

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

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

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 (Taiwo and Abayomi, 2011). 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, Idris and Bakar (2017), Jelilov and Musa (2016), Iheanacho (2016), Olulu et al. (2014), Oni and Ozemhoka (2014), and Nurudeen and Usman (2010). 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 theoretical based growth-led macroeconomic factor and it has been evident that it influences output growth (Law and Singh (2014), particularly through its intermediary role in allocating financial resources to productive uses. According to Demirgüç-Kunt and Levine (2008), 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 (2014) point that a developed financial system attracts both local and foreign investments which mostly 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 common aim for spinning-off their economies. Modelling the trio in a single linear model, which has been overlooked, may generate new

47 information. Thus, this present study contributes to knowledge in two important aspects different
48 from the previous studies. First, it assesses the influences of government expenditure and
49 financial development on economic growth; second, it expands the traditional expenditure-growth
50 model, with aim that if there is a clear evidence that our model is correctly specified, then,
51 expenditure-growth model need to be retested; empirical confirmation of which is explored for
52 the first time in this paper.

53
54 Next sessions of the paper are organized as follows. Section 2 lays out the profile of public
55 expenditure and economic growth in Nigeria. Section 3 covers literature review. Section 4 details
56 model specification, data and method. Section 5 presents the results, while section 6 gives
57 conclusion.

58 59 **2. Background to the Study**

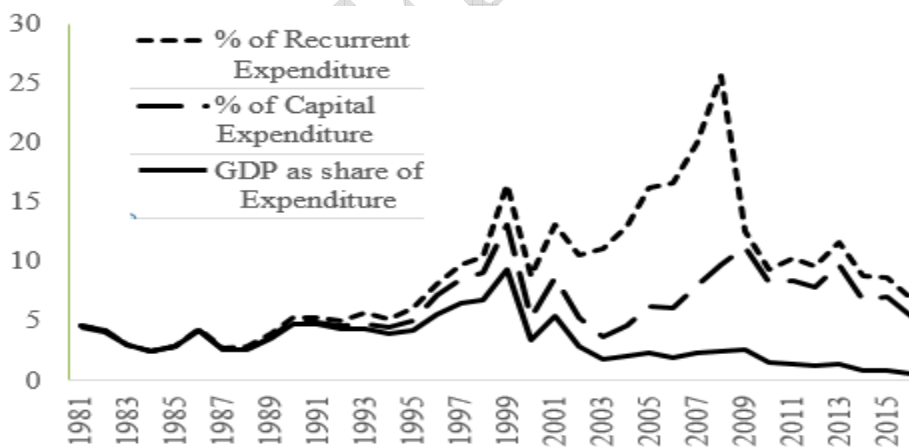
60 Public expenditure is mostly considered as a key determinant and a significant factor for economic
61 growth. The structure and efficiency of such expenditure often reflects in the provision of
62 favourable public goods that can enhance productivity and output growth. And this has often been
63 the strategy of many developing nations that target bridge output gap. In Nigeria, public
64 expenditure has been increasing over the years resulting mainly from increased spending on
65 administrative procurement, debt service, high national security outlay and infrastructural
66 expansion and other capital development in the country. In spite that Nigeria receives enormous
67 revenues from crude oil on which its economy heavily relies, the oil wealth is yet to
68 paradoxically translate to growth due to uncertainty in the oil market, interest payments on debts
69 and high cost of governance in the country. Though, Muhammadu Buhari administration has
70 been prudent in its expenditure for ensuring that adequate funds are reserve for provision of
71 public utilities demanded by the growing population. In previous years, many national
72 development plans were designed for generating revenue for public expenditure and series of
73 fiscal policies were formulated for controlling public expenditure (e.g. reduction of growth of
74 government wage bill; reduction in government subsidies) for ensuring economic stability in the
75 country. For instance, the structural adjustment programme (SAP) that was introduced in 1986
76 was targeted to reduce the public spending. And during the first National Rolling Plan (1990-
77 1992), government aimed at reducing the budgetary deficit and government expenditures were
78 made more cost-effective and kept levels that were consistent with the nation's resources,
79 realistic growth targets, and general economic stability.

80
81 Adequate funds are required to finance productive capital projects. Part of the primary aim of the
82 SAP reform was to ensure diversification of the economy, reduce public sector dominance in
83 domestic activities, reallocate resources to private sectors and encourage market development.
84 However, recurrent expenditure on yearly basis is most often increased and higher than capital
85 expenditure in the budget. Available records show that the aggregate share of recurrent
86 expenditure to the total expenditure stood at 68.9%, 64.9% in 2008 and 2009, respectively,
87 which increased to 81.4%, 82.4% and 86.8% in 2014, 2015 and 2016, respectively, and this
88 appeared to be the highest spending in the country's financial record. For the government capital
89 expenditure, the aggregate share to the total expenditure decreased respectively from 31.2% and
90 35.1% in 2008 and 2009, to 18.6%, 17.6% 13.2% in 2014, 2015 and 2016 (CBN, 2017). On
91 disaggregation, recurrent expenditure in Nigeria is noticeably more than triple the capital
92 expenditure. Idenyi et al. (2016) observed that small allocation of resources for capital projects is

93 seen to be responsible for economic instability with particular reference to high rate of
94 unemployment, high incidence of poverty and low standard wellbeing and high infrastructural
95 gap in the economy.

96
97 The statistics on government spending in local currency value published by the Central Bank of
98 Nigeria (CBN) (2015; 2016) show that total government expenditure (capital and recurrent) and
99 its components rise in last three years. For instance, total recurrent expenditure increased to ₦4,
100 178.59 billion, ₦3, 426.94 billion and ₦3, 831.98 billion in 2016, 2015 and 2014, respectively,
101 as compared to ₦2, 127.97 billion, ₦2, 117.36 and ₦1, 589.27 billion in 2009, 2008 and 2007,
102 respectively. In the same manner, the government capital expenditure on defense, internal
103 securities, education, health, agriculture, construction, and transport and communication
104 increased during the period under review, particularly the trend increased in 2009 and 2013. The
105 aggregate value in 2015 stood at ₦818.35 billion and ₦783.13 billion in 2014 but slightly
106 dropped to ₦634.79 billion in 2016. However, the values are marginally greater as compared to
107 ₦552.36 billion and ₦759.28 billion recorded in 2006 and 2007 respectively. In 2017, the
108 expenditure on capital projects stood at ₦1.5 trillion, the highest capital expenditure ever
109 achieved in Nigeria but below the recurrent capital like the trend in previous years.
110

111 The rapid increase in aggregate expenditure could result from: first, relative stability in exchange
112 rate of naira against dollar, which is more likely a consequence of active participation of CBN in
113 foreign exchange market; second, the recent meteoric rise in the international crude oil market
114 price increases revenue for the government to expend on growth-led projects; and, third, the
115 increased demand for public infrastructure like roads, communication, power supply, education
116 and health.
117



118
119 Figure 1: Disaggregate government expenditure and growth relationship
120

121 The effort of the government on the annual increase in its expenditure is to ensure a healthy
122 economy for the nation through increased output. Despite this effort, the rising in government
123 expenditure appears not to have meaningfully spurred the growth. Perhaps, this might be one of
124 the criteria for World Bank in ranking Nigeria as low-income country amidst its growth-led
125 resources. As shown in Figure 1, the contribution of public expenditure, both recurrent and
126 capital to the country's economic growth is not matched as expected considering the trend in the
127 last two decades. The gap between the growth and expenditure rates continues since the political

128 transitions and adjustment periods and wide in recent time. From 2009 onwards, the annual
129 aggregate expenditure increasing rate is more than 8%,however, the annual growth rate of the
130 GDP as a share of expenditure is decreasing, stood at about 0.5% in 2015. This could be a
131 reflection of disequilibrium of balance of payment in the economy or there are leakages in
132 government expenditure or the expenditure do not support investment or both. For healthier and
133 stabilized economy,quality public expenditure is necessaryfor maintaining high employment,
134 reasonable price stability, and steady economic growth rate. In many studies (Idris and Bakar,
135 2017; Omoke, 2009), prudent spending is seen to foster stabilization and thiscould be achieved
136 through sound fiscal policies. Beyond this, given thenarrow revenue base of thegovernment as a
137 result of sharp fall in oil price, andhigh budget deficits,government needs to reduce recurrent
138 expenditureand hence reallocate resources in favour ofproductive investment.

139

140 **3. Literature review**

141 There has been a strong view on the extension of classical and neo-classical prepositions that
142 factor accumulation and technological progress cannot adequatelyexplain changes in economic
143 growth.Public expenditurehas been discovered asalso an important determinant of economic
144 growth in recent literature.However, not only that the relationship between government
145 expenditure and economic growth have produced different results, but also financial
146 development, a theoretical based growth-led macroeconomic factor, commonly missed in
147 expenditure-growth models. The omission of this variable in the growth model is sensitive to
148 model bias, which opens for a new debate. In Keynesian philosophical view, it is assumed that
149 fiscal policy intervention, with respect to government expenditure, changes output growth. A
150 large extent of studies, for example,Jelilov and Musa (2016),Iheanacho (2016),Uguru (2016),Oni
151 and Ozemhoka (2014),Nurudeen and Usman (2010),Koeda and Kramarenko (2008) and
152 Jiranyakul (2007)support that quality government expenditure is growth-enhancing. This
153 hypothesis is consistent with endogenous growth theory which is linked to the proposition of
154 Keynesian thought.Though, the classical thought proposes that there should be laissez-
155 faire,meaning that the private individuals should carry out economic activities for the
156 growth of the economy. However, the market failure makes government intervention, in
157 this case,expenditure, becomesapparent.

158

159 Expenditure is categorized into recurrent and capital based on the cost structure of
160 government. It hasa functional relationship with public revenue and/or financethrough
161 which economic authoritiesinfluence the growth of their economies (Agenor, 2007;
162 Chete and Adeoye,2002).Expenditures on capital projects: infrastructure; education,
163 health;science and technological development and other needs; is seen as growth driven and
164 in many cases,allocationfor these expendituresisnot often a function of the size of
165 available revenueonly, but also depends on the amount allocated to recurrent
166 expenditure (Agbonkhese and Asekome, 2014). No doubt that the allocation of
167 available resources between these two expenditures for attainment of sustainable growth
168 is crucial in any economy.

169

170 Oni and Ozemhoka (2014) view that government aggregate spendingis usually a useful fiscaltool
171 in the process of economic growth and development, especially in controlling inflation,
172 unemployment, depression, balance of payment and foreign exchange rate stability. They express
173 thatan increase ingovernment spending would cause aggregate demand to rise and production

174 and supply of goods and services follow the same direction. As a result, the increase in supply of
175 goods and services coupled with a rise in the aggregate demand would reduce unemployment
176 and halt depression. In the case of contraction or low spending (fiscal instability) as Idris and
177 Bakar (2017) put forward, aggregate demand and output would fall, but would enable a possible
178 return to surplus budget and ensures fiscal balance within the public finance. Taiwo and Abayomi
179 (2011) add that government spending and tax rate are two main fiscal tools often adopted in an
180 economy for stabilization. They hypothesized that a rise in the government expenditure has the
181 same effect as a reduction in the tax rate on either aggregate output or demand; similarly, the
182 effect of a reduction in the government expenditure is the same as increase in tax rate.

183
184 Public revenue mostly spends on provision of private and social goods in appropriate mix. It has
185 been put forward that adequate provision of these goods directly improves productivity, which in
186 turn can stimulate the economy. As such it mostly signifies how efficient the
187 allocated resources are. Agenor (2007) observed that if the provision is left to be provided
188 by private individuals, the output will be inadequate or outrageously expensive. Gbosi (2002)
189 assert other characterization of public spending. He divides public spending into transfer and
190 non-transfer spending. The transfer spending characterized the payments on debts,
191 unemployment benefits and administrative costs incurred. The non-transfer spending includes
192 expenditure incurred for the use of goods and services which may be for consumption (recurrent
193 expenditure) or investment (capital expenditure) purpose. Kimaro, Keong and Sea (2017)
194 continue the argument that if government is to stimulate productivity it needs to give much
195 consideration on capital expenditure. Nonetheless, in as much as public expenditure is highly
196 desirable, particularly a growth-driven expenditure, requires a need-based financing (Rioja and
197 Valev, 2004).

198
199 Finance is a theoretical based growth-led macroeconomic factor that has evident to influence
200 output growth, particularly through its intermediary role in allocating financial resources to
201 productive uses (Ductor and Grechyna, 2015; Yu, Hassan and Sanchez 2012; Demirgüç-Kunt
202 and Levine, 2008; Demetriades and Law, 2006, Shan, 2005). An efficient finance often reflects
203 development of a financial system. According to Demirgüç-Kunt and Levine (2008), a well-
204 developed financial system reduces information and transactions costs the effect of which
205 promotes economic activity. Demetriades and Law (2006) emphasize that an efficient financial
206 system promotes growth as it channels resources to most productive uses and fosters more
207 efficient allocation of resources, and helps economic agents hedge, trade and pool risk, thereby
208 raising investment through which economic grows. Shan (2005) defines that financial
209 development is associated with mobilization of savings, the effect of which can facilitate
210 transactions, make credits available, and reduce transaction costs that might generate economic
211 growth. Globally, financial sectors had undergone rapid changes that making transactions more
212 efficient, quick and cost-effective resulting from technological innovation. In Afzal and Abbas's
213 (2010) study, financial development is established as a catalyst of economic growth and
214 development, and assert that government expenditure demands the need for finance and financial
215 development.

216
217 Empirically, a number of studies that analyzed the impact of government expenditure and
218 financial development on economic growth separately carried out the study, despite that they
219 focused different countries and generated mixed results. For example, Bleaney et al. (2001),

220 Gemmell and Kneller (2001), Gregorious and Ghosh (2007) aimed to examine the relationship
221 between public expenditure and economic growth. More recently, Iheanacho (2016) and Usman
222 and Agbede (2015), among many others, also carried out similar studies on the relationship
223 between two variables. In an attempt to examine how government expenditure influence
224 economic growth, Usman and Agbede (2015) examine the relationship between government
225 expenditure and economic growth in Nigeria using a co-integration and error correction model for
226 the period 1970-2010. A timeseries data was obtained for the analysis. They found that economic
227 growth had a positive and significant linear relationship with recurrent expenditure and negative
228 but significant relationship with capital expenditure. In an extension of the study, Iheanacho
229 (2016) carried out a similar study on the same country over the period of 1986-2014, using
230 Johansen cointegration and error correction approach. The author found a similar result that
231 recurrent expenditure is the major driver of economic growth in Nigeria, has a positive
232 relationship with economic growth; but capital expenditure has the opposite. Olorunfemi's (2008)
233 investigation is indifferent from other works that studied the impact of public spending on
234 economic growth in Nigeria. Using time series data from 1975 to 2004, he observed that public
235 expenditure impacted positively on economic growth and that there was no link between gross
236 fixed capital formation and Gross Domestic Product (GDP). He asserted that only 37.1% of
237 government expenditure is devoted to capital expenditure while 62.9% share is to current
238 expenditure. Contrarily, Abu and Abdullah (2010) found that recurrent expenditure has a
239 negative effect on economic growth of Nigeria, while capital expenditure has a positive impact.

240
241 Jiranyakul (2007) employed OLS technique to examine the relationship between government
242 expenditure and economic growth in Thailand, over the period 1993 to 2006, it was revealed that
243 there was a strong positive impact of government spending on economic growth of Thailand.
244 Josaphat and Oliver (2000) investigated the impact of government spending on economic growth
245 in Tanzania (1965-1996), using time series data of 32 periods. They formulated a simple growth
246 accounting model, adapting Ram (1986) model in which total government expenditure is
247 disaggregated into expenditure on investment, consumption spending and human capital
248 investment. They found that increased investment expenditure has a negative impact on growth
249 and consumption expenditure relates positively to growth, and expenditure on human capital
250 investment was insignificant. Fan and Rao (2003) investigated the impact of government
251 expenditure on economic growth in Azerbaijan in determining how the oil production boom
252 (2005-2007) increased government expenditure and to which effect this improved infrastructure
253 and raised GDP. They discovered that Azerbaijan's total expenditure increased by a cumulative
254 of 160% in nominal value within the period. The authors' reference was linked to Nigeria and
255 Saudi Arabia who also had experienced similar oil boom in 1970 to 1989 which led to an
256 increase in the expenditure of the duo governments over the period.

257
258 Using panel data, the findings of many studies on growth-expenditure nexus are not different,
259 mirrored the results obtained from time series data. Gregorious and Ghosh (2007) made use of
260 the heterogeneous panel data to study the impact of government expenditure on economic
261 growth. Their results suggest that countries with large government expenditure tend to
262 experience higher economic growth. Using panels of annual and period-averaged data for 22
263 Organizations for OECD countries during 1970 to 1995, applying OLS and GLS methods,
264 Bleaney et al. (2001) found that productive public expenditures enhance economic growth, but
265 non-productive public spending does not. Gemmell and Kneller (2001) 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. (2003) employed the same disaggregated approach as followed by Josaphat and Oliver(2000) 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, but 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 (Durusu-Ciftci, Ispir, and Yetkiner, 2017; Ductor and Grechyna, 2015; Law and Singh, 2014) have analyzed the link between financial development and economic growth. To minimize the space, Singh (2008) found evidence for the significant role offinancial development in economic growth in India.Yu, Hassan and Sanchez (2012), in their study on the relationship between economic growth and financial development, considered 172 low- and middle -income countries, found that GDP growth rate has a strong positive relationship with domestic credit toprivate sector and gross domestic savings among eight financial development indicators used as proxies for the analysis. In a recent analysis, Law and Singh (2014)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 thatthe variable has both theoretically and empirically beenidentifiedas a growth-led macroeconomic factor. We posit that omission of this variable may cause model misspecification, the result of which may mislead. This opens for a new debate, gap which 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 (2016) and Olulu, et al. (2014) who relied on Keynesian theory and Wagner's Law of public expenditure, is expanded to include financial development vector:

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

where $GROWTH_t$ is real gross domestic product (RGDP) that measures annual gross value of productiveactivities in the economy, expressed in billion Naira (local currency) at 2010 constant market prices. EXP_t is the country's level of aggregate expenditure, in billion Naira, X_t is a

312 financial development (*FIN*) vector and ε_t is white error with zero mean. In explicit model,
 313 government expenditure is decomposed into government capital expenditure (*EXPC*) and
 314 government recurrent expenditure (*EXPr*). These are often used in the literature to measure a
 315 nation expenditure. Also, following Law and Singh (2014), three financial development
 316 indicators—financial domestic credit (*FINdoc*) and private sector credit (*FINpsc*) and liquid
 317 liabilities (*FINllt*) – are employed in the analysis to capture various aspects of
 318 financial development, as well, exchange rate (*EXC*) is included as suggested in literature,
 319 specifically, *EXC* is an alternative proxy to other financial variables that might not capture in this
 320 paper. Finally, expenditure-growth model is explicitly expressed as:

$$322 \quad GROWTH_t = \beta_1 EXPC_t + \beta_2 EXPr_t + \gamma_2 FINpsc_t + \gamma_1 FINdoc_t \\ 323 \quad \gamma_3 FINllt_t + \delta_1 EXR_t + \varepsilon_t \quad (2)$$

324 where *GROWTH* and ε remain as defined above, *EXPC* is the components of government
 325 expenditure on public construction (roads and civic centers), airports, health, education,
 326 telecommunication, electricity generation. *EXPr* is the components of government expenditure
 327 on economic services, social and community services, transfer and administration, data are in
 328 billion Naira. *FINdoc* is financial domestic credit defined as credit to the public sector (federal
 329 and local governments and public enterprises); *FINpsc* is private sector credit expressed as the
 330 value of banking intermediary credits to the private sector; while *FINllt* is financial liquid
 331 liabilities which measures financial depth, consisting of currency in circulation plus demand and
 332 interest bearing liabilities of banks and nonbanks financial intermediary activities, and financial
 333 breath, consisting of ability of banks to mobilize funds and size of the banks. There are a number
 334 of proxies in the literature used for capturing financial development indicators. In our analysis,
 335 we employed three financial indicators based on the view that they are major sources of financing
 336 in many developing countries including Nigeria; and also they are commonly considered as
 337 proxies used in recent studies, for example, Law et al. (2017), Law and Sing (2014). Thus, we
 338 argue that an effective financing and channel of funds between depositors and investors for
 339 growth of economy could only be achieved if these three indicators are well developed. The *EXR*
 340 is an official exchange rate of local currency units relative to the U.S. dollar. All the variables are
 341 expressed in logarithm to maintain the same scale of units, except *EXR* which has already been
 342 defined in percentage.

344 4.2 Data, method and correlation matrix

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

351 Ordinary Least Squares (OLS) technique is employed to test the effects of government
 352 expenditure and financial development indicators on economic growth. The technique is mostly
 353 used in social sciences to test the linear relationship and for its ability to make statistical
 354 inferences and to produce estimate that can be generalized to real-life situation (see Jelilov and
 355 Musa, 2016; Bakare, 2011). Unlike Granger-causality and other nonlinear estimators, which may

not able to surmount the possible problem of endogeneity and simultaneity or collinearity bias if they exist, OLS has been found to produce efficient and unbiased estimates even if collinearity exists (Studenmund, 2005). It has power to capture individual effect of an explanatory variable in a multiple model and holds constant the effects of others, a distinguishing feature better than other multiple regression approaches like generalized least squares (GLS) and weighted least 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 employed Augmented Dick-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 is 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. Expectedly, multi-collinearity mostly occur

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.

in time series data, a consequence of variables having a large variance. The treatment requires dropping one of the variables with 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 existence of

389 collinearity in the model (see Adedeji et al., 2016; Radosevic and Yoruk, 2013; Studenmund,
 390 2005). Interestingly, all the variables demonstrate a strong relative importance as the mean
 391 values are greater than standard deviation, and implying that the variables exhibit significant
 392 variation in terms of magnitude and have stable time-series movements.

393 394 5. Results

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

405
406 Table 2. ADF and PP unit root tests

Variables	Level		First difference		Results
	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*	$I(1)$
FINlft	-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: *1 and **5 percent.

407
 408 Table 3 presents the estimated coefficients obtained from the data analyzed using OLS. We find
 409 aggregate government expenditure and aggregate financial development to be statistically
 410 significant. Interestingly, the regression signs of the two variables are different, $EXPag$ is
 411 negative while $FINag$ is positive, and the absolute values of the coefficients are substantially
 412 different in magnitude, 0.60 and 0.12 respectively for $FINag$ and $EXPag$. This shows that
 413 financial sector development is a crucial determinant of Nigerian economic growth. Based on
 414 this finding, on average, a 10% point increase in Nigerian financial sector performance may
 415 likely promote real GDP of the country by 6.0%. Accordingly, on average, for every 10%
 416 increase in total government spending may likely to lead to 1.2% decrease in real GDP, holding
 417 other factors constant, in line with Okoro's (2013) and Nurudeen and Usman's (2010) studies,
 418 among others. Though the significance of these variables is ordinarily expected, however, one
 419 would have predicted total government spending to more influence economic growth than
 420 financial sector development, but this empirical prediction is inverse. This contradicts the

421 Keynes theory of circular flow of money that states that an injection of money into the economy
 422 in form of government spending expands the total output in the economy because of the problem
 423 of under-investment. This result is also contrary to some previous findings, for example, Jelilov
 424 and Musa (2016) and Iheanacho (2016). However, the negative impact of total government
 425 expenditure on economic growth could practically trace to poor economic infrastructure resulting
 426 from abandonment, delay, termination and discontinuity of many projects due to instability in
 427 government. This is feasibly experienced across the country which might reflect the decrease in
 428 output.

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

439 Table 3. Estimated Coefficients

Model 1			Model 2			Robustness check	
	Coeff	t-stat		Coeff.	t-stat	Coeff.	t-stat
<i>EXPag</i>	-0.124** (0.046)	-2.717	<i>EXPc</i>	0.238* (0.068)	3.522	0.239* (0.068)	3.419
<i>FINag</i>	0.601* (0.072)	8.348	<i>EXPr</i>	-0.102* (0.028)	-3.600	-0.102* (0.028)	- 3.529
			<i>FINpsc</i>	-0.503** (0.228)	-2.201	- 0.495*** (0.269)	- 1.840
			<i>FINdoc</i>	0.168** (0.065)	2.569	0.166** (0.073)	2.277
			<i>FINllt</i>	0.597** (0.283)	2.109	0.589*** (0.316)	1.863
			<i>EXC</i>	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	3.730 [0.03]		3.706 [0.03]	
		correlation					

Heteroskedasticity 1.567 [0.19]

1.794 [0.13]

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

440

441 Contrarily, our result shows that recurrent expenditure has an adverse effect on growth. If
442 government recurrent expense increases by 10%, it may lead to a decrease in GDP by 1.0%.
443 Though the effect size might be tenuous, this reflects the preference of the government given and
444 huge allocation to internal security, spending on national executive and defence and public debt
445 servicing which do not translate to economic growth. This is in line with the Egbetunde and
446 Fasanya (2013) who confirm that high cost of governance is the main factor that responsible for
447 outrageous recurrent expenditure in Nigeria. In support of this scenario, Nwachukwu (2018) and
448 Ebonugwo (2018) reports emphasize that about two-thirds of the government's revenues go into
449 debt services and recurrent expenses which cut economic growth projection and education
450 funding of the country.

451

452 Similarly, the three banking development indicators: liquid liability, domestic credit and private
453 sector credit, are statistically significant. However, liquid liability and domestic credit have
454 predicted positive impacts on growth at 5 percent significant level each. The magnitude of the
455 effect size of liquid liabilities (0.60) is larger, perhaps being a consistent determinant of
456 economic growth in developing economies, than domestic credit's (0.17). On average, a ratio of
457 10% expansion of liquid liabilities may lead Nigerian economy to grow by 6.0%; while a ratio of
458 10% rise in lending credit to households, in term of credit cards and mortgage loans, may lead the
459 economy to grow by 1.7%. Surprisingly, private credit appears to have negative (-0.50) and
460 statistically significant effect on growth over the period observed. This reflects the degree the
461 private sectors lack financial resources to finance their investment projects necessary for
462 economic growth in Nigeria. Thus, this suggesting a necessarily need to attract more foreign
463 direct investment and credit inflow for boosting productivity of the private sector in the country.
464 The result revealed that liquid liabilities and domestic credit have much influence on economic
465 growth, in line with Law and Singh (2014) and Caporale et al. (2009). The positive significant
466 effect of liquid liabilities shows that structuring of the banking sector, like capitalization
467 approach, embarked upon by the apex bank yields a better outcome and appears to have
468 developed Nigerian banks. More so, access of households to finance has likely increased which
469 has enabled even those with no collateral to engage in productive entrepreneurial activities. Both
470 effects of which have a progressive impact on the country's economy. Theoretically, credits
471 granted to private firms for financing investment projects are essential to positively affect
472 growth, however, this is contrary to the result discovered in this analysis for the case
473 Nigeria. This could be the fact that there might be huge outflows of credits granted to private
474 firms; or no substantial collaboration between local and foreign banks (which has been the main
475 source of credit finance in many transition economies) for financing investment projects in
476 Nigeria; or both, that resulting to negative impact of lending credit to private sector on the
477 economy of the country. Finally, exchange rate has a positive and statistically significant
478 relationship with economic growth, though the coefficient is trivial. The weakly Nigerian Naira-
479 US dollar exchange rate appreciation effect on growth may stem from oil price fluctuations, as
480 Nigerian economy heavily depends on crude oil; productivity differentials; capital outflows; and
481 financial uncertainties, among a myriad of factors. Perhaps, this might have prompted the drastic

482 step taken by the current administration by switching Nigerian exchange rate from Naira-US
483 dollar to Naira-China Yuan with the aim to boost the economy through exchange rate. This
484 empirical result is consistent with Oni and Ozemhoka (2014) and Ibrahim and Chancharoenchai
485 (2013), among others.

486
487 Discussion to this point, we assume that government expenditure and financial development
488 indicators have significant potential to boost economic growth; that our model is correctly
489 specified; and that OLS method has power to take major model errors such as measurement error
490 and omitted bias into account. To check this, we added a fitted term (\hat{Y}^2) to check the robustness
491 of our model whether the coefficients of the parameters will significantly change. As presented in
492 the third column, Table 3, the fitted term is the square of estimated *GROWTH*. We
493 expect \hat{Y}^2 coefficient to be insignificantly different from zero if the equation model is correctly
494 specified. The absolute \hat{Y}^2 coefficient turned to be statistically insignificant, and the coefficients,
495 as well as the overall fit of the initial model are not substantially different compared to the new
496 model, implying that the model is correctly specified. Though RAMSEY test indicates that the
497 model is unfit, but the test does little more than signal. However, as dictated by
498 heteroskedasticity and Breusch-Godfrey serial correlation diagnostic tests, we can affirm that
499 there is absence of misspecification and serious serial correlation. Moreover, the performance of
500 the models is satisfactory as reflected by the adjusted R^2 and significant *F*-statistics.

501
502 In sum, the findings of this study have some important policy implications. There is a need to
503 increase government expenditure on which the focus should be more on capital expenditure; and
504 also lending credit to households should be increased as these could help fostering growth in
505 Nigeria. However, the government should be aware of trade-off of the monetary approach as
506 excess supply of money could increase inflation, the effect of which may greatly devastate
507 growth.

508 509 **6. Conclusion**

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

517 We found that government capital expenditure has a positive impact on economic growth. This
518 probably reflects the expenditure on infrastructure especially on education, health, agriculture,
519 construction, transport and communication in Nigeria. Contrarily, the recurrent expenditure has
520 an adverse effect on growth, which could result from much preference the authority has been
521 given to internal security, spending on national legislative and defence and public debt servicing
522 over decades which do not translate to economic growth. Our findings equally suggest that
523 *FINdoc* and *FINlit* are crucial to *GROWTH* in Nigeria. More importantly, liquid liabilities seems
524 to be a consistent determinant of growth in Nigeria. This confirms that households' consumption
525 more stimulates economic growth than private sector, indicating that Nigerian capital market has
526 not well developed and has not been providing adequate finance for productivities of firms; or
527 there might have been huge outflows of credits granted to private firms; or no substantial

528 collaboration between local and foreign banks for financing investment projects in Nigeria. We
529 submit that a well-developed financial system could enhance effective financing and
530 channeling of funds between depositors and investors which can help to stimulate the economic
531 growth in Nigeria. Additionally, the benefits of higher levels of financial development could be
532 realized in when economy grows and becomes mature.
533

534 In sum, the negative effect of $FINpsc$ is more dominant than the positive effect of capital
535 expenditure. The intuition behind this finding is that the higher the credits granted to private
536 sectors, the more the domestic borrowing by the government for financing its expenditures that
537 do little or not translate and impact on economic growth. This has some important policy
538 implication considering economic growth of Nigeria.
539

540 Nonetheless, some limitations are noted in this paper. First, the paper only focused on Nigeria as
541 a case study, however, the result is limited to generalize. A panel case study could be conducted
542 to compare with this study; and also, to more fully explore the relationships among the variables.
543 Second, the evidence of a significant negative relationship between $EXPr$, $FINpsc$ and $GROWTH$
544 as oppose the theory requires further research. Perhaps growth-led variables like trade openness
545 may be additionally added to the model in future to look for a positive relationship rather than a
546 negative one. However, caution should be taken when selecting and testing additional variables to
547 replicate and extend the findings as exchange rate may serve as an alternative proxy for many of
548 these variables. Besides, the selection of any new variable should be theory-driven, with an aim
549 to increase our understanding on expenditure-finance-growth relationship. Third, high
550 correlations between the identified variables might have inflated standard errors, resulting to
551 decrease in power to detect the significance of the fitted term. Nonetheless, our study extends
552 scientific research in the area of focus, sheds some light on the relationships among government
553 expenditure, financial development and economic growth. In addition, the findings of this study
554 have both academic and practical relevance as regard to the importance of financial development
555 in determining economic growth.
556

557 **7. Recommendations**

558 Based on the findings of the study at hand, it is recommended that the **government should** often
559 consider external sourcing for financial resources than domestic borrowing for financing its
560 expenditures. This would make credit adequately available for domestic investments which in
561 turn could enhance the growth of the country's economy. In addition, the government needs to
562 structure its monetary instruments in ensuring domestication of credits granted to private
563 sectors. The focus **should be on growth-friendly fiscal adjustment, with a shift in spending toward**
564 **productive outlays accompanied** by effective domestic revenue mobilization, broadening of tax
565 base and strengthening of revenue administration. As well, a financial resilience system should
566 be developed for ensuring adequate provision of liquid capital and improving resolution
567 frameworks to reduce recurrent expenditure. The public expenditure should be increased, the
568 focus should be more on capital expenditure; and credit lending to **households should be increased**
569 as these could help fostering growth in Nigeria. The **multiplier** effects of **these policies may enable**
570 **people to** escape from poverty that **grinds** many in the country.
571

572 **Disclaimer: - This manuscript was published in the conference.**

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577 Available link
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579 [opment Effects on Economic Growth Empirical evidence from Nigeria](https://www.researchgate.net/publication/328412927_Public_Expenditure_and_Financial_Development_Effects_on_Economic_Growth_Empirical_evidence_from_Nigeria)
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588
589

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