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An Analysis of Effect of Government Expenditure on Economic Growth: The Case of Liberia, 2015-2017

BY: PATRICK T. TENGBEH

UNIVERSITY OF LIBERIA

LUX-In-Tenebris Honor Scholars Program

ABSTRACT

This broad objective of this paper is to analyze the effect of government expenditure on Economic growth in Liberia from 2005 to 2017. Government expenditure was disaggregated into recurrent and capital expenditure using time series data obtained from the World Development Indicators 2017, International Monetary Fund (IMF) Database and the World Bank Expenditure Review Manual 2013 on Liberia. GDP Growth, a proxy for Economy growth, was used as dependent variable. Recurrent Expenditure, Capital Expenditure and Ebola were used as independent variables. Although Ebola was not of primary concern, the study controlled for the effects of the Ebola Virus Disease which had a devastating effect on the country's then thriving economy. The econometric technique used for estimation is the Ordinary Least Square (OLS); using the multiple regression analysis. The empirical findings of the study show that there is a positive but statistically insignificant impact of recurrent expenditure on GDP growth. Against, the a priori expectation of the study, there is a negative and statistically significant relationship between GDP growth and capital expenditure for the study. The regression results confirmed that the Ebola Virus Disease epidemic had a negative and statistically significant effect on GDP growth.

The empirical finding of a negative impact of capital expenditure on altering output was a stark contrast to the study's a priori expectation. The paper attributes such to the mismanagement, misuse, corruption and poor utilization of disbursed funds for capital investment projects. Based on these findings, the study provided the following recommendations: Increased supervision, monitoring and evaluation of government funded projects by relevant government institutions to ensure that resources are not only allotted, but that they are fully utilized effectively and efficiently thus bringing value for money; that the government of Liberia must endeavor to identify and spend on priority areas which have relevant and significant impact on the growth of the economy. Furthermore, the government of Liberia must ensure that procurement processes for public goods and services are transparent and free of corruption. The public Procurement and Concession Commission (PPCC) must be allowed to function independently and free of interference in its operation. It must be strengthened to ensure transparency, accountability and efficiency. Individuals who are entrusted with public resources intended for development purposes should be fully accountable for every dime expended. Finally, government expenditure should be targeted at improving the welfare of the poor who are in majority.

Chapter one

1.0 Introduction

There has been unending debates among economists about the role of government expenditure on economic growth in the economic theory. Wagner (1883) suggested that government expenditure is an endogenous factor, but not a cause of economic growth. Wagner's theory suggests the existence of the causality between public expenditure and national income runs from national income to public expenditure. Simply put, Wagner's law posited that government expenditure increases because of the economic growth and not the other way round.

Keynesian theories, on the other hand, have always believed that government expenditure can be used to promote economic growth. According to Keynesian hypothesis, expansion of government expenditure accelerates economic growth. Thus, government expenditure is regarded as an exogenous force that changes aggregate output (Loizides & Vamvoukas, 2005). Keynesian school of thought suggests that a proactive fiscal policy is an important instrument available to governments to stimulate economic activity and economic growth. By increasing government spending and/or cutting taxes, governments can offset a slower pace of economic activity; hence, fiscal policy is viewed as a countercyclical policy tool that mitigates short-run fluctuations in output and employment (Zagler & Durnecker, 2003). In addition, the Keynesian hypothesis, suggests that any kinds of public expenditures, even of a recurrent nature, can contribute positively.

Barro (1989) in his endogenous growth model argues that GDP growth is negatively related to the government consumption expenditure. He further argues that government consumption Introduces distortions, but does not provide an offsetting stimulus to investment and growth. Moreover, he stated that there is little relation of growth to the quantity of government investment expenditure. His 1990 study confirms his finding on previous study. He stated that government expenditure on investment and productive activities should contribute positively to growth, whereas government consumption spending is anticipated to be growth-retarding. However, it is difficult to determine which particular items of expenditure should be categorized as investment and which as consumption in empirical study.

Despite these unending debates, it is inevitable that governments around the world including Liberia have continued to use fiscal policy in allocating resources, distributing and stabilizing the economy. Government expenditures play key roles in the operation of all economies. Governments have used public expenditure and public revenue (taxation) to bring about macroeconomic stability and ensure economic growth. The focus of this research is on the former.

1.1 Definition and Concepts

1.1.1 Government Expenditure

Aigheyisi (2013) defines government expenditure as all expenses incurred by government for its operations and provision of public goods and services required to foster economic growth and improve the welfare of its citizens. Economists generally classify government expenditure into two: recurrent expenditure and capital expenditure. Recurrent expenditure has to do with regular expenses in running or covering the cost of administration. They include: compensation (salaries and wages) paid to government employees, travelling accommodation, cost incurred on communication and electricity, maintenance of equipment as well as cost incurred to cover up compulsory obligations such as interest and debt repayment. Capital expenditure, on the other hand, has to do with expenditures on capital goods such as infrastructure (roads, electricity, etc.). It also includes Productive investments in people, such as skills, values, and health resulting from expenditures on education, on-the-job training programs, and medical care (Todaro and Smith, Eleventh edition). Capital investment is done by government to provide public goods and services and stimulate addition capital formation by increasing investment. In order words, according to Jumare, Yusuf and Mohammed (2014), recurrent expenditure refers to financial outlays necessary for the day-to-day running of government businesses, while capital expenditure refers to investment outlays that increase the assets of the state. They argued that these categorization were however not mutually exclusive but were indeed interlinked. For instance, while capital expenditure gave rise to recurrent expenditure in most cases through the operational and maintenance costs of completed capital projects, the amount available for investment was a function of not only the size of revenue but also the amount that goes annually into the running of government.

1.1.2 Economic growth

A major objective of government expenditure is a necessary condition for economic development. The process of improving the quality of all human lives and capabilities by raising people's levels of living, self-esteem, and freedom. Economic growth refers to the increase in the productive capacity of an economy. It is measured by increasing real gross domestic product (GDP) and or per capital income. That is, a nation's ability to increase output or income per capita at a rate faster than the growth rate of its population (Todaro and Smith, 2005).

1.2 Background to the Liberian Economy

Liberia (with a population of 4.5 million, according to World Bank 2017 report) is one of the poorest countries in the world. It suffered a bloody fourteen (14) years of civil conflict which claimed the lives of over two hundred and fifty thousand (250,000) people and decimated about 90% of its infrastructure and economy. With a GNP per capita estimated at around US$157 in 2003 and 76% living below the poverty line. It ranks 174 out of 175 countries on the Human Development Index. Liberia, however, has made remarkable progress with its post-conflict recovery after the end of the civil war in 2003. The country drafted various macroeconomic development plans: The first was the poverty reduction strategy (PRS-1, 2008-2011), dubbed *Lift Liberia*, which reflected a broad vision of a peaceful, secure, and prosperous Liberia. The next development agenda was National Vision 2030: Liberia Rising 2030, which aims to make Liberia a middle income country by 2030. To achieve this goal, it formulated a 5-year medium-term development strategy for 2013-17: *Agenda for Transformation* that will ensure rapid economic growth an increase in per capita income as well as improvements in living standards and a better quality of life for a greater proportion of Liberians. Towards this end, the Agenda for Transformation would tackle the key binding constraints to sustainable and inclusive economic growth: infrastructure development (power/energy, roads); human capital development (education, youth skills development and employment, health). The successful implementation of these development agenda required a significant increase in both government recurrent and capital expenditure. The government, like any rational economic entity, had to consider allocative and technical efficiency of its expenditure. Allocative efficiency implies that scarce resources are spent on the highest priorities to achieve government objectives, For example, resources should be reallocated from a low spending priority sector (administration) to a high

priority sector (such as infrastructure and human development) that would contribute to sustained economic growth and Technical efficiency implies that the government will run operations at least cost, i.e., getting the same output with fewer resources. This will require a focus on increased value for money in public procurement, reduced wasteful spending, minimized cost of public service provisioning, and reduced fraud and corruption. The country was hit and devastated by the Ebola Virus Disease in 2014, thus indicating the need for further increased public spending on health. In this light, this study analyses the impact of government recurrent and capital expenditures on economic growth (increase in real GDP and per capital income) from 2005 to 2017.

1.2.1 Analysis of expenditures by economic classification

An analysis of Liberia government expenditure reveals a steady growth in public expenditure since the end of the civil conflict in 2003. However, the main concern among policy makers has been the implication of the large expenditure on economic growth (Ndonga, 2013). The World Bank's review of Liberia Public Expenditure in 2013 showed that During FY2005/06 – FY2012/13, public spending increased by nearly three times supported by a steady increase in revenue. Total spending rose from 8.8% percent of GDP in FY2005/06 to 31.1% percent of GDP in 2012/13. From 2009-2011, recurrent expenditure as a percent of GDP averaged 24%. As a percent of total expenditure, it averaged 85%. Recurrent Expenditure grew from 8.3% of GDP in FY2005/06 to 24% of GDP in FY2005/06. This was driven by rising personnel costs, goods and services, and transfers. Total personnel costs (compensation of employees) have grown in size and share. Personal costs include base salary, allowances, contractual employees, training stipends, overtime, social contribution (social security and pension), and other employee costs (medical and death benefits, and severance payments). Total personal costs doubled reflecting an increase in public sector wages, regularization of education and health workers, and recruitment of teachers, doctors, security officers, and other skills. (World Bank, 2013).

The share of compensation of employees accounted for about 36 percent of total expenditures in FY2011/12 (or about 40 percent of total revenue excluding grants). (Government of Liberia, 2013) However, the 2012/13 approved Spending in 2011/12 rose sharply reflecting an increase in current expenditure associated with the presidential and legislative elections. However, the

approved 2012/13 budget shows reversing expenditure trends as current expenditure declines while capital expenditure significantly increases.

Expenditures on goods and services tripled during FY05/06- FY12/13, from 2 percent to 7.6 percent of GDP. These include travel, operating costs (basic utilities, rental and leases, fuel and lubricants, repair and maintenance), office supplies and consumable services, specialized material and services, education and training expenses, insurance and licenses charges, and other expenses. Expenditure on goods and services increased by three times during FY05/06 and FY08/09. The increase was significant in the areas of transport expenses (purchases of vehicles, repair and maintenance, insurance, and fuel), travel-related expenditure, both domestic and foreign (plane tickets, lodging and other travel costs), and special materials and services related to security operations. However, it fluctuated during FY2008/09 to 6.1 percent of GDP in FY10/11).

Liberia's civil service wages bill, estimated at 12.8 percent of GDP in FY16, is relatively high by regional standards. The government embarked on a strategy to contain the wage bill, including through the clean-up of the payroll using biometric registration of civil servants. The initial phase of the payroll clean-up completed in 2014, removed some 4,000 ghost workers, resulting in savings of about 1 percent of GDP in 2014 relative to the 2012 payroll. However, for 2016, the decision to increase the number of health workers will result in an increase in the wage bill from the initially envisaged 9.6 percent of GDP to about 12.8 percent of GDP.

1.2.2 Capital Expenditure

Overall, capital spending was broadly aligned with the development priorities of government. Capital expenditure has risen from a very low level of 0.5 percent to reach 7.8 percent of GDP in FY2012/13. About 58 percent of total capital spending was allocated to the economic services sector, largely for the construction of roads and bridges The average shares of expenditure allocation to the public administration and public safety sectors were 23 percent and 10 percent, respectively. Capital spending allocated to these sectors was dominated by the purchase of vehicles and related equipment for the judiciary and security services. The share of capital spending to the social services sector was the least, accounting for 8.6 percent of total capital

spending for the period. This was largely spent on the purchase of transport and related equipment for the Ministries of Education and Health. Capital Expenditure as a percent of GDP for a three-year period (2009-2011) averaged 3.6%. As a percent of total revenue, for the same period, capital expenditure averaged 15%.

1.2.3 Economic Growth in Liberia

Since the post war era, Liberia has had its own share of economic growth turbulence. There has been an upward and downward trajectory over different periods. The country enjoyed a period of decent and sustained growth in GDP and per Capita income. Liberia experienced about a decade of sustained real GDP growth from 4% in 2004 to 8.8% in 2013. The economy took a nosedive in 2014 when it was hit by the outbreak of the Ebola virus Disease in 2014. This was coupled by the declining global commodity prices of its chief exports – rubber and iron ore - thus resulting in business closures including of mines, consequent job losses and reduced fiscal revenue. GDP growth in 2015 was flat, compared to 0.7 percent in 2014 and -1.6% in 2016. The mining sector - one of the key drivers of economic growth - declined by 15.9 percent. While growth in agriculture was revised downwards by 1.4 percent. The services sector, however, grew up by 4.7 percent; attributable mainly to the recovery in construction, hotels and trading services. The stagnation of the economy in 2015 was largely the result of a more severe decline than expected in the agriculture sector, together with a sharp decline in prices of key export commodities; iron ore and rubber, whose prices have fallen by close to 60 percent and 40 percent respectively, since 2013. Consequently, the mining concession companies have either reduced production, or shut down operations, with resultant increase in job losses and a general lull in economic activities. Based on the 2014 household survey, more than half of Liberians are poor (54.1 percent). Poverty remained particularly prevalent in rural areas, with about 70 percent of the population considered poor compared to 43.3 percent in urban areas.

1.3 Statement of the problem

There has been a public debate on the government expenditure in Liberia focusing on whether or not government spending supports or does not support economic growth. The link between government expenditure components and economic growth is therefore a critical subject of analysis as the two are interrelated (Stiglitz, 1989). According to Chude &Chude (2013), IMF

(1991) and Modebe (2012) governments should have a higher expenditure in development rather than in recurrent expenditures. An analysis of the public expenditure in Liberia shows that it has been heavily skewed toward recurrent expenditure. In Liberia, the government is the biggest employer due to the poor performing private sector and its inability to absorb and provide employment for citizens. This has led to consistent rise in the government's wage bill. The limited fiscal space for capital spending is a constraint on efforts to increase the stock of infrastructure and other productive investment. Furthermore, poor revenue performance has resulted in to a trend of successive government budget shortfalls. It therefore becomes imperative to probe into the responsiveness of each expenditure tool so that policy makers are furnished with empirical findings. This study thus seeks to fill this gap.

1.4 Purpose of the Study

The general objective of this study is to determine the impact of government expenditure in altering economic growth or real GDP growth in the Liberian Economy.

The specific objectives include:

I. Determine the impact of government recurrent expenditure on economic growth in Liberia from 2005 to 2017
II. Determine the impact of government capital expenditure on economic growth in Liberia from 2005 to 2017.
III. To estimate the future growth of economic growth, given some idea or data of government recurrent and capital expenditure.

1.5 Significance of the study

Empirical evidence establishing the nature of the link between macroeconomic policy variables and economic activities could prove indispensable to policy makers in that such information is likely to reduce the likelihood of policy mistakes. (Babah, 2007). Liberia public expenditure has been largely recurrent. This study thus seeks to establish empirical information that can be used by policy makers regarding the best government expenditure tool that stimulate economic growth. The results of this study may help to guide policy makers in designing fiscal strategies aimed at achieving the objectives of enhanced economic growth in the country. The study may also stimulate policy review and discussion on the distribution of public expenditure among its

components. This may lead to a review of sectorial budgetary allocations. It will also be useful for other developing countries especially in Sub-Saharan Africa which share similar characteristics with Liberia

1.6 Research questions

Given the need to foster meaningful economic growth and development in Liberia, this study asks the following questions:

I. What is the impact of government recurrent expenditures on economic growth in Liberia?
II. What is the impact of government capital expenditure on economic growth in Liberia?
III. Do recurrent and capital expenditures have no impact on the economic growth in Liberia?

1.7 Research Hypothesis

This study will seek to test the following hypotheses:

I. Government recurrent expenditure is has been more effective in promoting and sustaining economic growth in Liberia in recent years.
II. Government capital expenditure has been more effective in promoting and sustaining economic growth in Liberia in recent years.
III. Government expenditures (recurrent and capital) have been ineffective in promoting and sustaining economic growth in Liberia.

1.8 Organization of the study

The remainder of the study is organized as follows: Chapter 2 gives the theoretical and empirical literature review. Next, Chapter 3 discusses the econometric methodology used in estimating the effects of each expenditure component on GDP growth. Chapter 4 presents the empirical results and gives an economic interpretation of the findings. Chapter 5 gives a summary of the study and policy recommendation.

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

The debate regarding the role of government expenditure in the economy around the world has culminated in different studies and number of publication which aimed at establishing an empirical relationship between government expenditure and economic growth both in developing and developed countries. These studies have used different theories in specifying the model as well as different research methods, and the result showed that the effect of government expenditure on economic growth can run either negative or positive ways, similar to the economic theories which show different positions of government expenditure on economic development.

2.1 Theoretical literature

There are many theories concerning the impact of government expenditure on economic growth and the direction of causality. However, the two most cited are the Keynesian macroeconomic framework for development theory and the law of the expanding state role by Wagner. Wagner (1883) introduced the law of the expanding state role, a model showing that public expenditures are endogenous to economic growth, and that there exist long-run tendencies for public expenditure to grow relatively to some national income aggregates such as the gross domestic product (GDP). This theory suggests the existence of the causality between public expenditure and national income runs from national income to public expenditure. Wagner suggested that government expenditure is an endogenous factor or an outcome, but not a cause of economic development.

Keynes (1936), however, raised the idea that during depression the use of fiscal policies improves economic activities. Thus the causality between public expenditure and national income runs from public expenditure to national income. In the Keynesian macroeconomic framework, standard effective demand theory emphasized the positive impact of an autonomous public spending on economic growth. The Keynesian economists view government expenditure as a fiscal policy instrument is useful for achieving short term stability and higher long run growth rate. In addition, the Keynesian macroeconomics model, suggests that any kinds of public

expenditures, even of a recurrent nature, can contribute positively to economic growth, through multiplier effects on aggregate demand.

Solow (1956) in his neo-classical/exogenous growth model viewed that there is no long run impact of government expenditures on the economic growth rate. The neo- classical growth models suggest that fiscal policies cannot bring about changes in long-run growth of output. Neo- classical economists suggests that the long run growth rate is driven by population growth, the rate of labour force growth, and the rate of technological progress which is determined exogenously. This is backed up by the neoclassical counter-revolution school of the 1980s which suggest that state intervention in economic activity slows the pace of economic growth.

2.2 Empirical Literature Review

The evidences from the above theories on relationship between Government Expenditure and Economic Growth have been an attractive area of research. Some of the empirical studies in this area are reviewed here. Nevertheless, it is evident that the relationship between public spending and economic growth can run both ways in both the developed and developing countries where studies have been conducted.

Ghura (1995), using pooled time-series and cross-section data for 33 countries in Sub-Saharan Africa for the period 1970-1990 produced evidence that points towards the existence of a negative relationship between government consumption and economic growth.

On the same sample region, Yasin (2000) examined the relationship of government spending and economic growth in 26 sub-Saharan Africa countries. He developed the model on the basis of neoclassical production function. By using panel data from 1987 to 1997 period and employing both the fixed effect and random effect techniques, he found a different result with Ghura (1995) which suggest that the government spending on capital formation has the expected positive and significant effect on economic growth. He concluded the study with suggestion for these countries to increase government spending on capital formation and create favorable economic environment.

By using similar econometric approaches and similar model with Yasin (2000), Alexiou (2009) explored the impact of a string of variables to condition economic growth for seven countries in

the South Eastern Europe region spanning from 1995 to 2005. The evidence yielded indicates that out of the five variables used in the estimation, government spending on capital formation, development assistance, private investment and a proxy for trade-openness all have positive and significant effect on economic growth, whereas the remaining one, population growth, is found to be statistically insignificant. To conclude, he suggests that the policy makers can create an appropriate environment conducive to nurturing government spending on capital formation, private investment spending, and trade.

Another study that shows a positive correlation has been done by Alshahrani & Alsadiq (2014). They studied the effect of different types of government expenditure on economic growth in Saudi Arabia. They try to see the long-run and short-run effects of the expenditures on growth using various econometric techniques particularly Vector Error Correction Model (VECM). By employing time-series data over the period 1969 – 2010, they found that private domestic and public investments, as well as healthcare expenditure, stimulate growth in the long-run. The result also showed that openness to trade and spending in the housing sector boost short-run production which also used time-series data in studying the effects of government spending on economic growth in the US, found that a reduction in the size of the government (reduction in government spending) would have an adverse impact on economic growth and welfare. He conducted his study by using OLS estimation method and based his model on endogenous growth theory.

On contrary, Guseh (1997), which use similar econometric technique with Knoop (1999) and used time-series data over the period 1960 – 1985 for 59 middle-income developing countries, found a contradicting result with Knoop (1999), regarding the effects of government size on the rate of economic growth. His result suggested that growth in government size has negative effects on economic growth.

Talking about developing countries, Attari & Javed (2013) explored the relationship among the rate of inflation, economic growth and government expenditure in one of developing countries in Asia, i.e. Pakistan. In their study, they disaggregated government expenditure in to the government current expenditure and the government development expenditure. The investigation was made by using the time series data during the period 1980-2010 and employing various

econometric techniques. The result showed that the coefficient of government current expenditure is statistically insignificant, but the coefficient of government development expenditure is statistically significant. It shows that the government expenditures yield positive externalities and linkages. In the short run, the rate of inflation does not affect the economic growth but government expenditures do so. At the end, they argued that a lot of issues faced by the government of the developing countries, like utilization and the miss-allocation of resources, and if the government expenditures are utilized in the excess amount, the excessive capital expenditures become unproductive at the margin.

Still looking at one of developing countries, Nurudeen & Usman (2010) studied about government expenditure and economic growth in Nigeria. Using the co-integration and error correction methods and employing time-series data for the period 1979 – 2007, they developed their model based on Keynesian and endogenous growth model and they found that total capital expenditure, total recurrent expenditures, and government expenditure on education have negative effect of economic growth.

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Building on the same endogenous growth model with Nurudeen & Usman (2010), Hsieh & Lai (1994) attempted to see the nature of the relationship between government expenditure and economic growth in G-7 countries, namely Canada, France, Germany, Italy, Japan, UK, and USA. Their empirical result suggested that the relationship between government spending and growth can vary significantly across time. They find no robust evidence of positive effect of government spending on growth, neither have they found the robust negative effect. They conclude that public spending is found to be contributed at best a small proportion to the growth of an economy.

By using a worldwide sample, Wahab (2011) studied the effects of aggregate and disaggregate government spending on economic growth. For the aggregate government spending, he used data from 97 developing and developed countries for the period 1960 – 2004, while for the disaggregate government spending, he used data from 1980 to 2000 for 32 countries only. By using symmetric and asymmetric model specifications, they found that aggregate government spending has positive output growth effects particularly in periods of its below-trend growth. Furthermore, he found that government consumption spending has no significant output growth

effects, but government investment spending has positive output growth effects particularly when its growth falls below its trend-growth; this favorable effect turns negative when government investment spending growth exceeds its trend-growth.

Using a larger sample, Butkiewicz & Yanikkaya (2011) found a contrast result with what have been reported by Wahab (2011). They studied the impact of government expenditures on economic growth that emphasize on how government effectiveness influences the efficiency of government spending. Over 100 developed and developing nations are included in the data set, and Seemingly-Unrelated Regression (SUR) technique is used to estimate the model. The result showed that total expenditures having negative growth effects, but the result is inconsistent across sample. Consumption expenditures are found to have a detrimental growth effect in developing nations with ineffective governments and these countries benefited from the capital expenditures. They argue that this is due to the ineffective governments in developing nations that discourage private investment, thus public investment become the substitute for private investment. They suggest that developing nations should limit their governments' consumption spending and invest in infrastructure to stimulate growth.

CHAPTER 3: METHODOLOGY

3.1 Research Design

This section is focused on describing the methods used in analyzing the data and establishing the effects of government expenditure on economic growth. This study employs a quantity approach and makes use of the ordinary Least Square (OLS) which will enable us to find the independent effects of each explanatory variable on the dependent variable. Specifically, the Multiple Regression Model is applied where GDP Growth, is used as the exogenous variable and proxy for Economic Growth. Recurrent expenditure and capital expenditures are used as independent variables. Furthermore, Ebola was introduced as a dummy variable in order to determine its effects on the Liberian economy; zero (0) for non-Ebola years and one (1) for Ebola years. All other variables are expressed as percent of GDP.

3.2 Data Source and Description:

This research uses secondary annual time series data on recurrent expenditure, capital expenditure, from 2005 to 2017. These data were obtained from the World Development Indicators (WDI) database, IMF, and World Bank Expenditure Review Manual on Liberia 2013 and 2016.

3.3 Tools of Analysis

The statistical package used to establish the statistical relationship between the variables in the model is the MS Excel 2010. The econometric technique which will be used in this study is the OLS (Ordinary Least Squared) method. OLS will enable us to find the independent effects of each independent variable on the dependent variable using the multiple regression model.

The general form for a multiple regression analysis is given in the form below:

$Y = \beta O + \beta 1X1 + \beta 2X2 + \beta 3X3 + \mu$…… (1)

Where: Y = dependent variable, $\beta 0$ = equation constant, $\beta 1, \beta 2, \& \beta 3$ = coefficients of explanatory variables, *X1, X2, X3,* = independent or explanatory variables, & μ = error term

The proxy variables can be represented as:

Gross Domestic Product = GDP, Recurrent Government Expenditure = RE and Capital Government Expenditure = CE, and the dummy variable Ebola = EBO

Introducing the proxy variables into general multiple regression equation 1, we have:

$GDP = \beta 0 + \beta 1RE + \beta 2CE + \beta 3EBO + \mu$…… *(2)*

CHAPTER 4: EMPIRICAL ESTIMATION RESULTS

4.1 Descriptive Statistics

Table 1 presents the descriptive analysis results of the variables of the study. Data collected on the country's economic growth (Measured in GDP) and the Government expenditure disaggregated into recurrent and capital expenditures were analyzed to obtain the mean, median standard deviation, Range, Minimum and Maximum.

Table 1: Descriptive Statistics

Statistics	GDP Growth	Recurrent Expenditure	Capital Expenditure
Mean	5.52	22.44	4.94
Median	6.1	24.3	4.7
Standard Deviation	4.13	6.8	3.2
Range	14.7	23.8	11
Min	0.029	8.3	0.5
Max	13.1	32.1	11.5
Count	13	13	13

Source: Results from the author's data analysis

From Table 1 presented above, it is clear to see that there is significant variability in the individual variables from their means for the period under study. GDP Growth on the other hand has a mean value of 5.52 and a standard deviation of 4.13. Recurrent Expenditure has a mean value 22.44 and standard deviation of 6.8, while Capital Expenditure has a mean of 4.94 and a standard deviation of 4.7

4.2 Correlation Analysis

The study also conducted a pair-wise correlation analysis in order to establish the association between the variables. Table 2 below presents the results of the correlation analysis.

Table 2

Variables	GDP Growth	REC	CE	EBO
GDP Growth	1			
REC	-0.512	1		
CE	-0.717	0.836	1	
EBO	-0.554	0.376	0.265	1

Source: Results from the author's data analysis

From the correlation analysis, the result shows that there is a strong negative correlation between recurrent expenditure and GDP growth as given by the correlation coefficient of -0.512. Surprisingly, there exists a strong negative correlation 0f -0.717 between GDP Growth and Capital Expenditure.

As expected there was correlation between GDP Growth and Ebola. For the independent variables, there exists a positive correlation of 0.836 between Recurrent Expenditure and Capital Expenditure. The economic implications are explained later in the discussion of the results and findings.

4.3 Regression Results

To answer to the regression model proposed in the methodology, regression analysis was conducted to establish the relationship between the dependent and the predictor variables. The

Table 3

Variable	Coefficients	Standard Error	t-stat	P-value
Intercept	5.64	2.997	1.882	0.092
Recurrent	0.326	0.198	1.646	0.134
Capital Exp	-1.342	0.405	-3.317	0.009
Ebola	-5.293	2.041	-2.594	0.029

Source: Results from the author's data analysis

4.3.1 Interpretation of Regression Coefficients

The result of the multiple regression model is presented above. It demonstrates that recurrent Expenditure has positive but statistically insignificant impact on economic growth for the period covered. While Capital Expenditure, against the a prior expectations, has a negative but statistically significant impact on economic growth for the period covered. The coefficient of recurrent expenditure is 0.326. This is indicative that for every one percent increase in recurrent expenditure as a percent of GDP, GDP grows by 0.326 percent. Contrary to the a priori expectations, the coefficient of Capital Expenditure is -1.342. This shows that as Capital Expenditure as a percent of GDP increases by one percent, GDP will decline by 1.342 percent.

This result is particularly worrying, given that government capital expenditure is seen as a conduit to rapid growth in the economy. Government spending on roads, bridges, electricity and other infrastructure projects are expected to stimulate capital formation and spur growth in the economy. However, this negative relationship between capital expenditure and growth in GDP may stem from corruption and rent seeking in government and inefficiency in providing providing the basic social services to its citizens. In addition, there may have been poor utilization of disbursed funds meant for capital projects; sometimes allocations meant for the implementation of a particular project are

mismanaged, misused or siphoned by officials for personal use. Furthermore, poor procurement which leads to the awarding of government contracts to the wrong individuals and companies in exchange for kickbacks may be pervasive to the system.

4.3.2 Estimated Regression Equation

Thus, from the data analysis, we have the following estimated regression equation:

$$GDP = 5.640 + 0.326REC - 1.342CE - 5.293EBO \quad \text{.....Eqn 3}$$

4.4 Regression Model Summary

Table 4

Regression Statistics	
Multiple R	0.8584
R Square	0.739
Adjusted R Square	0.649
Standard Errors	2.448
Observations	13

Source: Results from the author's data analysis

As seen in the table above, the Multiple coefficient of determination R^2 is 0.737. This means that holding all other factors constant, 73.7 percent of the variations in the dependent variable (GDP Growth) are explained by variations in the Independent variables. This indicates that, other factors that are not studied in this study, (other determinants of economic growth) account for 26.7 percent of its variability. The adjusted R^2 which further validates the reliability of the results is given as 0.649 or 64.9 percent.

4.5 Analysis of Variance Analysis (ANOVA)

To test the over significance of the model developed, analysis of variance was employed in this study. Table 5 gives the results for the ANOVA statistics.

Table 5

	df	*SS*	*MS*	*F*	*Significance F*
Regression	3	151.0693	50.35642	8.400879	0.005634039
Residual	9	53.94766	5.994185		
Total	12	205.0169			

Source: Results from the author's data analysis

The F statistics represents the joint test of statistical significance of all the estimated coefficients of the independent variables. The significance of the F statistics, as seen in the table above shows that the variables are jointly statistically significantly.

CHAPTER FIVE: SUMMARY AND RECOMMENDATIONS

5.0 Introduction

This chapter presents the summary of the study findings and the recommendations made based on the results. It also presents the areas for further research as pointed out during the study.

5.1 Summary

The broad and main objective of this paper has been to explore the effect of government spending on economic growth in Liberia for the period under the study. Government expenditure was disaggregated into recurrent and capital expenditures in order to establish their individual effects on the economy. GDP Growth, a proxy for Economy growth, was used as dependent variable. Recurrent Expenditure, Capital Expenditure and Ebola were used as independent variables. Although Ebola was not of primary concern, the study controlled for the effects of Ebola Virus Disease which griped the country and had a devastating effect on the country's thriving economy. This research tested the following hypothesis: government recurrent expenditure has been more effective in promoting and sustaining economic growth in Liberia in recent years; government capital expenditure has been more effective in promoting and sustaining economic growth in Liberia in recent years; government expenditures (recurrent and capital) have been ineffective in promoting and sustaining economic growth in Liberia.

The econometric technique used for estimation is the Ordinary Least Square (OLS); the study implored the use of the multiple regression analysis to define the effects of government expenditure

on economic growth. The multiple regression results show that there is a positive but statistically insignificant impact of recurrent expenditure on GDP growth for the period of the study. Against, the a priori expectation of the study, there is a negative and statistically significant relationship between GDP growth and capital expenditure for the study. As expected Ebola had a negative and statistically significant effect on GDP growth, given that the Liberia Economy averaged an annual GDP growth From the results, we conclude that government expenditure, for the period covered during our study, does not have a significant

5.2 Recommendations

The empirical findings of this research alarmingly reveal Government Capital expenditure has a negative impact on economic growth. . The results suggest growth in capital expenditure has been associated with a slowdown in economic growth in Liberia. Thus, it is ineffective in stimulating economic growth in Liberia for the period covered during the study. This contradicts our a priori expectation. Against this background, the study provides the following recommendations.

I. Increased supervision, monitoring and evaluation of government funded projects by relevant government institutions to ensure that resources are not only allotted, but that they are fully utilized effectively and efficiently thus bringing value for money.

II. The government of Liberia must endeavor to identify and spend on priority areas which have relevant and significant impact on the growth of the economy.

III. Furthermore, the government of Liberia must sure that procurement processes for public goods and services are transparent and free of corruption. The public procurement and Concession Commission (PPCC) must be allowed to function independently and free of interference in its operation. It must be strengthened to ensure transparency, accountability, effectiveness and efficiency.

IV. Individuals who are entrusted with public resources intended for development purposes should be fully accountable for every dime expended.

V. Finally, government expenditure should be targeted at improving the welfare of the poor who are in majority

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