \Delta \ln EXP_{t-l} + \sum_{m=1}^u \varphi_{55} \Delta \ln L_{t-m} + \sum_{n=1}^v \varphi_{66} \Delta \ln Kh_{t-n} + \sum_{o=1}^w \varphi_{77} \Delta \ln Kph_{t-o} + \\ & \sum_{p=1}^x \varphi_{88} \Delta \ln F_{t-p} + \sum_{q=1}^T \varphi_{99} \Delta \ln POP_{t-q} + \gamma_i ECT_{t-1} + \sigma_{it} \dots\dots\dots(5) \\ \forall \quad i = 1, 2, 3, \dots, T \end{aligned}$$

Where  $\sigma_{it}$  are impulses (or residual terms or innovations or shocks) and are assumed to be identically, independently and normally distributed, for all the nine variables in the model. The statistical significance of the lagged error term, that is,  $ECT_{t-1}$  further validates the established long run relationship between the variables. The estimate of  $ECT_{t-1}$  also shows the speed of convergence from short run toward long run equilibrium path in all models. Also, the statistical significance of the estimate of lagged error term, that is,  $ECT_{t-1}$  with negative sign confirms the existence of a long run causal relationship using the t-statistic. Also, Wald-test or F-test statistic is employed to test the joint test significance of estimates of lagged terms of independent variables. This further confirms the existence of short-and-long run causality relations and is known as a measure of strong causality (Esu, 2016 and 2017). All other checks are as enshrined in the literature (see e.g., Esu, 2016 and 2017; Akpan, 2012; Kirchgassner and Wolters, 2007; Dickey & Fuller, 1979; Greene, 2003; Jalil and Feridun, 2011; Brown, Durbin and Evans 1975; etc.).

### 3.3. Data

The data used for this article are mainly of secondary components. They are real GDP, revenue allocation (share of federal, state and local government revenue, including internally generated revenue and retained revenue by the federal government), public expenditures, grants, labour and capital (human and physical). Others are inflation and population size. These data are sourced basically from officially published sources like, Central Bank of Nigeria (CBN)'s Statistical Bulletin and World Bank (WB)'s World Development Indicators (WDI) and the time series collected span of about 35. Real GDP is the dependent variable used for this study to proxy economic growth over the period under investigation. It is measured as the natural logarithm of GDP per capita (current local currency unit).

Next is the variable is the vector of revenue sharing among tiers of government. These variables are expected to explain the effect of fiscal federalism on Nigeria's growth dynamics, along other variables. Also, the internally generated revenue by the subnational governments will be expected to explain the level of robustness of subnational government to handle expenditure responsibilities assigned to the regions, as the progress in internally generated revenue by states and local governments has implication for economic growth. The vector of control variables, which include human and physical capital, population size and inflation, will be expected to serve for the stability as well as strengthening of the outcome of the model estimates. In response to the indictment on military era that floods the literature, we include dummies to cater for the effects of the both sides of governance – military rule and

democracy – on the progress of the Nigerian economy. The dummies are necessitated by the fact that, the ranked institutional variables from World Governance Indicator (WGI), which would have been suitable for this analysis, has no extensive time-series, and as such will still require dummies to fill the time series gap.

## 4. RESULTS AND ANALYSIS OF FINDINGS

### 4.1. Preliminaries

In examining the concept of fiscal federalism and its implication for growth in the case of Nigeria, fiscal decentralization and economic growth was examined, using a combination of some basic econometric techniques – which most of them have enjoyed detailed discussion in section three of this paper, and the results are presented and analyzed herein. In Table 4.1, the descriptive statistic and the correlation matrix are being reported. The Jarque-Bera statistic shows that all the series are normally distributed with zero mean and constant variance. The correlation coefficients indicate that fiscal federalism and other macroeconomic variables (used in this work), correlate positively and significantly with economic growth and with each other, except inflation that is with negative signs. Next, we report unit roots test results in Table 4.2.

**Table 4.1: Summary Statistics**

	<i>lnRGDP</i>	<i>lnREV</i>	<i>lnEXP</i>	<i>lnGR</i>	<i>lnKb</i>	<i>lnKpb</i>	<i>lnL</i>	<i>lnINF</i>	<i>lnPOP</i>
Descriptive Statistic									
Mean	25.09	25.80	15.25	81.50	14.70	46.30	38.63	19.60	12.20
Median	21.32	85.22	59.40	11.10	39.49	28.00	37.52	12.55	11.80
Maximum	38.52	90.91	51.85	11.40	58.29	10.60	59.00	72.84	18.60
Minimum	17.30	13.97	96.40	42.00	02.40	18.00	21.81	53.82	75.48
Std. Dev.	71.90	31.86	18.51	21.00	20.28	30.00	10.57	17.69	32.88
Skewness	07.28	09.11	09.95	41.61	12.82	08.71	02.62	16.65	03.43
Kurtosis	19.29	21.90	23.22	20.50	31.26	21.38	20.02	45.27	19.48
Jarque-Bera	49.02	59.61	61.56	56.33	98.91	56.60	19.04	20.11	23.69
Probability	0.08	0.05	0.04	0.00	0.00	0.05	0.38	0.00	0.30
Correlation Matrix									
<i>lnRGDP</i>	1.000								
<i>lnREV</i>	0.953	1.000							
<i>lnEXP</i>	0.947	0.995	1.000						
<i>lnGR</i>	0.337	0.271	0.257	1.000					
<i>lnKb</i>	0.921	0.965	0.973	0.228	1.000				
<i>lnKpb</i>	0.904	0.839	0.844	0.114	0.837	1.000			
<i>lnL</i>	0.826	0.924	0.934	0.323	0.893	0.656	1.000		
<i>lnINF</i>	-0.402	-0.368	-0.363	-0.179	-	-	-	1.000	
					0.343	0.349	0.311		
<i>lnPOP</i>	0.847	0.936	0.944	0.327	0.904	0.686	0.998	-0.327	1.000

*Computed by the author, using E-views 9*

Primarily, ARDL Bounds Testing approach to Cointegration is often applied to investigate long-run relationship among variables (Esu, 2017). One of the preconditions for employing this technique is that the integrating order of the series must be I(0) or I(1) or both, hence the need to test the integrating order of the series, since the ARDL bounds test becomes inappropriate if any variable is stationary at I(2) or beyond that order of integration in the series.

Augmented Dickey-Fuller Test (ADF) and Phillip-Perron Test (PP) for integration have been applied and the results are presented in Table 4.2. The results show that some of the variables were stationary at levels  $I(0)$ , but all the variables were stationary at first difference  $I(1)$  for the both test statistic. The bounds test results are presented in Table 4.3.

#### 4.2. Analysis of ARDL Bounds Test Results

The bounds test to cointegration investigates the existence of cointegration among variables in the series. Since it is necessary to get information on the lag order of variables, we used the unrestricted VAR model which helps us in computing the F-statistic to assess the existence or otherwise of cointegration within the series. We employ Akaike Information Criterion (AIC) for its strong precision power while providing better and consistent results for small samples. We compare the computed F-statistic with the critical bounds' values generated by Narayan (2005). The critical bounds values provided by Narayan (2005) is more appropriate for small samples than Pesaran and Smith (2001). The ARDL Bounds Test result is presented in Table 4.3.

**Table 4.2: ADF and PP Unit Root Analysis**

Variable	ADF Test with Intercept and Trend			PP Test with Intercept and Trend		
	T-Statistic	Prob. Values	Order of Integration	T-Statistic	Prob. Values	Order of Integration
<i>lnRGDP</i>	-2.1944(0)	0.4778		-2.1944(0)	0.4778	
	-4.5400(0)	0.0049**	$I(1)$	-4.5400(0)	0.0049**	$I(1)$
<i>lnREV</i>	-4.2751(3)	0.0100***	$I(0)$	-1.7160(4)	0.7227	
	-3.3051(7)	0.0868***	$I(1)$	-5.0763(4)	0.0012**	$I(1)$
<i>lnEXP</i>	3.2341(9)	1.0000		-1.3266(3)	0.8644	
	-3.8085(4)	0.0301***	$I(1)$	-7.2030(3)	0.0000*	$I(1)$
<i>lnGR</i>	-3.7560(0)	0.0314***	$I(0)$	-3.5418(5)	0.0503***	$I(0)$
	-6.0544(1)	0.0001*	$I(1)$	-14.9938(33)	0.0000*	$I(1)$
<i>lnKb</i>	-1.6024(0)	0.7716		-1.4665(5)	0.8221	
	-3.2495(9)	0.0989***	$I(1)$	-7.8494(13)	0.0000*	$I(1)$
<i>Kpb</i>	-3.6813(0)	0.0371***	$I(0)$	-3.6451(3)	0.0402*	$I(0)$
	-5.1058(1)	0.0012**	$I(1)$	-4.6398(0)	0.0038**	$I(1)$
<i>lnL</i>	3.8142(0)	1.0000		2.1607(4)	1.0000	
	-5.9312(1)	0.0002*	$I(1)$	-17.6641	0.000*	$I(1)$
<i>lnINF</i>	-3.8361(1)	0.0266***	$I(0)$	-2.7347(6)	0.2298	
	-5.3444(0)	0.0006*	$I(1)$	-9.6224(33)	0.0000*	$I(1)$
<i>lnPOP</i>	1.5692(9)	1.0000		8.85177(4)	1.0000	
	-3.4903(8)	0.0615*	$I(1)$	-2.5297(3)	0.0312***	$I(1)$

The asterisks (\*, \*\*, and \*\*\*) represents a 1%, 5% and 10% level of significance

To check the robustness of the bounds testing procedure, the varying dependent variable technique was employed, following Ang (2008 a,b) and Ang (2010). The empirical results show that the computed F-statistics are greater than critical bounds provided by Narayan (2005) for economic growth (RGDP), fiscal federalism (fiscal decentralisation) (Rev), public expenditure (Exp) and all other variables in the model, respectively, both as the dependent variables and independent variables. The null hypothesis of no cointegration was rejected at 1% level of significance. This confirms the presence of cointegration in the variables. Following these results, it can be concluded that there is a long-run relationship between

fiscal decentralisation, economic growth and all other variables in the model, except inflation, in the case of Nigeria over the period 1981 – 2016. The null hypothesis could not be rejected, in the case of inflation, since the computed F-statistic is smaller than critical bounds developed by Narayan (2005), for the series.

Table 4.3: Bounds Test to Cointegration

Estimated Model	$\ln Y_t = f(A_{it})!$	$\ln R_t = f(B_{it})!$	$\ln EX_t = f(C_{it})!$	$\ln G_t = f(D_{it})!$	$\ln KH_{it} = f(E_{it})!$	$\ln KPh_{it} = f(F_{it})!$	$\ln I_t = f(G_{it})!$	$\ln INF_t = f(H_{it})!$	$\ln POP_t = f(I_{it})!$
Optimal Lag Structure	(1,0,2,2,2,0,0,1)	(1,1,2,0,2,0,0,1)	(1,2,2,0,2,1,1,0)	(1,2,0,2,2,0,0,1)	(1,2,0,2,0,0,0,0)	(1,0,2,2,2,1,0,1)	(1,2,1,1,1,2,1,2,1)	(1,2,2,2,2,0,2,2)	(1,1,2,1,2,2,0,2)
	6.4333**	8.3314**	7.6074***	12.5113*	8.35505**	10.0824*	14.1109*	4.3186	11.3986***
Significant Level	Critical Values (T = 35) <sup>†</sup>								
	Lower bounds			Upper bounds					
1%	[I(0)]	[I(1)]							
5%	5.14	6.61							
10%	3.57	4.66							
R <sup>2</sup>	3.03	3.99							
Adj. R <sup>2</sup>	0.9870	0.9783	0.9753	0.7842	0.5394	0.8401	0.9672	0.8410	0.9926
F-Statistic	0.9780	0.9579	0.9522	0.5549	0.5014	0.6896	0.9169	0.5905	0.9838
	109.0324	47.9877	42.1011	33.4204	22.0489	5.5837	19.2160	3.4389	112.2990
Prob. Value	(0.0000)	(0.0000)	(0.0000)	(0.0088)	(0.0007)	(0.0005)	(0.0000)	(0.0013)	(0.0000)
D-W Stat.	2.0668	2.0149	2.1059	2.0478	2.1250	2.1044	2.1155	1.9749	1.9456

<sup>†</sup> indicates that the iterated equations are redefined for ease of reporting. \*, \*\*, \*\*\* represent significance at 1%, 5% and 10% levels respectively. The optimal lag structure is determined using AIC. Probability values are in parenthesis. † represents critical bounds value computed by Narayan (2005) following unrestricted intercept and restricted trend.



The implication of these outcomes is that there is a sustained equilibrium between fiscal decentralisation (fiscal federalism), economic growth and other adjoining variables, given that all variables behave well with their well-defined and well-behaved properties. This means that over time, fiscal federalism is supposed to engender economic progress of the practicing state, developing its regions, foster self-realisation and -actualization and expand productivity. Feld et al (2004); Sylvester and Ade (2017), amongst others, held this view. For instance, Sylvester and Ade (2017) found that revenue allocations and the other variables – as were included in their model - have significant relationship with economic growth in Nigeria. Also, Brueckner (2005) has stressed, using an endogenous-growth model with overlapping generations to explore the connection between fiscal federalism and economic growth, that federalism, which allows public-good levels to be tailored to suit the differing demands of young and old consumers, who live in different jurisdictions, increases the incentive to save. This stronger incentive in turn leads to an increase in investment in human capital, and a byproduct of this higher investment is faster economic growth. Thus, the case of positive interaction between fiscal decentralisation and economic growth seems identified.

#### 4.3. Fiscal Federalism Economic Growth Interaction: ARDL Long-run and Short-run Analysis

The long-run and short-run ARDL results are presented in Table 4.4. The long-run results for the nine variables seems to follow theoretical signs, the few mixed outcomes, notwithstanding. Two basic variables that proxied fiscal federalism reflected a mixed outcome. These variables are revenue (REV) and public expenditure (EXP).

**Table 4.4: ARDL Long-run and Short-run Results**

Independent Variable: <i>lnRGDP</i>				
Variable	Coefficient	Std Error	T-Statistic	Prob. Value
		Longrun	Analysis	
Constant	1.4161	7.3468	0.1928	0.8496
<i>lnREV</i>	0.5480(0)**	0.1736	3.1569	0.0061
<i>lnEXP</i>	-0.2880(2)**	0.0969	-2.9720	0.0090
<i>lnGR</i>	0.0243(0)	0.0167	1.4374	0.1699
<i>lnKb</i>	0.0487(2)***	0.0246	1.9744	0.0660
<i>Kpb</i>	0.2513(1)***	0.1053	2.3863	0.0297
<i>lnL</i>	0.6668(1)**	0.1684	-3960	0.0016
<i>lnPOP</i>	76.3592(1)***	37.5421	2.0340	0.0589
		Shortrun	Analysis	
Constant	0.1515	0.2357	0.6427	0.5384
<i>lnREV</i>	0.3767(0)**	0.0819	4.5948	0.0018
<i>lnEXP</i>	-0.2249(2)*	0.0297	-7.5644	0.0001
<i>lnGR</i>	0.0318(0)*	0.0055	5.7869	0.0004
<i>lnKb</i>	0.0408(2)*	0.0067	6.0779	0.0003
<i>Kpb</i>	0.2846(1)*	0.0256	11.1260	0.0000
<i>lnL</i>	0.6765(1)**	0.1684	-3.9606	0.0027
<i>lnPOP</i>	20.0458(0)	36.6956	0.5462	0.5998
<i>ECT<sub>t-1</sub></i>	-0.7568**	0.1785	-4.2382	0.0028
<i>R</i> <sup>2</sup> =0.98	<i>Adj R</i> <sup>2</sup> =0.95	<i>F-Stat</i> =	28.8398(0.0000)	<i>D-W</i> = 2.0152

Note: \*, \*\* and \*\*\* represent 1%, 5% and 10% level of significance, respectively, computed using E-Views version 9. Lags are presented in parenthesis.

While revenue distributed among tiers of government related positively and significantly with economic growth, expenditure moved in the opposite direction; it showed a negative, but significant relationship with economic growth. The result showed that a 1 percent rise in revenue distributed to the tiers of government, will lead to the growth of the economy to the tune of about 1.5 percent *ceteris paribus*. In the same vein, expenditure by the tiers of government is, *a priori*, supposed to stimulate the economy, which will lead to growth, but the outcome of the estimated parameter indicates a negative but significant relationship. That is, the result showed that, 1 percent increase in expenditure will mean about a decline in the economy to the tune of about 2.9 percent.

However, the significant relationship shows that, *ceteris paribus*, expenditure would have stimulated economic activities that will lead to growth, but for sharp practices in the processes. These practices could range from project abandonment, inflation of project costs, etc., to outright embezzlement of resources meant for developmental programmes, amongst other issues. Lopsidedness in project distribution as well as that of other expenditure spread could be another matter for consideration. This means that distributing projects based on political, ethnic or tribal sentiments, rather than economic potentials, opportunities and possibilities, could lead to undesirable outcomes, hence the need for re-engineering.

The result in the case of grants – that is positive but insignificant – may not be far from the case of corruption and other forms of misappropriations, as pointed out earlier. Though the short-run interaction indicated that a 1 percent increase in the flow of grants may result in about 0.32 percent improvement in the growth of the economy, this addition becomes smaller in the long-run. This fact is indicative in the long-run for grant in Table 4.4. on the other hand, capital investment – human and physical – have shown positive and significant contribution to the improvement of the Nigerian economy though a very minute contribution, especially in the case of human capital. The lean contribution of human capital – as the parameter estimates reflect in Table 4.4 – underlines the level of attention given to the development of human capital in all the tiers of government of the Nigerian federation. While it could be argued that human capital has not contributed much in the interaction – though it has potential of fostering greater economic progress, but for the obvious constraints – it is of essence to mention that the position of the physical capital and its possible influence on economic growth, can be traced to the seeming hostile business environment in Nigeria that has the potential of inhibiting investment flows. As it is reported Table 4.4., 1 percent rise in investment flows has the capacity of improving the economy at the rate of about 2.5 percent in the long run, while that of human capital will be about 4.9 percent.

Labour and inflation are the next variables with positive and negative elasticities respectively. Labour showed that 1 percent increase in employment may improve the economy growth by about 67 and 66 percent respectively, in the short-run and in the long-run. This outcome is explainable within the ambit of macroeconomic analysis. A rise in employment would mean arise in aggregate demand, which result in the stimulation of economic activities leading to productivity, which will result in economic growth. This therefore means that stimulating employment in all the tiers of government, would have both short-term and long-term effects on economic progress of Nigeria. This is expected to be possible if effective fiscal federalism is enjoyed by the subnational government, in such a way as to help them develop their internal capacities as well as express their different levels of autonomy in taking viable economic decisions.

However, the signs of estimates for inflation, both in the short-run and in the long-run, follows *a priori* sign. It shows that given a persistent rise in inflation rate, – as is the case in Nigeria – the economy will experience retrogression in economic activities, as purchasing power continues to drop. Adjustment of the relevant microeconomic variables, that will ensure at least a stable inflation rate, becomes a necessity. Population size of the Nigeria was also included as control in our model in this work. The elasticity,

both in the short-run and in the long-run, indicated a positive relationship with economic growth. The implication of this is the fact that, if properly harnessed, Nigeria's population growth could be advantageous in different ways that will improve the Nigerian economy. One quick access to such possibilities could be conscious efforts at human capital development, at different levels and capacities among the different tiers of government. The negative and statistically significant estimate of the error correction term further affirms the existence of a long-run relationship among variables in the case of Nigeria. The coefficient, which is statistically significant at 5 percent level, implies that short-run deviations are adjusted (corrected) toward a long-run equilibrium path, after the short-run shocks, at the rate of about 75 percent.

The various test statistics that were employed in assessing the viability as well as justification for the use of the different data and technique, are reported, though a selected few, in Table 4.4. The coefficient of determination ( $R^2$ ) and its adjusted output (Adjusted  $R^2$ ) of 0.98 and 0.95 respectively, showed that about 95 percent to 98 percent of the variation in the dependent variable, economic growth, is jointly explained by the regressors in the models; it measures the goodness of fit of those sets of iterations. While D-W statistic estimate of 2.0152 establishes the fact that the set of equations (or iterations) in the model were serially uncorrelated, F-statistic estimate points to the overall significance of the results of the estimated equations in the set. Thus, given the available data for this study, the model can be adjudged to have proximate what could be termed a true situation of Nigeria's fiscal federalism vis-à-vis the growth of its economy.

## **5. CONCLUSION**

Theoretically, fiscal federalism should be an engine for steering growth and development in a practicing economy. Nigeria has been a federal state before 1963, but the basic agitations for an inclusive growth and development have persisted, taking different dimensions from different regions. The prescribed solution by scholars has been effective fiscal federalism, both in laws and in practice, thus this study attempted an empirical assessment of Nigeria's fiscal federalism and its implication for the growth of its economy over time. The result of the estimated equations showed that fiscal decentralisation could actually foster economic growth, but threw up some revealing outcomes, that showed that this growth, over the years may have been inhibited by corruption, ineffective leadership, unconducive macroeconomic environment as well as other upheavals. It is therefore our recommendation that Nigeria should consciously make and implement laws that will foster effective, balanced and inclusive fiscal federalism; make, strengthen and implement laws that will be very hostile to corruption and every other forms of unwholesome practices, if it must enjoy the progress that characterise a federal state.

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## APPENDIX

## Data that was used for estimation (excluding dummies of 0 and 1)

YE AR	RGD P	REV	FEDE XP	GRANT S	Kh	Kph	LAB	INF	POP	URB AN
198 1	24868 8.1	16.29	11.41	6140000	0.25	8.82213 E+12	21815 335	20.81 282	754825 52	71544 97
198 2	23974 7.2	16.48	11.92	4450000	0.28	6.84175 E+12	22881 370	7.697 747	774729 07	76267 39
198 3	22193 9.8	13.97	9.64	420000	0.24	4.48673 E+12	23947 405	23.21 233	794622 77	81329 62
198 4	21202 2.2	14.33	9.93	6950000	0.30	2.87165 E+12	25013 440	17.82 053	814977 39	85282 37
198 5	22385 7.4	17.89	13.04	3770000	0.39	2.71083 E+12	26079 475	7.435 345	836133 00	89448 49
198 6	19901 1.9	20.93	16.22	8730000	0.40	2.35333 E+12	27145 510	5.717 151	858185 02	93858 96
198 7	17301 1.9	30.17	22.02	1379000 0	0.27	1.79858 E+12	28211 545	11.29 032	881016 28	98523 32
198 8	18123 0	38.11	27.75	3552000 0	1.88	1.87875 E+12	29277 580	54.51 122	904502 81	10346 474
198 9	18797 5.1	52.53	41.03	1278000 00	3.59	1.91632 E+12	29591 187	50.46 669	928443 53	10867 956
199 0	20657 5.1	80.24	60.27	1247000 00	2.90	2.65697 E+12	30343 257	7.364 4	952699 88	11420 718
199 1	20013 8.6	91.36	66.58	1307700 00	1.87	2.64685 E+12	31110 398	13.00 697	977263 23	11961 842
199 2	19600 2.2	125.4 7	92.80	1162700 00	0.44	2.56759 E+12	31890 084	44.58 884	100221 563	12437 916
199 3	19515 3.1	228.9 7	191.23	5365000 0	12.7 5	2.97827 E+12	32702 474	57.16 525	102761 737	12866 988
199 4	19207 9.8	210.4 0	160.89	4321000 0	9.48	2.67571 E+12	33550 648	57.03 171	105355 783	13314 524
199 5	18678 1	318.4 1	248.77	3262000 0	13.0 7	1.9748E +12	34358 961	72.83 55	108011 465	13780 851
199 6	19128 8.7	426.7 5	337.22	2414000 0	14.5 2	2.33214 E+12	35213 877	29.26 829	110732 904	14267 623
199 7	19181 6.4	525.1 8	428.22	2710000 0	18.7 4	2.53829 E+12	36103 052	8.529 874	113522 705	14773 817
199 8	19217 8.7	630.3 2	487.11	3331000 0	18.3 3	2.40992 E+12	37044 267	9.996 378	116385 750	15302 574
199 9	18833 0.6	1,116 .68	947.69	4778000 0	60.2 5	2.33941 E+12	37986 000	6.618 373	119327 073	15854 375
200 0	19344 2.4	1,060 .12	701.05	4959000 0	73.1 7	2.73785 E+12	38932 683	6.933 292	122352 009	16431 274
200 1	19696 6.4	1,591 .54	1,018. 00	8988000 0	64.4 0	2.14353 E+12	39925 510	18.87 365	125463 434	17032 094



200 2	19933 1.7	1,688 .00	1,018. 18	1073100 00	121. 15	2.57953 E+12	40906 807	12.87 658	128666 710	17660 742
200 3	21446 0.7	2,080 .99	1,225. 99	1148600 00	98.0 5	3.87289 E+12	41748 447	14.03 178	131972 533	18317 913
200 4	27956 3.7	2,540 .14	1,426. 20	1651300 00	110. 73	2.94322 E+12	42853 734	14.99 803	135393 616	19006 184
200 5	28181 3.2	3,241 .74	1,822. 10	5840000 000	138. 46	2.63538 E+12	43907 799	17.86 349	138939 478	19724 368
200 6	29709 5.3	3,481 .77	1,938. 00	1138818 0000	181. 27	4.20047 E+12	45036 274	8.239 527	142614 094	20464 291
200 7	30913 8.7	4,516 .30	2,450. 90	1323270 000	232. 69	5.95328 E+12	46230 555	5.382 224	146417 024	21201 912
200 8	31993 4.3	6,175 .66	3,240. 82	8464400 00	262. 20	5.91008 E+12	47480 439	11.57 798	150347 390	21970 458
200 9	33313 5.4	6,043 .66	3,452. 99	9496300 00	227. 32	7.96494 E+12	48780 752	11.53 767	154402 181	22768 005
201 0	34979 1.6	7,357 .12	4,194. 58	8104200 00	269. 90	9.18306 E+12	50068 829	13.72 02	158578 261	23599 164
201 1	35720 4.1	8,122 .16	4,712. 06	8585900 00	567. 60	8.42576 E+12	51415 818	10.84 079	162877 076	24464 294
201 2	36264 8.1	8,177 .91	4,605. 39	1092710 000	546. 30	8.64077 E+12	52823 715	12.21 701	167297 284	25366 174
201 3	37213 0	9,090 .70	5,185. 32	1352030 000	570. 41	9.32035 E+12	54261 143	8.475 827	171829 303	26302 579
201 4	38522 7.6	8,259 .42	4,587. 39	1164350 000	539. 73	1.05717 E+13	55789 427	8.057 383	176460 502	27277 591
201 5	38514 2	7,847 .89	4,988. 86	1176130 000	582. 91	1.04322 E+13	57352 349	9.017 684	181181 744	28306 484
201 6	36911 9.6	7,632 .54	5,160. 74		544. 24		58959 450	15.69 685	185989 640	29402 873

Table 2a: Tax revenue distributed among tiers of government (% of total tax revenue)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Austria	Central	43.96	45.73	44.75	44.33	44.03	43.74	43.14	43.26	43.87	44.1	43.67	43.7	44.29	44.93	44.84	44.18
	State	1.45	1.61	1.42	1.39	1.67	1.71	1.75	1.71	1.65	1.58	1.73	1.76	1.86	1.87	1.84	1.78
	Local	3.22	3.36	3.52	3.79	3.23	3.23	3	2.97	2.91	3.18	3.05	2.93	2.92	2.95	3.01	3.15
Belgium	Central	42.34	42.43	41.39	40.51	40.51	40.16	39.75	40.7	39.77	40.33	41.06	42.41	43.12	42.79	40.92	38.82
	State	3.37	3.48	4.63	4.74	4.76	4.88	4.93	5	5.09	5.27	5.48	5.56	5.83	5.64	6.68	8.1
	Local	3.38	3.58	3.7	3.81	3.63	3.59	3.7	3.74	3.58	4.01	3.84	3.88	3.8	3.82	3.83	3.88
Canada	Central	21.13	20.43	19.59	19.32	18.93	18.79	18.78	18.93	17.85	17.89	17.14	17.15	17.14	17.2	17.19	17.61
	State	18.55	17.74	17.23	17.51	17.67	18	18.35	17.92	17.59	17.71	17.27	17.28	17.37	17.17	17.52	17.86
	Local	4.35	4.34	4.27	4.26	4.25	4.26	4.29	4.42	4.43	4.9	4.85	4.73	4.78	4.77	4.72	4.9
Germany	Central	29.91	28.97	28.79	29.1	27.89	28.05	27.87	27.5	27.7	28.74	27.94	28.31	28.54	28.51	28.56	28.42
	State	10.86	10.22	10.01	10.03	10.04	10.02	10.22	10.54	10.69	10.66	10.2	10.45	10.72	11.08	11.14	11.55
	Local	4.86	4.62	4.54	4.52	4.65	4.72	4.9	4.97	5.02	4.96	4.91	5.05	5.01	4.97	4.91	5.01
Hungary	Central	38.4	37.2	36.22	35.88	35.94	35.57	36.07	38.64	40.66	41.11	39.99	39.08	41.5	42.03	42.27	41.61
	Local	5.8	5.89	5.79	6	6.22	6.03	6.11	6.18	4.26	4.73	4.78	4.95	4.58	4.62	4.48	3.23
Israel	Central	41.99	41.82	41.64	40.3	39.1	39.13	40.11	39.16	36.74	33.86	34.81	34.84	34	34.42	34.77	34.68
	Local	3.54	3.54	3.51	3.47	3.6	3.6	3.59	3.61	3.66	3.62	3.76	3.67	3.61	3.49	3.49	3.39

Source: *statcan.ca* and CBN statistical bulletin and various issues

Table 2b: Tax revenue distributed among tiers of government (% total tax revenue)																			
		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	
Mexico	Central	0	0	0	17.55	17.77	17.99	18.07	17.92	21.13	18.7	19.29	20.14	20.55	20.42	19.6	19.12		
	State	0	0	0	1.98	2.14	2.24	2.21	2.01	2.57	3.04	2.74	2.71	2.83	3.18	3.44	3.38		
	Local	0	0	0	0.83	0.8	0.84	0.88	0.86	0.97	1.15	1.01	0.78	0.98	0.9	0.99	1.15		
Spain	Central	30.37	30.37	29.23	28.66	28.99	29.52	30.12	30.74	27.27	25.12	27.03	26.57	26.49	28.47	28.7	28.03	27.3	
	State	3.79	3.77	5.24	5.65	6.06	6.3	6.54	6.37	5.89	6.25	5.64	6.03	7.4	6.36	6.27	6.34	6.34	
	Local	3.91	3.79	3.78	3.66	3.69	3.82	3.93	3.96	3.71	3.63	3.79	3.84	4.09	4.26	4.38	4.28	4.19	
Switzerland	Central	18.2	17.31	17.38	17.16	16.87	16.95	16.88	16.56	17.38	17.41	17.31	17.53	17.44	17.59	17.3	17.93	17.7	
	State	9.2	9.31	9.67	9.55	9.59	9.66	9.5	9.5	9.59	9.83	9.7	9.76	9.8	9.82	9.82	10.22	10.2	
	Local	6.78	6.83	6.85	6.72	6.63	6.5	6.42	6.27	6.24	6.47	6.33	6.35	6.36	6.38	6.42	6.53	6.61	
Nigeria	Central	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	
	State	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	
	Local	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	
South Africa	Central	23.9	24.6	24.7	23.8	24.5	24.5	24.6	24.8	26.21	24.12	23.92	24.63	25.34	25.63	26.1	27.2	27.2	
	State	3.91	3.79	3.78	3.66	3.69	3.82	3.93	3.96	3.71	3.63	3.79	3.84	4.09	4.26	4.38	4.28	4.1	
	Local	9.2	9.31	9.67	9.55	9.59	9.66	9.5	9.5	9.59	9.83	9.7	9.76	9.8	9.82	9.82	10.22	10.2	

Sources: [stats.oecd.org](http://stats.oecd.org) and CBN statistical bulletin and various issues