Government Expenditure and Economic Growth in Nigeria: Historical, Theoretical and Empirical Perspectives

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Abstract
This study follows a reversal of the Wagner Hypothesis as Government expenditure is used as a function of Economic Growth and adopts the ex-post facto research design. The datasets used in this work are annualized time series and purely secondary data drawn from World Bank databank. It covers a 35-year period, 1981 to 2015. In addition to the classical linear regression analyses, diagnostics tests were done to ensure validity and reliability of the results. Descriptive statistics, correlational analyses were employed in addition to the traditional unit root tests which confirmed the stationarity properties of the series under study and also determine the model form adopted. The result shows that Economic growth is a significant function of capital expenditure as By way of policy implication, it is recommended that public expenditure should be directed in a manner that engineers economic growth given the functional relationship discovered in this study.

Keywords: Government expenditure; Economic growth; Regression analyses; Empirical analyses; Stationarity; Diagnostic tests.

1. Historical Background of Growth in Government Expenditure

Government expenditure or spending includes all government consumption, investment, and transfer payments. Public expenditure was born out of revenue allocation which refers to the redistribution of fiscal capacity between the various levels of government or the disposition of responsibilities between tiers of the government Okoro (2013). The discovery of crude petroleum in commercial quantities in Nigeria in the middle of the 1960s greatly enhanced the performance of the economy in the 1970s. The newly found oil wealth ensured that the economy performed impressively in terms of real GDP growth rates. These averaged 5 percent annually during the period 1970 to 1979. However, by the early 1980s, the economy had started to experience real problems. The crash in world crude petroleum prices in 1980/81, the severe economic crises in developed industrial countries, coupled with political instability and internal ad hoc economic policies In the 1970s, unprecedented Nigeria’s oil revenue obviously permitted massive federal government expenditure. A dramatic jump in capital expenditure was noticeable between 1974 and 1980, reflecting the significant increase in government revenue following favourable developments in the international petroleum market. The period thus witnessed a boost in the provision of economic and social infrastructure such as highways, air and sea ports, hospitals, schools and housing. However, capital expenditures of the Federal Government as a percentage of GDP decreased steadily from 20.48 per cent in 1980 to 6.27 per cent in 1995. Following high regime turnovers at home, created hard times for the economy between 1980 and 1985. What is at stake here is how a government should allocate public spending across various sectors of an economy in order to maximize prospects of achieving its growth and development objectives. Our paper represents an attempt to re-examine the issues in the light of the Nigerian experience. Specifically, it is concerned with determining the relative contributions to economic growth in Nigeria of government capital expenditures on agriculture, education, health and infrastructures. The importance of disaggregating government expenditure for proper appreciation of the role of the state in the Nigerian economy is being underscored in this study. According to Canning (1999) opportunity could then be taken to carefully restructure and scrutinize the composition of public expenditure so as to simultaneously enhance growth and promote the needed environment for private sector development along the lines suggested in the state – in-society model.

1.1. Relating Growth to Expenditure Profile of Government

Government increased spending is an injection to the economy and could help to increase the rate of economic growth. The government spends money for a variety of reasons to reduce inequality, (unemployment benefit), provide public goods, (fire, police, defence), provide important public services like education and health (merit

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goods) all to enhance growth and development in the economy. Many scholars have deliberated that an increase in government spending can be an effective tool to boost aggregate demand for a retarded economy and to bring about reasonable effect on private sector. In Keynesian view, high level of government consumption is likely to increase employment, profitability and investment relating to aggregate demand. Though in recent nature, government expenditure can contribute positively to economic growth. Barro (1990) in his endogenous model forecast that only those government productive expenditures will positively affect the long run growth rate. Others argued that increase in government expenditures may not have effect in developing countries given their high and often unstable levels of public debt. Relating this fact to Vedder and Gallaway (1998) explains that constant increase in government expenditure at some point will contribute to economic stagnation and decline based on law of diminishing return. Despite the increase in government expenditure in Nigeria over these years, there are still public outcries over public ownership in the key sectors of the economy. In addition, for Nigeria to become one of the largest economies in the world by the year 2020, determining the effect of public expenditure on economic growth is a strategy to fast track growth in the nation’s economy.

2. Growth History of the Nigerian Economy

In Nigeria the annual growth rate in GDP measures the change in the value of the goods and services produced by the country during the period of a year. The Nigerian economy has had a truncated history. In the period 1960-1970, the GDP recorded 3.1 percent growth annually during the oil boom era, roughly 1970-1978, GDP grew positively by annually- a remarkable growth. However, in the 1980s, GDP had negative growth rates. In the period 1988-1997 which constitutes the period of structural adjustment and economic liberalization the GDP responded to economic adjustment policies and grew at positive rate of 4.0. In the early 1960s, the agricultural sector suffered from low commodity prices while the oil boom contributed to the negative growth of agriculture in the 1970s. The contribution of agriculture to GDP which was 63 percent declined to 34 percent in 1988, due to neglect of the agricultural sector. GDP annual Growth rate in Nigeria averaged 3.99 percent from 1982 until 2016. Nigeria GDP shrank 1.3 percent year on year in 2016, following a 2.24 percent decline in the previous year. The oil sector declined 12.38 percent year on year, following a 22.01 percent drop in the previous period and marking the fourth consecutive quarter of falls in the oil sector. The country produced 1.9 million barrels per day, down from 2.16 mbpd a year earlier, hurt by lower oil prices. As a result of these, the oil sector accounted for 7.15 percent of the GDP compared to 8.06 percent a year earlier. Nigeria being one of the fast-developing countries in Africa accounts for about 50 percent of total GDP to services which is the largest sector of the economy.

One of the fastest growing segments in services is information and communication, which together accounted for about 10 percent of the total output. Agriculture, which in the past was the biggest sector, now weights around 23 percent. Crude petroleum and natural gas constitute only 11 percent of the total GDP, while being the main exports. Industry and construction account for the remaining 16 percent of GDP.

Nigeria has had sluggish economic growth since the end of 2015, leading to the authorities to adopt an expansionary 2016 budget that aims to stimulate the economy. The 2016 outlook is for economic recovery as some of the reforms begin to take effect and measures to boost the economy, such as increased spending on infrastructure, are implemented. Some specific reforms pursued by the new administration to lay a foundation for renewed growth are commendable, which includes; the rationalization of the public sector in order to cut the cost of governance, enforcement of the single treasury account to block financial leakages; renewed efforts at enforcement of tax compliance; preparation for zero budgeting starting in 2016; and increasing the ratio of capital to recurrent expenditure to 30.70. African Economic Outlook (2016).


Government spending money towards the supply of goods and services that are not provided by the private sector but are important for the nation’s welfare. Government spending goes to the nation’s defense, infrastructure, education, health and welfare benefits. Government expenditure refers to the purchase of goods and services, which include public consumption and investment, and transfer payments consisting of income transfers (pensions, social benefits) and capital transfer. Meanwhile, the public sector is that portion of the society controlled by national or federal, state and local governments. The general view is that public expenditure either recurrent or capital expenditure, notably on social and economic infrastructure can be growth-enhancing. The public sector encompasses defence, homeland security, public protection, fire fighting, urban planning, taxation and various social programs. Nweke (2004) pointed that Public ownership in the key sectors of the economy were viewed as a more effective way to achieve economic growth and development since it was believed that the private sector in developing countries lacked the means (financial and entrepreneurial skill) to undertake the task of development. Anyanwu (1997) highlighted that public expenditure is usually categorized into recurrent and capital expenditure. He also noted that these are further broken down into their various compositions. For example; recurrent, water supply etc.
these are basis for an industrial take off which are necessary for economic growth and development. Capital expenditure is an expense where the benefit continues over a long period, rather than being exhausted in a short period. (Wikipedia.org). Recurrent expenditure refers to payments made annually by governments or organizations basically for administration except capital costs Muritala and Taiwo (2011). In Nigeria economy is total government expenditure in terms of

Capital and recurrent expenditures have continued to rise over the last three decades. Notable studies in the likes of Abu and Abudullahi (2010) all stressed that expenditure on defense, internal security, education, health, agriculture, construction transport and communication are rising overtime. Judging from the above viewpoints, the various components of capital and recurrent expenditure have risen between the decades of 1981 and 2010. It has been a great debate among researchers in economic literature on the impact and contribution of this multiple increase in our economy emphasized that recurrent expenditure during the last decade under review (2010) had accounted for over 50% of total expenditure, while the share of capital expenditure was relatively below 50% of total public sector expenditure. It must also be noted that the public sector capital expenditure, theoretically, is the aspect of public sector expenditure expected to drive economic growth. Instinctively, for a developing nation capital expenditure particularly in capital projects or infrastructural development is meant to constitute significant proportion of her total public sector expenditure to lay the foundation for economic growth and sustainable development, but this has not been the case in Nigeria. However, we are careful not to jump to the conclusion that the superiority in weight of recurrent expenditure over capital expenditure has adversely affected the nation's economy. A question therefore, poses itself: "Is the increasing public sector expenditure influencing the rate of economic growth in Nigeria?"

Specifically, Jhingan (2004) observed that some of the reasons adduced for the increase in government expenditure overtime are; inflation, public debt, tax revenue and population. He also stated that public sector expenditure, by increasing social welfare, helps in balancing income and wealth and as well can be used to create trade as well as to correct externalities and regional differences if employed judiciously, thereby fastening economic growth.

In further research, it is a common belief that the government plays a significant role in the development of a country and the public sector expenditure is an important instrument for the government to control the economy. Also, economists have noted its effects in promoting economic growth. Meanwhile, the general view is that public sector expenditure either recurrent or capital expenditure notably on social and economic infrastructure can be growth enhancing.

2.2. Concept of Economic Growth (GDP and GDP Growth)

It is a consensus that economic growth is an increase in the capacity of an economy to produce goods and services, in a period relative to another. According to Romer (2015) Economic growth occurs whenever people take resources and rearrange them in ways that make them more valuable. The overall economic indicator for the economy is GDP. Economic growth refers to an increase in the productive capacity of an economy as a result of which the economy is capable of producing additional quantities of goods and services. It can be measured in nominal or real terms, the latter of which is adjusted for inflation. Traditionally, aggregate economic growth is measured in terms of gross national product (GNP) or gross domestic product (GDP), although alternative metrics are sometimes used (http://www.investopedia.com).

An economic growth rate is a measure of economic growth from one period to another in percentage terms. This measure does not adjust for inflation. It is expressed in nominal terms. In practice, it is a measure of the rate of change that a nation's gross domestic (GDP) goes through from one year to another, but gross national product (GNP) can also be used if a nation's economy depends heavily on foreign earnings.

The economic growth rate provides insight into the general direction and magnitude of growth for the overall economy. The economic growth rate demonstrates the change in a nation’s or larger economy's income over a specified period of time. Most commonly, this is examined on a quarterly basis, but economic growth rates can be observed across larger spans of time, such as year over year (YOY) or decade over decade.

While economic growth is most often assumed to refer to positive movement, economic changes can be positive or negative. If an economy experiences two consecutive quarters with falling growth rates, it can be said that the associated economy is falling into a recession. If the economy begins to shrink, the percentage rate can be expressed as a negative to demonstrate the income lost over the time period being examined. Economic growth is measured by changes in the gross domestic product (GDP). It measures a country's entire economic output for the past year that consider all goods and services that are produced in this country for sale, whether they are sold domestically or sold overseas. It only measures final production, so that the parts manufactured to make a product are not counted. Exports are counted because they are produced in this country. Imports are subtracted from economic growth. Economic growth is measured quarterly using real GDP to compensate for the effects of inflation.

2.3. Theoretical Considerations
2.3.1. Theory of Public Expenditure

In the past, economic literature has amongst other things, concerned itself with the research and study of the relationships between public sector and economic growth. The major consensus is public sector expenditure impacts positively on economic growth. Notable theories are Keynesian theory, Peacock and Wiseman (1981). Keynes, in his hypothesis draws a link between public expenditure and economic growth and concludes that causality runs from public expenditure to income, implying that public sector expenditure is an exogenous factor and a public instrument for increasing national income. Furthermore, holds that increase in government expenditure leads to higher economic growth. Wagner, Peacock and Wiseman and many other economists have formulated different theories on public
expenditure and economic growth. Wagner (2007) positioned public sector expenditure as a behavioural variable that positively dictates if an economy is growing. Wagner’s theory of public expenditure states that; there are inherent tendencies for the activities of different layers of a government to increase both intensively and extensively. There was a functional relationship between the growth of an economy and the growth of the government activities so that government sectors grows faster than the economy. However, the neo classical growth model developed by Solow (1958), opined that the fiscal policy does not have any effect on the growth of national output. Nevertheless, Barro et al. (1994) noted that the expansion of government expenditure contributes positively to economic growth. However, Chude and Chude (2013) expressed that some researchers and policy makers do not support the claim that increasing government expenditure promotes economic growth. Instead, they assert that higher public expenditure may slow down overall performance of the economy. For instance, in an attempt to finance rising expenditure, government may increase taxes and/or borrowing. Glomm and Ravikumar (1997), articulated that higher income tax discourages individuals from working for long hours or even searching for job. Putting public expenditure into perspective, Pearce (1998) noted that Public expenditure is also associated with the public sector. The study emphasized that the phrase “public sector” could be referred to as that part of the economy, which is publicly owned as opposed to privately owned. Keynes (1936) explained that the fundamental problems of taxation and public credit cannot be solved without an underlying theory of expenditure. J.B Say formulated as the golden maxim of classical public finance ‘the very best of all plans of finance is to spend little.

2.3.2. Theory of Economic Growth

a. Neo-Classical Theory

The neo-classical theory of economic growth suggests that increasing Capital leads to diminishing returns. Therefore, increasing capital has only a temporary and limited impact on increasing the economic growth. As capital increases the economy maintains its steady state rate of economic growth.

Basically, to increase the growth it is necessary to increase labour productivity, the size of the workforce or improve technology. In other words economic growth requires an increase in all aspects of growth. This model was first suggested by Robert Solow.

b. The Malthus Predictions

It is argued that economic growth may have limitations caused by lack of raw materials, climate change and overcrowding. Given the failure of T. Malthus predictions to come true, these theories are often rubbished. Nevertheless, there may come a time when growth is constrained by environmental factors.


They place greater importance on the need for governments to actively encourage technological innovation. They argue in the free market classical view, firms may have no incentive to invest in new technologies because they will struggle to benefit in competitive markets.

- Place emphasis on increasing both capital and labour productivity.
- They argue that increasing labour productivity does not have diminishing returns, but, may have increasing returns
- They argue that increasing capital does not necessarily lead to diminishing returns as Solow predicts. They say it is more complicated, it depends on the type of capital investment.

2.4. Empirical Review

Iheanacho (2016) and Chude and Chude (2013) studied the impact of government expenditure on economic growth and found out that expenditure on education, recurrent expenditure, and government social services are positive and significant to economic growth using the ordinary least square regression model, Johansen cointegration and error correction model. They recommended that government should invest in more useful project rather than spending in numerous projects that do not contribute to economic growth. Teshome (2006) found out that government expenditure on human capital education, health, infrastructure, & defense is positive and significant to economic growth.

Nurudeen and Usman (2010) and Mohammadi et al. (2012) found a negative relationship between government total expenditure, recurrent expenditure, government expenditure on education and economic growth. Nworiji et al. (2012) studied effect of public expenditure on economic growth using ordinary least square found out that capital and recurrent expenditure on social & community services and recurrent expenditure are positive and significant to economic growth while capital & recurrent expenditure on economic services, capital expenditure on transfers is negative and insignificant to the study. Modebe et al. (2012), studied impact of recurrent and capital expenditure in Nigeria and found out that recurrent government expenditure had positive but insignificant effect on economic growth while capital expenditure is negative and insignificant to economic growth. Nwaeze et al. (2014) found out that federal government expenditure is positive but insignificant on economic growth. Olopade and Olapade (2010), studied the impact of government expenditure on economic growth using trend analysis and found out that there is no significant relationship between government expenditure and economic growth. Teshome (2006) revealed the same study in Ethiopia and found out that expenditure on human capital is positive and significant to economic growth while pubic investment and consumption is negative and insignificant to the study.
Kapunda and Topera (2013) in a slight departure from others gave attention to not only the volume of public expenditure but also the composition of it. Using OLS, the study found that capital expenditure and terms of trade exerts positive and significant impact on economic growth in Tanzania. This is contrary to expenditure on health, agriculture, general public service, defence infrastructure which showed positive but insignificant impact on economic growth. This position is consistent with the findings of Iheanacho (2016). On the contrary (Ogundipe and Oluwatobi, n.d) using granger causality test and Johnansen cointegration revealed that there is no relationship between government expenditure and economic growth.

3. Methodology

The Wagner hypothesis which has been empirically investigated in functional forms since the 1960s forms the theoretical basis for this study. The hypothesis which captures a relationship between government expenditure and economic growth is shown below in functional form

\[ GE = f(GDP) \]  

(i)

Where \( GE \) is total government expenditure and \( GDP \) is gross domestic product.

This study follows a reversal of the Wagner Hypothesis as Government expenditure is used as a function of Economic Growth. This model is written thus:

\[ GDP = f(GE) \]  

(ii)

In the full functional model, Government Expenditure will be unbundled to capture both capital and recurrent forms. Following the classical linear regression model and the log transformed form, the model will be written thus:

\[ \log GDP_t = B_0 + B_1 \log CAPEX_t + B_2 \log RECEXP_t + \log CEGDP + \epsilon \]  

(iii)

where

\( B_0 = \) intercept of the relationship in the model or the constant  
\( B_1, B_2 = \) coefficient of each exogenous or explanatory variable  
\( \epsilon = \) the stochastic or error term  
\( GDP = \) Gross Domestic Product  
\( CAPEX = \) Capital Expenditure  
\( RECEXP = \) Recurrent Expenditure  
\( CEGDP = \) Ratio of Capital Expenditure to the Gross Domestic Product

The a priori expectation of the co-efficients in the model is \( B_1 > 0, B_2 < 0, B_3 > 0 \)

This study is not experimental but involves the discussion and analyses of already completed events. It is on this premise that it can be said to adopt the ex-post facto research design. The datasets used in this work are annualized time series and purely secondary data drawn from World Bank databank. It covers a 35-year period, 1981 to 2015. The dataset is arranged and analyzed to form the bases for empirical analyses and conclusions. In addition to the classical linear regression analyses, diagnostics of the results will be done to ensure validity and reliability of the results. Descriptive statistics, correlational analyses will be used in addition to the traditional unit root tests which will confirm the stationarity properties of the series under study and also determine the model form to be adopted.

4. Data Analyses and Interpretation

To evaluate the analytical relationship of the variables under study, a line graph of economic growth and the two key variables are presented in fig 1 and fig 2 respectively. According to the slope of the graph, a positive linear relationship is inferred between economic growth and recurrent and capital expenditure respectively.

**Fig-1. Graph of GDP and Capital Expenditure (1981 to 2015)**
The results in table 2 above, a positive and significant relationship is inferred between both capital and recurrent expenditure and Economic growth respectively. This is based on the positive correlation coefficient and the significant t-statistics respectively.
Table 3 reports the test for stationarity properties of the series following the Augmented Dickey Fuller statistics. All the variables were found to be stationary at order 1. At the first difference as reported, the ADF statistics for the respective variables were more negative than the critical values at 5% level of significance. The reported p-values are all less than 0.05 for which cause, the null hypothesis of the presence of unit root in all the variables is convincingly rejected. This test essentially assures that the regression result would not be spurious if estimated at first difference. It is on the basis of the result in table 3 that the model is estimated on first difference.

4.1. Estimation of the Regression Model

The result as contained in the model below follows the form specified in equation IV with the exception of the fact that it was estimated on first difference in consistency due to the order of integration of the variables as shown by the unit root test. The model has all the coefficients of the parameter estimates duly fitted. The standard errors and the t-statistics for the parameter estimates are correspondingly shown.

\[
DLGDP = 0.001 + 1.003DLCAPEX + 0.001DLRECEXP - 1.004DLCEGDP \ldots \text{eq.}
\]

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<th>SE</th>
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<th>Expectation</th>
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<tr>
<td>DLCAPEX</td>
<td>(0.001)</td>
<td>[1.28]</td>
<td>(+)</td>
</tr>
<tr>
<td>DLRECEXP</td>
<td>(0.004)</td>
<td>[241]</td>
<td>(-)</td>
</tr>
<tr>
<td>DLCEGDP</td>
<td>(0.06)</td>
<td>[0.38]</td>
<td>(+)</td>
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It is essential however to discuss the diagnostic tests contained in Table 4 before analyzing the significance of the Regression estimates.

From Table 4, it can be established that the model has goodness of fit as the \( R^2 \) of 99% suggests. This shows that 99% of the variation in the dependent variable is accounted for by the independent variables with an unexplained variation of about 5%. The F-statistics of 28738 and the corresponding probability value of 0.000 (Appendix I), indicates that the overall regression is statistically significant and can be used for meaningful analyses. The Durbin Watson Statistics of 2.4 (Appendix I), creates no suspicion of the possible existence autocorrelation.

4.2. Discussion of the Regression Result

From the result shown in equation V which is an extract from Appendix I, the two explanatory variables of interest Capital Expenditure (DLCAPEX) and Recurrent Expenditure (DLRECEXP) show positive relationship with Economic growth. However, capital expenditure is significant, recurrent expenditure is non-significant. It can be inferred that a 1% increase in LCAPEX and LRECEXP respectively produces a 100% and 0.009% increase in Economic growth respectively. The t-statistics and the associated probability values show that Economic growth is a significant function of capital expenditure as an exogenous variable within the context of the formulated and estimated model. It should also be noted that the moderating variable which is ratio of economic growth to capital expenditure showed a negative and significant relationship with the endogenous variable.

5. Summary Recommendation and Conclusion

This paper analyses the relationship between government expenditure and economic growth with emphasis on the Nigerian economy using a dataset covering a 35year period. The ordinary Least Square Regression method represents the principal method of estimation. The key reason for the study is to evaluate whether there is a significant impact from the various forms of government expenditure on the growth of the Nigerian economy. The \( R^2 \) explains that 99% of variation in economic growth in the model is explained by the principal explanatory variables DLCAPEX, DLRECEXP and DLCEGDP which was used mainly as a moderator. DLCAPEX was found to share positive and significant relationship with economic growth DLGDP. This is consistent with our apriori expectation as it is evident that more injection of found through capital expenditure has always led to improvement in productivity. There is therefore a strong recommendation and advocacy for the injection of more funds into the economy through increased government spending. This has become quite necessary in the light of the recession facing the economy.

References


