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Fiscal federalism and economic development in Nigeria: An auto-regressive distributed lag approach

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Abstract: This study examines the impact of fiscal federalism on economic development in Nigeria for the period 1981–2017 using the auto-regressive distributed lag approach. The data for the study were sourced from various issues of Central Bank of Nigeria Statistical Bulletin and International Country Risk Guide. It was found that revenue decentralization with a coefficient of −2.15 significantly retarded economic development at 5%, while expenditure decentralization with a coefficient of 2.935 significantly increased economic development at 5%. The overall decentralization indicator, captured as simultaneity measure with a coefficient of 4.264 significantly increased economic development at 1%. From the empirical evidence, fiscal federalism will encourage economic development in Nigeria. These findings support and reinforce the need for greater decentralization

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PUBLIC INTEREST STATEMENT

The Nigerian government in the first decade after independence in 1960 practised fiscal federalism under a regional structure which promoted an agro economy and laid the foundation for economic progress made during this period. The role of governments and the fiscal structure in the attainment of sustainable development cannot be over-emphasized. Governments exist to serve the socio-economic needs of the citizens through optimal provision of national and local public goods and services. The study provided empirical evidence on the relationship between measures of fiscal federalism and economic development in Nigeria. The auto-regressive distributed lag approach was employed to show that there is a strong link between fiscal federalism and economic development. The study revealed that revenue decentralization retarded economic development, while expenditure decentralization promoted economic development. However, the overall decentralization indicator captured as simultaneity measure will increase economic development in Nigeria. Government should embrace fiscal decentralization to achieve sustainable development.

of fiscal responsibilities to sub-national government. Also, government should enact legislations to improve bureaucratic quality, and implement appropriate security reforms to further strengthen law and order to ensure economic development in Nigeria.

Subjects: Social Sciences; Policy Analysis; Public Policy; Economic Policy

Keywords: development; autoregressive distributed lag method; fiscal decentralization; fiscal federalism; Nigeria
Jel: numbers: H77; R51.

1. Introduction

Nigeria before and in the first half of the decade after independence practised fiscal federalism under a regional structure (Mohammed et al., 2017) and this promoted an agro economy and laid the foundation for economic progress. Agriculture was the mainstay of the economy, accounting for 65 percent of the Gross Domestic Product in 1962–1963, and 63 percent in 1966–1967, and approximately, 62 percent, 65 percent and 55 percent of the country's export earnings in 1966, 1967 and 1969, respectively (Akindele, 1986). Unfortunately, the situation changed in 1970 and by the second half of the 1970 s, crude oil production and export had become the main engine of growth of the Nigerian economy while the contribution of agriculture to export earnings declined progressively.

The reversal of the economic progress in agriculture achieved by the various regions in the first decade of independence in Nigeria has also been linked to the incursion of the military into governance in 1966 with its unitary command structure which led to the abandonment of fiscal federalism (Ewetan, 2012; Ewetan et al., 2020). In subsequent decades and till date oil exploration and production became the main driver of the Nigerian economy. Almost six decades after independence in 1960 Nigeria's Gross Domestic Product per capita was 2396.30 US dollars in 2018 equivalent to 19 percent of the world's average (Trading Economics, 2020). This showed economic performance for Nigeria that placed her among middle-income countries. For Nigeria to record rapid economic transformation, sustainable development emphasizes the need for fiscal decentralization of responsibilities to engender efficiency in public service delivery particularly in the provision of robust infrastructure (Amoo, 2018).

Based on the economic progress recorded in terms of the significant contribution of agriculture to Gross Domestic Product and export earnings in the first decade of independence (Akindele, 1986) this study posits that fiscal federalism could provide a solution to the challenges of economic development in Nigeria (Arif & Ahmad, 2018; Babajide et al., 2020; Ewetan et al., 2015; Ma & Mao, 2018; Mykola et al., 2019). There have been various reports and studies that have canvassed for the adoption of fiscal federalism with little empirical work evidence-based theory on Nigeria in recent times (Aigbokhan, 1999) to justify this recommendation. Against this background, this study, therefore, seeks to examine empirically the relationship between fiscal federalism and economic development in Nigeria.

2. Literature review

Fiscal federalism can be defined as the principles that guide the assignment of tax powers and expenditure responsibilities to the various tiers of government in a federation to promote healthy intergovernmental relations and synergy (Ewetan, 2011; Oates, 1972; Taiwo, 1999; Tanzi, 1995). The application of these principles in designing intergovernmental fiscal relations and the extent to which fiscal responsibilities are actually decentralized in the public sector is referred to as fiscal decentralization. Tella (1999) states that fiscal federalism refers to the financial relationships between and among existing tiers of government; it includes the system of transfers or grants by which the Federal government shares its revenues with the state and local government.

Findings from the empirical literature made up of cross-country and single country studies are mixed. Some empirical studies established a positive relationship between measures of decentralization, and economic growth/development (Ahmad et al., 2016; Akai & Sakata, 2002; Davoodi & Zou, 1998; Ekpo, 2009; Ewetan, 2011; Ewetan et al., 2016; Iimi, 2005; Ismail & Hamzah, 2006; Lin & Liu, 2000; Philip & Isah, 2012; Slavinskaite, 2017; Stansel, 2005; Yilmaz, 1999). Neringa et al. (2020) in a panel study of thirteen states of the European Union find a statistically significant positive effect of fiscal decentralization on economic development. Similarly, Setiawan and Aritenang (2019) in a study on the impact of fiscal decentralization on economic performance in Indonesia find a significant effect of fiscal decentralization on economic performance at a lag value of three years. Also Chygryn et al. (2018) employed panel data to investigate the influence of fiscal decentralization in selected European Countries. Empirical evidence confirms a positive impact of fiscal decentralization on GDP, GDP growth rate, foreign direct investment, and social contribution.

Arif and Ahmad (2018) employed a panel data set of 53 developed and developing countries over the period 1996–2014 to examine the direct and indirect impact of fiscal decentralization on macroeconomic performance, governance and growth. The result shows that the indirect impact of fiscal decentralization on per capita gross domestic product (GDP) growth rate is positive and more significant when it is complemented by sound institutional structure in terms of rule of law, low corruption in government institutions, high-bureaucratic quality and democratic accountability. Similarly, Ma and Mao (2018) employed a county-level panel data set for the period 2001–2011 to examine the impact of fiscal reform on local economic growth in China. The result shows that the reform increased significantly the GDP growth rate. Other empirical studies established a negative relationship between measures of fiscal decentralization and economic growth/development in advanced, emerging and developing countries (Aigbokhan, 1999; Davoodi & Zou, 1998; Mykola et al., 2019; Xie et al., 1999; Zhang & Zou, 1998).

In the empirical literature, there is evidence that government in developing countries are far more centralized than in the industrialized countries (Innocents, 2011; Matthew et al., 2020; Oates, 1993). Oates (1985) using a sample of 43 countries, results reveal an average share of central-government spending in total public expenditure of 65 percent in the subsample of 18 industrialised countries as contrasted to 89 percent in the subsample of 25 developing nations. In terms of public revenues, the average share of central governments in the developing countries was in excess of 90 percent confirming that central government in the developing countries assumes the lion's share of fiscal responsibility. Currently, there is resurgence of interest in the nature of the link between fiscal decentralization and economic development. There is the argument that decentralization results from the achievement of a higher level of economic development (Oates, 1993). Thus, it is economic development that drives fiscal decentralization and the theoretical implication of this is that there is an inverse relationship between fiscal centralization and the level of economic development.

In the Nigerian case, a comparative study by Ekanade (2011) on fiscal federalism and development in Nigeria, Canada and drawing from the Canadian experience posits that for Nigeria to successfully overcome the challenge of development, it must give prominence to principles such as autonomy of sub national units, predominance of civic culture, scientific equalisation and dependence of intergovernmental relations on mutual convenience rather than on statues. In a study on fiscal federalism and economic development in Nigeria, Babalola (2015) finds that fiscal federalism did not promote economic development because of the weak intergovernmental fiscal system and non-adherence to fiscal federalism principles. In the same vein, other studies on Nigeria find that fiscal centralization, mismatch between revenue sources and expenditure responsibilities, predatory and politically motivated parameters of revenue allocation have contributed significantly to economic and social backwardness (Alabi, 2010; Ewetan, 2012; Nwede et al., 2013). Using descriptive survey method, Okolie and Ochei (2014) find that total dependence on the revenue from the federation account by all tiers of government is largely responsible for the slow economic development in Nigeria. In a much earlier study, Ubogu (1982) examined the major economic factors

that influenced the variations of fiscal decentralization of twelve selected states through regression analysis based on cross-section data. He finds that federal grants and the degree of urbanization were the most important factors that explained the variation in fiscal decentralization among the selected states, while per capita investment was insignificant. He concluded that the level of fiscal decentralization does not depend on the level of economic development of the state.

For fiscal federalism to promote economic development in Nigeria attention must be given to a number of issues. These issues include; fiscal laws that will ensure legal framework for beneficial and dynamic intergovernmental fiscal relations, significant decentralization of fiscal responsibilities to sub-national government guided by the principles of fiscal federalism, and the nurturing of strong, transparent, efficient and independent fiscal institutions that will ensure accountability, and that can address proactively emerging fiscal challenges of the 2000 s in the public sector.

3. Theoretical framework

This study adopts the endogenous growth theory which linked economy's long-run growth to endogenous factors to capture the theoretical link between fiscal decentralization and economic development. Oates's decentralization theorem (Oates, 1972, 1999), and Davoodi and Zou (1998) posited that fiscal decentralization can promote economic growth and development. According to the decentralization theorem fiscal decentralization leads to efficient provision of local public services, promotes accountability, and stimulates growth and economic development. Davoodi and Zou (1998) and Aigbokhan (1999) studies assumed that the three levels of government; federal, state and local conduct public spending and thus extended Barro's (1990) endogenous growth model. This study defines fiscal decentralization level as ratio of sub-national revenue and spending to federal government revenue and spending. The implication of this is that as sub-national revenue and spending increases relative to federal government revenue and spending, fiscal decentralization increases (Ahmad et al., 2016; Davoodi & Zou, 1998). Our study further augment the Davoodi and Zou (1998) and Ahmad et al. (2016) models by including institutional variables in the model, on the assumption that fiscal decentralization and institutions complement each other. According to Ahmad et al. (2016) better institutional quality will contribute to the effectiveness of fiscal decentralization in ultimately promoting growth and development.

4. Research design

4.1. Data sources and measurement

GDP per capita (GDPPC) and the three measures of fiscal decentralization namely: Revenue decentralization (FDC1), Expenditure decentralization (FDC2), and Simultaneous decentralization of revenue and expenditure (FDC3) in Naira were sourced from Central Bank of Nigeria (CBN) Statistical Bulletin of various issues. The CBN is the main custodian of data on government fiscal operations at federal, state and local government levels in Nigeria. Revenue decentralization (FDC1) is measured by sub-national internally generated revenue percentage of federal revenue; Expenditure decentralization (FDC2) is measured by sub-national expenditure percentage of federal expenditure; Simultaneous decentralization of revenue and expenditure (FDC3) is measured by sub-national internally generated revenue percentage of federal expenditure. Data on bureaucratic quality index (BQ) and law and order (LOR) were sourced from International Country Risk Guide.

4.2. Model specification

The model investigates the effect of fiscal federalism on economic development in Nigeria between 1981 and 2017. The dependent variable economic development is captured as Gross Domestic Product per capita (GDPPC). GDP per capita is used to capture economic development because it is often employed in categorizing countries into different levels of development as it measures a country's standard of living overtime (Arif & Ahmad, 2018; Mykola et al., 2019; Todaro & Smith, 2012). In the empirical literature (Aigbokhan, 1999; Ewetan, 2011; Ewetan et al., 2016; Mykola et al., 2019) opined that fiscal federalism the explanatory variable of focus is usually captured with three

measures of fiscal decentralization: (1) revenue decentralization (FDC1); (2) expenditure decentralization (FDC2); (3) simultaneity measure (FDC3). On the basis of the decentralization theorem, the study attempts to illustrate the relationship between the three measures of fiscal federalism and economic development. Bureaucratic quality index (BQ) an explanatory variable measures the quality of fiscal institutions, freedom from political pressures, quality of policy formulation and implementation, and the credibility of government's commitment to such policies on a scale of 0 to 10 where 0 is absence of quality and 10 is perfect quality. Law and order (LOR) an explanatory variable reflects the extent of confidence and adherence to laws, contract enforcement, property right, the police and courts, lies between 0 and 10 where 0 is absence of law and order and 10 is perfect law and order. The implicit form of the model is specified in Equation (1):

$$GDPPC = f(FDC1, FDC2, FDC3, BQ, LOR) \tag{1}$$

Equation (1) can be specified explicitly, shown in Equation (2):

$$GDPPC = \alpha + \delta FDC1 + \theta FDC2 + \rho FDC3 + \beta BQ + \gamma LOR + \varepsilon_t \tag{2}$$

where GDPPC represents GDP per capita, FDC1 represents revenue decentralization, FDC2 represents expenditure decentralization, FDC3 represents simultaneous decentralization of revenue and expenditure, BQ represents bureaucratic quality index, LOR represents law and order, and ε_t represents the error term.

α is the intercept, and δ, θ, ρ, β, and γ are the coefficients for the explanatory variables. The coefficients of the explanatory variables are expected to take the following signs: $\alpha > 0$, $\delta > 0$, $\theta > 0$, $\rho > 0$, $\beta > 0$, $\gamma > 0$. This means that the a priori expectation is a positive relationship between these explanatory variables and economic development (GDPPC), ceteris paribus.

4.3. Estimation technique

This study adopted the auto-regressive distributed lag (ARDL) technique in line with the empirical study of Okodua and Ewetan (2013). This study employs the ARDL because it can be applied when the variables are differently integrated at levels [I(0)], or order one [I (1)]. However, the method does not accommodate macroeconomic variables integrated of order two [I(2)], and the dependent variable has to be integrated of order 1. The estimator obtained from ARDL model tends to be more efficient. It also has the additional advantage of yielding consistent estimates of the long-run coefficients that are asymptotically normal irrespective of whether the underlying regressors are I(1) or I(0) (Pesaran & Shin, 1999; Pesaran et al., 2001). Co-integration is determined through the bounds test by matching the computed F-statistics to the appropriate critical values (Pesaran et al., 2001). According to Okodua and Ewetan (2013), when the computed F-statistics is less than the lower bound value, [I(0)], there is no co-integration. However, if the computed F-statistics is greater than the upper bound value, I(1), then there is co-integration.

The conditional error correction ARDL model to be estimated from Equation (2) is given as follows:

$$\begin{aligned}\Delta GDPPC_t = \alpha + \sum_{i=1}^{p} \sigma i \Delta GDPPC_{t-i} + \sum_{i=0}^{p} \beta i \Delta BQ_{t-i} + \\ \sum_{i=0}^{p} \gamma i \Delta LOR_{t-i} + \sum_{i=0}^{p} \delta i \Delta FDC1_{t-i} + \sum_{i=0}^{p} \theta i \Delta FDC2_{t-i} + \sum_{i=0}^{p} \rho i \Delta FDC3_{t-i} + \lambda ECM_{t-i} + \varepsilon_t\end{aligned} \tag{3}$$

where Δ is the first-difference operator and the optimal lag length is denoted by p.

The null hypothesis of the bounds test (H0) states that there is no co-integration, whereas the alternative hypothesis (H1) states that there is co-integration. This is expressed as follows:

H_0: $\sigma = \beta = \gamma = \delta = \theta = \rho = 0$ (No long run relationship exists)

H_1: $\sigma \neq \beta \neq \gamma \neq \delta \neq \theta \neq \rho \neq 0$ (There exists a long run relationship)

As recommended by Liew (2004), we run the regression model for the ARDL bounds test with the use of Akaike information criteria (AIC), and we select a maximum lag length of one as recommended by Pesaran and Shin (1999) since data is 36 years. Having established the existence of co-integration, the long-run regression model to be estimated is stated as follows:

$$GDPPC_t = \alpha + \sum_{i=1}^{p} \sigma i GDPPC_{t-i} + \sum_{i=0}^{p} \beta i BQ_{t-i} + \sum_{i=0}^{p} LOR_{t-i} + \sum_{i=0}^{p} \delta i FDC1_{t-i} + \sum_{i=0}^{p} \theta i FDC2_{t-i} + \sum_{i=0}^{p} \rho i \Delta FDC3_{t-i} + \varepsilon_t \quad (4)$$

The short-run form of the regression model determined from the Error Correction form is given as follows:

$$GDPPC_t = \alpha + \sum_{i=1}^{p} \sigma i \Delta GDPPC_{t-i} + \sum_{i=0}^{p} \beta i \Delta BQ_{t-i} + \sum_{i=0}^{p} \gamma i \Delta LOR_{t-i} + \sum_{i=0}^{p} \delta i \Delta FDC1_{t-i} + \sum_{i=0}^{p} \theta i \Delta FDC2_{t-i} + \sum_{i=0}^{p} \rho i \Delta FDC3_{t-i} + \lambda ECM_{t-i} + \varepsilon_t \quad (5)$$

The unit root test is carried out for the series using the Augmented Dickey-Fuller approach to determine the stationarity properties of the study variables. When the ADF statistics is greater than the critical value a variable is stationary. However, when the ADF statistics is less than the critical value the variable is non-stationary. When a variable is not stationary at level form this provides the basis to take the first difference. The equation is given as:

$$\Delta Z = \delta Z_{t-1} + \sum_{i=1}^{n} \phi i \Delta Z_{t-1} + \mu$$

If the series is not stationary at level form, it could be stationary at the first difference form.

5. Results

Table 1 presents the descriptive statistics of the series used in the study. GDP per capita (GDPPC) has the highest mean, then followed by the law and order (LOR), bureaucratic quality index (BQI), expenditure decentralization (FDC2), simultaneous decentralization of revenue and expenditure (FDC3) and revenue decentralization (FDC1). Likewise, GDPPC has the highest standard deviation, and revenue decentralization (FDC) has the lowest standard deviation. All the remaining series are positively skewed.

Table 2 presents the unit root test results showing that simultaneity measure of decentralization (FDC3) is stationary at levels, whereas others became stationary at first difference. The dependent variables, GDP per capita (GDPPC) fulfils the requirement of ARDL as it is stationary at first difference. The ARDL technique as advanced by Pesaran et al. (2001) is applicable if the study series are a combination of I(0) and I(1) and the order of integration is not expected to be greater than I(1). All the requirements of ARDL technique are satisfied in this study. Having selected a maximum optimal lag length of 1 for the regressors using the AIC, the ARDL model that reduces the AIC is (1, 1, 0, 0, 0, 0). This is shown in Figure 1.

The ARDL bounds test result to determine the co-integration reported in Table 3 reveals that the computed F-statistics (5.3688) is greater than the critical values of the upper bounds levels at different significance levels. This implies that the null hypothesis (H_0: $\sigma = \beta = \gamma = \delta = \theta = \rho = 0$) is rejected and we conclude that there exists a long-run relationship between economics development, fiscal federalism, bureaucratic quality, law and order.

Table 1. Descriptive Statistics of Decentralized and Institutional Variables

	FDC1	FDC2	FDC3	BQ	LOR	GDPPC
Mean	0.054	0.345	0.086	1.172	2.02	921.309
Median	0.049	0.340	0.074	1.0	2.0	365.460
Maximum	0.147	1.150	0.181	2.0	3.0	3221.678
Minimum	0.004	0.010	0.004	0.0	1.0	153.647
Std. Dev.	0.035	0.186	0.045	0.53	0.72	960.040
Skewness	0.921	2.360	0.287	0.19	0.06	1.268
Kurtosis	3.239	11.960	2.390	3.046	1.87	3.059
Sum	1.850	11.730	2.910	39.83	68.67	31,324.520
Sum Sq. Dev.	0.040	1.140	0.066	9.31	17.2	*30,415,352*
Observations	34	34	34	34	34	34

Source: Authors' Computation 2020 using E-views 10

Table 2. Results of the unit root test of Decentralized and Institutional Variables

Series	ADF Test Statistic			ADF Test Statistic		
	Level	5% CV	Order	1st Diff	5%	CV Order
GDPPC	−1.963	−3.540		−5.640	−3.544	I(1)
FDC1	−2.607	−3.540		−4.792	−3.548	I(1)
FDC2	−2.308	−3.540		−6.518	−3.544	I(1)
FDC3	−3.675	−3.540	I(0)			
BQ	−2.633	−3.540		−4.711	−3.563	I(1)
LOR	−2.356	−3.540		−4.521	−3.558	I(1)

Source: Authors' Computation 2020 using E-views 10

The coefficient estimates of the long-run model are reported in Table 4. Revenue decentralization (FDC1) has a negative sign and is statistically significant at 5 percent level. This means that revenue decentralization to lower tiers of government will not promote economic development in Nigeria or decrease the level of GDP per capita (GDPPC). Expenditure decentralization (FDC2) and simultaneity measure of decentralization (FDC3) have a positive sign and are statistically significant at 5 and 1 percent levels, respectively. This means that expenditure decentralization and simultaneous decentralization of revenue and expenditure will promote economic development in Nigeria or increase the level of GDP per capita (GDPPC). Bureaucratic quality (BQ) has a negative sign and is not statistically significant. This denotes that the current quality of bureaucracy in Nigeria will not promote economic development. Law and order (LOR) has a positive sign and is not statistically significant. This means that law and order in Nigeria will engender economic development insignificantly in Nigeria.

Table 5 presents the short-run dynamics and the estimates of the ECM. The error correction coefficient measures the speed of adjustment. Theoretically, to validate the presence of long-run relationship among the series it must lie between zero and one, negative and statistically significant. From the results presented, the coefficient of the ECM is −0.211, and it is statistically significant at the 1 percent level. This suggests that the system will adjust to equilibrium at the speed of about 21 percent per annum.

Finally, to ensure that the regression model does not violate time series econometrics assumptions we conducted some diagnostic test. Table 6 reports the diagnostic checks using the

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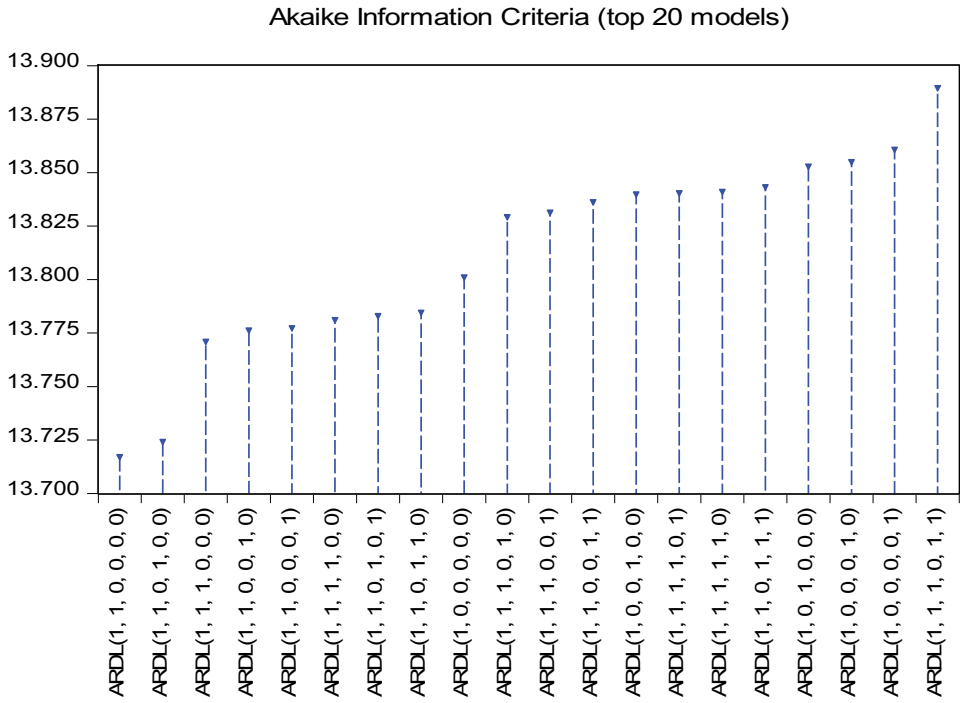

Figure 1. AIC ((top 20 models).

Source: Authors' Compilation 2020 using E-views 10

Table 3. ARDL bounds test for determination of long-run relationship between economic development fiscal federalism bureaucratic quality, law and order

Model

	*Critical Value Bounds of the F-statistic	
	Lower Bound	**Upper Bound**
	I(0)	**I(1)**
10%	2.26	3.35
5%	2.62	3.79
1%	3.41	4.68
F-Statistic	5.3688	

Note: Case: Intercept and trendNumber of regressors (K) = 5

*Crtitical Value Bounds of the F-statistic are from Pesaran et al. (1999)

Source: Authors' Computation 2020 using E-views 10

Histogram Normality Test, Breusch-Godfrey Serial Correlation LM Test and to check for normality, serial correction and heteroskedasticity, respectively. It is expected that the probability value must not be significant at the level of 5 percent to conclude that the errors are normally distributed, that there is no autocorrelation and heteroskedasticity in the results. The results in Table 6 reveal that the probability values for the three tests are greater than 5 percent. Therefore, we can conclude that the errors are normally distributed, and autocorrelation and heteroskedasticity are not present in the regression models.

5.1. Discussion

The study examined the effects of fiscal decentralization on economic development in Nigeria using an augmented model (Ahmad et al., 2016; Davoodi & Zou, 1998) including fiscal

Table 4. Long-run coefficients of fiscal federalism, bureaucratic quality, law and order

Dependent variable GDPPC				
Variable	**Coefficient**	**Std. Error**	**T-statistic**	**P-value**
FDC1	−2.357**	0.00001	−2.275	0.031
FDC2	2.935**	1.0058	2.918	0.011
FDC3	4.264*	1.0049	4.243	0.000
BQ	−60.867	345.8293	−0.176	0.862
LOR	304.391	301.3773	1.010	0.322

* Significant at 1% level, ** Significant at 5% level

Source: Authors' Computation 2020 using E-views 10

Table 5. Error correction model of economic development, fiscal federalism, bureaucratic quality

Selected Model -ARDL (1,1,0,0,0,0)				
Dependent variable: D(GDPPC)				
	Coefficient	**Std. Error**	**T-statistic**	**P-value**
C	−0.515	0.097	−5.309	0.0000
D(FDC1)	−0.771	0.149	−5.172	0.0000
D(FDC2)	0.679	0.155	5.904	0.0000
D(FDC3)	−0.693	0.089	−7.787	0.0000
D(BQ)	0.099	0.042	3.357	0.027
ECM(−1)	−0.211	0.034	−6.197	0.0000

Source: Authors' Computation 2020 using E-views 10

Table 6. Diagnostic tests of regression model for fiscal federalism and economic development

Test Carried Out	Jarque-Bera Value	Obs. *R-Squared Value	P-Value
Normality	12.740		0.171
Serial Correlation		1.596	0.450
Hetetroskedasticity (ARCH)		73.549	0.396

Source: Authors' Computation 2020 using E-views 10

decentralization and institutional variables, on the assumption that they complement each other. It specifically highlighted the extent to which fiscal federalism promoted economic development in Nigeria in the short-run and long-run. The findings from the study have several policy implications which could be useful for policymakers, academicians and researchers in this study area. The nature of the fiscal structure in a federation which is critical for economic development provides the motivation for this study. The focus of the discussion is on the three measures of fiscal decentralization; revenue decentralization, expenditure decentralization and simultaneity measure of decentralization.

One very important finding in this study is that in the long-run, the three measures of fiscal federalism had different significant impacts on economic development. Expenditure decentralization (FDC2) and simultaneity measure of decentralization (FDC3) have a significant positive effect on Nigeria's economic development (GDPPC) at 5 and 1 percent levels,

respectively. The positive effects of the expenditure decentralization and simultaneity measure of decentralization could be related to the fact that sub-national governments now spend their resources to improve the quality of social services and develop robust infrastructural projects to boost their economic capacity and also improve the welfare of the people. This finding agrees with Innocents (2011), Hernandez-Trillo (2016), Agyemang-Duah et al. (2018), Mykola et al. (2019), and Purbadharmaja et al. (2019) that expenditure decentralization promotes economic development as it enhances efficient decision-making at sub-national levels of governance.

On the contrary, revenue decentralization (FDC1) has a significant negative relationship with economic development (GDPPC) at 5 percent level. The negative effects of the revenue decentralization could be attributed to the collection of multiplicity of taxes on labour, medium, small and micro businesses, and properties by sub-national governments that are distortionary in nature taxes. This finding agrees with Mykola et al. (2019), Aigbokhan (1999), Prud'homme (1995), and Tanzi (1995) conclusion that the overall effect of revenue decentralization on growth is largely negative. This could also be linked to the other finding of the study that bureaucratic quality (BQ) a measure of quality of fiscal institutions, which is usually poor at local government level, reduces economic development insignificantly in the long-run. However, law and order (LOR) increases economic development insignificantly in the long-run in Nigeria. The findings on the institutional variables support the argument by Arif and Ahmad (2018) that sound institutional structure in terms of rule of law, low corruption in government institutions, high-bureaucratic quality and democratic accountability are basic requirement for fiscal decentralization to impact positively on economic development.

The implication of the long-run positive impact of expenditure decentralization and simultaneous decentralization of revenue and expenditure on economic development is that fiscal decentralization is largely beneficial to overall economic development and so government should decentralize more fiscal power to states and local government in Nigeria. For fiscal decentralization to promote economic development at all times national and sub-national governments should use appropriate legislations to mitigate corruption, promote development, and institutionalize accountability in government fiscal operations. These policies will ensure that fiscal institutions use their limited funds to deliver optimal level of local and national public goods and services to drive growth and development.

6. Conclusion and recommendations

The study examined the impact of fiscal federalism on economic development in Nigeria by using simultaneously a set of decentralization measures. To achieve this objective, the study used the autoregressive distributed lag (ARDL) method and time series data from 1981 to 2017. The study found that fiscal decentralization promoted economic development in the long-run in Nigeria despite poor bureaucratic quality, and insignificant positive impact law and order on economic development. These findings therefore support and reinforce the need for greater decentralization of fiscal powers to local and state government and the adoption of appropriate policies to improve bureaucratic quality (BQ), and further strengthen law and order (LOR) to ensure accountability and economic development in the long-run in Nigeria. The findings also suggest that for maximum impact on the long-run economic development in Nigeria government should ensure the simultaneous decentralization of expenditure and revenue to lower tiers of government. Therefore, this study strongly believes that there is an urgent need for appropriate legislations to guarantee the fiscal and political autonomy of sub-national governments. This will no doubt engender socio-economic development and improve the quality of public services particularly at local government level in Nigeria.

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