**Impact of Government Expenditure as a one of the factors for economic growth in Ghana**

# ABSTRACT

The paper focuses on the effect of government expenditure on economic growth in Ghana. The study sought to discover and analyze the effect of Government recurrent and capital expenditure on economic growth. The independent variables considered in this research constitute Government recurrent and capital expenditure while gross domestic product (GDP) is considered as dependent variable. The work is analyzed using time series data from 1972 to 2021. A unit root test is conducted to determine whether the time series variable is non-stationary and possesses a unit root. The results imply that capital government expenditure (GCE) has an important effect on GDP growth with a coefficient of 0.26160 (p < 0.01) meaning that a 1% increase in GCE results in a 0.26% increase in GDP. On the other hand, the coefficient for recurrent government expenditure (RGE) is given as 0.05581 with a p-value of 0.2664 which shows a positive relationship between GDP and RGE, but the p-value is also not significant. The Granger causality test indicates the presence of a bidirectional relationship between capital expenditure and economic growth while unidirectional causality from economic growth to recurrent expenditure. These results support the Keynesian perspective that more government involvement in the economy is associated with growth. However, the study also goes against the Peacock and Wiseman hypothesis, suggesting government spending is more responsive during crises than as an inner happen of economic growth. The study recommends that to achieve sustained economic growth, the government and policymakers should concentrate on investing in the basic infrastructure as they are catalysts for economic growth.

**Keywords:** Economic Growth, Government Expenditure**,** Capital Expenditure, Recurrent Expenditure

## 

## Introduction

Public expenditure plays a vital role in poverty reduction for most developing economies, and Ghana is not exempted (Debrah, 2013). The available evidence indicates Ghana has achieved substantial poverty reduction over the years, but progress has become slower while inequality persists (Dadzie & Ofei‐Aboagye, 2021). Governments in the quest to reduce poverty spend on essential services such as providing quality education, good health care and security for its citizenry, good transport systems, paying salaries of public servants, purchasing weapons for the military, etc (Hyman, 2010).

Moreover, the government’s effort to increase economic growth in Ghana has resulted in a sharp rise in government spending but the corresponding impact on the growth of the economy is not felt by households (Adu and Ackah, 2015). In the research conducted by Adu and Ackah (2015), the study found that, in both the short and long term, government capital expenditure has an inverse effect on the growth of the economy whereas government recurrent expenditure has a direct effect on economic growth.

Ghana's economic growth since independence has not been stable and data available have shown that, while government expenditure is rising, the rate of economic growth has remained stagnant until 2011 when the country’s economy grew by 14.5% due to the oil production in larger quantities (Ministry of Finance and Economic Planning Data, 2011). Available data has also shown Ghana’s economy showed an inconsistent growth pattern. Since 1965, Ghana's economic growth rate stood at 4.5% on average as against the real expenditure growth rate of 8.5% on average. From 1995 to 2010, Ghana’s economy grew on an average stood at 5.8% lower than the 8% as proposed in Vision 2020 but average expenditure grew by 13% in the same period (Adu and Ackah, 2015).

Scholars over the years have debated extensively how public spending impacts national economic development with economists and policy makers investigating the many connections between public budgets and national economic growth. The findings of prior studies show inconsistent results. Some research found that government spending impacted economic growth positively with other findings suggesting a negative or insignificant effect between the two (Chu et al., 2018; Eunice, 2018; Nyasha & Odhiambo, 2019).

The results of prior studies that assessed the effects of government expenditure on economic growth in Ghana showed inconsistent and conflicting results (Sakyi & Adams, 2012; Sakyi, 2011; Nketia-Amponsah, 2009). The study is therefore an attempt to contribute to research on the relationship between government expenditure and economic growth in Ghana, a developing economy. This is because available literature on how public spending affects economic growth in Ghana remains scarce. This study also examined this relationship from different theoretical lenses in a quest to reconcile the differences. The study ended by proposing some reforms for economic growth.

## Hypothesis

The following hypotheses have been developed. The hypothesis included null ( and the alternative hypothesis (). The hypotheses are:

Government recurrent expenditure has no significant effect on economic growth in Ghana

Government recurrent expenditure has no significant effect on economic growth in Ghana

Government capital expenditure has no significant effect on economic growth in Ghana.

Government capital expenditure has significant effect on economic growth in Ghana

Government expenditure does not granger cause economic growth in Ghana

: Government expenditure granger causes economic growth in Ghana

**Literature Review**

## Concept of Government Expenditure

Government expenditure includes all expenses incurred by the central government, the local government, and other public sector entities for the provision of public services or to satisfy the social wants of the people (Krah, 2014). It consists of all appropriate spending from public funds. A nation’s economic policies depend on government expenditure because they determine how resources get distributed and affect citizen welfare (Yeniwati 2019). A governmental budget leads to either budget deficits or surpluses as the main fundamental idea (Yeniwati 2019). Keynes (1936) backed the need for government expenditure in resource allocation and income distribution. In countries where development is still at birth, government expenditure not only hastens the expansion of the economy and stimulates employment opportunities, but also plays an expedient role in reducing poverty and inequalities in income distribution (Jelilov et al., 2016).

## Types of Government Spending

According to Aigheyisi, (2013), government expenditures are generally categorized into expenditures on administration, defense, internal securities, health, education, and foreign affairs and have both capital and recurrent components. Capital expenditure refers to the amount spent in the acquisition of fixed (productive) assets as well as expenditure incurred in the upgrade/improvement of existing fixed assets such as lands, buildings, roads, machines equipment, etc., including intangible assets (John, 2017). Capital expenditure is usually seen as expenditure creating future benefits, as there could be some lags between when it is incurred and when it takes effect on the economy. Recurrent expenditure on the other hand refers to expenditure on the purchase of goods and services, wages and salaries, operations as well as current grants and subsidies (usually classified as transfer payments). Recurrent expenditure, excluding transfer payments, is also referred to as government final consumption expenditure.

According to Danladi et at (2015) economists have classified government expenditure into three main types. Government acquisition of items and services for present consumption, expenditure is also known as government consumption expenditure. Government provision of infrastructure aimed at providing future benefits to the public also includes research spending by the government, and this expenditure is referred to as investment expenditure. Government expenditures that are not related directly to the purchases of goods and services, these expenditures also referred to as transfer payments.

Government expenditure is financed through different means. Governments use taxes to fund programs and expenditures and at other times governments borrow internally or externally to finance their programs. It is government fiscal policies that determine the source and the means of financing expenditure Danladi et al, (2015).

## Empirical Literature

Several researches are conducted to establish the relationship that occurs between government expenditure and economic growth. However, there have been some variations in their findings. Many scholars disagree about the impact that public spending has on the growth of national economies.

Several studies show that public spending for infrastructure and expenditure on education and healthcare creates growth through enhanced productivity and improved human capabilities. Research conducted by Nyasha and Odhiambo (2019) reviewed extant literature on the subject and found that most studies found the relationship between government expenditure and economic growth to be positive. This is further supported by a study by Uremadu et al. (2019) that also found that government spending affects economic growth positively. However, Eunice (2018) identified negative economic growth resulting from non-productive government expenditure.

The effect of Government spending on economic growth has intrigued many researchers although disagreement among their findings produces more confusion than practical understanding (Nyasha & Odhiambo, 2019).

Government spending in health, military, and education sectors showed a positive and significant influence on the economy and welfare of citizens across 20 Asian countries according to Wiksadana & Sihaloho (2021). The study identified government health expenditure as having the biggest impact on education and military spending immediately following (Wiksadana & Sihaloho, 2021).

The study by Uremadu et al. (2019) investigated the association between government spending and economic growth in Nigeria and the results indicated that Nigerian government expenditures for administration and public debt payment created substantial economic growth yet transfers did not impact growth significantly.

An examination by Chu et al. (2018) showed productive government spending along with non-productive government spending creates different impacts on economic growth based on a nation's level of development. The proportion of current spending showed positive effects on growth rates among developing countries but displayed negative results in developed countries.

According to the research findings of Paudel (2023), contrary to the assumption that capital expenditure is more crucial to economic growth than recurrent expenditure, the aggregate of capital and recurrent expenditure was found not to significantly influence economic growth. Moreover, the study found that expenditure on education, whether current or capital would increase economic growth.

Ackah et al. (2014) conducted a study using Wagner’s hypothesis, counteraction through the pairwise Granger test to examine the impact of government expenditure on the economic growth of Ghana. The study revealed that government expenditure has a positive effect on economic growth in the long run but negative in the short run, this was attributed to the payment of taxes in a sense that when the government raises revenue through taxes to finance its expenditure, these taxes would affect production in the short run, as there are distortions in taxes that impede economic growth.

Onakoya and Somole (2013) adopt the three-stage least square simultaneous equations estimation technique to study the effect of Government investment spending on the economy of Nigeria, in the context of the macroeconomic framework at the sectoral level. The findings showed that Government capital spending has a strong correlation with the growth economy in Nigeria. However, the findings also indicated that public investment spending has a direct impact on the output of oil and gas, but negatively impacts on the production in the manufacturing and agriculture sectors. However, the effect on the services sector was insignificant. The evidence further points out that, Government capital spending promotes private-sector investment to increase the growth of the economy.

Aigheyisi, (2013) has researched to assess the effect of public investment and government expenditure on the growth of Nigeria’s economy using the Granger Causality Test to establish the existence of a causal relationship between federal government expenditure (recurrent and capital) and GDP and to further confirm the existence of long-run cointegrating relations between the variables. The result of the study indicated that there are causality running between the growth of the economy and government consumption expenditure.

The findings of Modebe et al (2012), in a study to investigate the impact of recurrent and capital expenditure on Nigeria’s economic growth using multiple regression analysis for data from 1987 to 2010, found that both capital and recurrent expenditure have an insignificant impact on economic growth while only recurrent expenditure had a positive effect.

Muritala et al. (2011) investigated the impact of government recurrent and capital expenditure on the economic growth of Nigeria from 1970-2008 using the Ordinary Least Square (OLS) technique. Available evidence from the analysis suggests a direct effect of investment and consumption expenditure on GDP. It is necessary to suggest that the government should consider private sector participation and commercialization to ensure efficiency in the allocation of resources (Darkoh, 2014).

Nurudeen and Usman, (2010)used the co-integration and error correction methods to analyze the relationship between government expenditure and economic growth in Nigeria from 1970 to 2008. The study results revealed that the explanatory variables jointly account for approximately 58.96 percent of changes in economic growth. The estimation results showed that total capital expenditure and total recurrent expenditure are statistically significant in explaining changes in economic growth. However, expenditures on defense and agriculture are not significant in explaining economic growth.

In a study to examine the effects of the growth of public spending for a panel of 30 developing countries between the 1970s and 1980s, (Bose *et al* 2007) concluded that government investment spending has a direct and strong relationship to the growth of the economy, while government consumption expenditure has an insignificant relationship with the growth of the economy. When government expenditure is divided into its components parts and examined, “government expenditure” in education and the overall expenditures on education in Nigeria were the only investments that were seen to be significantly associated with growth if all factors that affect government budgets are to be considered (Aigheyisi, 2013).

Olugbenga and Owoye, (2007) assessed the connection between government expenditure and economic growth in 30 OECD nations between the period 1970 to 2005. The regression results revealed the existence of a long-run connection between government spending and the growth of the economy. The authors at the same time identified a one-way causality from public spending to the growth of the economy in 16 out of 30 countries, thus supporting the Keynesian hypothesis. However, causality runs from the growth of the economy to public expenditure in 10 of the countries, confirming Wagner’s law. Finally, the authors found the existence of a feedback relationship between government expenditure and economic growth for a group of four countries.

## Theoretical Framework

This section of the research examines common theories that explain the relationship between government expenditure and economic growth.

## Keynesian Macroeconomic Theory of Government Expenditure

According to Keynesian Economics Theory which is shaped by the ideas of John Maynard Keynes, the theory intimated that government expenditure increment leads to more economic activity and spending and therefore results in economic growth (Elmendorf & Mankiw, 1999). According to Keynesian economic theory, governmental intervention occurs regularly as a means to enhance aggregate demand employment levels, and production capacity by utilizing borrowed funds (Aspromourgos, 2018 and Brown-Collier & Collier, 1995 Kregel, 1985; Amoako et al., 2025).

Moreover, according to Keynes, (1936), economies are unpredictable and fluctuate and therefore the interaction of demand and supply at equilibrium would not necessarily bring full employment. He suggested that to reduce the issue of unemployment, the government can take over from the private sector, invest in the sectors that are ignored by the private investment, and finance them either through taxes or borrowed money. Various studies agreed with Keynes with many scholars positing that Deficit-financed fiscal policy causes government debt to increase which increases income, exchange rates, and demand (Ncanywa et al., 2018; Fischer, 1993). The theory however fails to address the difficulties of using taxes and borrowing to fund budget deficits according to Pereira and Dall’acqua (1991).

In disagreement with this, the neoclassical model argues that government expenditure policies bring disincentives to economic growth and as such have no impact on the economic growth. However, those in support of the Keynesian model argued that government expenditure policies help to correct the inefficiencies resulting from the market. Barro et al (1992), Easterly and Rebelo, (1993), and Brons et al, (1999) argue that government activities influence the direction of a country’s economy. Nurudeen and Usman,(2010) and DaAtul and Amirkhalkhali, (2002) posit that in the endogenous growth model, government spending and taxes are necessary in predetermining the future growth of an economy.

## Musgrave theory of public expenditure growth

The public expenditure growth theory developed by economist Richard A. Musgrave provides researchers with a detailed model to study the increase in government spending throughout the years (Tiebout, 1956). The basic principle of Musgrave's theory establishes that the market forces responsible for private sector goods allocation fail to measure public good demand effectively. Musgrave maintained that public goods need collective decision-making processes that often generate suboptimal resource distributions than the ones achieved by private sector markets (Tiebout, 1956).

The theory presented by Musgrave shows that as a result of industrialization, public goods and services such as infrastructure, health, and education experience higher demand. This is because the rising complexity of modern societies together with the requirement of collective action drives the growth of government expenditures. After all, the private sector remains unable to address specific domestic challenges effectively. According to Musgrave’s theory public goods and service expenses rise with time due to population expectations and technological advancements (Jermsittiparsert et al., 2019).

Many scholars and researchers argue regarding the effects of Musgrave’s theory across public finance and economic studies. The theory established by Musgrave stands as an influential work that enhances our knowledge of public spending patterns and how governments operate during modern times yet its suitability faces criticism in developing nations. The theory was established by Musgrave (Tiebout, 1956, Frankel, 1957, Jermsittiparsert et al., 2019).

## Peacock and Wiseman’s Theory of Expenditure

The field of public finance received substantial influence from Peacock and Wiseman's Theory of Expenditure which is popularly referred to as the "Displacement Effect" theory can be employed to explain the impact of government spending and economic growth (Tiebout, 1956).

Peacock and Wiseman established that governmental spending does not show a steady rise over time instead demonstrates displacement patterns through sudden large-scale increases that emerge following external shocks such as financial crises or economic downturns (Tiebout, 1956). The theory explains that displacement effects create new increases in government spending which endures beyond the crisis period (Tiebout, 1956).

The Peacock and Wiseman theory argues that government expenditure is dynamic and non-linear and follows societal and sociopolitical influences rather than the view that the traditional idea of government expenditure is linear and gradual. According to the theory, the actual spending declared by governments goes beyond the necessity for public goods and services since social and political variables including public sentiments and tax tolerance among the public also influence these decisions.

Extant literature regarding the Peacock and Wiseman theory shows conflicting results because while some research results back up the displacement effect (Furceri & Zdzienicka, 2012; Pluta, 1974), others doubt its global validity (Jermsittiparsert et al., 2019; Tiebout, 1956). However, the Peacock and Wiseman concept continues to shape current discourse on public finance despite the criticism from other authors.

To conclude, the Peacock and Wiseman theory of expenditure presents a detailed and sophisticated method to describe the connections between government spending and social conditions. It functions as an essential framework that enables better comprehension of unpredictable governmental fiscal policies. (Jermsittiparsert et al., 2019) (Ebaid & Bahari, 2019) (Tiebout, 1956).

## Wagner's theory

Wagner (1893) also developed an expenditure model that assumed that as the public sector increases, government expenditure also increases. The model also explained that as the economy grows, there will be pressure on the government to provide goods and services for sustainable growth. The theory also posits that there would be a need for the government to institute regulations and laws to maintain law and order so that property rights would be protected in the expanded economy.

The theory suggests that due to the expansion of the economy, there will be more demand for social activities of the state, administrative and protective actions, and welfare functions and the government will be required to resort to loans so that certain projects that will stimulate the growth of the economy are finance (Kambua, 2014; Atisu et al., 2024; Umoren et al., 2025). Consequently, this will result in the accumulation of debts and interest which payment will bring an increase in government expenditure(Kambua, 2014).

In Wagner's view, the private market would not forgo its profit motive to provide goods needed to satisfy public needs; this has made it necessary for the government to take over to provide public goods. He further explains that, if private companies become too large, the economy will become unstable because, problems for individual companies would become problems for society as a whole (Kambua,2014), and the government will have to ensure that there are rules to regulate both the public and the private sector.

In conclusion, Wagner's law suggests that rising government expenditure impacts economic growth positively which contrasts with Peacock and Wiseman's ideas. Despite the merits of this theory, research findings about Wagner's law produce conflicting results since different research approaches suggest the law holds in certain situations although other investigations produce contrary results. (Ebaid & Bahari, 2019).

## Ernest Engel’s Theory of Public Expenditure

During the 19th century, German statistician and economist Ernest Engel developed a fundamental theory about public expenditure which explains the relationship between economic growth and government expenditure. The theory developed by Engel asserts that when national per capita income grows expenditure on food costs reduces but customers spend more on other goods and services (Chai & Moneta, 2010). Engel reached this conclusion through his analysis of family budgets thereby determining that food-related household expenses decrease as household income increases.

The basic principle demonstrates broad consequences regarding government spending. The composition of government expenditure will change as economies expand and per capita income levels increase since food expenditure will diminish in comparison to infrastructure healthcare and education budgets.

Research after Engel's findings has verified his results by showing how public spending on food items usually drops when per capita income rises (Abdel‐Ghany & Schwenk, 1993; Muritala et al, 2011; Darkoh, 2014).

**Research Methodology**

The research design identified for this study is a quantitative approach. The study collected data from only secondary sources. The sources include published data and data collected from journals, data obtained from the Bank of Ghana, World Bank publications, and Ghana statistical services publications. The information about the economic growth of Ghana from 1972 to 2021 was obtained from the website of the World Bank as well as government expenditure in relation to a similar period. The study employed time series. We also sourced some of our information from the publications of the IMF and the Ministry of Finance with respect to the period stated. Our data on government expenditure have been grouped into two major categories such as recurrent and capital expenditure. Other variables considered were inflation, exchange rate etc.

## 

## Data Analysis

GDP: f(GRE, GCE, ) where GDP represents the economic growth measured by GDP annual percentage growth rate, GRE represents government recurrent expenditure measured by government consumption expenditure in percentage of GDP and GCE represents government capital expenditure measured by fixed capital formation in percentage of annual GDP. This function of economic growth can be expressed in an equation form as:

GDP ꞊ + + + µ, where and Are constants and µ is the error term and t represents the years (t = 1967 to 2016).

## 

## RESULTS AND ANALYSIS

The data of the study is analyzed and presented to allow the interpretation of the relationship between government expenditure and economic growth. The government expenditure has been disaggregated into capital expenditure and recurrent expenditure. It covers the descriptive statistics of the data, the regression analysis, the correlation matrix, the Granger casualty test, the Johansen cointegration test, and the regression equation. The result of the various diagnostic tests has been combined with the regression analysis in one table.

## Descriptive Statistics

The table below presents the descriptive statistics of the various variables used in the study.

Table 1: Descriptive Statistics Results

|  |  |  |  |
| --- | --- | --- | --- |
|  | Economic Growth (Annual %) | Consumption Expenditure (% Of GDP) | Capital Expenditure (% Of GDP) |
| Mean | 3.803289 | 12.22260 | 16.24003 |
| Maximum | 14.04600 | 20.88796 | 30.92694 |
| Minimum | -12.43163 | 5.861290 | 3.531480 |
| Standard Deviation | 4.483185 | 3.196671 | 7.838386 |
| Skewness | -1.244731 | 0.799899 | 0.071069 |
| Jarque-Bera  Probability | 29.19364  0.000000 | 6.222032  0.044556 | 3.688936  0.158109 |
| Sum | 190.1644 | 611.1302 | 812.0015 |
| Sum Sq. Dev. | 984.8483 | 500.7165 | 3010.575 |
| Observation | 50 | 50 | 50 |

*Source: E-View Results*

From the table above the economic growth has a mean of 3.80329 which means that the economy of Ghana from 1972 to 2021 has increased at an average of 3.8%. The standard deviation also means that the GDP growth in the respective years varied significantly by 4.48% from the mean. The mean of the consumption expenditure is 12.22260 meaning the consumption expenditure increased averagely by 12.22. Finally, the mean of capital expenditure is also 16.24003, meaning the capital expenditure increases at an average of 16.24%. Also from the table, all the variables are positively skewed except only economic growth, and observing the Kurtosis with the Jarque-Bera explains the presence of normal distribution among recurrent expenditure and economic growth but not in the capital expenditure.

## 

## Regression Analysis and Results Presentation

Table 2: Independent Variable (Economic Growth)

EXPLANATORY

VARIABLES MODEL 1 MODEL2 MODEL 3

Constants [-0.635485] [-0.916814] [-1.127228]

(-0.6215) (0.7107) (0.6215)

Recurrent expenditure [0.386178\*] [0.055807]

(0.0529) (0.266402)

Capital expenditure [0.273323\*\*\*] [0.261601\*\*\*]

(0.0004) (0.0036)

\*means significant at 10%, \*\* means significant at 5%, \*\*\*significant at 1%, the p-values are in () and the coefficients are in [ ]

R- Square 0.228366 0.075822 0.229530

F- Statistics 14.20569 3.938072 7.000858

Durbin- Watson 1.582298 1.339567 1.586732

DIAGNOSTICS:

JarqueBera 25.31801\*\*\*

(0.0000)

VIF 1. 27937

ADF root test

DGCE -8.063969\*\*\*

(0.0000)

DGRE -6.303383\*\*\*

(0.0000)

LGDP -4.533382\*\*\*

(0.0006)

Breusch- Pegan-Godfrey 3.82323

(p­ > chi-square (2) (0.1478)

Observation 50 50 50

|  |
| --- |
| Source: E-View Results |

From Table 2, the capital expenditure in the first model has a coefficient of 0.273323 which explains that a 1% change in the capital expenditure will lead to a 0.27% change in economic growth in Ghana, this has a p- p-value of (0.0004) means this change is significant at 1%. In the second model, the group has eliminated capital expenditure and included recurrent (consumption) expenditure. The coefficient of recurrent expenditure in the second model is 0.386178 and has a p-value of 0.0529. This explains that leaving recurrent expenditure alone, a 1% change in the government expenditure will bring about a 0.39% change in economic growth and this impact is significant at 1%. To explain the correct effect of government expenditure on economic growth, the study included all these components in model 3. The capital expenditure in the third model has a coefficient of 0.261601 and a p-value of 0.0036 meaning that a 1% change in capital expenditure will bring 0.26% change in GDP and this is significant at 1% while the recurrent expenditure has a coefficient of 0.055807 and p-value of (0.266402) meaning that, 1% change in recurrent expenditure will bring 0.06% change in economic growth and this is not significant. Also, the R- R-square in the regression of the general model is 0.229530 (22.95%), this explains that the 22.95% change in economic growth in Ghana is explained by changes in the independent variables such as recurrent and capital expenditure.

## 

## Diagnostic Test

The following diagnostic tests were conducted to analyze the stability of the data:

## Autocorrelation Test

The group conducted an autocorrelation test, to examine whether there was autocorrelation between the variables. The group used the Durbin-Watson statistics developed by J. Durbin and G S Watson in 1951 to analyze the autocorrelation of our data using Eview 7.1. The Durbin-Watson model has established a scale to measure whether there has been an autocorrelation between two times series, the scale has ranged from 0 to 4, which means that when data has a Durbin-Watson value greater than 1 but less than 2 the data can be considered as normally distributed and has no autocorrelation between two times series. From Table 2 above, the Durbin Watson statistics s 1.586732, means that our data is normally distributed and has no autocorrelation.

## Normality Test

To measure the normality of our data, we used the Jarque- Bera statistics. The null hypothesis of our study is that the data is normally distributed. From Table 2 the Jarque- Bera statistics is 25.31801 with a p-value of 0.00000 this means that there is no constant variance in the distribution which is significant at 1% which implies that our normality assumption should be rejected.

## Unit Root Test

Table 3: Results of unit Root Test

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| VARIABLES  AND RESIDUALS | ADF  LAG | ADF  TEST  STATISTIC | PROB | DECISION  RULE |
| LGDP | 1 | -4.533882 | 0.0006 | Stationary |
| LGRE | 1 | -1.780849 | 0.3845 | Non-stationary |
| LGCE | 1 | -1.538339 | 0.5060 | Non-stationary |
| DGDP | 1 | -4.774946 | 0.0003 | Stationary |
| DGRE | 1 | -6.303383 | 0.0000 | Stationary |
| DGCE | 1 | -8.063969 | 0.0000 | Stationary |

Source: E-View Results

We have also tested the unit root of the data across the time series to determine whether the data has a unit root or is stationary across the time series. This test is done using the ordinary least square approach with the Augmented Dickey fuller test. The null hypothesis assumed a unit root in the data within the times series. From the statistics, all the variables have no unit root after the first difference and the intercept except the economic growth which is stationary at the level. This is explained by the following statistics; the capital expenditure has an ADF test value of -8.063969 and a p- p-value of (0.0000) indicating that the null hypothesis should be rejected because it is insignificant, the recurrent expenditure has an ADF test value of -6.303383 and a p-value of (0.000) meaning the null hypothesis should be rejected because it is insignificant and finally the economic growth (GDP) has ADF test value of -4.533382 and a p-value of (0.0006) meaning that the null hypothesis should be rejected because it is insignificant. These results are shown in Table 2 above.

The analysis of time series data requires unit root testing because non-stationarity commonly exists which produces false regression results when testing occurs without proper validation. The ADF test focuses on validating variables used in the study to ensure that they are either stationary at levels or become stationary after differencing to enable valid statistical analysis.

## Heteroskedescity Test

**Table 4: Results of heteroskedasticity test**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Heteroskedasticity Test: Breusch-Pagan-Godfrey | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| F-statistic | 1.945698 | Prob. F(2,47) | | 0.1542 |
| Obs\*R-squared | 3.823235 | Prob. Chi-Square(2) | | 0.1478 |
| Scaled explained SS | 8.618717 | Prob. Chi-Square(2) | | 0.0134 |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Test Equation: | |  |  |  |
| Dependent Variable: RESID^2 | | |  |  |
| Method: Least Squares | | |  |  |
| Date: 06/01/05 Time: 16:23 | | |  |  |
| Sample: 1967 2016 | | |  |  |
| Included observations: 50 | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 24.89864 | 19.18082 | 1.298101 | 0.2006 |
| CONSUMPTION\_EXPENDITURE\_ | 1.045069 | 1.771525 | 0.589926 | 0.5581 |
| CAPITAL\_EXPENDITURE\_\_\_\_O | -1.385230 | 0.722468 | -1.917359 | 0.0613 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.076465 | Mean dependent var | | 15.17592 |
| Adjusted R-squared | 0.037165 | S.D. dependent var | | 34.62861 |
| S.E. of regression | 33.97903 | Akaike info criterion | | 9.947489 |
| Sum squared resid | 54264.99 | Schwarz criterion | | 10.06221 |
| Log likelihood | -245.6872 | Hannan-Quinn criter. | | 9.991175 |
| F-statistic | 1.945698 | Durbin-Watson stat | | 1.937961 |
| Prob(F-statistic) | 0.154226 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Source: E-View Results

Again, the researchers also tested for heteroskedasticity using the Breusch- Pegan-Godfrey test. The null hypothesis assumed the existence of no heteroscedasticity that is in constant variance within the distribution. To observe the existence of heteroscedasticity in the distribution we have used the “Obs\*R- square and the Prob. Chi-Square (2)”. From Table 2, the Obs\*R- square is 3.82323 Prob. Chi-Square is 0.1478 and since the p-value is more than 10% significant level, no heteroskedasticity exists in the data.

## Multicollinearity Test

Finally to measure the multicollinearity in the data the group has adopted the “Variance Inflation Factor (VIF)” using the Eview7.0. From Table 2 the VIF statistics is 1.2793 which is greater than 10% and signifies the existence of multicollinearity in our data.

## Granger Casualty Test

To explain the casualty between the dependent variable and the independent variables the group has adopted the Pairwise Granger test to analyze the casualty between the variables. The table illustrates the Granger casualty test conducted using eview7.1.

Table 5: Pairwise Granger Test

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Hypothesis** |  |  | **Obs** | | **F-Statistic** | | **Probability** | |
| Recurrent expenditure does not Granger cause GDP | | | | |  | | 0.00444 | | 0.9472 | |
| Growth | | | | |  | |  | |  | |
| GDP growth does not Granger cause Recurrent | | | | | 49 | | 7.55209 | | 0.0085 | |
| Expenditure | | | | |  | |  | |  | |
| Capital expenditure does not Granger cause GDP | | | | |  | | 3.30886 | | 0.0754 | |
| Growth | | | | |  | |  | |  | |
| GDP growth does not Granger cause capital expenditure | | | | | 49 | | 2.89685 | | 0.0955 | |
| Capital expenditure does not Granger cause Recurrent. | | | | |  | | 3.00377 | | 0.0898 | |
| expenditure | | | | |  | |  | |  | |
| Recurrent expenditure does not guarantee cause Capital | | | | | 49 | | 0.86078 | | 0.3584 | |
| expenditure | | | | |  | |  | |  | |

Source: Group’s E-View Results

From Table 5 above, it can be observed causality runs through both capital expenditure and economic growth. This means that the null hypothesis that economic growth does not granger cause capital expenditure and vice versa can be rejected because they are significant at 1%. They have probabilities such as 0.0955 and 0.0754 respectively. Also, causality runs from capital expenditure to consumption expenditure, but no causality runs from recurrent expenditure to capital expenditure because they have probabilities like 0.0898 and 0.3584 respectively. We have also observed that causality runs from economic growth to recurrent expenses and not from recurrent expenditure to economic growth because they have probabilities such as 0.0084 and 0.9472 respectively.

This test proves vital for establishing whether historical government expenditure results can predict future economic growth along with confirming the opposite relationship. Evidence from the study demonstrates that capital spending impacts GDP while GDP directly affects capital spending amounts.

## Discussion of the Results

From the study conducted, we realized that the regression equation we ran would help us to discuss effectively our results. The equation produced is stated as follows:

GDP = 0.05581RGE + 0.26160GCE – 1.12723

From the equation, it is clear that both recurrent government expenditure (RGE) and capital government expenditure (CGE) have positive coefficients indicating that government expenditure has positive effects on economic growth. However, we have realized that recurrent government expenditure (RGE) has an insignificant relation to economic growth. In general terms, government expenditure has a positive impact on economic growth. These findings are consistent with the Keynesian theory of full employment which states that an economy is not stable and for that matter private market that is demand and supply cannot provide full employment except with the intervention of government (Keynes, 1936). This means government intervention will bring an increase in government expenditure leading to an increase in economic growth. The findings are consistent with the findings of Uremadu et al. (2019). However, the finding contradicts the Peacock and Wiseman theory of government expenditure, which states that government expenditure increases during crises like war, drought, and famine and not necessarily to the economic growth because people are ready to meet their tax obligation even at the higher tax rate Peacock and Wiseman (1961).

The result of the study suggests that the funding and implementation of infrastructure, education, and health systems as well as industrial development lead substantially to national economic growth. A 1% increase in capital expenditure results in a 0.26% rise in GDP according to the estimated coefficient of 0.261601 (significant at 1%). Therefore, when the government funds projects such as roads, electricity generation, and education, it generates multiple economic benefits that increase productivity and employment opportunities to stimulate growth in private businesses.

The study is very important to Ghana because of the following reasons:

1. The development of infrastructure decreases costs for production which generates attraction of both foreign and domestic investors.
2. Support for education and healthcare services upgrades human capabilities which results in higher productivity rates of workers.
3. Industrial finance from government sources leads to product diversity so Ghana decreases its dependence on gold and cocoa exports.

Despite the positive impact of foreign aid, Ghana faces major challenges which include corruption, project inefficiencies, and debt sustainability issues that diminish expected growth benefits.

Moreover, the result indicates that the relationship between recurrent expenditure and economic growth is positive, it shows no statistical significance (coefficient value of 0.05581 and p-value of 0.266402). This implies that although recurrent expenditure influences economic stability, it fails to create substantial GDP growth. The result of the study suggests the following:

1. Government operational expenses and employee salaries produce minimal productivity value because they fail to enhance productive capabilities.
2. The continuous growth of public sector wages and the increasing administrative expenses have led to bigger budget deficits and an elevated public debt situation for Ghana.
3. The majority of recurrent expenditure leaks through inefficiencies and corruption because it fails to reach growth-enhancing activities.
4. The economy of Ghana would generate superior returns when more funding is reserved for capital investments instead of excessive recurrent expenditure.

Also, in assessing the causality between the variables, the study has realized there is a bidirectional causality running between capital expenditure and economic growth where unidirectional causality runs from economic growth to recurrent expenditure. In general terms, bidirectional causality is found to be running through government expenditure and economic growth. This implies that to grow the economy, the government has to increase its expenditure on capital formation because high government expenditure can lead to high economic growth. The finding is consistent with Wagner’s theory of increasing state activities, which states that as public activities increase government expenditure also increases (Wagner, 1983) but contradicts the findings of Aigheyisi, (2013).

The result from the Granger causality test validates that economic growth has a bidirectional relationship with capital expenditure. This implies that

i. The rise in economic growth enables the government to boost capital spending due to increased tax revenue.

ii. Increase in capital expenditure positively impacts economic growth through improved infrastructure development, enhanced human capital, and industrial production capabilities.

The recommendation for fiscal discipline emphasizes that growing tax income from economic growth should be invested in capital expenditures which are more productive than repetitive budget allocations.

**Summary of the Findings**

To determine the casualty that runs through the variable studied, the study used the Granger casualty test to examine the casualty that runs through them. The result of this test revealed that there is a bidirectional casualty that runs between economic growth and capital expenditure and economic growth and recurrent government expenditure. However, there is a unidirectional casualty that runs through capital expenditure and recurrent government expenditure.

The study also conducted a cointegration analysis using the Johansen cointegration to examine the cointegration and the long-term relationship between the variables. The result of the test indicated that there is cointegration between the variables. The study found that there is a positive relationship between government expenditure and economic growth in Ghana. However, the regression analysis shows that even though government recurrent expenditure has a positive relationship with economic growth, the relationship is not significant.

Moreover, to avoid any spurious regression, the study conducted some diagnostic and stability tests, using the Augmented Fuller Dickey unit root test, normality test, heteroskedastic test, multicollinearity test, and autocorrelation analysis. The result from these tests showed that our variables were stationary at the levels and not any form of disturbance was identified with the variation. This has boosted the confidence imposed in our findings.

Finally, the outcome of the study has shown us that there is a direct relationship between government expenditure and economic growth; however recurrent expenditure has insignificant positive relation with economic growth. This finding confirms the Keynesian theory that forms the basis of this study. The finding also agreed with the Wagner assumption that an increase in economic activities brings high government expenditure because the finding of the Granger casualty test proved that there is a bidirectional casualty that runs through both government expenditure and economic growth.

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## Conclusion

This study explored all the tools and techniques available to it in determining the relationship between economic growth and government expenditure, though there may be issues that might not be covered in the course of the study, there is no doubt that the conclusion that will be drawn from this will be valid, accurate and reliable. The following conclusions are arrived at.

The study examined the data on recurrent expenditure and economic growth from 1972 to 2021 and concluded that an insignificant positive relationship exists between government recurrent expenditure and economic growth.

Finally, the group wanted to find out whether there is causality running through government expenditure and economic growth in Ghana. After conducting the cointegration test and Granger causality test, the group has concluded that there is bidirectional causality between government expenditure and economic growth. The group has identified a unidirectional causality between government recurrent expenditure and economic growth with causality running from economic growth to recurrent expenditure.

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## Recommendations

This research proves that government spending creates positive economic growth in Ghana because capital spending leads to significant growth but recurrent spending shows minimal influence. Future researchers should investigate public expenditure efficiency through sector allocation assessments and analysis of their sectoral productivity results. Moreover, future studies should include an analysis of external economic factors which include global financial trends and foreign aid since these affect Ghana’s fiscal policies.

**Policy Implications for Ghana and other developing countries**

The study provides the following suggestions on how economic growth and optimal government spending can be achieved in Ghana.

Firstly, the government should allocate capital investment funds into key sectors of the economy such as infrastructure development, health facilities education systems, and industrial expansion to generate lasting economic development.

Moreover, the government should work towards minimizing recurrent expenditure to limit budget deficits which will enable resources to be freed up to make productive investments.

Also, the government should put measures in place geared towards financial transparency and fiscal discipline to maximize economic outcomes from its expenditure.

**Disclaimer (Artificial intelligence)**

Option 1:

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

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