

**THE IMPACT OF GOVERNMENT EXPENDITURE ON ECONOMIC  
GROWTH IN UGANDA FOR THE PERIOD  
1986-2020**

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## DECLARATION

I hereby declare that this research report is my original work and it has never been submitted to any University for any academic award.

Signed...  .....

Date... 05<sup>th</sup> / APRIL / 2022 .....

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### APPROVAL

This is to certify that **Wanzama Brian** was under my supervision and this research report meets the basic requirement for submission. It is therefore ready for submission to the examination board of the department of Economics and Statistics for marking.

Signed.....

Date.....05<sup>th</sup>/4/2022

MR KAKOOZA AKILEWO

Research supervisor

## **DEDICATION**

This research report is dedicated to my beloved Parents Mrs. Nabulo Esther and Mr. Shisoso Richard, my sister Nabutsale Brenda, my brothers Job, Ronald, Sam, Dan, Geoffrey, Peter and more especially my mentors Mr. Ndokora Justus and Mr. Ahmed Lemma.

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I would like to declare at this point that, I bear all responsibilities for shortcoming that may be found in this work. It shouldn't be attributed to any of the above acknowledged individuals.

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## **ABBREVIATIONS AND ACRONYMS**

ADF	Augmented Dicky-Fuller
ADL	Auto Regressive Distributed Lag
ECT	Error Correction Term
ECM	Error Correction Model
GDP	Gross Domestic Product
GMM	General Methods Moments
GLS	Generalized Least Squares
IMF	International Monetary Fund
MME	Modified M-Estimator
OLS	Ordinary Least Squares
OECD	Organization for Economic Cooperation and Development
WB	World Bank
PP	Phillips Peron
SSA	Sub Saharan Africa
VAR	Vector Auto-Regressive
UBOS	Uganda Bureau Of Statistics
HIV/AIDS	Human Immune Virus/ Acquired Immune Deficiency Syndrome

## **ABSTRACT**

The study examined impact of government expenditure on economic growth with the aid of secondary data obtained from the World Index for the period of 1986 to 2020. The study was guided by three objectives, namely, Establishing the relationship between government expenditure and economic growth, determining the effect of government expenditure composition on economic growth and determining the casual relationship between economic growth and government expenditure components. Augmented Dickey Fuller Statistic and Phillips perron test was used to check stationarity of the variables employed. Johansen co-integration was employed to test whether variables had a long run relationship, Granger causality was employed to test for the casual relationship between the variables and the ordinary least squares method was used to determine the significance of the government expenditure composition on economic growth. In addition, tests for autocorrelation, heteroscedasticity and normality tests were carried out in order to produce linear, unbiased and reliable results.

The study revealed that all the variables were stationary after the first difference, integrated of at most order one and there is a long run relationship between government expenditure and economic growth. Furthermore, the study revealed that government expenditure on final consumption and education had a significant effect on economic growth and there existed a bi-directional relationship between government expenditure components and economic growth.

Based on these findings, the study recommended the government to increase on its expenditure allocation to the education and human capital development, allocate more funds for the development of the health care sector and streamline its expenditure allocation to the debt servicing.

# **CHAPTER ONE**

## **INTRODUCTION**

### **1.0 Introduction of the Study.**

This chapter covered the background of the study, problem statement, objectives of the study, hypothesis, scope of the study, significance of the study, and definition of operational variables.

### **1.1 Background of the Study.**

The term government expenditure refers to the money spent by the public sector on the acquisition of goods and provision of services such as education, health care, social protection and defense. This includes public consumption and public investment and transfer payments. Public expenditure can also be defined as the expenditures incurred by the public authorities like the central state and local governments to satisfy the collective social wants of the people (Akrani, 2012). Furthermore, public expenditure involves all the expenses which the public sector incurs for its maintenance for the benefits of the economy (Osuji et al, 2017). Also, according to (Oriakhi & Arodoye, 2013), government expenditure are the expenses which the government incur for the maintenance of the government and the society in general.

From the global perspective, the relationship between economic growth and government expenditure is an important subject of analysis (Barro, 1990; Landau, 1985; Easterly and Robelo, 1993; Barro & Martin, 1992). A central question is whether or not increase in government expenditure increases the long run steady state growth rate of the economy. Government expenditure remains an important instrument utilised in the process of development. It plays a pivotal role in the functioning of any economy at almost all stages of growth and development. Most developing and developed countries today use public expenditure to improve income distribution, direct the allocation of resources in desired areas, and influence the composition of national income (Assi et al, 2019; World Bank, 2008; Vtyurina S, 2020) The ratio of government expenditure expressed as a percentage of GDP has been less stable than the ratio of government revenue. At the end of the 19<sup>th</sup> century, average public expenditure was around 10 percent of GDP. In the USA it was only 7 percent and in the countries like United Kingdom, Germany or Netherlands, it did not exceed 10 percent. Australia, Italy, and France had public expenditure over 12 percent before the start of World War 1. Since then, the rate has decreased gradually down to 47 percent from 2010 to 2019. In 2020, it increased again to 53 percent due to the impact of covid-19 pandemic. In 2020, the highest expenditure to GDP shares were observed in France was 62.1 percent, Greece was

60.7 percent, Belgium (60.0 percent) and Austria (57.9 percent) and the lowest in Ireland (28.4 percent), Romania (42.4 percent) and Bulgaria (42.9 percent) (World Economic Outlook, 2021)

In sub-Saharan Africa, government spending being the readily available policy instrument for the provision of social services (Tanzi, 2018) has come under increasing scrutiny in SSA countries. This has been the case for countries involved in externally supported economic adjustment or sectoral assistance programs underpinned by conditionality that can be geared towards monitoring and enhancing public social policies (Ahmed et al, 2000). This has meant identifying social priority areas to enable the governments to better target and monitor their resources especially external assistance funds made available. In the recent trends in social spending and social indicators compiled in the World Bank's Development indicators (2001) across individual countries the trends are less well defined with some countries recording setbacks in the recent years specifically those that have experienced armed conflicts or high prevalence of HIV/AIDs (Moser et al, 2001)

In East Africa, there is significant empirical work that demonstrates that as income increases the demand for public services will also increase; there will be a natural tendency to increase government expenditure. From a demand perspective the question hinges on the income elasticity of demand. From a supply perspective we argue that public expenditure is much like private capital and exhibits diminishing marginal returns. Governments that have a high level of spending will have limited incentives to expand spending while those with relatively small government sectors will want to increase public spending (Deller, 2000). It is worth noting that Kenya has the highest expenditure. Tanzania is the second while Uganda is third. If we are to compare this government expenditure with GDP, we notice that Tanzania has a higher economic growth than Kenya, yet Kenya is spending more on its economy in US dollars. This relationship therefore necessitates further study, as most theory demands that the more you spend on the economy, the faster it grows.

In Uganda, the overall expenditure by the government remains high. Government expenditure has amounted to about 20 percent of GDP or more in recent years, with expenditure becoming increasingly slanted towards recurrent expenditures, Uganda relies heavily on development partners such as world Bank (WB), and international development Associations for financing most of the projects. Several studies have analyzed the impact of government expenditure on economic growth in the short run (Landau 1983 and Endame 2009). Uganda in the past decade, the ratio of government expenditure as a percentage of GDP, shows that the average value for

Uganda from 1960 to 2020 was 10.59 percent within the minimum of 6.59 percent in 2009 and the maximum of 16.79 percent in 2002 (UBOS,2021).

It was on the basis of this background that the study sought to analyze the impact of government expenditure on Economic growth in Uganda.

## **1.2 Statement of the Problem.**

All countries in the world spend on goods and services such as physical infrastructure, education, health care, economic services, defense and general administration with the aim of promoting economic growth and Uganda is not any different from them. However, the major challenge is high government expenditure associated with low levels of economic growth. The causes of much of the variations in economic growth over time are not well understood. In particular, the effect of government expenditure on economic growth has not been explored exhaustively (Churchill et al, 2016; Lin, Ali & Lu 2015; Ahuja & Pandit, 2020). Different governments have undertaken various budgetary rationalization and reforms aimed at curbing unproductive government expenditure, which has been rising over the years such as restructuring the government expenditures, especially those targeting public investments, such as those on education and health. However, despite the reforms, the government expenditure is still increasing (Churchill, Ugur & Yew, 2016; Lin, Ali & Lu 2015; Ahuja & Pandit, 2020).

Empirical evidences on the effect of government expenditure on economic growth especially for developing economies present two opposing views, some suggesting that increase in government expenditure has negative effect on economic growth (Saidu & Ibrahim, 2019; Segun & Adelowokan, 2015). In contrast, other studies established that increase in government expenditure has a positive impact on economic growth (Ahuja & Pandit, 2020; Awode & Akpa, 2018; Nyarko-Asomani, *et al.*, 2019). The conflicting results can be attributed to differences in methodological approach, scope, or dataset). However, it was questionable whether the same study would yield the same results in the context of Ugandan economy when the methodological approach, scope and dataset were changed.

Therefore, this study therefore was conducted to address this shortfall and also contribute to the existing literature.

### **1.3 Objectives of the Study.**

#### **1.3.1 The major objective of the Study.**

The major aim of the study was to determine the impact of government expenditure on economic growth in Uganda.

#### **1.3.2 Specific Objectives of the Study.**

Specifically, the objectives of study were;

- i. To establish the relationship between government expenditure and economic growth in Uganda.
- ii. To determine whether government expenditure components have a significant effect on economic growth in Uganda.
- iii. To determine the Causal relationship between Economic growth and government expenditure components

### **1.4. Research Hypotheses.**

The study was guided by the following research hypotheses;

H<sub>01</sub>: There is no relationship between government expenditure and economic growth in Uganda.

H<sub>02</sub>: Government expenditure components have no significant effect on economic in Uganda.

H<sub>03</sub>: There is no causal relationship between government expenditure and Economic growth in Uganda

### **1.5 Scope of the Study.**

This was the limitedness that was considered in the study and was divided into content scope and the time scope as illustrated below.

#### **1.5.1 Content Scope.**

The study was limited to the impact of government expenditure in Uganda. Specifically, the study concentrated on the relationship between government expenditure and economic growth, the impact of components of government expenditure on economic growth and casual relationship between government expenditure components economic growth in Uganda. This was because many researchers do not concentrate and on this causal relationship. Anything outside this content was not looked at in this study.

### **1.5.2 Time Scope.**

The study was limited to the period 1986 to 2020, since this period was characterized by substantial growth in government expenditure, and because time series data was only available for this period of time.

### **1.6 Significance of the Study.**

- i. The study will guide and benefit policy makers to enable them to identify the inherent drive of the expenditure growth and consequently be able to effectively target the relevant expenditure components for any fiscal action in line with both medium- and long-term growth objectives of the country.
- ii. The study will benefit academicians in their research work as point of reference as it will be available in the libraries in the area of government expenditure and economic growth.
- iii. The study will further enhance the understanding of the short term and long-term effects of the government expenditure undertaken by the government.



## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.0 Introduction.**

This section comprises of the review of related literature according to the topic “the impact of government expenditure on economic growth”. This section was organized in respect to specific objectives of the study, so as to provide answers research questions and provide the study justification through other authors, literature, books, journals and magazines.

#### **2.1 Economic Growth in Uganda.**

Economic growth refers the increase in the productive potentials of an economy from one period to another. Economic growth was measured in form of GDP.

The economy of Uganda has great potential and appear poised for rapid economic growth and development World Bank (December 2017). Uganda is endowed with significant natural resources including fertile land, regular rainfall and mineral deposits. Chronic political instability and erratic economic management since the implementation of self-rule has produced the record of persistent economic decline that has left Uganda among the world’s poorest and less developed countries (Staff Writer, 2016). The economy has grown since the 1990s; real GDP grew at an average of 6.7 percent annually during the period 1990-2015, (World Bank,2018) whereas the GDP per capita grew at 3.3 percent per annum during the same period. During this period, the Ugandan economy experienced economic transformation, the share of agriculture value added in GDP declined from 56 percent in 1990 to 24 percent in 2015, the share of industry grew from 11 percent to 20 percent with manufacturing increasing at the slower pace, from 6 percent to 9 percent of GDP and the share of services went from 32percent to 55 percent (world Bank, 2018).

Recent literature shows that Uganda’s real GDP grew at 2.9 percent in the FY20, less than half the 6.8 percent (UBOS, 2021) recorded in the FY19 due the COVID-19 pandemic, tourism and hospitality were severely hurt by global travel restrictions and local containment measures. Other sectors that were affected included manufacturing, retail and whole sale trade and education. All theses had an effect on economic growth. The Bank of Uganda kept the inflation rate at 3.8 percent under 5 percent medium term target. The fiscal deficit widened to 6.6 percent in 2020 from 5.2 percent in 2019 (UBOS,2020) as the government directed spending towards public health including increased testing and cross boarder surveillance of covid-19.

## **2.2 Relationship Between Government Expenditure and Economic Growth.**

Several scholars in their study on the relationship between government expenditure and economic growth found out that when government expenditure increases, economic growth also increases and thus a positive relationship while others found out that when government expenditure increases, economic growth decreases (Khom et al, 2021; Idris & Baker, 2017; Oktayer, 2012).

Khom & Dipak, (2021) in their study analyzed the impact of government expenditure on economic growth of Nepal by using simple and multiple linear regression models. Descriptive and analytical research design used secondary data and the finding of their study showed that there was significant/insignificant impact of government spending on economic growth of Nepal.

Similarly, in another study conducted by (Dudzevicius et al, 2018) using data for eight European Union member countries found a strong positive association between public spending and economic growth. (Idris & Baker, 2017) and (Ihugba & Njoku, 2017) found positive impact of government expenditure on output growth. (Chimobi, 2016) investigated national income and government expenditure nexus in Nigeria and found that there was a stable long run relationship between the fiscal variable and economic growth.

Therefore, this study was aimed at verifying which of the two groups was significant in the perspective of Uganda economy.

## **2.3 Government Expenditure Composition and Economic Growth.**

Several studies on the impact of government expenditure composition on economic growth was carried and according to (Gemmell et al, 2016) in their study on the reallocation of the government expenditure towards the education and infrastructure have positive effect while social welfare spending has inverse effect over economic growth in the long run. Aliyev and Mikayilov, (2016) described that the role of composition of budget expenditure recommend the validity of the relationship among the variables in the long term.

According (Mudaki & Masaviru, 2012) in the determination of impact of government expenditure composition on economic growth in Kenya, his findings revealed that expenditure on health a positive but insignificant effect on growth, education and consumption had a positive and significant effect while debt servicing and military had an insignificant impact on economic growth.

Similarly according to (Zia et al, 2021) in their study to observe the effect of various elements of the government expenditures on economic growth of Pakistan for the period 1973 to 2018.

Based on the ADF test results, their study found that effect of public expenditure components had a positive and significant effect on economic growth. The research found that outlays for transport, infrastructure, justice and defense were growth enhancing.

It was therefore in line with these findings that this study aimed at establishing the casual relationship between government expenditure components and economic growth in the context of the Ugandan economy.

#### **2.4 Causal Relationship Between GDP Growth and Government Expenditure Components.**

The relationship between public expenditure and economic growth has been examined by many researchers. However, there was no consistent evidence that there's any unidirectional causality between public expenditure and economic growth.

According to (Garba & Abdullahi, 2013) examined the causality between public expenditure and economic growth in Nigeria. They applied the Johansen co-integration approach and the Granger causality test using time series aggregate data for a sample of 39 years, over the period of 1970–2008. The result revealed that public expenditure and economic growth are cointegrated in the long run. Furthermore, the results of the Granger causality test indicate bidirectional causality running from public expenditure to economic growth and, in turn, from economic growth to public expenditure instead of being unidirectional.

Similarly, Oktayer and Oktayer, (2012) investigated the nexus between public spending and output growth using Turkish data for the period 1950-2010 and found no long run co-integration between the variables of interest. Ebaid and Bahari, (2019) using data for Kuwait found a unidirectional causality running from expenditure to economic growth.

It was therefore in line with these findings that this study aimed at finding the impact of productive government expenditure and on economic growth in the context of the Ugandan economy.

## CHAPTER THREE

### METHODOLOGY

#### 3.0 Introduction.

The chapter presents the empirical model adopted for the study. The variables used in the study were defined. The data, the data sources and the methods to be used in data analysis were explained.

#### 3.1 Research Design.

The study adopted a cross sectional research design in conjunction with descriptive data. This study aimed at establishing the impact of government expenditure on economic growth in Uganda. Quantitative data was used in the study test the hypotheses posed in chapter one. The study used time series data from the period 1986 to 2020 for the components of government expenditure, namely; final consumption, public debt servicing, defense, education, and health care. The OLS model was used for estimation after undergoing time-series property.

#### 3.2 Theoretical Framework.

The theoretical framework that the study was based on is Keynesian theory. Keynesian theory states that public expenditure determines economic growth. During recession a policy of budgetary expansion should be undertaken to increase the aggregate demand in the economy thus boosting the Gross Domestic Product (GDP), the employment rises, income and profits of the firms increase, and this would result in the firm's hiring more workers to produce the goods and services needed by the government.

Based on Keynesian theory (Eiya, 2011), (Jerono, 2009), stated that government expenditure components influence growth and the relationship can be defined as in equation 1

$$GDP = f(Hea, Me, Educ, Debt, Consp) \dots\dots\dots (1)$$

Where:

Hea = Health Expenditure

Me= Military Expenditure Edu = Education Expenditure,

Debt = Public debt servicing expenditure, Consp = Final Consumption expenditure

### 3.3 Model Specification.

The consideration in designing the methodology was to incorporate all the important expenditure variables and their effects on economic growth. Under these considerations, the following equation was estimated:

$$(GDP)_t = \beta_0 + \beta_1 \text{Exp (Hea)}_t + \beta_2 \text{Exp (Educ)}_t + \beta_3 \text{Exp(me)}_t + \beta_4 \text{Exp(consp)}_t + \text{Exp(debt)}_t + E_t \dots\dots\dots (2)$$

Where:

GDP = Gross Domestic Product

Exp (Hea) = Expenditure on health

Exp (Educ) = Expenditure on Education

Exp (Me) = Expenditure on military spending

Exp (consp) = Expenditure on final consumption

Exp(debt) = Expenditure on Public debt servicing

$\beta_i$  = Regression coefficient

$E_t$  = Error term

$t$  = Time variable

### 3.4 Definition of Variables and Measurement of Variables.

Table 3.4 Definition and Measurement of Variables

VARIABLE	DEFINITION	MEASUREMENT
Economic Growth (GDP)	This is the percentage rate of increase in gross domestic product. It captures the change in value of goods and services produced in a given economy for a specified period of time.	It was measured in current USD (Billion)
Expenditure on Defense	This is the fraction of expenditure on defense against the gross government expenditure.	It was the total amount spend on defense by the government in current USD (Billions)
Expenditure on Education	This is the share of expenditure in education to total government expenditure	It was the total amount spend on education by the government in Current USD (Billions)
Expenditure on Health	This is the share of public expenditure on health to total government expenditure	It was the total amount spend on Health by the government in current USD (Billions)
Expenditure on Final consumption	This is the share of public funds over the total government expenditure directed to final consumption	It was the total amount spend on Final consumption by the government in current USD (Billions)
Public debt servicing	It is the interest payments made by the central government for the use of all borrowed money both domestic and external.	It was the total amount spend on debt servicing by the government in current USD (Billions)

### **3.5 Types and Sources of Data.**

Secondary data for the period 1986 to 2020 was collected and used for analysis in this study. The data was derived from world index, World Bank Open Data and World Development Indicators data. Data on GDP growth rate and the components of government expenditure were obtained from government official documents such as Republic of Uganda's Statistical Abstracts, Ministry of Planning and economic Development, Economic Surveys, UBOS, Development Plans, Budget, Bank of Uganda publications, Finance Bills, Economic Reports, and other sources, including the International Financial Statistics, the World Tables, the Government Financial Statistics and the World Development Reports.

### **3.6 Diagnostic Tests.**

#### **3.6.1. Unit root tests.**

This was the first step involved testing for stationarity of the series. This was a standard procedure performed to ensure that the series have a constant mean and variance, so that the resultant regression results would be meaningful (Tsay, 2001). Otherwise, if stationarity of the series is present and not checked, the presence of trend in the data series would mean that the regression results are

spurious. Two main methods for testing stationarity or the presence of unit roots that were applied are the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests (Perron, 1989). The ADF procedure attempts to retain the validity of the tests based on white-noise errors in the regression model by ensuring that the errors are indeed white-noise. On the other hand, (PP) procedure corrects for serial correlation through a non-parametric correction to the standard statistic (Stock, 2001). PP test acts to modify the statistics after the estimation in order to take into account the effect that auto correlated errors have on the results. Therefore, PP test was desirable because it did not require estimation of additional parameters that would require additional data and also may not exhaust degrees of freedom.

#### **3.6.2. Lag Length Selection Criteria.**

To decide on the number of lags in unit root testing the lowest Akaike Information Criterion (AIC) complemented by Schwartz Bayesian Criterion (SBC) are used for better fit. The AIC and SBC estimate the quality of each model, relative to each of the other models and help for the choice of parsimonious model because there is a penalty to adding higher lags. However, for residual testing, the asymptotic critical values are invalid for a standard Unit Root Tests.

The calculated t-statistic is compared with a set of statistics provided by Davidson and MacKinnon (1993).

### 3.6.3. Test for Cointegration.

The Engle and Granger two step approach test of Cointegration was applied in this study. Engle and Granger (1987) suggest a Cointegration test, which consists of estimating the cointegration regression by OLS, obtaining the residual  $\hat{u}_t$  and applying unit root test for  $\hat{u}_t$ . To test an equilibrium assertion, they propose testing the null that  $\hat{u}_t$  has a unit root against the alternative that it has a root less than unity. Since  $\hat{u}_t$  are themselves estimates, new critical values need to be tabulated. Thus, one has to use the corrected MacKinnon critical values.

The Error Correction Method (ECM) representation of a cointegrated system has the following parameters.

$$\Delta y_t = c + \alpha_0(y_{t-1} - \beta x_{t-1}) + \sum_{i=1}^p \pi_1 \Delta y_{t-i} + \sum_{i=1}^p \pi_2 \Delta x_{t-i} + \varepsilon_t \quad \dots\dots\dots 3$$

Where:  $\beta$  expresses the long-run equilibrium relationship;  $\alpha$  expresses the speed of adjustment, or how strongly the past disequilibrium affects changes in Y. It is also referred to as the Error Correction Term (ECT) and links the long-run equilibrium relationship implied by Cointegration with the short run dynamic adjustment mechanism that describes how the variables react when they move out of long-run equilibrium. P is the order of the Autoregressive (AR) process in Y and X where Y and X are dependent and independent variables respectively;  $\pi_1$  and  $\pi_2$  are the parameters of own dynamics of Y and X (not reflecting disequilibrium conditions); and  $\varepsilon$  is the error term.

Before bound test was applied to test for long run equilibrium relationship between the variables, ordinary least square (OLS) technique was first utilized using equation 3. The null hypothesis of no co-integration between the variables was tested against alternative hypothesis of the existence of long run relationship between the variables.

### 3.6.4 Test of normality of the residuals.

The normality of the residuals of the ECM was tested for normality using the JarqueBera, Skewness and Kurtosis test. The interpretation of the results of the tests was that if the p-value of the tests is less than 5 percent, then the distribution of the variable is normal (Stan, 2011).



### **3.6.5 Test for autocorrelation of the Residuals.**

The Breusch-Godfrey Serial Correlation/LM test was used to test for serial correlation in the model. Under the null hypothesis of no serial correlation at lag order  $h$ , we rejected the null if the probability of the LM-stat at different lags was sufficiently lag.

### **3.6.6 Heteroskedasticity Tests for residuals.**

To test for heteroskedasticity of the residual under the null hypothesis of No cross terms, the chi-square test was used and the null was rejected if the chi-square value was sufficiently large.

### **3.6.7 Granger Causality Test.**

The Granger Causality test was used to determine the causal relationship between GDP growth and government expenditure components. The Granger method sought to explain how much of a variable  $X$  (government expenditure components) can be explained by its own past values and whether adding lagged values of another variable  $Y$  (GDP growth) can explain better.

Granger causality was used to determine whether one-time series was useful in forecasting another (Enders, 1995). The VAR equations were used to perform Granger causality tests. The F-statistics tested the null hypothesis that the coefficients on lagged values of a variable are zero in the equation of the other variable against the alternative hypothesis that the coefficients on lagged values of a variable are not zero in the equation of the other variable. The null hypothesis was rejected when F-statistics is greater than the p-value.

### **3.7 Data Analysis.**

This study sought to address the three specific objectives. The general objective was to establish the impact government expenditure on economic growth in Uganda. The specific objectives were achieved by the estimation of equation 2 by using a time series data model using analytical packages STATA and EViews.

## CHAPTER FOUR

### PRESENTATION, ANALYSIS AND INTERPRETATION OF THE FINDINGS

#### 4.0 Introduction.

This chapter presents the results of the estimated model developed in chapter three their analysis and interpretation.

#### 4.1 Descriptive Statistics.

Table 4.1 Descriptive Statistics

	GDP	EDUC	DEBT	CONSP	HEA	ME
Mean	12.844	0.1900	0.5413	1.4289	0.8375	0.2550
Median	6.5089	0.1380	0.2936	1.0403	0.6069	0.1597
Maximum	32.9270	0.8447	9.2165	4.2916	2.9516	0.9848
Minimum	2.8575	0.0509	0.2100	0.2760	0.0190	0.0523
Std. Dev.	10.9500	0.1882	1.5239	1.0394	0.79792	0.1976
Skewness	0.8689	0.2792	1.4926	0.9399	1.32165	1.9148
Kurtosis	4.9819	7.2898	2.7967	3.1135	3.8860	3.8798
Observation	35	35	35	35	35	35

*Source: World Index Data 1986-2020*

The results shows that the mean and median of the variables are good measures of central tendency since these are within the minimum and maximum values of the different series. From the table above, the average GDP is 6.5089, expenditures on education, debt servicing, final consumption and military are on average 0.1900, 0.5413, 1.4289 and 0.2550 respectively. The maximum GDP is 32.9270. the minimum is 2.8575 and its deviation from the mean is 10.9500. The maximum expenditure on education, debt servicing, consumption health and military is 0.8477, 9.2165, 4.2916, 2.916 and 0.948 respectively. The respective deviations from the mean are 0.1882, 1.5239, 1.0394, 0.797792 and 0.1976. Minimum expenditures also are 0.0509, 0.2100, 0.276, 0.019 and 0.0523.

## 4.2 Trends of GDP Growth Rate and Government Expenditure

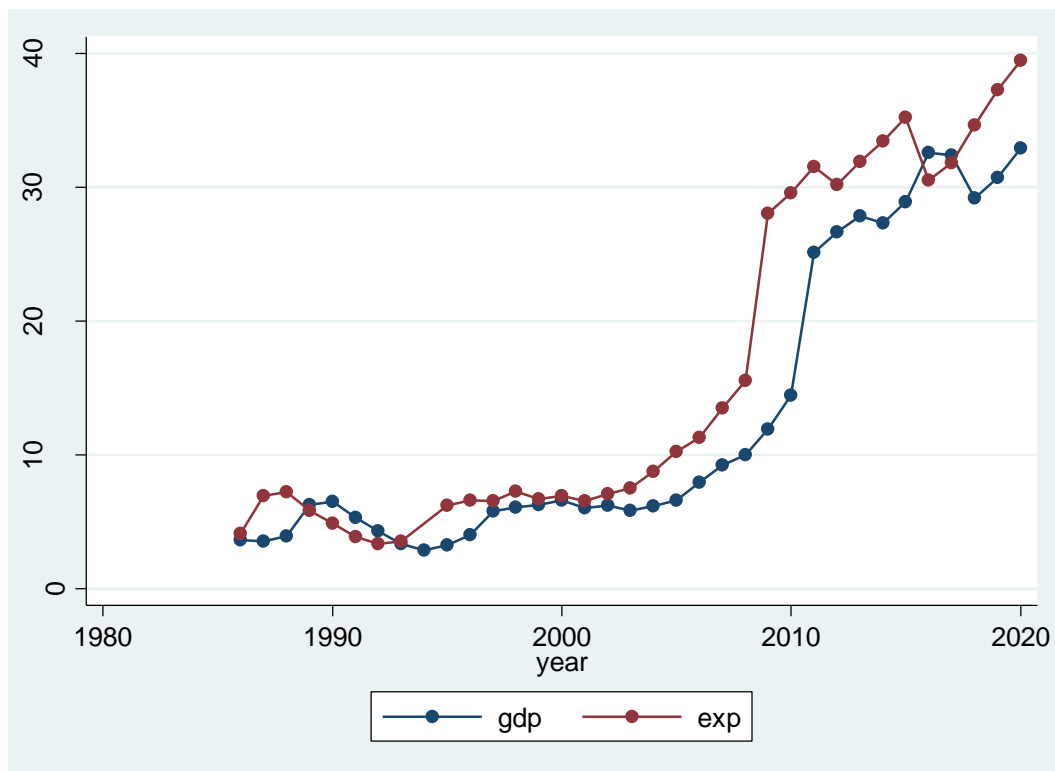


Figure 4.1 Trends in growth rate and government expenditure 1986-2020

Source: World Index Data 1986-2020

Figure-1 depicts the growth rate of GDP and government expenditure of Uganda over the period of 1986-2020. The growth rate GDP does not exceed above 35 percent but the growth rate of government expenditure is approximately 40 percent. In the most of the years, the trends of growth rate of GDP and government spending has found similar nature. The GDP growth rate was highest in 2020 and so is government expenditure in the same year. Similarly, the growth of rate of GDP was the lowest 1993 whereas the growth rate of government expenditure was also the lowest in that year.

### 4.3 Stationary Unit Root Tests.

#### 4.3.1a Augmented Dickey Fuller (ADF) Unit root Test

Table 4.2a Augmented Dickey Fuller (ADF) Unit Root Test

Variable	At Level		First Difference		Order of Integration
	Intercept	Trend and Intercept	Intercept	Trend and Intercept	
GDP	0.1827	-1.5936	-3.529*	-3.7613*	I(1)
Hea	-2.5808*	-2.4295*	-7.0152**	-7.1258**	I(0)
Debt	-4.0928*	-4.0179*	-6.5866*	-6.4860*	I(0)
Educ	-2.4633*	-2.3768*	-3.5850*	-3.4292*	I(0)
Consp	-0.5056	-3.6989*	-6.4218*	-6.4980*	I(1)
Me	0.1897	-1.8923	-3.0059*	-3.3485*	I(1)

(\*\*) and (\*\*\*) denote significance level at 5 percent and 1 percent levels.

Optimal lag length is determined by Akaike Information Criterion (AIC).

*Source: World Index Data 1986-2020*

#### 4.2b Phillips Perron (PP) Unit Root Test.

Table 4.2b Phillips Perron (PP) Unit Root Test

Variable	At Level		First Difference		Order of Integration
	Intercept	Trend and Intercept	Intercept	Trend and Intercept	
GDP	0.4438	-1.4506	-4.2265*	-4.3746*	I(1)
Hea	-6.0890**	-6.0273**	-16.0166***	-16.495***	I(0)
Debt	-5.8535*	-5.7570*	-12.6710**	-12.4898**	I(0)
Educ	-5.6775*	-5.6373*	-12.9346**	-12.6456**	I(0)
Consp	-0.4606	-4.2040*	-9.5956**	-9.88766**	I(1)
Me	0.7007	-1.1314	-2.8530*	-3.1357*	I(1)

(\*\*) and (\*\*\*) denote significance level at 5 percent and 1 percent levels.

Optimal lag length is determined by Akaike Information Criterion (AIC).

*Source: World Index Data 1986-2020*

Table 4.2a&b reports the results of both ADF and PP tests, which are consistent in establishing same order of integration for each variable. The unit root test results in table 2a for ADF and table 2b for PP above reveals that GDP, Consumption expenditure and military expenditure are non-stationary at level while health expenditure, debt servicing and education are stationary however at first difference, all the variables became stationary. This implies that none of the

variables intended to be used for this research work is non-stationary at first difference since, by comparison, their critical values at 5 percent level of significance are more in significant than the Dickey-Fuller (ADF) and Phillips Perron (PP) test statistics in absolute terms. Since the variables were not fixed at the level, Johansen co-integration is conducted to test the long-run relationship.

#### 4.3.2 Diagnostic Tests.

Table 4.3 Diagnostic Tests

Test	Null Hypothesis ( $H_0$ )	Test	Test Value (P-value)	Decision
<b>Normality test</b>	The residuals series is normally distributed.	Jarque-Bera	0.635610	Can't Reject $H_0$
<b>Serial correlation</b>	There is no serial correlation.	BG Serial Correlation	0.07810	Can't Reject $H_0$
<b>Heteroskedasticity</b>	The variance is homoscedastic.	Breusch-Pagan-Godfrey	0.002	Reject $H_0$

*Source: World Index Data 1986-2020*

To test for the normality of the residuals, the JarqueBera test was carried out for the residuals and the results depicted that since the probability value of the JarqueBera statistics  $0.6356 > 0.05$  hence failure to reject the null hypothesis and conclusion made that the series are normally distributed.

For serial correlation test using the Breusch-Godfrey test was carried out, the observed probability Chi-Square value (0.07810) is greater than the 5 percent significance level. As a result, the null hypothesis of no serial correlation is accepted and conclude that there is no autocorrelation among the variables in this study.

Similarly, to test for Heteroskedasticity using Breusch- Heteroscedasticity Test Pagan-Godfrey's, the results show that the observed probability Chi- Square value (0.002) is less than 0.05 critical value. This means that the variables are homoscedastic in nature ordinarily since the variables used in the study have almost the same variance at level.

## 4.4 The Relationship Between Government Expenditure and Economic Growth.

### 4.4.1 Lag Length Selection Criteria.

In estimating the VEC model, various lag length criteria that include the sequential modified LR test, Final Prediction Error (FPE), Akaike Information Criterion (AIC), and Hannan-Quin (HQ), and Schwartz Information Criterion (SC) indicated an optimal lag length of one. Therefore, from the table below, while considering LR test, the maximum lag is 1 while considering FPE test the maximum lag length is 4, for AIC criteria, the maximum lag length is 2 for SC and HQ the maximum lag length is 2

Table 4.4 Lag Length Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-18.44845	NA	0.017601	1.635876	1.733386	1.662921
1	48.28336	117.4480*	0.000117*	-3.382669	-3.090139*	-3.301533*
2	50.67236	3.822408	0.000134	-3.253789	-2.766239	-3.118563
3	52.03487	1.962005	0.000169	-3.042789	-2.360219	-2.853473
4	59.02813	8.951380	0.000138	-3.282251*	-2.404660	-3.038844

### 4.4.2 Test for Co-integration.

Table 4.5 Testing for Co-integration

Eigenvalue	Likelihood Ratio (LR)	5 Percent Critical Value	1 Percent Critical Value	Hypothesized No. of CE(s)
0.85	150.85	114.90	124.75	None **
0.66	87.57	87.31	96.58	At most 1 *
0.49	51.33	62.99	70.05	At most 2
0.32	28.49	42.44	48.45	At most 3
0.25	15.64	25.32	30.45	At most 4

\*(\*\*) denotes rejection of the hypothesis at 5% (1%) significance level

**Source: World Index Data 1986-2020**

L.R. test indicates 2 cointegrating equation(s) at 5 percent and 1 percent significance level. Since the likelihood ratio of the maximum eigenvalue(s) is greater than the critical value at 5 percent, the null hypothesis of no Cointegration against the alternative of a Cointegration relationship in the model. This implies that there exhibits a long run relationship.

#### 4.5 Effect of Government Expenditure Components on Economic Growth.

##### OLS ESTIMATES

Table 4.6 Impact of Government Expenditure on Economic Growth

VARIABLES	GDP
Me	0.8712 (10.1870)
Debt	-0.1858 (0.5780)
Educ	12.7978** (5.3787)
Consp	9.0961*** (1.8875)
Hea	0.0837 (1.2596)
Constant	-2.3825 (2.0082)
Observations	35
R-squared	0.8189

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.

**Source: World Index Data 1986-2020**

The  $R^2$  value of 0.8189 implies that 81.89 percent of the variations in GDP is explained by independent variables that is expenditure on health, education, military, final consumption and debt servicing hence a good fit for the sample.

When expenditure on health, education, military, final consumption and debt servicing are zero, on average the GDP is -2.3825. A unit increase in health expenditure keeping other factors constant will on average increase the GDP by 0.08365 US billion dollars. This is statistically

insignificant at all levels of significance thus health expenditure has no significant effect on GDP.

A unit increase in debt servicing expenditure keeping other factors constant will on average decrease the GDP by 0.0837 US billion dollars. This is statistically insignificant at all levels of significance thus debt servicing expenditure has no significant effect on GDP

However, a unit increase in education expenditure keeping other factors constant will on average increase the GDP by 12.7978 US billion dollars. This is statistically significant at 5 percent level of significance thus education expenditure has a significant effect on GDP.

Similarly, a unit increase in final consumption expenditure keeping other factors constant will on average increase the GDP by 9.0961 US billion dollars. This is statistically significant at one percent level of significance thus education expenditure has a significant effect on GDP (growth rate).

Lastly, a unit increase in military expenditure keeping other factors constant will on average increase the GDP by 0.8712 US billion dollars. This is statistically insignificant at all levels of significance thus military expenditure has a positive but insignificant effect on GDP.



#### 4.6 The Causal Relationship Between GDP Growth and Government Expenditure Components.

Table 4.7 Casual Relationship Between Economic Growth and Government Expenditure Components

Null Hypothesis	F-Statistic	Lags	Probability	Conclusion
GDP growth does not Granger - Cause government expenditure on health	0.16907	11	0.24236	Uni-directional causality running from health expenditure to GDP growth
Government expenditure on health does not Granger - Cause GDP growth	51.5011	11	0.10830	
GDP growth does not Granger - Cause expenditure on education	7.82273	6	0.0004	Bi-directional
Expenditure on education does not Granger - Cause GDP growth	0.58076	6	0.74058	
GDP growth does not Granger - Cause expenditure on government final consumption expenditure	4.46173	2	0.02080	Bi-directional
Expenditure on government final consumption does not Granger - Cause GDP growth	3.02703	2	0.06454	
GDP growth does not Granger - Cause expenditure on military	6.40043	3	0.0023	Bi-directional
Expenditure on military does not Granger - Cause GDP growth	10.8511	3	0.0000	
GDP growth does not Granger - Cause expenditure on debt servicing	0.28330	8	0.95664	Bi-directional
Expenditure on public debt servicing does not Granger - Cause GDP growth	9.94336	8	0.0007	
*(**) denotes rejection of the hypothesis at 5%(1%) significance level				

**Source: World Index Data 1986-2020**

The Granger causality test results reveals that there is bi-directional causality between government expenditure on military, education, Final consumption and debt servicing. This means that these set of variables predict each other and hence can be on either side of the equation, (either as dependent or as an independent variable).

The variable that has a unidirectional causality include government expenditure on Health. This implies that only one variable can explain the other. In this case, they require to be on the right-hand side of the equation as independent variables.

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSION AND RECOMMENDATIONS**

#### **5.0 Introduction.**

This chapter presents the summary, conclusions and recommendations, area of further study and the limitation of the study.

#### **5.1 Summary of The Findings.**

The study found out that the maximum expenditure by the government was on debt servicing while the minimum expenditure was on the education.

In the determination of the relationship between government expenditure and economic growth, the study found out that there exists a long run relationship. The study also found out that government expenditure on consumption and education had a significant effect on economic growth while debt servicing, health and military expenditure had an insignificant effect on economic growth. Furthermore, there existed a bi-directional relationship between economic growth government expenditure components such as education, consumption, military and debt servicing while health expenditure and economic growth had a Uni-directional relationship when causality test was carried out.

#### **5.2 Conclusion.**

On the establishment of the relationship between government expenditure and economic growth, the study found out that there is a long run relationship between government expenditure and economic growth. This is in line with (Chimobi, 2016) who investigated national income and government expenditure nexus in Nigeria and found that there is a stable long run relationship between the fiscal variable and economic growth.

On the determination of effect of government expenditure components on economic growth, the study found out that government expenditure on education and final consumption had a significant effect on economic growth. This is in line with the findings of (Mudaki & Masaviru, 2012) who determined the impact of government expenditure composition on economic growth in Kenya.

On the determination of the casual relationship between government expenditure composition and economic growth. Government expenditure on Education, final consumption, military and debt servicing has a Bi-directional relationship with economic growth. This is in line with the

findings of (Garba & Abdullahi, 2013) who examined the causality between public expenditure and economic growth in Nigeria.

### **5.3 Recommendations.**

With reference to the findings of this research, the following recommendations are proffered in order to escalate economic growth in Uganda;

The government should increase its expenditure allocation to the education and human capital development. This is because the study found that education affect economic growth positively. This could be done through provision of education facilities, training and employing more teachers.

The government should allocate more funds for the development of the health care sector. This is because the study found that health care contributes positively to the economic growth. This should be achieved through investment in capital equipment, health facilities and provision of quality medical supplies.

The government should streamline its expenditure allocation to the debt servicing. This is because it was found that public debt servicing affects economic growth negatively. Public debt servicing reduces the resources that could otherwise have been allocated to more productive sectors of the economy.

### **5.4 Areas for Further Research.**

Although the focus of this study was solely on measuring the impact of government expenditure on economic growth, an important issue to address in future research is what determines government decision to allocate expenditure among various components? In particular, the role of demographic factors and the nature of the political process is important

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## APPENDIX-1

### Dataset Used for Analysis

YEAR	GDP(US\$) BILLION	ME(US\$) BILLION	DEBT (US\$)	EDUC(US\$) BILLION	CONSP (US\$) BILLION	HEA(US\$) BILLION	G- EXPT(US\$) BILLION
1986	3.6157	0.1311	0.1451	0.1716	0.3536	0.5632	4.0752
1987	3.5197	0.131	0.3118	0.1599	0.4991	0.8726	6.9049
1988	3.9232	0.1409	0.3226	0.2015	0.5276	0.7363	7.198
1989	6.2695	0.1398	0.181	0.1878	0.3679	0.2367	5.8146
1990	6.5089	0.107	0.1468	0.1447	0.3233	0.5362	4.8718
1991	5.2765	0.0736	0.1134	0.1472	0.2936	0.8721	3.8511
1992	4.3044	0.0523	0.9623	0.1132	0.276	0.5621	3.3205
1993	3.3217	0.0626	0.1102	0.138	0.3591	0.1222	3.5125
1994	2.8575	0.1041	0.0761	0.4687	0.5841	0.2688	4.7622
1995	3.2204	0.127	0.1083	0.1353	0.6434	0.6179	6.1862
1996	3.9904	0.1354	0.1162	0.1481	0.7107	0.6069	6.6138
1997	5.7558	0.1396	0.1211	0.1609	0.8332	2.9395	6.5271
1998	6.0446	0.1547	0.1274	0.1533	0.8473	0.0924	7.2708
1999	6.2693	0.1597	0.1345	0.1324	0.7717	1.9978	6.6655
2000	6.5848	0.1413	0.1557	0.0757	0.8983	0.4978	6.9021
2001	5.9986	0.1362	0.1623	0.0509	0.9101	0.5005	6.5585
2002	6.1933	0.1422	0.1921	0.0712	1.0375	1.542	7.0721
2003	5.8405	0.1524	9.2165	0.0845	1.0403	0.5052	7.5165
2004	6.1786	0.196	0.2936	0.1034	1.1026	0.6355	8.727
2005	6.6069	0.2167	0.3149	0.1718	1.339	0.7508	10.2076
2006	7.9395	0.2185	0.3296	0.1008	1.4071	0.9363	11.2625
2007	9.2392	0.2521	0.3858	0.0666	1.5346	0.1079	13.4786
2008	9.9777	0.3119	0.4194	0.075	1.6189	1.0375	15.552
2009	11.9026	0.2935	0.5002	0.0721	1.6548	0.1159	28.0246
2010	14.4404	0.6087	0.4168	0.0638	2.2068	0.1519	29.5927
2011	25.1278	0.6071	0.4966	0.0639	4.2916	0.0224	31.533
2012	26.6734	0.3518	0.5437	0.0684	2.0737	0.2098	30.2213
2013	27.8717	0.3001	0.4816	0.0879	2.0525	2.0206	31.9445
2014	27.3059	0.3257	0.5371	0.2067	2.4227	0.019	33.4479
2015	28.9158	0.3061	0.5357	0.0951	2.9001	1.9627	35.2197
2016	32.6124	0.3186	0.4762	0.8447	2.1471	0.985	30.5329
2017	32.3872	0.3468	0.5109	0.189	2.4625	0.891	31.8251
2018	29.204	0.4084	0.6372	0.692	2.8436	0.1906	34.6614
2019	30.7445	0.6476	0.3256	0.3521	3.1021	2.256	37.2901
2020	32.927	0.9848	0.9872	0.6521	3.5763	2.9516	39.4727

*Source: World Index Data 1986-2020*