Effects of Public Expenditure and Financial Development on Economic Growth: Empirical Evidence from Nigeria

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Authors' contributions

This work was carried out in collaboration between all authors. All authors read and approved the final manuscript.

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ABSTRACT

The relationship between economic growth, government expenditure and financial development has widely explored but the latter has separately been modelled. Modelling the trio in a single linear model may generate new information. This study examines the effects of disaggregated public expenditure and financial development indicators on economic growth, focusing on Nigeria. Time series data, spanned between 1981 and 2016, were collected and analyzed using ordinary squares technique. We find that specification of the expenditure-growth model with financial development is valid. All the disaggregated financial development and public expenditure indicators have significant effects on economic growth, with positive regression signs except two -financial private sector credit and recurrent expenditure–directionally different. The effect of the former is more dominant, signaling important policy implication considering economic growth of Nigeria.

Keywords: Government expenditure; financial development; economic growth; macroeconomic.

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1. INTRODUCTION

In Keynesian view, public expenditure promotes economic growth through provision of growth-led facilities most especially economic and social infrastructure particularly power and water supply, education, health, and transportation. This is mostly referred to as capital expenditure. The size and structure of the expenditure determine the rate of growth in output of the economy. The relationship between economic growth and government expenditure has widely been explored, using data from the developing and developed countries, and recently more are added to the literature for example [1]. However, the results of these studies are not only mixed, but the specification of the model used in many of these studies opens for new debate as financial development and expenditure has been separately modelled with economic growth. Financial development is a theory-based growth-led macroeconomic factor and it has been evident that it influences output growth, particularly through it intermediary role in allocating financial resources to productive uses. According to Demirgüç-Kunt and Levine [2], a well-developed financial system reduces information and transactions costs the effect of which promotes economic activity. It is a way through which resources are channeled to productive uses that translate to growth. Also, it is associated with mobilization of savings, the effect of which can facilitate transactions, make credits available, and reduce transaction costs. Law and Singh [3] point out that a developed financial system attracts both local and foreign investment that often serves as a springboard for economic growth. Globally, financial sectors had undergone rapid changes which make transactions more efficient, quick and cost-effective resulting from technological innovation.

Over a decade, governments in many developing countries increased their expenditure on public sectors and upgraded their financial systems with the common aim of spinning off their economies. Modelling the trio in a single linear model, which has been overlooked, may generate new information. Thus, this present study contributes to knowledge in two important aspects different from previous studies. First, it assesses the influences of government expenditure and financial development on economic growth; second, it expands the traditional expenditure-growth model, with aim that if there is clear evidence that our model is correctly specified, then, the expenditure-growth model need to be retested; empirical confirmation of which is explored for the first time in this paper.

Next sections of the paper are organized as follows. Section 2 lays out the profile of public expenditure and economic growth in Nigeria. Section 3 covers a literature review. Section 4 details model specification, data and method. Section 5 presents the results, while section 6 gives a conclusion.

2. BACKGROUND TO THE STUDY

Public expenditure is mostly considered as a key determinant and a significant factor for economic growth. The structure and efficiency of such expenditure often reflects in the provision of favorable public goods that can enhance productivity and output growth. And this has often been the strategy of many developing nations that target bridging the output gap. In Nigeria, public expenditure has been increasing over the years resulting mainly from increased spending on administrative procurement, debt service, high national security outlay and infrastructural expansion and other capital development in the country. In spite that Nigeria receives enormous revenues from crude oil on which its economy heavily relies, the oil wealth is yet to paradoxically translate to growth due to uncertainty in the oil market, interest payments on debts and high cost of governance in the country. The Muhammadu Buhari administration has been prudent in its expenditure for ensuring that there are adequate funds that serve as a reserve for provision of public utilities demanded by the growing population. In previous years, many national development plans were designed for generating revenue for public expenditure and series of fiscal policies were formulated for controlling public expenditure (e.g. reduction of growth of government wage bill; reduction in government subsidies) for ensuring economic stability in the country. For instance, the structural adjustment program (SAP) that was introduced in 1986 targeted a reduction of public spending. And during the first National Rolling Plan (1990-1992), government aimed at reducing the budgetary deficit, and government expenditures were made more cost-effective and kept levels that were consistent with the nation's resources, realistic growth targets, and general economic stability.

Adequate funds are required to finance productive capital projects. Part of the primary aim of the SAP reform was to ensure

diversification of the economy, reduce public sector dominance in domestic activities, reallocate resources to private sectors and encourage market development. However, recurrent expenditure on yearly basis has continually increased and is higher than capital expenditure in the budget. Available records show that the aggregate share of recurrent expenditure to the total expenditure stood at 68.9%, 64.9% in 2008 and 2009, respectively, which increased to 81.4%, 82.4% and 86.8% in 2014, 2015 and 2016, respectively, and this appeared to be the highest spending in the country's financial record. For the government capital expenditure, the aggregate share to the total expenditure decreased respectively from 31.2% and 35.1% in 2008 and 2009, to 18.6%, 17.6% 13.2% in 2014, 2015 and 2016 [4]. On disaggregation, recurrent expenditure in Nigeria is noticeably more than triple the capital expenditure. Idenyi et al. [5] observed that small allocation of resources for capital projects is seen to be responsible for economic instability with particular reference to high rate of unemployment, high incidence of poverty and low standard wellbeing and high infrastructural gap in the economy.

The statistics on government spending in local currency value published by the Central Bank of Nigeria [6,7] show that total government expenditure (capital and recurrent) and its components have risen in the last three years. For instance, total recurrent expenditure increased to ₦4, 178.59 billion, ₦3, 426.94 billion and ₦3, 831.98 billion in 2016, 2015 and 2014, respectively, as compared to ₦2, 127.97 billion, ₦2, 117.36 and ₦1, 589.27 billion in 2009, 2008 and 2007, respectively. In the same manner, the government capital expenditure on defense, internal securities, education, health, agriculture, construction, and transport and communication increased during the period under review, particularly in 2009 and 2013. The aggregate value in 2015 stood at ₦818.35 billion and ₦783.13 billion in 2014 but slightly dropped to ₦634.79 billion in 2016. However, the values are marginally greater as compared to ₦552.36 billion and ₦759.28 billion recorded in 2006 and 2007 respectively. In 2017, the expenditure on capital projects stood at ₦1.5 trillion, the highest capital expenditure ever achieved in Nigeria but below the recurrent capital like the trend in previous years.

The rapid increase in aggregate expenditure could result from: first, relative stability in exchange rate of naira against dollar, which is more likely a consequence of active participation of CBN in foreign exchange market; second, the recent meteoric rise in the international crude oil market price increases revenue for the government to expend on growth-led projects; and, third, the increased demand for public infrastructure like roads, communication, power supply, education and health.

The effort of the government on the annual increase in its expenditure is to ensure a healthy economy for the nation through increased output. Despite this effort, the rise in government expenditure appears not to have meaningfully spurred growth. Perhaps, this might be one of the criteria for World Bank in ranking Nigeria as low-income country amidst its growth-led resources. As shown in Fig. 1, the contribution of public expenditure, both recurrent and capital to the country's economic growth is not matched as
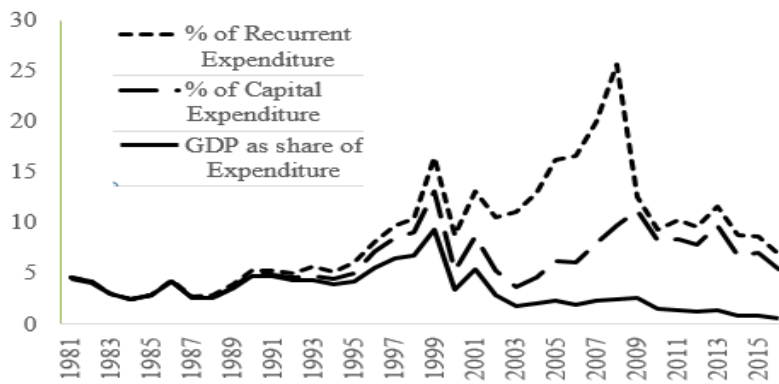

Fig. 1. Disaggregate government expenditure and growth relationship

expected considering the trend in the last two decades. The gap between the growth and expenditure rates continues due to the recent political transitions and adjustment periods. From 2009 onwards, the annual aggregate expenditure increasing rate is more than 8%, however, the annual growth rate of the GDP as a share of expenditure is decreasing, stood at about 0.5% in 2015. This could be a reflection of disequilibrium of balance of payment in the economy or there are leakages in government expenditure or the expenditure do not support investment or both. For healthier and stabilized economy, quality public expenditure is necessary for maintaining high employment, reasonable price stability, and steady economic growth rate. In many studies, it is argued that prudent spending could foster stabilization but this could be achieved through sound fiscal policies [8]. Beyond this, given the thin source of revenue of government in Nigeria, as a result of sharp fall in oil price and high budget deficits, government needs to reduce recurrent expenditure and hence reallocate resources in favour of productive investment.

3. LITERATURE REVIEW

There has been a strong view on the extension of classical and neo-classical propositions that factor accumulation and technological progress cannot adequately explain changes in economic growth. Public expenditure has been discovered as also an important determinant of economic growth in recent literature. However, not only that the relationship between government expenditure and economic growth have produced different results, but also financial development, a theory-based growth-led macroeconomic factor, is commonly missing in expenditure-growth models. The omission of this variable in the growth model is sensitive to model bias, which opens a new debate. The Keynesian philosophical view assumes that fiscal policy intervention, with respect to government expenditure, changes output growth. A large extent of studies [9,10] support that quality government expenditure is growth-enhancing. This hypothesis is consistent with endogenous growth theory which is linked to the proposition of Keynesian thought. By contrast, the classical thought proposes that there should be laissez-faire, meaning that the private individuals should carry out economic activities for the growth of the economy. However, the market failure makes government intervention, in this case, expenditure, become apparent.

Expenditure is categorized into recurrent and capital based on the cost structure of government. It has a functional relationship with public revenue and/or finance through which economic authorities influence the growth of their economies [11]. Expenditures on capital projects: infrastructure; education, health; science and technological development and other needs; is seen as growth driven and in many cases, allocation for these expenditures is not often a function of the size of available revenue only, but also depends on the amount allocated to recurrent expenditure [12]. No doubt that the allocation of available resources between these two expenditures for attainment of sustainable growth is crucial in any economy.

Oni and Ozemhoka [13] view that government aggregate spending is usually a useful fiscal tool in the process of economic growth and development, especially in controlling inflation, unemployment, depression, balance of payment and foreign exchange rate stability. They express that an increase in government spending would cause aggregate demand to rise and production and supply of goods and services follow the same direction. As a result, the increase in supply of goods and services coupled with a rise in aggregate demand would reduce unemployment and halt depression. In the case of contraction or low spending (fiscal instability), aggregate demand and output would fall, but would enable a possible return to surplus budget and ensures fiscal balance within the public finance. Taiwo and Abayomi [14] add that government spending and the tax rate are two main fiscal tools often adopted in an economy for stabilization. They hypothesized that a rise in the government expenditure has the same effect as a reduction in the tax rate on either aggregate output or demand; similarly, the effect of a reduction in government expenditure is the same as of an increase in tax rate.

Public revenue is mostly spent on the provision of private and social goods in appropriate mix. It has been put forward that adequate provision of these goods directly improves productivity, which in turn can stimulate the economy. As such it mostly signifies how efficient the allocated resources are. Agenor [15] observed that if the provision is left to be provided by private individuals, output will be inadequate or outrageously expensive. Gbosi [16] assert other characterization of public spending. He divides public spending into transfer and non-transfer spending. Transfer spending characterizes the

payments on debts, unemployment benefits and administrative costs incurred. Non-transfer spending includes expenditure incurred for the use of goods and services which may be for consumption (recurrent expenditure) or investment (capital expenditure) purpose. Kimaro, Keong and Sea [17] continue the argument that if government is to stimulate productivity it needs to give much consideration to capital expenditure. Nonetheless, inasmuch as public expenditure is highly desirable, particularly growth-driven expenditure, it requires need-based financing [18].

Finance is a theory-based macroeconomic growth factor that has evident to influence output growth, particularly through it intermediary role in allocating financial resources to productive uses [19]. An efficient finance often reflects development of a financial system. According to Durusu-Ciftci et al. [20], a well-developed financial system reduces information and transaction costs the effect of which promotes economic activity. Demetriades and Law [21] emphasize that an efficient financial system promotes growth as it channels resources to most productive uses and fosters more efficient allocation of resources, and helps economic agents hedge, trade and pool risk, thereby raising investment through which economic grows. Shan [22] defines that financial development is associated with mobilization of savings, the effect of which can facilitate transactions, make credits available, and reduce transaction costs that might hamper economic growth. Globally, financial sectors had undergone rapid changes that make transactions more efficient, quick and cost-effective resulting from technological innovation. In Afzal and Abbas's [23] study, financial development is established as a catalyst of economic growth and of development, and they assert that government expenditure demands the need for finance and financial development.

Empirically, a number of studies that analyzed the impact of government expenditure and financial development on economic growth separately have been carried out, but they focused different countries and generated mixed results. For example, recently, Usman and Agbede [24], among many others, carried a study on the relationship between public expenditure and economic growth in an attempt to examine how government expenditure influence economic growth, using a co-integration and error correction model for the

period 1970-2010. Time series data was obtained for the analysis. They found that economic growth had a positive and significant linear relationship with recurrent expenditure and negative significant relationship with capital expenditure. In an extension of the study, Iheanacho [25] carried out a similar study on the same country over the period of 1986-2014, using Johansen cointegration and error correction approach. The author found a similar result that recurrent expenditure is the major driver of economic growth in Nigeria, has a positive relationship with economic growth; but capital expenditure has the opposite. Olorunfemi's [26] investigation is different from other works that studied the impact of public spending on economic growth in Nigeria. Using time series data from 1975 to 2004, he observed that public expenditure impacted positively on economic growth and that there was no link between gross fixed capital formation and Gross Domestic Product (GDP). He asserted that only 37.1% of government expenditure is devoted to capital expenditure while 62.9% to current expenditure. Contrarily, Abu and Abdullahi [27] found that recurrent expenditure has a negative effect on economic growth of Nigeria, while capital expenditure has a positive impact.

Jiranyakul [28] employed OLS technique to examine the relationship between government expenditure and economic growth in Thailand, over the period 1993 to 2006, it was revealed that there was a strong positive impact of government spending on economic growth of Thailand. Josaphat and Oliver [29] investigated the impact of government spending on economic growth in Tanzania (1965-1996), using time series data of 32 periods. They formulated a simple growth accounting model, adapting Ram [30] model in which total government expenditure is disaggregated into expenditure on investment, consumption spending and human capital investment. They found that increased investment expenditure has a negative impact on growth and consumption expenditure relates positively to growth, and expenditure on human capital investment was insignificant. Fan and Rao [31] investigated the impact of government expenditure on economic growth in Azerbaijan in determining how the oil production boom (2005-2007) increased government expenditure and to which amount this improved infrastructure raised GDP. They discovered that Azerbaijan's total expenditure increased by a cumulative of 160% in nominal value within the period. The authors' reference was linked to Nigeria and Saudi Arabia

who also had experienced similar oil boom in 1970 to 1989 which led to an increase in the expenditure of the duo governments over the period.

Using panel data, the findings of many studies on growth-expenditure nexus are not different, mirrored the results obtained from time series data. Gregorious and Ghosh [32] made use of the heterogeneous panel data to study the impact of government expenditure on economic growth. Their results suggest that countries with large government expenditure tend to experience higher economic growth. Using panels of annual and period-averaged data for 22 Organizations for OECD countries during 1970 to 1995, applying OLS and GLS methods, Bleaney et al. [33] found that productive public expenditures enhance economic growth, but non-productive public spending does not. Gemmell and Kneller [34] provide empirical evidence on the impact of fiscal policy on long-run growth for European economy. Their results indicate that while some public investment spending has a positive effect on economic growth, consumption and social security spending have negative growth effects. Niloy et al. [35] employed disaggregated approach to examine the growth effects of government expenditure for a panel of thirty developing countries) over 1970 1980, with a particular focus on sectoral expenditures. The primary research results showed that the share of government capital expenditure in GDP is positively and significantly correlated with economic growth, but current expenditure is insignificant. The result at the sectoral level revealed that government investment and total expenditures on education are the only outlays that remain significantly associated with growth throughout the analysis. Although public investments and expenditures in other sectors (transport and communication, defense) were found initially to have significant associations with growth, they do not survive when government budget constraint and other sectoral expenditures were incorporated into the analysis. Also, private investment share of GDP was found to be associated with economic growth in a significant and positive manner.

On separate account, several studies have analyzed the link between financial development and economic growth. To minimize the space, Singh [36] found evidence for the significant role of financial development in economic growth in India. Yu, Hassan and Sanchez [37], in their study on the relationship between economic growth and financial development, considered 172 low– and middle–income countries, found that the GDP growth rate has a strong positive relationship with domestic credit to private sector and gross domestic savings among eight financial development indicators used as proxies for the analysis. In a recent analysis, Law and Singh [38] pooled 87 developed and developing countries to analyze the link between financial development and economic growth. They found that financial development is beneficial to growth, but to a certain threshold, beyond which the development of finance would relatively adversely affect the growth. Noticeably, financial development is commonly missed in expenditure-growth model despite that the variable has both theoretically and empirically been identified as a macroeconomic growth factor. We posit that omission of this variable may cause model misspecification, the result of which may mislead. This opens a new debate that motivates the present study to remodel the expenditure-growth model by adding financial development into the expenditure-growth model based on the growth-factor positivity hypothesis.

4. MODEL SPECIFICATION, DATA AND METHOD

4.1 Model Specification

The traditional expenditure-growth model specification by Jelilov and Musa [39] and Olulu et al. [40], who relied on Keynesian theory and on Wagner's Law of public expenditure, is expanded to include financial development vector:

$$GROWTH_t = \beta EXP_t + \gamma X_t + \varepsilon_t \qquad (1)$$

where *GROWTH* is real gross domestic product (RGDP) that measures annual gross value of productive activities in the economy, expressed in billion Naira (local currency) at 2010 constant market prices. *EXP* is the country's level of aggregate expenditure, in billion Naira, X_t is a financial development (*FIN*) vector and ε_t is white-noise error with zero mean. In explicit model, government expenditure is discomposed into government capital expenditure (*EXPc*) and government recurrent expenditure (*EXPr*). These are often used in the literature to measure a nation expenditure. Also, following Law and Singh [32], three financial development indicators — financial domestic credit (*FINdoc*) and private sector credit (*FINpsc*) and liquid liabilities (*FINllt*) — are employed in the analysis to capture

various aspects of financial development, as well, exchange rate (*EXC*) is included as suggested in literature, specifically, *EXC* is an alternative proxy to other financial variables that might not capture in this paper. Finally, the expenditure-growth model is explicitly expressed as:

$$GROWTH_t = \beta_1 EXPc_t + \beta_2 EXPr_t + \gamma_2 FINpsc_t + \gamma_1 FINdoc_t + \gamma_3 FINllt_t + \delta_1 EXR_t + \varepsilon_t \qquad (2)$$

where *GROWTH* and ε remain as defined above, $EXPc$ is the component of government expenditure on public construction (roads and civic centers), airports, health, education, telecommunication, electricity generation. $EXPr$ is the components of government expenditure on economic services, social and community services, transfer and administration, data are in billion Naira. $FINdoc$ isfinancial domestic credit defined as credit to the public sector (federal and local governments and public enterprises); $FINpsc$ is private sector credit expressed as the value of banking intermediary credits to the private sector; while $FINllt$ is financial liquid liabilities and measures financial depth, consisting of currency in circulation plus demand and interest-bearing liabilities of banks and nonbanks financial intermediary activities, and financial breath, consisting of ability of banks to mobilize funds and size of the banks. There are a number of proxies in the literature used for capturing financial development indicators. In our analysis, we employed three financial indicators based on the view that they are major sources of financing in many developing countries including Nigeria; and also they are commonly considered as proxies used in recent studies, for example, Law et al. [41]. Thus, we argue that an effective financing and channel of funds between depositors and investors for growth of economy could only be achieved if these three indicators

are well developed. EXR is an official exchange rate of local currency units relative to the U.S. dollar. All the variables are expressed in logarithm to maintain the same scale of units, except EXR which has already been defined in percentage.

4.2 Data, Method and Correlation Matrix

Annual time series data is used in this study. Real GDP, government capital expenditure, government recurrent expenditure, financial domestic credit, financial private sector credit and financial liquid liability data are collected from the Central Bank of Nigeria (CBN) databank, while the official exchange rate data is collected from World Development Indicators. All the datasets span from 1981 to 2016. This period covers the highest public spending and the period at which the economy experienced two major economic cycles: recession and oil price slump.

The Ordinary Least Squares (OLS) technique is employed to test the effects of government expenditure and financial development indicators on economic growth. The technique is mostly used in social sciences to test linear relationships, and for its ability to make statistical inferences and to produce estimate that can be generalized to real-life situations [42]. Unlike Granger-causality and other nonlinear estimators, which may not be able to surmount the possible problem of endogeneity and simultaneity or collinearity if they exist, OLS has been found to produce efficient and unbiased estimates even if collinearity exists [43]. It has the power to capture individual effect of an explanatory variable in a multiple model and to hold constant the effects of others, a distinguishing feature better than other multiple regression approaches like generalized least squares (GLS) and weighted least

Table 1. Correlation matrix, mean and standard deviation (SD) information

	Growth	EXPc	EXPr	FINpsc	FINdoc	FINllt	EXC	Mean	SD
GROWTH	1.00							10.22	0.53
EXPc	0.87	1.00						4.79	1.96
EXPr	0.69	0.89	1.00					4.76	1.82
FINpsc	0.76	0.94	0.92	1.00				9.77	0.81
FINdoc	0.80	0.80	0.77	0.85	1.00			9.69	0.83
FINllt	0.21	0.56	0.72	0.76	0.53	1.00		8.02	0.27
EXC	0.94	0.84	0.71	0.79	0.83	0.30	1.00	76.46	71.94

Note: GROWTH = real economic growth; EXPc = government capital expenditure; EXPr = government recurrent expenditure; FINdoc = financial domestic credit; FINpsc; financial private sector credit; FINllt = financial liquid liability; EXC = official exchange rate

squares (WLS). In addition, OLS enables to exactly know the degree at which an explanatory variable predicts dependent variable if there is a change in such an explanatory variable.More so, financial variables are highly sensitive and their estimates can be biased for a variety of reasons, especially from measurement error and omitted variable bias, which OLS minimizes, and produces unbiased, consistent and efficient estimates if its properties are met. However, the variables on which the technique is employed are to be stationary. To ascertain this, we employ Augmented Dickey-Fuller (ADF) and Phillips-Perron unit root tests in the section that follows.

Table 1 shows correlation matrix, mean and standard deviation (SD) statistics of the variables employed in the analysis. The correlation results reveal that the degree of association between most of the variables is weak since the correlation coefficients among the variables are less than maximum value of 0.90 suggested in the literature, except the correlation between economic growth and exchange rate (0.94) as well as between government capital expenditure (0.94), government recurrent expenditure (0.92) and financial private sector credit. This possibly could be the reason that the process of financing government expenditure is much associated with borrowing financial resources from private investors. Nonetheless, the correlation coefficients between economic growth and the independent variables of interest are admissible. Thus, there is little risk of multi-collinearity problem with the data. The treatment requires dropping one of the variables with a high correlation coefficient. However, considering the conceptual framework this study intends to test, these variables are relevant for the analysis, thus dropping one of the variables would lead to variable bias and, if such action is taken, it would bias the estimates of the regression parameters,

which is more severe than any existence of collinearity in the model [44,45]. Interestingly, all the variables demonstrate a strong relative importance as the mean values are greater than standard deviation, and implying that the variables exhibit significant variation in terms of magnitude and have stable time-series movements.

5. RESULTS

The purpose of this analysis is to test the hypothesis that government expenditure and banking sector development indicators have positive impact on the growth of the Nigerian economy. Prior to the estimation of the models, ADF and PP unit root tests were conducted to ascertain the level of integration order at which the variables are stationary. The null hypothesis that the variables contain unit roots at level are not rejected, meaning that they contain random work and not stationary, except for liquid liability, however, PP test still indicates that the variable is not stationary. However, all the variables are stationary after first differenced at which the hypotheses are rejected at least at better 5% significance level. Since all the variables are integrated of order 1, $I(1)$, this indicates that economic inferences drawn from the analysis are valid.

Table 3 presents the estimated coefficients obtained from the data analyzed using OLS. We find aggregate government expenditure and aggregate financial development to be statistically significant. Interestingly, the regression signs of the two variables are different, *EXPag* is negative while *FINag* is positive, and the absolute values of the coefficients are substantially different in magnitude, 0.60 and 0.12 respectively for *FINag* and *EXPag*. This shows that financial sector

Table 2. ADF and PP unit root tests

	Level		First difference		Results
Variables	**ADF**	**PP**	**ADF**	**PP**	
GROWTH	-0.097	-1.212	-3.230**	-3.045**	*I*(1)
EXPc	-1.273	-1.261	-5.835*	-5.867*	*I*(1)
EXPr	-1.782	-1.782	-5.900*	-5.900*	*I*(1)
FINpsc	-2.687	-1.367	-3.175**	-13.882*	*I*(1)
FINdoc	-1.084	-1.082	10.520*	-13.046*	*I*(1)
FINllt	-3.994*	-1.878	-4.4731*	-13.649*	*I*(1)
EXC	-1.320	-1.154	-3.645*	-3.646*	*I*(1)

Notes: ADF and PP test equations include intercept term. For ADF test, Schwarz Info Criteria (SIC) is used to select the optimal lag length, while Barlett Kernel test equation is used for the selection of lag length for the PP. Coefficient is significant at: *1and **5 percent

development is a crucial determinant of Nigerian economic growth. Based on this finding, on average, a 10% point increase in Nigerian financial sector performance may likely promote real GDP of the country by 6.0%. Accordingly, on average, for every 10% increase in total government spending may likely to lead to 1.2% decrease in real GDP, holding other factors constant, in line with Okoro's [46] study, among others. Though the significance of these variables is ordinarily expected, however, one would have predicted total government spending to influence economic growth rather than financial sector development, but the empirical prediction is inverse. This contradicts the Keynes theory of circular flow of money that states that an injection of money into the economy in form of government spending expands total output in the economy. Practically, in case at hand, the negative impact of total government expenditure on economic growth could trace to poor economic infrastructure resulting from abandonment, delay, termination and discontinuity of many projects due to instability in government. This is feasibly experienced across the country which might reflect the decrease in output.

Turning to model 2, where total government expenditure is decomposed into capital expenditure and recurrent expenditure; and banking sector development is decomposed to private sector financial credit, domestic financial credit; and liquid liability; and exchange rate is included as a control variable. All the variables are statistically significant at least at the 5% significance level. The result reveals that capital expenditure on economic infrastructure, especially on education, health, agriculture, construction, transport and communication, has a positive effect on growth, and its effect size is relatively substantial. On average, a 10% increase in capital spending will lead to about 2.4% increase in real output.

Contrarily, our result shows that recurrent expenditure has an adverse effect on growth. If government recurrent expense increases by 10%, it may lead to a decrease in GDP by 1.0%. Though the effect size might appear tenuous, this reflects the preference of the government given and huge allocation to internal security, spending on national executive and defense and public debt servicing which do not translate to economic growth. This is in line with the

Table 3. Estimated coefficients

Model 1			Model 2			Robustness check	
	Coeff	t-stat		Coeff.	t-stat	Coeff.	t-stat
EXPag	-0.124** (0.046)	-2.717	EXPc	0.238* (0.068)	3.522	0.239* (0.068)	3.419
FINag	0.601* (0.072)	8.348	EXPr	-0.102* (0.028)	-3.600	-0.102* (0.028)	-3.529
			FINpsc	-0.503** (0.228)	-2.201	-0.495*** (0.269)	-1.840
			FINdoc	0.168** (0.065)	2.569	0.166** (0.073)	2.277
			FINllt	0.597** (0.283)	2.109	0.589*** (0.316)	1.863
			EXC	0.004* (0.001)	4.266	0.004* (0.001)	4.184
			$\hat{Y}^2$	-	-	-0.001 (0.020)	-0.060
$\bar{R}^2$	89%			94%		93%	
DW	1.19			1.27		1.28	
F-stat	146.93			93.56		77.45	
Ob.	36			36		36	
			RAMSEY test	8.227 [0.00]		7.997 [0.00]	
			LM serial correlation	3.730 [0.03]		3.706 [0.03]	
			Heteroskedasticity	1.567 [0.19]		1.794 [0.13]	

Note: EXPag = aggregate government expenditure; FINag = aggregate financial sector development; EXPc, EXPr, FINpsc, FINdoc, FINllt and EXC are defined in the text. DW = Durbin-Watson. Ob = number of observation. Coeff. = estimated coefficient. t-stat = t statistic. Coefficient is significant at: *1, **5 and ***10 percent. Standard errors are in parentheses. p-values are in brackets

Egbetunde and Fasanya [47] who confirm that high cost of governance is the main factor that is responsible for outrageous recurrent expenditure in Nigeria. In support of this scenario, Nwachukwu [48] and Ebonugwo [49] emphasize that about two-thirds of the government's revenues go into debt services and recurrent expenses which cut economic growth projection and education funding of the country.

Similarly, the three banking development indicators: liquid liability, domestic credit and private sector credit, are statistically significant. However, liquid liability and domestic credit have predicted positive impacts on growth at 5 percent significant level each. The magnitude of the effect size of liquid liabilities (0.60) is larger, perhaps being a consistent determinant of economic growth in developing economies, than domestic credit's (0.17). On average, a ratio of 10% expansion of liquid liabilities may lead Nigerian economy to grow by 6.0%, while a ratio of 10% rise in lending credit to households, in term of credit cards and mortgage loans may lead the economy to grow by 1.7%. Surprisingly, private credit appears to have negative (-0.50) and statistically significant effect on growth over the period observed. This reflects the degree the private sectors lack financial resources to finance their investment projects necessary for economic growth in Nigeria. Thus, this suggests a need to attract more foreign direct investment and credit inflow for boosting productivity of the private sector in the country. The result revealed that liquid liabilities and domestic credit have much influence on economic growth, in line with Caporale et al. [50]. The positive significant effect of liquid liabilities shows that structuring of the banking sector, like capitalization approach, embarked upon by the apex bank yields a better outcome and appears to have developed Nigerian banks. More so, access of households to finance has likely increased, which has enabled even those with no collateral to engage in productive entrepreneurial activities. Both effects have a progressive impact on the country's economy. Theoretically, credits granted to private firms for financing investment projects are essential to positively affect growth, however, this is contrary to the result discovered in this analysis for the case Nigeria. This could be the fact that there might be huge outflows of credits granted to private firms; or no substantial collaboration between local and foreign banks (which has been the main source of credit finance in many transition economies) for financing investment projects in Nigeria; or both,

that resulting to negative impact of lending credit to private sector on the economy of the country. Finally, exchange rate has a positive and statistically significant relationship with economic growth, though the coefficient is trivial. The weak Nigerian Naira-US dollar exchange rate appreciation effect on growth may stem from oil price fluctuations, as Nigerian economy heavily depends on crude oil; productivity differentials; capital outflows; and financial uncertainties, among a myriad of factors. Perhaps, this might have prompted the drastic step taken by the current administration by switching Nigerian exchange rate from Naira-US dollar to Naira-China Yuen with the aim to boost the economy through exchange rate. This empirical result is consistent with Ibrahim and Chancharoenchai [51], among others.

To this point, we have assumes that government expenditure and financial development indicators have significant potential to boost economic growth; that our model is correctly specified; and that OLS method has power to take major model errors such as measurement error and omitted bias into account. To check this, we added a fitted term ($\hat{Y}^2$) to check the robustness of our model whether the coefficients of the parameters will significantly change. As presented in the third column, Table 3, the fitted term is the square of estimated *GROWTH*. We expect the $\hat{Y}^2$ coefficient to be insignificantly different from zero if the equation model is correctly specified. The absolute $\hat{Y}^2$ coefficient turns out to be statistically insignificant, and the coefficients, as well as the overall fit of the initial model, are not substantially different compared to the new model, implying that the model is correctly specified. Though RAMSEY test indicates that the model is unfit, but the test does little more than signal. However, as dictated by heteroskedasticity and Breusch-Godfrey serial correlation diagnostic tests, we can affirm that there is absence of misspecification and of serious serial correlation. Moreover, the performance of the models is satisfactory as reflected by the adjusted R^2 and significant *F*-statistics.

In sum, the findings of this study have some important policy implications. There is a need to increase government expenditure on which the focus should be more on capital expenditure; and also lending credit to households should be increased as these could help fostering growth in Nigeria. However, the government should be aware of trade-off of the monetary approach as

excess supply of money could increase inflation, the effect of which may greatly devastate growth.

6. CONCLUSION

In this paper, we examined the relationship between government expenditure and economic growth by the inclusion of three financial development indicators into expenditure-growth model that are found to be major theory-based macroeconomic growth variables. This empirical confirmation of the effects of disaggregated government expenditure and financial development has been for the first time in this paper. Based on the evidence we claimed that omission of these financial indicators could cause misspecification of the expenditure-growth model, the result of which could mislead.

We found that government capital expenditure has a positive impact on economic growth. This probably reflects the expenditure on infrastructure especially on education, health, agriculture, construction, transport and communication in Nigeria. Contrarily, the recurrent expenditure has an adverse effect on growth, which could result from much preference the authority has been given to internal security, spending on national legislative and defense and public debt servicing over decades which do not translate to economic growth. Our findings equally suggest that *FINdoc* and *FINllt* are crucial to *GROWTH* in Nigeria. More importantly, liquid liabilities seems to be a consistent determinant of growth in Nigeria. This confirms that households' consumption stimulates economic growth more than private sector, indicating that Nigerian capital market is not well developed and has not been providing adequate finance for productivities of firms; or there might have been huge outflows of credits granted to private firms; or no substantial collaboration between local and foreign banks for financing investment projects in Nigeria. We submit that a well-developed financial system could enhance effective financing and channeling of funds between depositors and investors which can help to stimulate the economic growth in Nigeria. Additionally, the benefits of higher levels of financial development could be realized in when economy grows and becomes mature.

In sum, the negative effect of FINpsc is more dominant than the positive effect of capital expenditure. The intuition behind this finding is that the higher the credits granted to private sectors, the more the domestic borrowing by the government for financing its expenditures that do little or not translate and impact on economic growth. This has some important policy implication considering economic growth of Nigeria.

Nonetheless, some limitations are noted in this paper. First, the paper only focused on Nigeria as a case study, however, the result is limited to generalize. A panel case study could be conducted to compare with this study; and also, to more fully explore the relationships among the variables. Second, the evidence of a significant negative relationship between *EXPr, FINpsc* and *GROWTH* as oppose the theory requires further research. Perhaps growth-led variables like trade openness may be additionally added to the model in future to look for a positive relationship rather than a negative one. However, caution should be taken when selecting and testing additional variables to replicate and extend the findings as exchange rate may serve as an alternative proxy for many of these variables. Besides, the selection of any new variable should be theory-driven, with an aim to increase our understanding on expenditure-finance-growth relationship. Third, high correlations between the identified variables might have inflated standard errors, resulting to decrease in power to detect the significance of the fitted term. Nonetheless, our study extends scientific research in the area of focus, sheds some light on the relationships among government expenditure, financial development and economic growth. In addition, the findings of this study have both academic and practical relevance as regard to the importance of financial development in determining economic growth.

7. RECOMMENDATIONS

Based on the findings of the study at hand, it is recommended that the government should often consider external sourcing for financial resources than domestic borrowing for financing its expenditures. This would make credit adequately available for domestic investments which in turn could enhance the growth of the country's economy. In addition, the government needs to structure its monetary instruments in ensuring domestication of credits granted to private sectors. The focus should be on growth-friendly fiscal adjustment, with a shift in spending toward productive outlays accompanied by effective domestic revenue mobilization, broadening of tax base and strengthening of revenue administration. As well, a financial resilience

system should be developed for ensuring adequate provision of liquid capital and improving resolution frameworks to reduce recurrent expenditure. The public expenditure should be increased, the focus should be more on capital expenditure; and credit lending to households should be increased as these could help fostering growth in Nigeria. The multiplier effects of these policies may enable people to escape from poverty that grinds many in the country.

DISCLAIMER

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Idris M, Bakar R. Public sector spending and economic growth in Nigeria: In search for of a stable relationship. Asian Research Journal of Arts & Social Sciences. 2017;3(2):1-19.
2. Nurudeen A, Usman A. Government expenditure and economic growth in Nigeria, 1970-2008: A disaggregated analysis. Business and Economics Journal. 2010;4:1-11.
3. Demirgüç-Kunt A, Levine R. Finance, financial sector policies, and long-run growth. Policy Research Working Paper WPS4469, The World Bank, Washington, DC; 2008.
4. Central Bank of Nigeria (CBN). Statistical Bulletin, Abuja, Nigeria; 2017.
5. Idenyi OS, Obinna NJ, Promise EA, Ogbonnaya OT. Analysis of government expenditure and economic growth in Nigeria: Application of co-integration methodology. Asian Research Journal of Arts & Social Sciences. 2016;1(4):1-17.
6. Central Bank of Nigeria (CBN). Statistical Bulletin, Abuja, Nigeria; 2016.
7. Central Bank of Nigeria (CBN). Statistical Bulletin, Abuja, Nigeria; 2015.
8. Omoke P. Government expenditure and national income: A causality test for Nigeria. European Journal of Economics and Political Studies. 2009;2(2):1-11.
9. Koeda J, Kramarenko V. Impact of government expenditure on growth: The case of Azerbaijan. IMF Working Papers. 2008;8:1-18.
Available:https://ssrn.com/abstract=11537 36
10. Uguru LC. The link between public debt and government expenditure pattern: The Nigeria experience. Journal of Business and Management. 2016;18(1):37-41.
11. Chete A, Adeoye S. Human resources development in Africa. The Nigerian Economic Society Selected Papers for the 2002 Annual Conference, 2002;79-102.
12. Abgonkhese AO, Asekome MO. Impact of public expenditure on the growth of Nigerian economy. European Scientific Journal. 2014;10(28):219–229.
13. Oni AA, Ozemhoka AM. Impact of public expenditure on the growth of Nigerian economy. European Scientific Journal. 2014;10(28):219-229.
14. Taiwo M, Abayomi T. Government expenditure and economic development: Empirical evidence from Nigeria. European Journal of Business and Management. 2011;3(9):18-28.
15. Agenor PR. Health and infrastructure in a model of endogenous growth. Journal of Macroeconomics. 2007;28(2):768–774.
16. Gbosi AN. Contemporary issues in Nigeria public finance and fiscal policy. Port Harcourt, Pam Unique Publishers; 2002.

17. Kimaro EL, Keong CC, Sea LL. Government expenditure, efficiency and economic growth: A panel analysis of Sub-Saharan African low income countries. African Journal of Economic Review. 2017;5(2):34–54.

18. Rioja F, Valev N. Does one size fit all? A reexamination of the finance and growth relationship. Journal of Development Economics. 2004;74(2):429-447.

19. Ductor L, Grechyna D. Financial development, real sector, and economic growth. International Review of Economics & Finance. 2015;37:393–405.

20. Durusu-Ciftci D, Ispir S, Yetkine H. Financial development and economic growth: Some theory and more evidence. Journal of Policy Modeling. 2017;39(2): 290-306.

21. Demetriades PY, Law SH. Finance, institutions and economic development. International Journal of Finance and Economics. 2006;11:245–260.

22. Shan J. Does financial development 'lead' economic growth? A vector auto-regression appraisal. Applied Economics. 2005;37(12):1353-1367.

23. Afzal M, Abbas Q. Wagner's law in Pakistan: Another look. Journal of Economics and International Finance. 2010;2(1):12-19.

24. Usman O, Agbede EA. Government expenditure and economic growth in Nigeria: A cointegration and error correction modeling. MPRA Paper, University Library of Munich, Germany; 2015.

25. Iheanacho E. The contribution of government expenditure on economic growth of Nigeria disaggregated approach. International Journal of Economics & Management Sciences. 2016;5(5):1-8.

26. Olorunfemi S. Public investment and economic growth in Nigeria: An autoregressive model. Journal of International Finance and Economics. 2008;8(2):63-78.

27. Abu N, Abdullahi U. Government expenditure and economic growth in Nigeria, 1970-2008: A disaggregated analysis. Business and Economic Journal. 2010:4(3):237-330.
   Available:http://astoujournals/com

28. *Jiranyakul K. The relationship between government expenditures and economic growth in Thailand. Journal of Economics*

and Economic Education Research. 2007;8(2):1–9.

29. Josaphat PK, Oliver M. Government spending and economic growth in Tanzania (1965-1996). CREDIT Research Paper; 2000.

30. Ram R. Government size and economic growth: A new framework and some empirical evidence from cross-section and time series data. American Economic Review. 1986;76:191-203.

31. Fan S, Rao N. Public spending in developing countries: Trends, determination, and impact. EPTD Discussion Paper No. 99 (USA); 2003.

32. Gregorious A, Ghosh S. Fiscal policy in an endogenous growth model with public capital and pollution. Japanese Economic Review. 2007;56(6):67-84.

33. Bleaney M, Gemmell N, Kneller R. Testing the endogenous growth model: Public expenditure, taxation, and growth over the long-run. The Canadian Journal of Economics. 2001;34(1):36-57.

34. Gemmell N, Kneller R. The impact of fiscal policy on long run growth. European Economy. London; 2001.

35. Niloy B, Emranul MH, Denise RO. Public expenditure and economic growth: A disaggregated analysis for developing countries. JEL, Publication; 2003.

36. Singh T. Financial development and economic growth nexus: A time-series evidence from India. Applied Economics. 2008;40(12):1615-1627.

37. Yu J, Hassan MK, Sanchez BA. Re-examination of financial development, stock markets development and economic growth. Applied Economics. 2012;44(27): 3479-3489.

38. Law SH, Singh N. Does too much finance harm economic growth? Journal of Banking & Finance. 2014;41:36–44.

39. Jelilov G, Musa M. The impact of government expenditure on economic growth in Nigeria. Sacha Journal of Policy and Strategic Studies. 2016;5(1):15-23.

40. Olulu RM, Erhieyovwe EK, Andrew U. Government expenditures and economic growth: The Nigerian experience. Mediterranean Journal of Social Sciences. 2014;5(10):89-94.

41. Law SH, Lee WC, Sing N. Revisiting the finance-innovation nexus: Evidence from a non-linear approach. Journal of Innovation & Knowledge. 2017;3(3):1453–153.

42. Bakare AS. Local content policy in oil sector and the capacity utilization in nigerian manufacturing industry. Business and Management Review. 2011;1(6):82–92.

43. Studenmund AH. Using econometrics: A practical guide. Pearson Education, Inc.; 2005.

44. Adedeji AN, Sidique SF, Rahman AA, Law SH. The role of local content policy in local value creation in Nigerian oil industry: A Structural Equation Modeling (SEM) approach. Resources Policy. 2016;49:61-73.

45. Radosevic S, Yoruk E. Entrepreneurial propensity of innovation systems: Theory, methodology and evidence. Research Policy. 2013;42:1015–1038.

46. Okoro AS. Government spending and economic growth in Nigeria. Global Journal of Management and Business Research Economics and Commerce. 2013;13(5):21-30.

47. Egbetunde T, Fasanya IO. Public expenditure and economic growth in Nigeria: Evidence from auto-regressive distributed lag specification. Zagreb International Review of Economics & Business. 2013;16(1):79-92.

48. Nwachukwu C, Nelson C, Jimoh AM. IMF warns Nigeria of debt crisis, urges diversification. Guardian Newspaper; 2018.
Available:https://guardian.ng/news/imf-warns-nigeria-of-debt-crisis-urges-diversification/

49. Ebonugwo M. ASUU strike: Our position on varsity funding — Babalakin, Chair, F G Negotiating Team. Vanguard Newspaper; 2018.
Available:https://www.vanguardngr.com/2018/11/asuu-strike-our-position-on-varsity-funding-babalakin-chair-f-g-negotiating-team/

50. Caporale GM, Rault C, Sova R, Sova A. Financial development and economic growth: Evidence from ten new EU members. Discussion Papers of DIW Berlin; 2009.
Available:http://www.diw.de/english/products/publications/discussion_papers/27539.html

51. Ibrahim MH, Chancharoenchai K. How inflationary are oil price hikes? A disaggregated look at Thailand using symmetric and asymmetric cointegration models. Journal of the Asia Pacific Economy. 2014;3:409-422.