The Use of Public Expenditure in the Advancement of National Economy: A Comparative Study of the United Kingdom and Nigeria Publication Process Date

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The Use of Public Expenditure in the Advancement of National Economy: A Comparative Study of the United Kingdom and Nigeria

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ABSTRACT

The study investigates the use of public expenditure in the advancement of the national economy comparatively for the United Kingdom and Nigeria during the period 2000-2020. The hypotheses were linearly modeled while adopting the ordinary least square method of estimation and the granger causality test. The findings support Keynes' (1936) notion of the government intervening actively in the economy through a variety of policy instruments by revealing a positive and significant relationship between government spending and economic growth in the two countries being sampled. The Granger causality test shows that Wagner's law, which states that there is a causal relationship between economic growth and government spending, does not hold for Nigeria and the United Kingdom. The study concludes that government expenditure has been better utilized for the advancement of the national economy in the United Kingdom than in Nigeria. Given the positive and significant impact of government expenditure on Economic growth, the study thus recommends that Nigeria needs to improve its expenditure management by providing a sound macroeconomic environment.

Keywords: Public Expenditure; Economic Growth; National Economy; Nigeria; United Kingdom

1. Introduction

Economic growth refers to an increase in a country's potential GDP, albeit the definition varies depending on how GDP is calculated. Government spending is an important part of economic policy, and governments use it as an operative policy instrument to encourage strong and long-term growth (Ahuja & Pandit, 2020). It tries to enhance economic growth by expanding the budget, which will increase private sector expenditure, resulting in growth through the multiplier effect. However, public spending has some evident economic impacts, and crowding-out effects may impede overall economic development. As a result, if the government raises spending at the expense of greater taxes or borrowings, it may diminish public consumption. Two propositions have been made about the nature of the hypothetical relationship between government expenditure and economic growth. There have fundamentally been two primary areas of investigation at the theoretical level: Wagner's law and Keynesian macroeconomic theory. On one area, Wagner claims that public spending is an unavoidable byproduct of economic growth in which public spending grows at a faster pace than economic output. According to this argument, the pace of growth influences the increase in government spending. The Keynesian thesis, on the other hand, sees government spending as an instrument of economic policy designed to promote economic growth, with a causal link from government spending to economic progress. The direction of causality between economic growth and government expenditure is not universally agreed upon by these theories on the empirical front.

Following the early 1990s recession, the United Kingdom's economy grew for sixteen years in a row before contracting in 2008 and 2009. Since 2010, output has increased again.
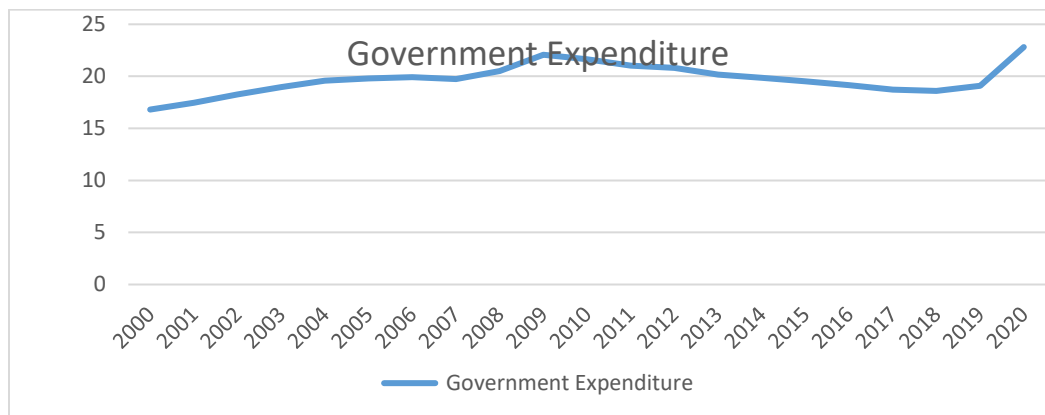

Figure 1 The Trend of Government Expenditure in the United Kingdom (% of GDP)

The United Kingdom's exit from the European Union influenced the country's public finances. However, studies that have estimated the effects of Brexit on national income have come to the same conclusion that it will cut national income in the medium and long term. Up until 2000–2001, receipts and expenditures were roughly balanced. Before the significant budgetary repercussions of the pandemic took effect, there was a period of increased public spending that lasted until 2008 without corresponding increases in taxes receipts. The 2008 financial crisis resulted in an immediate rise in government spending to safeguard the UK banking system and deliver welfare benefits. COVID-19 emergency measures are having an early impact, as evidenced by the sharp growth in 2019–2020.

It is undeniable that the Federal Government of Nigeria's expenditure has increased over time as a result of large receipts from crude oil production and sales, resulting in increased demand for public goods such as the construction of more roads, increased power generation, increased educational institutions and equipment, and better health services, among other things.
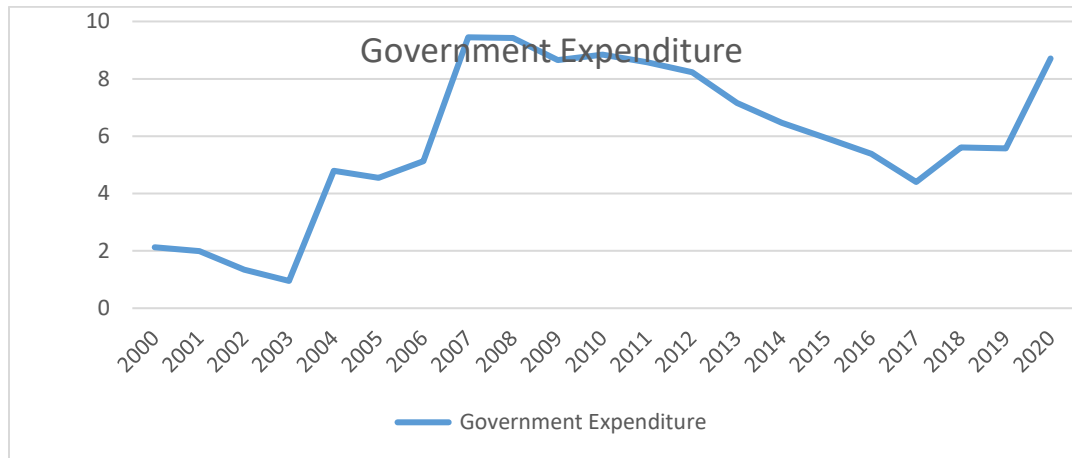
Figure 2: The Trend of Government Expenditure in Nigeria (% of GDP)

According to available data, total government spending and its components have continued to climb in recent decades. Although government spending increased, there was no significant translation of these expenditures into meaningful growth and development, and Nigeria remained one of the poorest countries in the world, with many Nigerians living in abject poverty. Moreover, macroeconomic indices such as the balance of payments, import obligations, inflation rate, and exchange rate showed no signs of recovery even though the economy was growing.

2. Literature Review

The existing literature on the relationship between economic growth and government spending contains a variety of theoretical explanations and empirical evidence. The first is a Keynesian perspective on government size-led growth. Increased government expenditure, according to the Keynesian school of thinking, stimulates domestic consumption, especially during economic downturns when free market forces fail to maintain equilibrium due to labor market rigidities. This demonstrates Keynes' preference for expansionary fiscal policies in recession-stricken countries. The alternative point of view is Wagner's law, which states that there is a causal relationship between economic growth and government spending. The public sector expands at an increasing rate over time, according to the Wagner thesis, for three key reasons (Wahab, 2004). To begin with, as industrialization proceeds, the public sector tends to expand administrative and protective functions to ensure the smooth operation of market forces. Second, some public services, including education, cultural activities, and health care are income elastic, suggesting that demand for those services increases as income rises. Finally, when the private sector is reluctant to spend and unlikely to supply certain economic services required for technological advancement, the government will take the lead in financing such large-scale projects (Wahab, 2004). Several empirical studies have sought to determine if government spending and economic growth are causally related. Several studies have sought to assess the validity of Wagner's law by determining if government expenditure grows at a higher rate than national income and whether government expenditure is caused by rising output or causes output to rise. Despite the extensive studies conducted to determine the veracity of Wagner's law, there appears to be no consensus, even within countries. Some studies have found support for the law, while others claim otherwise.

Islam (2001) examined the correlation between government spending and real per capita GDP in the United States from 1929 to 1996. The outcomes were in line with Wagner's law. To analyze the link between public expenditure and GDP advancement, Tang (2001) and Al-Faris (2002) used econometric techniques such as multivariate co-integration and Granger causality. They came to the same conclusion, proving the existence of unidirectional causality between economic development and government spending. Abu-Bader and Abu-Qarn (2003) employed a multivariate co-integration and variance decomposition method of estimation to examine the direction of causality between government spending and economic growth for Israel, Egypt, and Syria. The result revealed the existence of a long-run and bi-directional negative impact between government spending and economic growth in the bivariate framework. However, the findings revealed that military spending had a negative impact on economic

growth in all three nations, while civilian government spending has a positive impact on economic growth in both Israel and Egypt.

Loizides and Vamvoukas (2005) performed a trivariate causality test to examine the link between government spending and economic growth in Greece, the United Kingdom, and Ireland. For all three countries, they employed bivariate and trivariate ECMs in the Granger causality framework. Three different models were used: one with unemployment, one with inflation, and one without either of these variables. The findings revealed that government expenditure leads to economic growth in all nations in the short run, whereas the same is true in the long run for only two countries (Ireland and the United Kingdom). Cooray (2009) performed a cross-sectional analysis of the link between government expenditure and economic growth in 71 nations. The findings revealed that both the size and quality of government are positively associated with economic growth. Ighodaro and Oriakhi (2010) investigated the validity of Wagner's law in Nigeria. They found a long-term link between public expenditure and economic growth with GDP being utilized as an independent variable. Nworji et al. (2012) also examined the impact of public spending composition on Nigerian economic growth from 1970 to 2009. They found that government spending significantly and positively impacts economic growth in Nigeria. Ordinary spending on transfers and community and social services has also been found to boost growth.

From 1998 through 2012, Gangal and Gupta (2013) used the ADF Unit Root Test, Cointegration Test, and Granger Causality Test methodologies to examine the impact of government spending on India's economic growth. They discovered a one-way relationship between total public spending and economic growth. The findings also revealed that government spending has a positive impact on economic growth.

Ahuja & Pandit (2020) examined the relationship between public expenditure and economic growth using a more copious panel data set covering 59 countries in 1990–2019. The findings reveal the existence of a unidirectional causality, running from public expenditures to GDP growth, between economic growth and government spending. Menyah and Wolde-Rufael (2013) also explored the link between Ethiopia's government expenditure and economic growth to test the validity of Wagner's Law. They discovered strong evidence of a long-run relationship between government spending and GDP. The study used a modified form of the Granger causality test to find a unidirectional causality flowing only from GDP to government expenditure, confirming Wagner's theory of a growing public sector.

The findings of many studies on the relationship between economic growth and government spending vary. There is no conclusive evidence This is because different variables are at play in different scenarios, as well as the natures of the economies being researched. This topic is compared between Nigeria and the United Kingdom.

Hypothesis Development
The objective of this study is to examine the relationship between government expenditure and economic growth comparatively for Nigeria and United Kingdom. Thus, we propose to test the following hypothesis:

1. There is no long-run relationship between government expenditure and economic growth in Nigeria and United Kingdom between 2000 and 2020

2. Government spending does not granger cause economic growth in Nigeria and United Kingdom between 2000 and 2020

3. Model and Estimation Method

To examine the long-run relationship between government expenditure and economic growth comparatively for Nigeria and United Kingdom, data was sourced from the world bank. The study adopts annual time series secondary data during the period 2000 through 2020. To generate empirical results for the paper, the model is formulated based on Peacock and Wiseman's (1961) interpretation of Wagner's law which states that the elasticity of government expenditure to output exceeds unity ($\alpha_i > 1$) (Menyah and Wolde-Rufael, 2013). The model According to Peacock and Wiseman's (1961) is thus:

$$\log G = \alpha_0 + \alpha_1 \log Y + \varepsilon_{it}$$

Where,

GE= Government Expenditure (General government final consumption expenditure (% of GDP))

GDP=gross domestic product (a proxy for national growth measured in current US$)

ε_{it}= stochastic error term

To empirically analyze the above functional form, the Ordinary Least Square (OLS) method of estimation by a German Philosopher Carl Friedrich Gauss. The rationale behind this choice of estimation technique is because of the BLUE (Best Linear Unbiased Estimator) property it possesses.

To decide the direction of causation, we shall rely on the Granger causality test. Granger's test (1969) tests whether the lag value of the variable explains current changes in another variable. A variable X is said to Granger-cause Y if the autoregressive-based prediction of the current value of Y is improved by adding past values of X. The test takes the following model.

$$Y_t = \alpha_0 + \sum_{i=0}^{n} \alpha_{1i} Y_{t-i} + \sum_{i=0}^{n} \alpha_{2i} X_{t-j} + \mu 1t$$

$$X_t = \beta_0 + \sum_{i=0}^{n} \beta_{1i} X_{t-i} + \sum_{i=0}^{n} \beta_{2i} Y_{t-j} + \mu 1t$$

Where,

μ_1 and μ_2 are serially uncorrelated zero-mean stochastic error terms.

Various preliminary and diagnostic tests such as unit root, descriptive statistics, diagnostic tests (Breusch-Godfrey Serial Correlation LM test, Heteroskedasticity test, Ramey RESET tests were carried out to ascertain the validity of the model.

4. Data Presentation and Analysis

Discussion of Results
The descriptive statistics for the variables are presented in Table 4.1. The table below shows the simple descriptive statistic of the Gross domestic product and government expenditure for Nigeria and the United Kingdom. Table 1 reveals that the mean value of GDP for the United Kingdom is 2551.66 billion US$ is greater than the mean value of GDP for Nigeria of 315.19 billion US$. This shows that the economy of the United Kingdom has grown much more than the economy of Nigeria in the years sampled. The United Kingdom also has a mean value of government expenditure of about 19.73% of its GDP while Nigeria's mean government expenditure is 5.9% of its GDP over the years sampled.

Table 4.1 Descriptive Statistics

	NIGERIA		UNITED KINGDOM	
	GDP NG	GE	GDP	GE
Mean	315193708453.21	5.869833	2551646592213.92	19.73812
Median	361456622215.7212	5.604329	2693247611031.814	19.74264
Maximum	546676374567.7206	9.448340	3093407362945.177	22.81104
Minimum	69448756932.58326	0.951747	1638656974233.482	16.80911
Std. Dev.	153521418423.6432	2.690846	430235124363.0343	1.445707
Skewness	-0.340096	-0.350532	-1.0197103	0.152494
Kurtosis	1.79364	2.056501	3.012158	2.936932
Observations	21	21	21	21

Source: Authors' Computation (2021)

Note: The summary statistics were computed before taking the natural logs of the variables

The analysis proceeds to employ the Augmented Dickey-Fuller (ADF) unit root test to check for non-stationarity or otherwise of the variables within the model. The results are presented in Table 2 below. The results on the table show that all the variables are stationary at first difference.

Table 4.2 Result for Stationarity Test

	NIGERIA			UNITED KINGDOM		
VARIABLES	ADF STATISTIC	5% CRITICAL LEVEL	ORDER OF INTEGRATION	ADF STATISTIC	5% CRITICAL LEVEL	ORDER OF INTEGRATION
LnGDP	-4.479907	0.0152	I (1)	-3.825098	0.0410	I (0)
LnGE	-5.633071	0.0016	I (0)	-3.942423	0.0455	I (0)

Source: Authors' Computation (2021)
Notes: The test was conducted with the assumption of intercept and trend
5%. level of significance was adopted

From the result in table 4.2, it can be seen that most of the variables are integrated at levels except ln GDP for Nigeria with is integrated at first difference. Since not all the variables are stationary at level, it becomes econometrically plausible to conduct a co-integration test. Johansen co-integration test is utilized to determine the existence of a long-run relationship in the model. The Johansen procedure considers trend and no intercept. The result shows the presence of two significant co-integrating equations. This indicates a long-run relationship among the variables. Hence, although not all the variables are stationary at levels, they have a long-run relationship. Therefore, a long-run model can be estimated.

Table 4.3 Johansen Co-Integration Test

	NIGERIA			UNITED KINGDOM		
No. of Co-Integrating Equations	Trace Statistic	0.05 Critical Value	P-value	Trace Statistic	0.05 Critical Value	P-value
None *	17.39596	15.49471	0.0256	19.17307	15.49471	0.0133
At most 1 *	4.491209	3.841466	0.0341	4.574527	3.841466	0.0324

Source: Authors' computation

The test was conducted with the assumption of trend and no intercept
The Johansen procedure shows the presence of two significant co-integrating equations for Nigeria and the United Kingdom. This shows the existence of a long-run relationship in the two models. Therefore, a long-run model can be estimated.
The regression result is represented in Table 4.4 for the two different countries using GDP as the dependent variable and government expenditure as the independent variable.

Table 4.4 Regression Results
The Dependent Variable is the GDP (US$)

Variable	NIGERIA			UNITED KINGDOM		
	coefficient	t-statistic	Prob.	coefficient	t-statistic	Prob.
Constant	24.98702*	5.945787	0.0000	24.16569	16.63878*	0.0000
GE	0.818244*	5.945787	0.0000	1.471911	3.020959*	0.0070
R-squared	0.65			0.82		
Adjusted R-squared	0.63			0.79		
F-statistics probability	35.35239* (0.000010)			9.126191* (0.007028)		
Jarque-Berra	1.7462 (0.4176)			1.7344 (0.42011)		
Breusch-Godfrey Serial Correlation LM Test:	8.345222 (0.1382)			13.96979 (0.0826)		
Heteroskedasticity Test: Breusch-Pagan-Godfrey	1.975042 (0.1599)			3.569560 (0.0588)		

Source: Author's computation 2021
Note: * indicates 5% significance level

The results as presented in Table 4.4 showed an R-squared value of 0.65, one can conclude that the independent variable explained only 65 percent variability in the dependent variable in Nigeria. An R-squared value of 0.82 for the United Kingdom indicates that the independent variable accounted for over 82 percent variability in output growth. In other words, the model explains that economic growth in the United Kingdom is better than in Nigeria. The F-statistic validates the joint contributions of the independent variable in explaining output growth in both Nigeria and the United Kingdom. the probability value of the F-statistic is less than 0.05 for Nigeria and the United Kingdom, revealing that the model has a good fit. The Breusch-Godfrey Serial Correlation LM Test confirms the absence of serial autocorrelation in the Nigerian data series and the Britain data series. The Breusch-Pagan-Godfrey heteroskedasticity test shows no evidence of heteroscedasticity in the model for both Nigeria and the United Kingdom.

The results reported in Table 4 indicate that government expenditure significantly determines economic growth in both Nigeria and the United Kingdom. Government expenditure is positively related to economic growth in Nigeria, government expenditure also exhibits a positive relationship with economic growth in the United Kingdom. However, in Nigeria, the coefficient of government expenditure (GE) was 0.818244 while the t-value is 5.945787 with the probability value of 0.00000. A percentage increase in government expenditure will cause a positive and significant impact on economic growth by 0.818244 units. For the United Kingdom, the coefficient of government expenditure (GE) was 1.471911 while the t-value is 3.020959 with the probability value of 0.0070 which implies that a percentage increase in government expenditure (GE) will cause a positive and significant effect on GDP by 1.471911 units. This shows that the influence of government expenditure on economic growth in Nigeria is confirmed by the results, even though the coefficient is relatively small in Nigeria. In the United Kingdom, however, the relationship is not only positive but fairly large in magnitude and is statistically significant. The implication is that the Keynesian school of thought, that increase in government spending fosters domestic consumption when the law of invisible hand fails to maintain equilibrium, has been confirmed in both Nigeria and the United Kingdom. As more expenditures are committed to the advancement of the economy by the government, the more effective they are at generating higher levels of growth. This conclusion is consistent with the findings of Menyah and Wolde-Rufael (2013); Nworji et al. (2012). The first null hypothesis, that there is no significant long-run association between government expenditure and economic growth in Nigeria, is rejected as a result of this finding. Keynes believed that government intervention in the economy through fiscal policy was necessary for economic stability. Government expenditure, in particular, can serve as an important economic regulator and stimulant. In both good and poor times, public sector spending can be seen as a useful policy instrument for balancing the economy.

We employed the granger causality test to ascertain the direction of causality between government expenditure and economic growth. The results of the Granger causality test are presented in Table 5.

Table 4.5 Granger Causality Test

	Nigeria		United Kingdom	
Null Hypothesis:	F-Statistic	P-value	F-Statistic	P-value
LNGEUK does not Granger Cause LNGDPUK	1.01721	0.3868	1.61607	0.2336
LNGDPUK does not Granger Cause LNGEUK	0.85333	0.4470	2.22819	0.1445

Source: Author's computation from Eviews 9
Note: the lag length of this test is 2

In the Granger causality test, the decision rule is to reject the null hypothesis if the probability value of the F-statistic is less than 0.05 level of significance. Looking at the result in table 4.5, the probability value of all the F-statistic is greater than 0.05 level of significance, thus we fail to reject the null hypothesis and conclude that there is no causal relationship between government expenditure and economic growth in both Nigeria and United Kingdom. This means that changes in economic growth as measured by gross domestic product are not influenced by changes in two years' lag value of government expenditure. In the same vein, changes in government expenditure are not influenced by two years lag value of economic growth. Thus, government expenditure and economic growth do not Granger cause each other, implying that there is no causal relationship between them. This clearly shows that Wagner's law, which states that there is a causal relationship between economic growth and government spending, does not hold for Nigeria and the United Kingdom.

5. Conclusion

This paper empirically investigated the impact of government expenditure on economic growth comparatively for Nigeria and the United Kingdom. As pointed out in the literature, research experts have failed to develop a consensus on the impact of government spending on economic growth. As a result, the impact is yet to be determined. While the Wagner Law asserts that government spending rises in tandem with economic growth, the Keynesian perspective emphasizes the relevance of government spending in generating growth. This current study uses both the Granger Causality Test and Ordinary Least square regression analysis to reach this research goal while comparing Nigeria and United Kingdom between 2000 and 2020. This research has aided in the endeavor to develop an empirical measure of the impact of government spending on economic growth. According to data analysis, there is a positive link between government spending and economic growth in the two countries being sampled. This backs up Keynes' (1936) notion of the government intervening actively in the economy through a variety of policy instruments. Furthermore, the research confirms Wagner's (1813) premise of ever-increasing state activity because accessible statistics on government expenditure and gross domestic product in both Nigeria and the United Kingdom show an increasing trend. The empirical findings are backed with Keynes' theory, which states that any increase in government spending leads to an increase in economic growth. This demonstrates how public spending can be used to raise GDP growth. Over the period investigated, Nigeria and the United Kingdom have witnessed an increasing GDP growth rate, although, the growth rate in the United Kingdom surpasses that of Nigeria significantly.

As a result of the preceding, it is reasonable to conclude that government expenditure has been better utilized in the United Kingdom than in Nigeria. Britain's present economic state, on the other hand, is better than Nigeria's economic state. One important finding of the study is that Nigeria needs to improve its expenditure management by providing a sound macroeconomic environment. A sound macroeconomic environment is essential for growth since it is a logical precondition for the proper use of public funds.

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