

# The Impact of Government Fiscal Expenditure on Sierra Leone's Economic Growth

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## Abstract

This study examines the impact of government fiscal expenditures on Sierra Leone's economic growth. Based on the study, the researcher disaggregated government fiscal expenditures into three major groups: capital, education, and consumption. In this study, the researcher used a casual-comparative research design to evaluate the independent and dependent variables. The current study uses time series data from the World Bank's World Development Indicators database covering the period from 2008 to 2022. The researcher employed Ordinary Least Square and Prais Winsten AR (1) regression models. Based on the analysis, government expenditure on capital projects, education, and consumption had a positive and significant effect on Sierra Leone's economic growth. Conclusively, the findings of this research have furnished additional empirical data regarding government fiscal expenditures on crucial economic domains like capital (fixed), education and consumption (current). It has also unambiguously identified the most efficacious sectors to which the government should allocate greater emphasis in order to enhance the country's economic growth. The researcher recommends the government of Sierra Leone to continue augmenting its financial support for capital projects, practice judicious consumer expenditures and invest in education that fosters innovation. To maximize the effects of government fiscal expenditures across multiple economic sectors, it is critical to ensure efficient and effective allocation of funds. Getting the desired results requires focused spending, transparent budget processes, and monitoring methods.

**Keywords:** Government Fiscal Expenditure, Economic Growth, Gross Domestic Product, Gross Capita Formation, Capital Expenditure, Current Expenditure, Prais Winsten and OLS

## 1. Introduction

### 1.1 Background

Sierra Leone is a developing country in West Africa that has faced significant economic challenges, including a history of civil conflict, weak institutions, and high levels of poverty. The government plays a crucial role in promoting economic growth and development through its fiscal policies. Researchers' interest in verifying and understanding government fiscal expenditures and economic growth has increased because of the resurgence of growth theory. Over the last decade, researchers extensively studied government fiscal expenditures components and their impact on economic growth. The empirical pieces of literature and popular theorists' outputs, such as Keynes, Wagner, and Neo-Classical views, vary in terms of data sets and econometric techniques and often produce contradicting results. In their study, (Bhavsar & Samanta, 2023) discovered that an increase in government expenditure as a percentage of gross domestic product (GDP) can

## ARTICLE INFO

### Research paper

Received: 02 June 2024

Accepted: 07 July 2024

Published: 09 July 2024

DOI: 10.58970/IJSB.1040

## CITATION

Bangura, F. S. (2024). The Impact of Government Fiscal Expenditure on Sierra Leone's Economic Growth, *Journal of Scientific Reports*, 7(1), 1-14.

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lead to economic growth, particularly in developing countries. However, the effectiveness of government expenditure in promoting economic growth can vary depending on factors such as the quality of public spending, institutional capacity, and the overall economic environment.

Sierra Leone's fiscal and debt sustainability is among several strategies that the government has developed in recent years. In order to restore macroeconomic stability, the government pursued fiscal consolidation with a focus on mobilizing domestic revenue and exercising judicious expenditure management. This action by the government has intensified a positive financial outcome, as domestic revenue increased to 13.7% in 2018 and further to 14.6% of GDP in 2019 from 12.3% in 2017. Concurrently, government expenditure fell from 23.5% of GDP in 2017 to 21.1% of GDP in 2019. However, the outbreak of the Corona Virus Disease (COVID-19) in the early 2020 and measures put in place at national and international level to stop the spread of the virus impeded economic activity in 2021. As a result, the GDP of Sierra Leone contracted by 2.2 percent in 2020 after growing by 5.5 percent in 2019. Because of a decline in economic activity, poor tax compliance, and tax deferrals provided by the National Revenue Authority (NRA) to companies to help them deal with the detrimental effects of the disease on their operations, domestic revenue fell to 13.3% of GDP in 2020 from 14.6% in 2019 (Sierra Leone Fiscal Strategy Statement, 2020). Overall, government expenditure rose to 24.9% of GDP in 2020. Experts forecast a decrease in government expenditure from 24.9% of GDP in 2020 to 23.1% of GDP in 2021, and an average of 21% of GDP from 2022 to 2024. In 2023, the government's total expenditure and net lending amounted to New Leones (NL) 9.7 billion, representing 12.3% of the GDP (Sierra Leone Government Budget, 2024). This amount was within the projected budget. Maintaining the wage bill at a sustainable level of 6.0% of GDP over the medium term is one of the sub-fiscal objectives of the overall measures to limit expenditure.

From a theoretical perspective, for example, Keynesian theory emphasized that government fiscal expenditure stimulates economic growth by increasing aggregate demand and creating employment opportunities in an economy. In Sierra Leone, increasing government expenditures on infrastructure projects, education, and consumption can boost economic growth by improving productivity and human capital development. While proponents of supply-side economics contend that policies that emphasize entrepreneurship, innovation, production, and investment can boost economic growth, prosperity, and the creation of jobs. Supply-side economists seek to foster an atmosphere that encourages business growth and contributes to the expansion of the economy by highlighting supply-side variables that propel economic activity. Understanding the theoretical underpinnings of the impact of government fiscal expenditure on economic growth can help policymakers in Sierra Leone to design effective fiscal policies that promote long-term economic development. The country is facing high unemployment and low aggregate demand, therefore, increasing government expenditure on infrastructure projects could help stimulate economic growth. For example, the African Development Bank (2011) emphasizes how crucial infrastructure is to Sierra Leone's economic development while also pointing out the potential and difficulties that come with the development of the nation's infrastructure. Understanding the impact of government fiscal expenditure and economic growth from a global perspective and in Sierra Leone is essential for policymakers to make informed decisions about resource allocation and fiscal policy.

This study used data from 2008 to 2022 in order to determine whether the Wagner law, Neo-Classical school of thought or the Keynesian method applies to Sierra Leone's economy. Therefore, causality analysis was then used to determine the direction of the relationship between the variables of interest, and coefficient estimators were used to determine whether raising government fiscal expenditure is the best course of action for Sierra Leone seeking to assure economic growth. The Keynesian method is therefore appropriate for Sierra Leone economy as all the study objectives such as government capital expenditure on economic growth, government expenditure on education, and government consumption expenditure all relate

positively and significantly toward economic growth of Sierra Leone. Thus, this research closes the knowledge gap regarding discussions about the impact of government fiscal expenditure on Sierra Leone's economic growth. The researcher focuses on a country-specific to gain full insight into the reaction of the government fiscal expenditure on Sierra Leone's economic growth as against the different findings that looked at the concept from a cross-country perspective such as (Ahuja & Pandit, 2020; Dudzevičiūtė et al., 2018; Kimaro et al., 2017; Sadeh et al., 2021). Also important is the fact that there is no available study that sheds light on the impact of government fiscal expenditure on Sierra Leone's economic growth. This study uses time series regression and modeling techniques of OLS (Ordinary Least Square) and Prais Winston with an observation period of 15 years ranging from 2008 to 2022, which advances the corpus of knowledge.

The researcher structured the remaining part of the study like this; The second section presents the literature review, the third section presents the data and methods, the fourth section presents the empirical analysis and discussion of findings, and the fifth section presents the conclusion and recommendations of this study.

## **2. Literature Review**

Several studies that have investigated the impact of government fiscal expenditure on economic growth have yielded varying conclusions when viewed from both developed and developing countries' perspectives. The findings are contradictory and have left the urge for more studies to be carried out to examine the impact of government fiscal expenditure on economic growth. Government fiscal expenditure is a growth-led government size of the economy that can enhance economic activities leading to economic growth (Ahuja & Pandit, 2020; Sumandeep & Sharma, 2024; Maingi, 2017; Okonkwo et al., 2023; Okoroigwe, 2024). Other studies contended that government fiscal expenditure can be growth retarding, leading to more pressure on the economy, and more burden on the citizens with less or no economic growth and development (Buthelezi, 2023; Jolaiya, 2022; Ndanshau & Mdadila 2023). From an economic point of view, government fiscal expenditure is the total amount of money that the government spends in a certain period, usually a fiscal year, on goods and services, investments, and transfers payment. It is the responsibility of the government to meet the needs and demands of the public providing basic social amenities to its citizens as part of its commitment to uphold the social contract, since the government regulate the amount of money in circulation in the economy. Expenditure by the government is a crucial tool in stimulating the development process of an economy (Aluthge et al., 2021). According to Ahujah & Pandit (2020), government expenditure positively and significantly affects economic growth. Therefore, government expenditure is an important element of economic policy used by the government for more economic growth.

The popular economic theorists held different perspectives regards government expenditure and its relationship with economic growth, as Wagner postulated that an increase in economic growth would enhance the government's capacity to embark on more expenditure in the economy over time which implies a growth-led concept. Specifically, an increase in economic activity, such as the technological sector, industries, tourism sectors, etc., will free up more resources for the government to spend on both current and fixed capital projects. While Keynes found that in order to achieve economic growth, the government must increase its size to stimulate more growth, which will lead to more productive activities and ensure high aggregate demand among a nation's citizens. The government, as the principal of the economy, should stimulate all sectors in the economy so that all can compete on equal grounds and contribute immensely towards overall national economic growth. In the Neoclassical paradigm, the government must have a less function in economic activities, hence, the government should allocate more economic activities to the private sector to ensure more economies of scale in an economy, the Neoclassical theory defies both Keynes's and Wagner's ideas. Even among researchers that consider the short and long-run impact in measuring the relationship between government expenditure and economic growth, there is a disparity of findings. Jibir et al., (2023) examined the effect of government

expenditure on economic growth. The study employed time series data from 1981 to 2021 and used the autoregressive distributed lag (ARDL) model to analyze the study variables; the study found that government capital investment positively affects economic growth in both the short and long term. As a result, the study suggested that the government raise the percentage of capital spending on worthwhile initiatives that have a direct impact on the welfare of the populace.

Osifo & Abusomwan (2023) looked at how government expenditure affected important economic sectors and the stock market performance of the Federal Republic of Nigeria. The time series data used spanning 1980 to 2021 were get from the Central Bank of Nigeria. The government allocated its spending to areas such as agriculture, military, education, and health. To determine the short and long-term impact of government expenditure on stock market performance in the Federal Republic of Nigeria, the study used the OLS and ARDL methods. The findings show that, through the long and short term, government expenditure on education, defense, and agriculture has a significant influence on stock market performance in the long run. Government expenditure on defense and agriculture significantly affects stock market performance in the short run.

Nwude et al., (2023) studied how government expenditure on pensions and gratuities, health care, education, and agriculture expenditures affected Nigeria's economic growth over 40 years from 1981 to 2020. The researchers used an ex-post facto research method and collected time series data from the Nigeria Bureau of Statistics and the Central Bank of Nigeria Statistical Bulletin. For the unit root test, all the variables were stationary at the first difference when using the Augmented Dickey-Fuller method. The Johansen co-integration test identified evidence of a long-run equilibrium relationship between the variables. Upon utilising the Vector Error Correction Model to analyse the data, the findings indicate that investment in education has both long and short-term favorable effects on economic growth, which are statistically significant. While public debt servicing and pensions/gratuities have a negative and insignificant long-term influence on economic growth, they have a positive and insignificant short-term impact. Conversely, spending on health and agriculture has a positive and large impact.

Ndanshau & Mdadila (2023), empirical investigation on the relationship between government consumption and economic growth in Tanzania between 1967 and 2020. Given the conditioning parameters, the Autoregressive Distributed Lag (ARDL) limits cointegration test showed that government spending and economic growth were cointegrated. It also showed a minor but statistically significant positive long-run influence of government size on economic growth. The null hypothesis that there is no unidirectional or bidirectional causal relationship between government size and economic growth was rejected by the pairwise Granger causality test. Also, inflation had a negative and statistically significant long-term impact on economic growth. According to the ECM results, private investment had a positive but statistically negligible short-term impact on economic growth, whereas the size of the government had a negative and statistically insignificant short-term effect.

Okerekeoti, (2022) examined the correlation between government spending on education and the economic growth of Nigeria. The researchers collected data for the investigation from the yearly sequence of the chosen pertinent macroeconomic variables spanning from 1999 to 2020. The analysis utilises data on government expenditure on education as the variable representing public expenditure, and real gross domestic product as the variable representing economic growth. Hypothesis testing was conducted using regression analysis. The results of this analysis confirm that there is a strong and statistically significant relationship between government spending on education and real gross domestic product (RGDP) at a 5% level of significance. According to the study's results, the researchers proposed that increasing the allocation of public funding to education would gradually enhance income, resulting in an enhancement in the quality of life for the population.

Okoroigwe (2024) looked at how government expenditure impact Nigeria's economic growth between 2016 and 2022. The independent variables in the study were agriculture, education, health, and expenditure on security, while the dependent variable was a real gross domestic product (RGDP), which served as a substitute for economic growth. Multiple regression and correlation analysis for evaluating hypotheses. The results show that government spending on agriculture, health, education, and security all significantly affects Nigeria's GDP. The findings provided additional empirical evidence about the influence of government expenditure on key economic sectors, such as security, agriculture, health, and education. These are the sectors to which the government must pay greater attention if it hopes to increase the gross domestic product. Also, the analysis found that the most potent threats to the influence of government expenditures on these vital industries were nepotism and corruption.

Despite government spending leading to economic growth as firmly held by traditional economists and some empirical findings, sometimes increased government expenditure can lead to budget deficits, higher inflation, and misallocation of resources because of inefficiency. A study conducted by Kimaro et al., (2017) on some developing countries in Sub-Saharan African countries concludes that government spending is growth-enhancing and can lead to more economic activities in these developing nations, but the efficient and sustainable management of such resources by the government is the problem. Policymakers should implement a sound policy that resonates with efficient and effective management of state resources by reducing or avoiding crowding out of the potential private sectors that might contribute positively toward overall economic growth (Chu et al., 2020).

The inconsistency in various findings also applies to empirical research that attempts to evaluate the relationship between government expenditure and economic growth from a cross-national perspective. While some studies (Acikgoz & Cinar, 2017; Ahuja & Pandit, 2020; Chu et al., 2020; Dudzevičiūtė et al., 2018; Kimaro et al., 2017) argue that there is a significant and positive relationship between government spending and economic growth, other cross-country studies (Albassam, 2022; Diyoke et al., 2017; Sidek & Asutay, 2021) demonstrate a negative relationship between the two. The body of research on the subject has shown that there is not a single, definitive theory or body of empirical data that can be used to draw general conclusions about how government spending affects economic growth. This is due to the presence of many variables in different scenarios, in addition to the individual characteristics of the economies being studied.

### **3. Data and Methodology**

This section of the study examines the data and methodologies used to analyze the influence of government fiscal expenditure on Sierra Leone's economic growth.

#### **3.1 Data**

This study utilizes time series data from Sierra Leone, covering the period from 2008 to 2022. The study's data was sourced from the World Bank's World Development Indicators database. The researcher chose this period because it marked the Post-Conflict Recovery Period of Sierra Leone, as the country endured a horrific civil war that lasted from 1991 to 2002, resulting in major economic and social disruptions. The chosen time frame enables an analysis of Sierra Leone's endeavor's in recovering and reconstructing after the conflict. It aims to evaluate the specific impact of government expenditure on the restoration of infrastructure, the promotion of economic stability, and the fostering of sustainable growth. This period comprises a range of policy reforms and development measures implemented by the Sierra Leonean government to encourage economic growth and tackle socio-economic concerns. Additionally, the chosen time frame aligns with noteworthy worldwide economic occurrences and patterns that have indirectly impacted Sierra Leone's economic progress. This encompasses the consequences of the worldwide economic downturn in 2008, variations in the prices of commodities, and changes in the dynamics of international trade. By taking into account these external influences, the study

has assessed how government fiscal expenditure has interacted with wider economic forces to determine Sierra Leone's growth trajectory and ability to withstand external shocks.

In order to guarantee the high quality and dependability of the dataset, a comprehensive examination was conducted on the raw data to identify and rectify any inconsistencies, errors, and missing values. The data was normalized to ensure that all variables were on a consistent scale for the purpose of comparison. Extraneous variables and repetitive information were eliminated to prioritize the essential factors of relevance. The variables were converted into logarithms in order to satisfy the assumptions of the statistical models employed in the analysis. The researcher also ensures that any data sources with acknowledged reliability issues were mentioned. This paper acknowledged the limitations regarding the representativeness of the sample or dataset and examined the potential impact of these biases on the generalizability of the findings.

### 3.2 Methodology

The study uses the casual-comparative research approach as it helps the researchers to investigate the effects of certain factors on outcomes in real-world contexts without changing them and offers useful insights into the correlations between variables. The models adopted in this study are the OLS and Prais Winsten. This study uses the OLS model because of its interpretability, versatility in handling different data, simplicity, linearity, efficiency, and capabilities for statistical inference. Other scholars that have used the models include (Osifo & Abusomwan, 2023) among others. Researchers prefer the Prais-Winsten model because it is a more advanced regression method that considers autocorrelation in the error terms. Compared to OLS, it provides more accurate and efficient parameter estimations, particularly when used to time series data or data with correlated errors (Rahman & Hossain, 2012). The utilization of both OLS and Prais-Winsten models in this study facilitates the comparison of findings, robustness checks, autocorrelation management, thorough analysis, and sensitivity studies, hence producing more dependable and enlightening research findings.

Based on the research objectives, the study generated three equations in a log-linear form to analyze the impact of government fiscal expenditure on Sierra Leone's economic growth. The first equation uses gross capita formation (GCF) as a proxy for capital expenditure and includes all control variables. While equation two analyzes government expenditure on education (GEXPEDU) and includes all the variables to evaluate it regarding economic growth. Equation three analyzes general government final consumption expenditure (GGFCONEXP) as a proxy for current expenditure and includes all the control variables to evaluate its relationship with economic growth. Below, are the three long-linear equations:

**To evaluate the effect of government capital expenditure on economic growth, the researcher states the model in equation 1.**

$$GDP_i = \beta_0 + \beta_1 GCF_i + \beta_2 Population_i + \beta_3 Inflation_i + \beta_4 Trade_i + \varepsilon_i \dots \dots \dots \text{Eqn 1.}$$

**To evaluate the effect of government education expenditure on economic growth, the researcher states the model in equation 2.**

$$GDP_i = \beta_0 + \beta_1 GEXPEDU_i + \beta_2 Population_i + \beta_3 Inflation_i + \beta_4 Trade_i + \varepsilon_i \dots \dots \dots \text{Eqn 2.}$$

**To evaluate the effect of government consumption expenditure on economic growth, the researcher states the model in equation 3.**

$$GDP_i = \beta_0 + \beta_1 GGFCONEXP_i + \beta_2 Population_i + \beta_3 Inflation_i + \beta_4 Trade_i + \varepsilon_i \dots \dots \dots \text{Eqn 3.}$$

Where,  $GDP_i$  represents Gross Domestic Product for period t, as founded by (Aderobaki and Falope, 2024) and (Chidinma and Kemisola, 2022) and (Gifari 2015; Rahman et al., 2023).  $\beta_0$  is the constant term, while  $\beta_1$  is the coefficient for the variable of interests for each equation;  $GCF_i$  (Gross Capita Formation for period t),  $GEXPEDU_i$  (Government Expenditure on Education for period t), and  $GGFCONEXP_i$  (General Government Final Consumption Expenditure for period t).  $\beta_2$  is the coefficient for population growth for period t, which is a control variable in the study,

$\beta_3$ = coefficient for inflation as another control variable, and  $\beta_4$ =coefficient of the control variable in trade for period t, and  $\varepsilon_i$  is the error term for period t. The inclusion of certain control variables, such as population growth, inflation, and trade, in the regression analysis is of utmost importance for various reasons:

Population growth is a crucial demographic factor that impacts economic growth. An expanding population can result in a rise in the availability of workers, the need for goods and services, and the possibility of economic growth. By using population growth as a control variable, the study separates the influence of government fiscal expenditure on economic growth from the consequences of population size fluctuations. Inflation is a crucial macroeconomic indicator that signifies the overall rise in prices of goods and services over a period of time. Significant inflationary pressures can gradually diminish the ability to buy goods and services, upset the overall economic equilibrium, and influence the choices made about investments. Adjusting for inflation in this study allows for the differentiation of the influence of government fiscal spending on economic growth from the consequences of changes in price levels, guaranteeing a more precise evaluation of the connection between fiscal policy and economic performance. Trade, encompassing both exports and imports, it has a profound impact on a nation's economic development by facilitating the global interchange of products and services, attracting foreign investment, and affecting competitiveness. By using trade variables as controls, the study is able to consider the influence of external trade dynamics on economic growth. This helps to capture the wider economic context in which government fiscal expenditure takes place. Table 1 displays the descriptions of the variables in the study.

**Table 1. Variables Description**

Variables	Type of Variable	Definition of Variable	Measurement
Gross Domestic Product Per capita Current	Dependent	Gross domestic product is the total value of goods and services produced in a country, divided by the population at the midpoint of the year.	Growth Rate of GDP
Gross Capita Formation Current	Independent	(formerly gross domestic investment) includes outlays of additions to the fixed assets of the economy plus net changes in the level of inventories.	Total Capital Expenditure
Government Expenditure on Education	Independent	It includes (Current, capital, and transfers) made by the central government. It also includes expenditures funded by transfers from international.	Percentage of GDP
General Government Final Consumption Expenditure Constant	Independent	(previously general government consumption) relates to all current government expenditures on goods and services purchases (including personnel remuneration).	Constant expenditure of the government relative to GDP on labor expenses and other goods and services.
Population Growth	Control	The population growth rate for a year is the exponential rate at which the midyear population grows from year T-1 to t.	Measured as a percentage.
Inflation	Control	This metric indicates the yearly percentage fluctuation in the price that an average consumer has to pay for a collection of products and services.	Consumer Price Index
Trade	Control	Trade refers to the total value of products and services that a country both exports and imports.	Ratio of gross domestic product (% GDP).

#### 4. Results and Discussion

This section of the study focuses on presentation, discussions, and interpretations of the results of correlation, OLS results, serial correlation, and Prais Winsten. This section also addresses the study research objectives.

### 4.1 Descriptive Statistics

The purpose of the study is to assess the impact of government fiscal expenditure on Sierra Leone’s economic growth. The study used time series data spanning from 2008 to 2022. The study disaggregated government fiscal expenditure into capital expenditure, educational expenditure and consumption expenditure to determine the level of Sierra Leone economic growth. The data that has been disaggregated by sector pertains to education to enhance efficiency and prudence on sectorial expenditure. This analysis incorporated variables such as GDP per capita current, gross capital formation, government expenditure on education, and general government final consumption expenditure. GDP per capita is a variable that is influenced by economic growth, while gross capital formation, government expenditure on education, and general government final consumption expenditure are the study independent variables or factors that determine GDP growth. This study utilizes trade, inflation, and population growth as control variables. All variables are quantified in actual terms and represented in logarithmic form. Table 2 presents the description of the variables considered in the study. From the table, we can see that all the variables have a positive mean and the values of standard deviation are lower than the mean values. This shows that there is less variability in the data. Some variables are very large; therefore, the researcher posit a log on all the variables before doing analysis.

**Table 2: Descriptive Statistics of the Economic Variables**

Variable	Obs	Mean	Std. Dev.	Min	Max
LNGDP	15	7.997	.512	7.09	8.807
LNGCF	15	21.959	.665	20.332	22.633
LNGEXPEDU	15	1.336	.501	.867	2.245
LNGGFCEXP	15	20.273	.693	19.582	21.33
LNPOPGRO	15	.903	.074	.777	1.025
LNINFLATION	15	2.278	.501	1.535	3.304
LNTRADE	15	4.158	.261	3.691	4.478

Source: Author’s computation

### 4.2 Variance Inflation Factor

To assess the level of collinearity between variables, this study employed the Variance Inflation Factor (VIF) to evaluate the extent of collinearity between one predictor and other predictors. The VIF states that when the variance inflation factor is less than 10 then is no multicollinearity between factors. It quantifies how much the variance of an estimated regression coefficient is increased due to correlation with other predictors. Based on VIF, a mean value of above 5 indicates the presence of multicollinearity but based on the results, all models VIF has a mean value of below 5 which shows that all variables used in this analysis does not suffer from multicollinearity, as seen by the VIF result provided in table 3, 4 and 5 respectively. Table 2 shows a mean value of 2.489, Table 3 shows a mean value of 2.306, while Table 4 having 2.716 as mean value.

**Table 3 Variance Inflation Factor Result**

Variable	Variance Inflation Factor	1/VIF
LNGCFCLCU	2.73	.366
LNINFLATION	2.656	.377
LNPOPGROAN	2.335	.428
LNTRADE	2.234	.448
Mean VIF	2.489	.

Source: Stata 18 computation

**Table 4 Variance Inflation Factor Result**

Variable	Variance Inflation Factor	1/VIF
LNPOPGROAN	3.272	.306
LNGEETGDP	2.291	.437
LNINFLATION	2.261	.442
LNTRADE	1.398	.715
Mean VIF	2.306	.

Source: Stata 18 computation



**Table 5 Variance Inflation Factor Result**

Variable	Variance Inflation Factor	1/VIF
LNGGFCEXP	3.568	.28
LNPOPGROAN	3.471	.288
LNINFLATION	2.662	.376
LNTRADE	1.161	.861
Mean VIF	2.716	.

Source: Stata 18 computation

### 4.3 Correlation

Table 6 presents a matrix of correlations between seven variables. Each cell in the table represents the correlation coefficient between the corresponding variables.

**Table 6: Results for Correlation Tests**

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) LNGDP	1.000						
(2) LNGCF	0.775	1.000					
(3) LNGEXPEDU	0.641	0.410	1.000				
(4) LNGGFCEXP	0.809	0.535	0.834	1.000			
(5) LNPOPGRO	-0.881	-0.484	-0.647	-0.794	1.000		
(6) LNINFLATION	0.642	0.436	0.570	0.761	-0.728	1.000	
(7) LNTRADE	0.465	0.653	-0.255	-0.049	-0.178	-0.024	1.000

Source: Stata 18 computation

The correlation coefficients range between -1 and positive 1 and confirm the strength and direction of the linear relationship between the two variables. For example, the correlation coefficient between InGDP (variable 1) and InGCF (variable 2) is 0.775, suggesting a strong positive correlation between these two variables. Similarly, the correlation coefficient between LGDP and InPOPULATION (variable 5) is -0.881, highlighting a strong negative correlation between InGDP and InPOPULATION. The absolute values of the correlation coefficients show the strength of the relationship, disregarding the direction. For instance, a correlation coefficient of 0.775 between InGDP and InGCF suggests a relatively strong positive relationship. Conversely, a correlation coefficient of -0.881 between InGDP and InPOPULATION shows a strong negative relationship. Based on the correlation matrix, it is possible to observe relationships between variables. For example, InGDP (variable 1) has a strong positive correlation with InGCF (variable 2), InGEXPEDU (variable 3), and InGGFCEXP (variable 4). InGDP (variable 1) has a strong negative correlation with InPOPULATION (variable 5). Also, the researcher observes other correlations between different pairs of variables. The correlation matrix has provided information about the strength and direction of the linear relationships between the variables. It helps to identify which variables are positively or negatively associated with each other, aiding in understanding the interdependencies and potential relationships within the dataset.

### 4.4 OLS Result

Table 7 presents the estimation result. The F-statistics show that the interest variables collectively are positive and significant in their ability to explain the variability in the dependent variable. Columns 1, 2, and 3 represent the estimation models for the variables of interest (InGCF, InGEXPEDU, and InGGFCEXP). Each model regressed against the dependent variable (InGDP). This outcome is in line with what Ahuja & Pandit (2020) reported. The researcher included all the seven variables in each of the models to run regression. Each model shows the estimated coefficients for the independent variables, shows the expected change in the dependent variable associated with a one-unit change in the independent variable. The first column presented in the table examines the impact of government capital expenditure on Sierra Leone's economic growth, and included several control variables in the regression. The table shows that gross capita formation (InGCF) is positive and significant; while all other parameters remain constant, economic growth increases by 0.313 for every 1% increase. This is because gross capita

formation records the expansion of other important industries like higher productivity, better technology, more production capacity, and other areas that can lead to the creation of jobs and overall boost the economy of Sierra Leone. This finding is consistent with the findings reported by (Jibir et al., 2023).

**Table 7: Results for Ordinary Least Square (OLS) Regression**

Variable	(1) lnGDP	(2) lnGDP	(3) lnGDP
LNGCF	0.313*** (0.0985)		
LNGEXPEDU		0.432*** (0.101)	
LNGGFCEXP			0.404*** (0.0845)
LNPOPGROAN	-4.913*** (0.824)	-3.252*** (0.822)	-2.985*** (0.785)
LNINFLATION	-0.0477 (0.129)	0.0749 (0.100)	-0.0778 (0.101)
LNTRADE	0.144 (0.227)	0.966*** (0.152)	0.814*** (0.128)
Constant	5.069** (1.946)	6.168*** (1.371)	-0.714 (2.394)
Observations	15	15	15
R-squared	0.940	0.957	0.963

Note: Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Source:** Stata 18 computation

The second column presented in the table examines the impact of government educational expenditure lnGEXPEDU, and Sierra Leone's economic growth, and several control variables included in the regression. From the table, educational expenditure is significant and positive, it shows that a 1 percent increase in educational expenditure increases economic growth by 0.432, holding everything else constant. Because of the increase in education, there is a subsequent boost in human capital development, leading to innovation and technological advancement. This finding is consistent so reported by (Okerekeoti, 2022; Nwude et al., 2023; Osifo & Abusomwan, 2023).

The third column in the table examines the impact of government current expenditure on Sierra Leone's economic growth, and several control variables included in the regression. According to the table, the general government's final consumption expenditure (lnGGFCEXP) is positive and significant; for every 1% rise in consumption, it increases economic growth by 0.404, leaving all other factors constant. This is because the general government's final consumption expenditure on goods and services that the public consumes directly influences aggregate demand, and spurs economic growth. Overall, the general government's final consumption expenditure attracts private investment by establishing an environment that is favorable to business operations and investment, promoting social stability, investing in human capital, and supporting innovations that result in the sustainable economic growth of Sierra Leone. This finding is in line with the findings presented by (Ndanshau & Mdadila, 2023).

From the table, population growth has consistently shown a negative and significant impact on economic growth in all the columns. It shows that a 1 percent increase in population growth decreases economic growth by 4.913, 3.252, and 2.985, accordingly. This is because of the increased financial burden on the government, as it has to allocate more resources towards healthcare, education, and other essential areas. Most of the population is unproductive, leading to a high unemployment rate, which further adds to the government's burden and ultimately hinders the overall economic growth of Sierra Leone. According to the table, inflation has a negative correlation with lnGCF, a positive correlation with lnGEXPEDU in the second column, and a negative correlation with lnGGFCEXP in the third. Different factor causes this, such as the

rate and duration of inflation and the general state of the economy. While excessive and persistent inflation can present serious obstacles and impede long-term growth prospects, as shown by Columns (1) and (3), 0.0477 and 0.0778 respectively, moderate inflation can also have some positive effects on economic growth, as shown by Column 2, which has a positive coefficient of 0.0749. This finding is in line with the findings of (Ndanshau & Mdadila, 2023). From the table, trade has consistently shown a positive and significant impact on economic growth columns 2 and 3, it shows that a 1 percent increase in trade increases economic growth by 0.966 in column 2, and 0.814 in column 3 respectively, while a 0.144 less correlation between inflation and column 1. This is because trade promotes market expansion, specialization, competition, innovation, technology transfer, and diversification. By fostering an open and competitive trading environment, Sierra Leone can harness the benefits of trade to enhance productivity, create jobs, and improve the living standards of its citizens.

#### 4.5 Serial Correlation Result

This study employs the Durbin-Watson statistic to test for autocorrelation since it is a measure used in regression analysis to identify autocorrelation, which is the correlation between the residuals of a regression model. The Durbin-Watson statistic varies between 0 and 4, with values around 2 show no serial association. The result of the Durbin-Watson statistics is 1.900952. Since this value is less than 2, it suggests the possibility of a positive serial correlation in the residuals. Positive serial correlation occurs when the residuals of a regression model show a positive correlation, show that a positive residual in one observation is likely to be followed by another positive residual. Therefore, the researcher employed the Prais Winsten model to solve the problem of autocorrelation. Durbin-Watson test result:

The value of the Durbin-Watson d-statistic (5, 15) is 1.900952.

#### 4.6 Prais Winsten Result

**Table 8: Results for Prais Winsten AR (1) Regression Tests**

Variable	(1) lngdp	(2) lngdp	(3) lngdp
LNGCF	0.314*** (0.0976)		
LNGXPEDU		0.442*** (0.0976)	
LNGGFCEXP			0.400*** (0.0780)
LNPOPGROAN	-4.944*** (0.809)	-3.313*** (0.762)	-3.089*** (0.712)
LNINFLATION	-0.0513 (0.128)	0.0558 (0.0949)	-0.0756 (0.0938)
LNTRADE	0.138 (0.225)	0.952*** (0.140)	0.808*** (0.117)
Constant	5.105** (1.919)	6.314*** (1.287)	-0.508 (2.212)
Observations	15	15	15
R-squared	0.950	0.981	0.986

Note: Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Source: Stata 18 computation

Having presented the findings using OLS in table 8, the researcher further presents another analysis using Prais Winsten model because the model can help in solving the problem of autocorrelation, which is detected when using the Durbin-Watson test. This model can also help in enhancing the validity of statistical inference and also in improving the efficiency of parameter estimates. Table 5 presents the Prais Winsten test findings regarding the influence of government fiscal expenditure on Sierra Leone's economic growth. Even when the model is used, gross capita formation still has a substantial and positive impact on economic growth; an increase in GCF as a percentage of GDP leads to an increase in GDP growth of 0.314%. The correlation between

government expenditure on education and economic growth is positive and statistically significant. Specifically, a 1 percent increase in education expenditure leads to a 0.444% increase in economic growth. In addition, the analysis reveals that government consumption expenditure has a strong and statistically significant impact on economic growth. Specifically, a 1 percent rise in consumption expenditure leads to a 0.400 increase in economic growth. Overall, the results demonstrate that government spending in all major areas significantly and favorably affects Sierra Leone's economic growth. This suggests that infrastructure spending that boosts productivity, human capital development through education that fosters innovation, and social well-being should be the government's top priorities. By allocating resources to these specific sectors, the nation can establish a solid basis for long-lasting and equitable economic expansion that positively impacts individuals, enterprises, and the overall community.

#### **4.7 Policy and Administrative Implications**

The findings of this analysis demonstrate a strong and statistically significant relationship between government capital expenditure, government educational expenditure, and government consumption expenditure, and the economic growth of Sierra Leone. This implies that augmenting these expenditures result in increased economic growth within the country at large. The government should consider augmenting capital investment to foster economic growth. This entails allocating funds towards the development of infrastructure, healthcare, and several other industries that have the potential to enhance productivity and generate employment opportunities. Boosting investment in education can result in a more proficient labor force, hence stimulating innovation and enhancing productivity in the economy, as evidenced by the findings of (Nwude et al., 2023). Government consumption expenditure contributes to economic growth by bolstering demand for products and services, therefore, government agencies tasked with budget allocation and expenditure planning should collaborate closely with policymakers to guarantee the efficient distribution of resources to achieve economic growth objectives. It is necessary to establish monitoring and assessment processes to track the impact of higher expenditure on economic growth. This will enable policymakers to make well-informed decisions and adapt strategies as necessary. Additionally, it is crucial to invest in capacity-building initiatives to ensure that government officials possess the necessary skills and knowledge to efficiently manage and implement increased expenditure, thereby maximizing the potential for economic growth.

The findings of this study provide insight into the efficiency and effectiveness of public investments funded through government fiscal expenditure. It emphasizes the sectors that require further improvements in project selection, implementation, and monitoring, particularly the education sector, which is a priority area for the government of Sierra Leone as it contributes to long-term economic growth.

The present study is consistent with prior research conducted in the region (Ahuja & Pandit, 2020; Aluthge et al., 2021; Sumandeep et al., 2024; Okonkwo et al., 2023; and Okoroigwe, 2024), all of which concur that governments should allocate additional resources to strategic sectors in order to foster economic growth in the diverse developing countries within the region. The study findings suggest that by aligning fiscal expenditure with the goal of inclusive growth, the government can ensure that economic expansion benefits all sectors of society and contributes to reducing poverty and promoting sustainable development. Given Sierra Leone's 10-year history of civil violence, it is crucial for the country to prioritise capital expenditures that will drive significant progress and enhance its worldwide significance. The study results have provided policymakers with guidance for the creation of adaptable fiscal policies and backup plans to alleviate the effects of external shocks on the economy. To bolster the nation's capacity to endure external pressures and sustain economic growth among uncertainty, it is crucial for the government to uphold budgetary resilience and adaptability.

## 5. Conclusion and Recommendations

The primary aim of this study was to examine the impact of government fiscal expenditure and Sierra Leone's economic growth, calculated as the real GDP growth rate. The researcher disaggregated government expenditure based on the study-specific objectives, such as capital expenditure, education expenditure, and consumption expenditure. This study employed OLS and Prais Winsten models to analyze the relationship between government expenditure and economic growth. This study adopted time series data covering 2008 to 2022 in Sierra Leone. The result show that higher government fiscal expenditure can stimulate economic growth. Increased funding from the government to the disaggregated government expenditures (Capital, education, and consumption) as the study specific objectives positively and significantly contribute to the economic growth of Sierra Leone.

This study's result suggests that the Keynesian assumption holds true for the economy of Sierra Leone, since rising government expenditure will promote economic growth in the country. The various disaggregated government expenditures each play a crucial role in propelling economic growth. Therefore, implores policymakers in Sierra Leone to prioritize the strategic allocation of the nation's resources for more economic growth. The researcher implores the Sierra Leonean government to continue augmenting its financial support for capital projects, education that facilitates innovations, and prudent consumption expenditures that are critical for a developing country like Sierra Leone. Investments in critical areas such as infrastructure (capital expenditure), education, and social welfare (consumption) can yield substantial benefits. To maximize the impact of government fiscal expenditure on the several sectors of the economy, it is essential to ensure efficient and effective utilization of disbursed funds. Transparent budget processes, monitoring mechanisms, and targeted expenditure are crucial for achieving desired outcomes. The analysis emphasizes the potential advantages of Sierra Leone's economy and emphasizes the significance of wise government spending. Policymakers should deliberate on these findings when drafting fiscal policies.

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