MAKERERE UNIVERSITY

IMPACT OF GOVERNMENT EXPENDITURE ON ECONOMIC GROWTH IN UGANDA Q1 2008 - Q4 2017

BY

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DECLARATION

I, **AHIMBISIBWE FRANCIS,** hereby declare that this thesis titled "The impact of government expenditure on economic growth in Uganda" is my own work and that all the sources I have used or quoted have been acknowledged.

Name of the author: **AHIMBISIBWE Francis**

Signature: ……………………………………………………...

Date: …20/11/2018……………………………………………

CERTIFICATION

The undersigned certify that he has read this thesis titled "The impact of government expenditure on economic growth in Uganda" in the process of guiding the author and thereby recommend it for submission to the Directorate of Research and Graduate Training of Makerere University in partial fulfillment of the award of the degree of Master of Arts in Economic policy and planning of Makerere University.

Signed.. Date. 20/11/2018

Dr. ORYEMA JOHN BOSCO

DEDICATION

To my late caring Grandmother, Odilla Kangwamu, who was my bedrock while growing up and with whom I would have loved to share these moments had she been around;

And

To my son, Siima McWyatt Rugasira, whom I hope this achievement will act as a motivation to aim high and always know that he can achieve anything he sets his sights and mind on.

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First and most importantly, I take this opportunity to thank God Almighty, for all that I have achieved in my life has not been by my might but rather by His gracious providence, mercy and blessings.

My deepest gratitude goes to Eng. & Mrs. Stephen Kangwamu and the whole of the Kangwamu family that took on the mantle to take care of me and educate me when I lost my parents at a tender age. Without you, I definitely would not have reached these levels. My biggest motivation is to always make you proud.

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Finally, to my course mates, friends, relatives and well-wishers, I recognize your contributions and prayers. May the Almighty God continue to bless us all and provide for our individual needs as we strive to improve ourselves, our country and the world at large.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

ADF	Augmented Dickey Fuller Test
ARDL	Autoregressive Distributed Lag Model
BIC	Bayesian information criterion
CUSUM	Cumulative Sum
ECT	Error Correction Term
GC	Government Consumption
GDE	Growth Rate of Development Expenditure
GDP	Gross Domestic Product
GDPG	Growth Rate of GDP
GKS	Growth Rate of Capital Stock
GLF	Growth Rate of Labor Force
GRE	Growth Rate of Recurrent Expenditure
INF	Inflation
MOFPED	Ministry of Finance, Planning and Economic Development
RESET	Regression Equation Specification Error Test
UBOS	Uganda Bureau of Statistics
VIF	Variance Inflation Factor
WDI	World Development Indicators
WPI	World Price Index

CHAPTER ONE: INTRODUCTION

This chapter presents the background to the study, the problem statement, objectives of the study, scope of the study, significance of the study, and organization of the study.

1.1 Background

The effect of government expenditure on economic growth has been a topic of long-standing controversy in economic theory and empirical research. The central issue is whether government expenditure enhances economic growth or not.

Theoretically, economists have shown how government expenditure may impact economic growth. For Instance, Keynes (1936) proposed the approach of using public spending to stimulate economic growth especially when private spending and investment are insufficient. The ideology behind Keynes view is that expenditure, if well utilized, can stimulate the macroeconomy through the use of discretionary fiscal policy and increasing aggregate demand. According to the neo classical economists, reducing the role of private sector through the crowding-out effect might reduce inflation in the economy but will also reduce output. This is because increase in public debt to fund increased government expenditure leads to increased interest rates which in turn leads to reduction in private sector credit extension and thereby negatively affecting output. The New Keynesians present the multiplier effect in response and argue that the increase in government expenditure will increase demand and thus increase economic growth.

In line with the neo classical view, the Monetarist approach argues that tax financed government expenditure crowds out private investment. This is because when government expenditure is tax-financed, additional expenditure calls for more taxation (Ahmed, 1999). A higher tax burden reduces the disposable income for individuals and this results into a reduction in consumption, lower savings and hence lower investment. Relatedly, higher tax burden on corporations and businesses result into decreased profits which reduces expansion and development of these businesses. If the government decides to borrow from money or capital markets to finance its expenditure, interest rates will rise resulting in crowding out of the private sector (Ahmed, 1999).

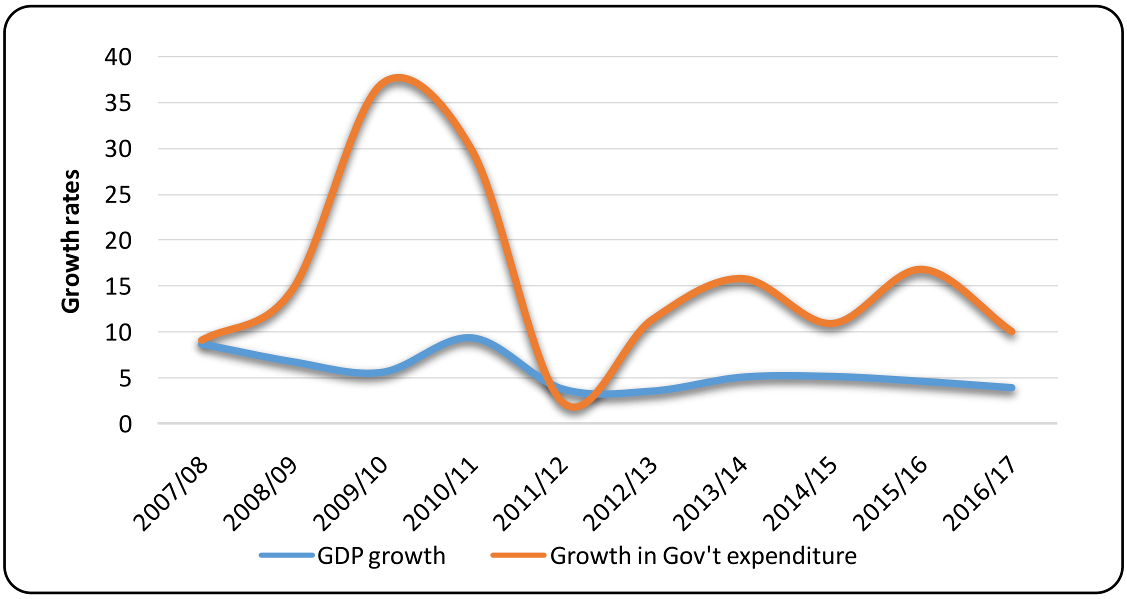
In spite of the above discussion, economic theory does not inevitably generate solid conclusions about the impact of government spending on economic growth. Regarding empirical research, there exists strong controversy over the evidence of a link between public expenditure and growth. Some economists agree to the fact that there are situations in which government spending leads to economic growth whereas, in other situations, government spending hinders growth. Those in favor of the negative relationship argue that, the benefits of public spending which is financed by taxing the private sector or borrowing from the private sector (whether directly or indirectly through crowding out) may be offset by the cost of financing it (Abu and Abdullah,2010; Iheanacho, 2016). Deficits which are domestically financed are generally growth debilitating. In addition, if beneficial public spending leads to macro instability, it may have a cost in terms of growth.

On the other hand, Government expenditure can increase output either directly or indirectly through different ways as examined by Lin (1994). These ways include provision of public goods like roads, railways and social services like health and education and through promotion of exports by offering subsidies.

In the context of Uganda, government expenditure has continued to increase, at least for the past decade. For instance, government expenditure (recurrent and development) increased from UShs 4.3trillion in the financial year 2007/08 to UShs 16.7 trillion in the year 2016/17, representing 288 percentage increment. Over the same period the annual government expenditure growth rate averaged at 15.8%. It is interesting to note that both recurrent and development expenditures have been increasing. For instance, recurrent expenditure increased from UShs 2.9 trillion to UShs 9.96 trillion for the period 2007/08 to 2016/17, representing 243 percentage increment. Development expenditure increased from UShs 1.4 trillion to UShs 6.7 trillion over the same period, representing 379 percentage increment. In terms of annual growth rates, recurrent expenditure averaged at 15.8 percent while development expenditure averaged at 16.7 percent.

Looking at economic performance, Uganda's economic growth has slowed down in the recent years. Having averaged at 7.6 percent for the period between the financial years 2007/08 to 2010/11, economic growth rate for Uganda has since come down to an average of just 4.4 percent between the financial years 2011/12 and 2016/17. The trend for the growth rates for real GDP and government expenditure for the period financial years 2007/8 – 2016/17 is shown in the figure 1.1.

Figure 1. 1: Trend of Growth Rate of Real GDP and Government Expenditure



Source: Government Finance Statistics (GFS) 2017 and Uganda Bureau of Statistics

From the graph, growth rate of government expenditure exceeds the growth rate of real GDP (with exception of financial year 2011/12).

1.2 Problem statement

As highlighted earlier, there exists controversies (both in theory and empirical evidence) about the effect of government expenditure on economic growth. Some suggest a positive impact (Barro, 1990; Barro and Sali-i-Martin, 1992; Olorunfemi, 2008; Cooray, 2009) while others suggest negative relationship (Abu and Abdullah, 2010; Iheanacho 2016; Nkiru & Izuchukwu, 2013). In the context of Uganda, growth rate of government expenditure has remained above growth rate of GDP. For instance, the period between financial years 2002/03 and 2010/11, growth rate of government expenditure averaged at 15.9% while GDP growth rate averaged at 7.7% and the period between 2011/12 and 2016/17, government expenditure growth rate averaged at 11.9% while GDP growth rate averaged at 4.4%. This suggests that growth in government expenditure might not be translating into corresponding increment in

GDP growth. This therefore calls for a need to investigate the impact of government expenditure on economic growth in Uganda.

1.3 Objectives of the study

1.3.1 General objective

To examine the impact of government expenditure on economic growth in Uganda.

1.3.2 Specific objectives

a) To examine the impact of development expenditure on economic growth in Uganda.
b) To examine the impact of recurrent expenditure on economic growth in Uganda.

1.4 Hypotheses of the study

a) Development expenditure has no impact on economic growth in Uganda.
b) Recurrent expenditure has no impact on economic growth in Uganda.

1.5 Scope of the study

The study investigates the impact of government expenditure on economic growth in Uganda considering the time period from 2008 quarter one to 2017 quarter four.

1.6 Justification/ significance of the study

Generally, government spending to an extent is necessary and beneficial for a smooth running of the economy and thus knowing the impact of government expenditure is central in this regard. This will enable the government to figure out which components or types of expenditure should be increased to improve growth and development and the welfare of the people of Uganda.

1.7 Organization of the study

The study is organized into five chapters. Chapter one is the introduction part of the study. It contains the background of the study, the problem statement, the objectives of the study, the scope of the study and the significance of the study. Chapter two reviews the relevant literature as regards the impact of government expenditure on economic growth. Chapter three presents the methodology adopted for the study encompassing the theoretical framework, specification of the empirical model, definition and explanation of the variables used in the empirical analysis, estimation procedure, and the data types and sources. Chapter four presents the estimated results and their interpretation. And finally; chapter five gives conclusions, recommendations, limitations of the study and the area of further studies.

CHAPTER TWO: LITERATURE REVIEW

This chapter starts with presentation of theoretical review, under which the various theoretical views regarding the impact of government expenditure on economic growth are explored. Thereafter empirical studies are reviewed. The chapter concludes by presenting the summary of the literature and the knowledge gap.

2.1 Theoretical Literature

Theoretical literature about the relationship between government expenditure and economic growth can be divided into two schools of thought; the Keynesian and Wagner's schools of thought. The fundamental contrast in these two theories is the direction of causation.

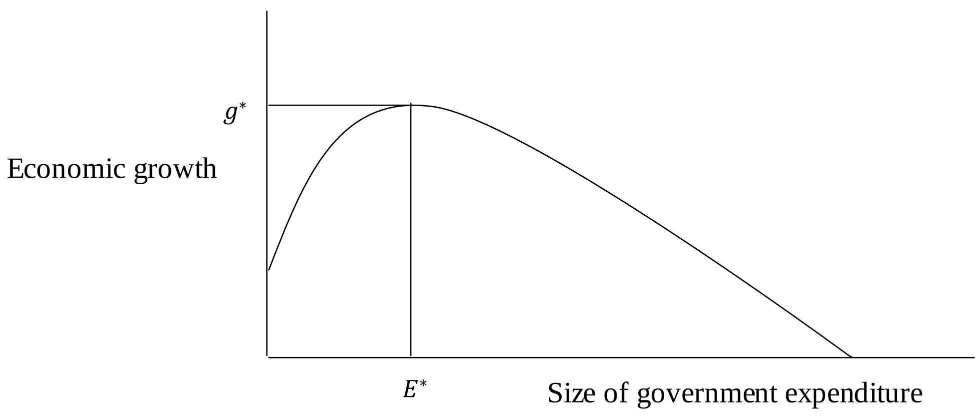
Wagner's Law assumes that the long-run elasticity for public spending and economic growth is larger than unity, implying that the role of the government increases because of economic growth. This is explained by the increasing demand for regulatory and protective functions which are needed to sustain the increasing level of economic wealth. In addition, as countries grow wealthier, the demand for public goods like education, healthcare, defense and cultural services among others increases.

The theory that the need for goods and services provided by the government increases with a country's economic growth is explained by the following reasons; Firstly, as the economy grows the public sector will take over the administrative and protective functions that were previously carried out by the private sector. Secondly, as the economy grows, the need for provision of social as well as cultural goods and services becomes greater as well. Finally, as the economy grows, more government intervention is required to manage, control and finance natural monopolies and to maintain the well-functioning of market forces through regulation (Lahurushan & Gunasekara, 2015).

The Keynesian view argues that economic growth occurs as a result of rising public sector expenditure. In this context, government expenditure is treated as an independent exogenous variable and could be used as an efficient policy variable to influence economic growth. In the early stages of economic development, higher rate of growth of public expenditure is required to provide social overheads. Most of these projects are capital intensive which require high spending (Kneller, Bleaney, & Kneller, 1999). The investment in education, health, roads, electricity, and water supply are prerequisites that can launch the economy from the traditional stage to the take off stage of economic development (Lahirushan & Gunasekara, 2015).

Besides the two schools of thought discussed above, US senator Richard Armey developed the Armey curve in early 1990's. The Armey curve demonstrates the relation between government expenditure and economic development and hypothesizes that an optimal size of government expenditure exists. The curve is illustrated as shown below.

Figure 2. 1: Government expenditure and Economic growth



As illustrated in figure 2.1: The graphical representation of the Armey Curve, a State with a non-existent government results in minimum economic development. This is explained by the lack of rule of law and protection of property right. Due to the uncertain economic environment, there is no intention to save or invest (Lahurushan & Gunasekara, 2015). However, if the role of the government grows to full ownership of resources and control of economic decision making, economic growth is limited and may decline to zero. Explanations for this trend can be found in the decrease of private investments due to the ‘crowding out’ effect, higher tax rates and less free market. Additionally, the Armey Curve indicates an optimal size of the government E*, where maximum economic growth is reached. At this point, an increasing amount of government expenditure leads to a decrease in economic growth. This point differs country by country and may rely on economic factors like openness of the economy as well as social factors like household size among others.

2.2 Empirical literature

There exists a number of empirical studies on the impact of government expenditure on economic growth. The findings of these studies can be grouped into four main categories. While the first focuses on the empirical findings that support the Keynesian hypothesis, the second focuses on the empirical findings that support Wagner’s Law. There are some empirical findings that show absence of clear relationships between government expenditure and economic growth. Finally, there are those empirical findings that show an inverse relationship between government expenditure and economic growth.

Pham (2009) analyzed the impact of government expenditure on GDP growth for China, Hong Kong, Malaysia and Singapore by covering the period from 1990 to

2008. This study found out that there is a significant positive relationship between government expenditure and economic development which is in line with theory. Furthermore, the evidence in this paper suggests that government expenditure indeed has a significant influence on GDP growth in the long run in China, Hong Kong, Malaysia and Singapore.

Ergun & Tuck, (2006) studied the direction of causality between national income and government expenditures for Indonesia, Malaysia, Philippines, Singapore, and Thailand. Granger causality test was used to investigate the causal links between the two variables. Annual time series data from 1960-2002 was used. Support for the hypothesis that causality runs from government expenditures to national income was found only in the case of Philippines. There was no evidence for this hypothesis and its reverse for the other countries.

Loizides & Vamvoukas, (2005) estimates the long-run relationship between government expenditure and economic growth using both a bivariate and trivariate analysis. In the bivariate analysis, simple regressions are estimated to establish the relation from government expenditure towards economic growth and vice versa. In the trivariate analysis, either the unemployment rate or inflation rate is added separately as explanatory variable in order to affirm the validity of either the Keynesian hypothesis or Wagner's law in Greece, UK and Ireland. They conclude that in the short run government size Granger causes economic growth in all countries. While in the long-run, economic growth Granger causes the size of government in Greece, and when inflation is added, in the UK. This implies that government expenditure indeed constitutes a stabilization policy tool to affect economic growth in the short term for all the three countries under investigation.

Devarajan *et al.* (1993) used functional categories of public expenditure in their economic growth regressions. The study found out that public expenditure had an inverse relationship with growth in developing countries but had a positive relationship with growth in developed countries. The study categorized expenditure into productive and non-productive categories by taking into account the level of resources invested and output produced by different programs. For instance, the study reported that government expenditure on health, transport and communications is growth promoting but found no positive impact of education and military spending on economic growth.

Karagianni et al. (2002), employs the two-step Engle and Granger cointegration method, the Johansen maximum likelihood method and the Granger causality test, in order to investigate the long run and causal relationship between government spending and income. For this purpose, they employ six alternative functional forms, using data for the 15 of the countries in the European Union (EU) over the time period 1949-1998. The results, accruing from this study, are ambiguous according to the method applied. The major points that emerge from the Engle and Granger test are that in most of the EU countries, no long-term relationship has been observed, except for some subcases in Finland, Italy and the Netherlands. In contrast, the Johansen test supports the existence of Wagner's Law in most of the EU countries under study, with the exception of France and Italy. As far as the Granger causality test is concerned, patterns of causality between income and government expenditure display dramatic differences across various countries. Moreover, there is limited support for the pattern of causality; Wagner's Law is completely verified only in two countries – Finland and Italy.

Akitoby et al (2006), examined the short and long-term behavior of government spending with respect to output in 51 developing countries using an error correction model. They find evidence that is consistent with the existence of cyclical ratcheting and voracity in government spending in developing countries, resulting in a tendency for government spending to rise over time.

Kalam & Aziz (2009), used Bangladesh data from 1976 to 2007 in a bivariate as well as a trivariate framework incorporating population size as a third variable to empirically investigate Wagner's Law. The results provide evidence in support of the law for Bangladesh, in both the short-run and long-run. There is existence of a long-run cointegration relationship among real government expenditure, real GDP and the size of population. Government expenditure is positively tied with the real GDP, per capita GDP and population size. Real GDP and GDP per capita Granger cause total government expenditure to change. Population size is also noted as a significant stimulus for public spending to grow in both the long-run and short-run.

Mulumba, (2009) attempts to investigate the validity of Wagner's law and causality between government expenditure and economic growth in SADC countries from 1988 to 2004. In order to determine the existence of the long-run relationship and causality, a univariate analysis is carried out to assess whether panel series are integrated at the same order. The study finds that all panel series under investigation are indeed integrated of the same order. In addition, economic growth was found to Granger cause government expenditure in both the long and the short-run, which is more consistent with Wagner's law than with the Keynesian stance.

Dilrukshini, (2002) investigates the existence of a long-run relationship between public expenditure and GDP using data for Sri Lanka during 1952-2002. Using the

Granger causality test and Sri Lankan time series aggregate data, the study found no empirical support to the Keynesian hypothesis. The study found that both the government expenditure and GDP variables were non-stationary in levels, but stationary in first differences. Accordingly, the variables were integrated of order one and therefore the author had to apply cointegration test. According to the results, there was no cointegrating relationship between government expenditure and national income. Accordingly, the author could not find long-run relationship between government expenditure and GDP growth.

Muhlis & Hakan, (2003) investigated the long-run relationship between public expenditure and GDP for the Turkish economy. The study used the natural log of annual data from 1965-2000. They employed cointegration and Granger Causality tests on the following variables: Gross Domestic Product (GDP), Total Government Consumption (GC), Total Public Expenditure (EXP) and Mid-Year Annual Population. The data in nominal values were converted to real values using the Wholesale Price Index (WPI). They discovered that neither Wagner's Law nor Keynes' hypothesis was valid in Turkey.

Nkwaton, (2012) empirically investigated the relationship between government expenditure and economic growth both at the bivariate and the multivariate systems. The econometric investigation was based on a cointegration approach and the Toda-Yamamoto Augmented Granger Causality test. The results of Johansen bivariate/multivariate cointegration revealed that there was no long-run relationship among the stationary variables.

Wahab (2004), presented new specification in order to disentangle the effect of positive economic growth and negative economic growth on growth of government expenditure in the OECD countries for the period between 1950 and 2000. The general finding revealed that in times of positive economic growth, government expenditure tends to grow less than proportional to the increase in growth.

In the context of Uganda, Sennoga & Matovu (2012) examined the relationships between public spending by composition and Uganda's development goals which included economic growth and poverty reduction. The authors used a Dynamic Computable General Equilibrium (DCGE) model to study the aforesaid relationships. The results show that public spending composition indeed influences economic growth and poverty reduction. Specifically, the authors show that improved public sector efficiency, in addition to reallocation of public expenditure away from the unproductive sectors such as public administration and security to the productive sectors including agriculture, energy, water, and health leads to higher GDP growth rates and accelerates poverty reduction.

Summary of the literature and research gap

On the basis of reviewed literature, there exists mixed findings regarding the impact of government expenditure on growth. Some find a positive impact, others find negative impact while there also exists scholars who find no significant impact. There are also scholars who argue that its economic growth that Granger causes government expenditure and not the other way round.

Regarding Uganda, a study by Musila & Belassi (2004) focused on the impact of government education expenditure on economic growth, ignoring other types of government expenditure (expenditure on health, agriculture, infrastructure among others). Moreover, the study used data for the period 1965 to 1999, which may make the findings not to be currently reliable due to changing conditions. This implies that there is still a gap as far as studying the impact of government expenditure on economic growth in Uganda is concerned. It is this gap that this study seeks to fill.

CHAPTER THREE: METHODOLOGY

This chapter describes the theoretical framework adopted for the study, empirical model developed for the study, description of the variables, and estimation technique employed in the study to examine the impact of government expenditure on economic growth in Uganda. The chapter concludes by describing data sources and type.

3.1 Theoretical Framework

The theoretical model of this study follows Baum and Lin (1993) as it employs the neoclassical aggregate production function based on the constant return to scale assumption. According to Solow (1956), output is a function of labor and capital stock that is;

$$Y = f(K, L) \qquad (3.1)$$

Where Y is aggregate output, K is capital stock and L is the stock of labor force.

Similar to Ashauer (1989), the study augments the above neo classical production function by introducing government expenditure. Thus, the production function is specified as;

$$Y = f(K, L, G) \qquad (3.2)$$

Where G is the aggregate government expenditure. Y, K and L are as defined before.

Adopting a cobb-Douglas production function equation (3.2) becomes;

$$Y = K^{\alpha} L^{\theta} G^{\beta} \qquad (3.3)$$

Taking logs of equation (3.3) yields equation (3.4);

$$lnY = \alpha lnK + \theta lnL + \beta lnG \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.\ldots\ldots (3.4)$$

Differentiating equation (3.4) with respect to time gives equation (3.5);

$$\frac{1}{Y}\frac{dY}{dt} = \frac{\alpha}{K}\frac{dK}{dt} + \frac{\theta}{L}\frac{dL}{dt} + \frac{\beta}{G}\frac{\square G}{dt} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3.5)$$

In equation (3.5), $\frac{1}{Y}\frac{dY}{dt}$ is growth rate of output, $\frac{1}{K}\frac{dK}{dt}$ is the growth rate of capital stock, $\frac{1}{L}\frac{dL}{dt}$ is the growth rate of labor force and $\frac{1}{G}\frac{dG}{dt}$ is the growth rate of government expenditure. $\alpha, \theta \ and \ \beta$ are output elasticities with respect to capital stock, stock of labour force and government expenditure respectively. Equation 3.5 therefore implies that the growth rate of output is determined by growth rate in capital stock, the rate of growth of labour force, and the growth rate of government expenditure. That is;

$$g_Y = f(g_K, g_L, g_G) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3.6)$$

Where; $g_Y = \frac{1}{Y}\frac{dY}{dt}$, $g_K = \frac{1}{K}\frac{dK}{dt}, g_L = \frac{1}{L}\frac{dL}{dt}$ and $g_G = \frac{1}{G}\frac{dG}{dt}$

3.2 Empirical Model

Based on the theoretical model in equation (3.6), this study develops an empirical model by introducing the intercept term and disaggregating government expenditure into two components that is; recurrent expenditure and development expenditure. Literature suggests inflation and openness to have a significant impact on economic growth. The study therefore controls for these variables in addition to labour force growth and growth rate of capital stock. The empirical model is thus given by:

$$GDPG_t = \beta_0 + \beta_1 GKS_t + \beta_2 GLF_t + \beta_3 GRE_t + \beta_4 GDE_t + \beta_5 INF_t + \beta_6 OPEN_t + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.. (3.7)$$

Where; $\boldsymbol{GDPG}$ is the annual growth rate of GDP, $\boldsymbol{GKS}$ is the growth rate of capital stock, $\boldsymbol{GLF}$ is the growth rate of stock of labour, $\boldsymbol{GRE}$ is the growth rate of Recurrent expenditure,$\boldsymbol{GDE}$ is the growth rate of development expenditure, $\boldsymbol{INF}$ is inflation rate, and $\boldsymbol{OPEN}$ is openness. As a robustness check, two sub-models of equation (3.7) are estimated and these are shown by equations (3.8) and (3.9).

$$GDPG_t = \beta_0 + \beta_1 GKS_t + \beta_2 GLF_t + \beta_3 GRE_t + \beta_4 INF_t + \beta_5 OPEN_t + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots . (3.8)$$

$$GDPG_t = \beta_0 + \beta_1 GK \; <_t + \beta_2 GLF_t + \beta_3 GDE_t + \beta_4 INF_t + \beta_5 OPEN_t + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3.9)$$

In equation (3.8), only government recurrent expenditure is considered while in equation (3.9) only government development expenditure is considered.

3.3 Definition of the variables and expected signs

Growth rate of capital stock (GKS). In line with the previous empirical studies (such as; Shuaib and Diana, 2015; Nweke, 2017), growth rate in capital stock will be proxied by growth rate of gross capital formation based on constant local currency. Gross capital formation (formerly gross domestic investment) consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. Increase in capital stock promotes investment thus increasing GDP growth (Plossner, 1992). Accordingly, the study hyposized a positive relationship between GDP growth and growth in capital stock.

Growth rate of stock of labour (GLF): In the literature of economic growth, population growth rate has been used as a proxy for labor force growth as in the case of Makhema (2006). Increase in population growth increases the supply of labour force in the country, yet at the same time it increases demand for goods and service thereby increasing GDP growth. The study therefore expected a positive association between GDP growth and growth in labour force.

Growth Rate of Recurrent Government expenditure (GRE). Recurrent expenditure refers to spending on items that are consumed only for a limited period of time (Modebe, 2012). Recurrent expenditure consists of government expenditure on administration such as wages, salaries, interest on loans, maintenances, etc. (Bonmwa & Ogboru, 2017). According to Lotto (2011) and Devarajan &Vinay (1996) some aspects of recurrent sectoral expenditure have positive effects while others have negative effects on economic growth.

Growth Rate of Government Development Expenditure (GDE). Development expenditure refers to expenditure on capital goods and projects that are meant to increase the national output (Kivuva, 2016). Development expenditure is expected to play a pivotal role in the growth of any country since such expenditure, if effectively utilized can significantly reduce the cost of doing business in that country. A positive relationship between development expenditure and economic growth was expected.

Inflation rate (INF). This is measured as the annual percentage change in general price level in the economy. It is meant to capture macroeconomic stability and the coefficient is expected to be negative since inflation dampens economic growth.

Openness (OPEN). This refers to the degree of openness of the economy to international trade. According to Marilyne et al (2011), openness has a general positive impact on growth and thus needs to be included in the model given that Uganda is an open economy. It is measured as a ratio of trade (exports plus imports) to GDP.

3.4 Estimation procedure

3.4.1 Unit root tests

Before estimating the relationship between economic growth and government expenditure, there was need to check for the stationarity of each data series. Testing the stationarity of economic time series is of great importance since estimation of a time series model without testing for stationarity can easily result in a spurious regression. Consequently, the usual statistical tests are likely to be inappropriate and the inferences drawn are likely to be erroneous and misleading. This study adopted the augmented dickey fuller (ADF) test.

Augmented dickey fuller test (ADF)

This is a modified version of the Dicky Fuller test which ensures that the unit root test is valid even with the presence of serial correlation of unknown form. To get the specification of the ADF test, the ordinary Dickey Fuller equation is modified by adding lagged values of the differenced dependent variable as shown below.

$$\Delta Y_t = \alpha_0 + \alpha_2 t + \rho Y_{t-1} + \sum_{i=1}^{M} \beta_i \Delta Y_{t-i} + u_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (3.10)$$

Where Y_t is the time series being tested, M is the optimal number of lags, u_t is the error term.

The test is conducted under the null hypothesis that $\rho = 0$ (series has a unit root) against the alternative that $\rho < 0$. The decision is based on the dickey fuller tau statistic which is given as;

$$DF_\tau = \frac{\widehat{\rho} - 1}{Est.std.error(\widehat{\rho})} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (3.11)$$

The null hypothesis is rejected if the computed tau statistic is less than the critical dickey fuller values at a given level of significance.

3.4.2 Cointegration

Having tested the stationarity of each time series, the next step is to search for cointegration among these variables. Two variables are said to be co-integrated if they have a long-term relationship between them. In the literature, three approaches have been used to test for existence of long run relationship among the variable (cointegration), that is; Engle and Granger (1987) approach, Johansen and Juselius (1990) procedure and the ARDL bounds test by Pesaran et al (2001).

The Engle Granger approach is a two-step approach which uses ordinary least squares to test for cointegration. In the first step, the model is estimated using OLS and the residuals predicted, then unit root test is conducted on the residuals. Absence of unit root in the residuals is an indicator that the variables are cointegrated. When this happens, the Granger representation theorem says that there is some valid error correction representation of the model which describes how the dependent variable and the independent variables behave in the short run and long run. The second step therefore involves estimation of the error correction model with the lagged residuals from the first step included as error correction term.

The Engle Granger approach is however limited in a way that the error made in the first step is carried forward into the second step which leads to poor estimation. In addition, OLS estimation of the static level models may create bias in finite samples due to the omitted short-run dynamics (Banerjee, Dolado, Hendry, and Smith, 1986).

In the bid to resolve the shortcomings of the Engle granger approach, Johansen and Juselius (1990) developed a method that is based on maximum likelihood estimation.

This approach can estimate and test even in the presence of multiple cointegrating vectors. The Johansen and Juselius (1990) method is based on VAR and the maximum Eigen value or the likelihood ratio. However there arises identification issues when using the method and usually the number of cointegrating relations depends on the number of lags chosen (Greene, 2007). More so, the technique requires all variables to be integrated of the same order (preferably of order one, I (1))

3.4.3 ARDL technique and bound test

The study adopts ARDL bounds approach to cointegration to examine the impact of government expenditure on economic growth. The choice of this approach is primarily based on the advantages it has over the other estimation techniques. First,the approach is not as restrictive in terms of the meeting of integration of the same order as in Johansen; secondly, it produces unbiased estimates even in the presence of endogenous covariates (Harris & Sollis, 2003). Furthermore, the method can be applied even when the variables have different optimal number of lags. ARDL models for the equations 3.7, 3.8, and 3.9 are given by equations 3.12, 3.13, and 3.14 respectively.

$$\Delta GDPG_t = \alpha_0 + \alpha' X_{t-1} + \sum_{a=1}^{m} \beta_a \Delta GDPG_{t-a} + \sum_{i=0}^{r} \lambda_i' \Delta X_{t-i} + e_t \ldots\ldots\ldots\ldots\ldots (3.12)$$

Where;

$X_{t-1}' = (GRE_{t-1} GDE_{t-1} GKS_{t-1} GLF_{t-1} INF_{t-1} OPEN_{t-1})$ for the case of equation (3.7), $X_{t-1}' = (GRE_{t-1} GKS_{t-1} GLF_{t-1} INF_{t-1} OPEN_{t-1})$ for the case of equation (3.8), and $X_{t-1}' = (GDE_{t-1} GKS_{t-1} GLF_{t-1} INF_{t-1} OPEN_{t-1})$ for the case of equation (3.9). $\alpha' = (\alpha_1 \alpha_2 \alpha_3 \alpha_4 \alpha_5 \alpha_6)$ for equation (3.7) $\alpha' = (\alpha_1 \alpha_2 \alpha_3 \alpha_4 \alpha_5)$ for the case of equation (3.8) and (3.9)

Where: Δ=First-difference operator, α_0 = the drift component, while m and r are lag lengths. The rest of the variables are defined as before. The short run effects are obtained by testing the coefficients of the first differenced explanatory variables while the long run effects are shown by the coefficients of the lagged explanatory variables.

Bounds Test

To test for existence of long run relationship, bounds test was applied. This is a Wald test (F-statistic) that tests whether all the long run coefficients are statistically equal to zero. It's performed under the null hypothesis of "no cointegration among the variables in the model".

The null and alternative hypotheses are stated as follows:

$H_0 : \alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = \alpha_5 = \alpha_6 = 0$

$H_1 : \alpha_1 \neq \alpha_2 \neq \alpha_3 \neq \alpha_4 \neq \alpha_5 \neq \alpha_6 \neq 0$

The computed F-statistic is compared with the critical F-values provided by Pesaran et al. (2001). If the computed F-statistic is greater than the upper critical value, the null hypothesis is rejected indicating that the variables are cointegrated. If the computed F-statistic is lower than the lower bound critical value, we fail to reject the null hypothesis, and conclude that there is absence of cointegration.

Short run and long run dynamics

After confirming existence of long run relation among the variables, short run and long run coefficients are estimated from the ARDL model. The long run elasticities are given by the equation (3.13) while the short run dynamics are given by equation (3.14).

Long run coefficients

$$\Delta GDPG_t = \alpha_0 + \alpha_1 GKS_{t-1} + \alpha_2 GLF_{t-1} + \alpha_3 GRE_{t-1} + \alpha_4 GDE_{t-1} + \alpha_5 INF_{t-1} + \alpha_6 OPEN_{t-1} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3.13)$$

Short run dynamics

$$\Delta GDPG_t = \sum_{a=1}^{m} \beta_a \Delta GDPG_{t-a} + \sum_{b=0}^{n} \delta_b \Delta GKS_{t-b} + \sum_{c=0}^{p} \gamma_c \Delta GLF_{t-c} + \sum_{d=0}^{q} \mu_d \Delta GRE_{t-d} + \sum_{e=0}^{r} \sigma_e \Delta GDE_{t-e} + \sum_{f=0}^{s} \theta_f \Delta INF_{t-f} + \sum_{g=0}^{s} \phi_g \Delta OPEN_{t-g} + \phi \text{ECT} + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3.14)$$

Where: $\phi$is the coefficient of speed of adjustment which measures the speed at which equilibrium is restored given a change in the explanatory variables in the model. This is expected to be negative and statistically significant. ECT represents error correction term.

3.4.4 Diagnostic tests

Diagnostic tests are carried out to check if the model satisfies the assumptions of the classical linear regression model. In this study, the following diagnostic tests are considered; stability (CUSUM) test, serial correlation, heteroscedasticity, normality, multicollinearity and specification test (Ramsey RESET test).

Breusch-Godfrey test was applied to test for serial correlation. This was preferred over the Durbin-Watson test because the Durbin-Watson is not reliable in presence of stochastic regressors (Greene, 2007).

The study adopted Breusch-pagan test for heteroscedasticity over the White test because the White test may reveal heteroscedasticity when in the actual sense the model suffers from specification errors and not heteroscedasticity (since White test is for both heteroscedasticity and specification errors). Moreover, the test is nonconstructive, that is; if the null hypothesis is rejected, the test gives no indication of what to do next (Greene, 2007). Regarding normality and multicollinearity, Jarque-bera and variance inflation factor were used respectively.

3.5 Data Types and Sources

The study employed secondary and quarterly data running from 2008 quarter one to 2017 quarter four. The data on government expenditure was sourced from Ministry of Finance, Planning and Economic Development (MoFPED)'s Government Finance Statistics, GDP growth and inflation data were obtained from Uganda Bureau of Statistics (UBOS), while growth in capital stock and population growth rate were sourced from the World Development Indicators (WDI) of the World Bank. Openness was computed using exports and imports figures from Balance of Payment (BOP) analytical tables from Bank of Uganda.

CHAPTER FOUR: PRESENTATION AND DISUSSION OF EMPIRICAL FINDINGS

This chapter presents the empirical results of the estimated model developed in chapter three and their interpretation. First, the data is analysed using descriptive statistics to know the behaviour of the data. This is followed by Pairwise correlation matrix which is computed to determine the extent of the linear relation between two variables. Thereafter unit root tests and estimation of the model is done. Finally, diagnostic tests are carried out before interpretation and discussion of the results is done.

4.1 Descriptive statistics

The results of data description are shown in table 4.1. These results show that all variable have the same number of observations; that is 40. With exception GDE, all the other variables are normally and symmetrically distributed since their kurtosis values are close to three and their skewness values are close to zero.

Table 4. 1: Descriptive statistics

Stats	GDPG	GRE	GDE	GKS	GLF	INF	OPEN
Mean	5.720	2.723	15.24	6.157	3.826	8.386	0.474
Median	5.650	5.146	11.07	5.411	3.876	6.424	0.477
SD	2.576	7.082	29.80	3.680	0.123	5.667	0.052
Skewness	0.115	-0.342	1.221	0.407	-0.164	1.117	-0.021
Kurtosis	2.518	2.279	5.128	2.077	1.419	3.413	3.389
Minimum	1.100	-12.01	-22.62	0.635	3.603	1.693	0.335
Maximum	11.50	16.56	119.7	13.79	3.977	23.61	0.602
N	40	40	40	40	40	40	40

Source: Author's computations

The results further show that, with exception of growth rate of government development expenditure and inflation, the mean and median are good measures of central tendency since these are perpetually within the minimum and maximum values of the different series. For instance; GDP growth rate ranges from 1.1 to 11.5

percent with mean of 5.72 and median of 5.65, growth in recurrent government expenditure (GRE) ranges from -12.01 to 16.56 percent with mean of 2.723 and median of 5.14. The maximum value of inflation is far away from the mean and median values indicating a possibility of outliers in the series. This high maximum value of 23.61 is due to the economic crisis that hit the economy in 2011 making inflation reach double digit.

4.2 Pairwise correlation matrix

Correlation analysis is carried out to determine the extent of linear association between any two variables in the study. This is important because it can help to reveal the possibility of multicollinearity problem in the regression**.** The results are shown by the correlation matrix in table 4.2 below.

Table 4. 2: Pairwise correlation

	GDPG	GRE	GDE	GKS	GLF	INF	OPEN
GDPG	1						
GRE	0.0942	1					
GDE	-0.288	0.0554	1				
GKS	0.180	-0.3243*	-0.228	1			
GLF	0.4087*	0.127	0.112	0.0731	1		
INF	0.112	0.131	0.0166	0.160	0.4635*	1	
OPEN	-0.0835	-0.3583*	0.298	0.185	0.165	0.244	1
***represents significance at 5%**							

Source: Author's computations

The results show that all the correlation coefficients between independent variables are less than 0.8 therefore disputing the possibility of having multicollinearity in regression. The results further show that, apart from growth in government development expenditure and openness (which have a negative relationship with economic growth), all the other variables have a positive relationship with economic growth. However only growth in labour force has a significant linear relationship with GDP growth. The pairwise correlation matrix can be spurious necessitating the need to investigate these relationships in a multivariate regression analysis.

4.3 Unit root tests

To avoid instances of spurious regression, unit root tests were carried out to ascertain the stationarity properties of the data. Augmented dickey fuller test was used. Tables 4.3 present the results of these tests (see appendix for critical values).

Table 4. 3: Unit root tests (ADF)

Variables	**Level**		**First difference**	
Specification	Intercept	intercept and trend	Intercept	Intercept and trend
GDPG	-2.594*	-2.518	-5.112***	-5.146***
GRE	-3.687***	-3.907**	N/A	N/A
GDE	-3.697***	-3.737**	N/A	N/A
GKS	-2.759*	-2.752	-5.994***	-3.583**
GLF	-1.526	-2.709	-7.564***	-6.646***
INF	-4.339***	-5.171***	N/A	N/A
OPEN	-3.797***	-3.915**	N/A	N/A
*, **, *** represent significance at 10%, 5%, and 1% respectively				

Source: Author's computations

The results of the unit root test show that growth rate of government recurrent expenditure (GRE), growth rate of government development expenditure (GDE), openness (OPEN) and inflation (INF) are stationary at level since the Dickey Fuller tau-statistic exceeds the critical value (in absolute terms) at 5 percent level of confidence. GDP growth, growth rate of capital stock (GKS), and growth rate of labour force (GLF) are all non-stationary at level but stationary after first difference. The results therefore mean that there is a mixture of both I(0) and I(1) variables.

4.4 Estimation of the model

Given that there is a mixture of both I(0) and I(1) and none of the variables is I(2), the study adopted ARDL approach to cointegration to test for the existence of level relationship between the variables and ARDL error correction model to estimate the short run and long run coefficients. Optimal lags for the study variables are selected using the Bayesian information criterion (BIC) with maximum lag length of three. Maximum lag length of three was chosen because of the small sample size. The models selected by BIC are ARDL(1, 2, 0, 2, 2, 1, 0), ARDL(1, 2, 2, 1, 2, 0) and ARDL(2, 0, 0, 1, 0, 0) for model 1, 2 and 3 respectively. The results of the estimated model are presented in table 4.4 and table 4.5. Where table 4.4 presents the results of bounds test and table 4.5 presents the long run and short run results, (see appendix A for preliminary results and appendix B for results of diagnostic tests).

Table 4. 4: Bounds test

Models	Model 1	Model 2	Model 3
F-statistic	7.281	8.777	4.817
10% (lower bound, upper bound)	(2.12, 3.23)	(2.26 , 3.35)	(2.26 , 3.35)
5% (lower bound, upper bound)	(2.45, 3.61)	(2.62, 3.79)	(2.62, 3.79)
2.5% (lower bound, upper bound)	(2.75, 3.99)	(2.96, 4.18)	(2.96, 4.18)
1% (lower bound, upper bound)	(3.15, 4.43)	(3.41, 4.68)	(3.41, 4.68)

Source: Author's computations

The results of the bounds test confirm the existence of level relationship among the variables since the F-statistic for all the models is above the upper bound at 5% level of significance suggesting the rejection of the null hypothesis of "no level relationship".

Having confirmed the existence of long run relationship, it's mandatory to proceed and estimate short run and long run results. Three models are estimated; Model 1 has both recurrent and development expenditures controlled for; in Model 2, development expenditure is removed from the model, leaving only recurrent expenditure; while in Model three, recurrent expenditure is removed from the estimation, leaving only development expenditure.

Table 4. 5: Regression results (Long run and short run results)

	VARIABLES	MODEL1	MODEL2	MODEL3
LONG RUN	GRE	0.325** (0.125)	0.325** (0.129)	
	GDE	-0.008 (0.019)		-0.035 (0.022)
	GKS	0.065 (0.178)	0.088 (0.177)	-0.195 (0.191)
	GLF	24.245** (8.798)	25.569*** (8.735)	17.703** (8.252)
	INF	-0.359* (0.174)	-0.390** (0.170)	-0.439** (0.211)
	OPEN	-12.445 (14.297)	-15.964 (12.689)	9.911 (14.790)
SHORT RUN	LD.GDPG			-0.345** (0.157)
	D.GRE	-0.061 (0.075)	-0.051 (0.070)	
	LD.GRE	-0.115** (0.046)	-0.108** (0.043)	
	D.GKS	0.030 (0.110)	0.030 (0.108)	
	LD.GKS	-0.509*** (0.126)	-0.533*** (0.111)	
	D.GLF	-4.754 (4.716)	-4.627 (4.622)	
	LD.GLF	-17.581*** (4.730)	-18.327*** (4.315)	
	D.INF	0.630*** (0.144)	0.631*** (0.141)	0.368** (0.154)
	CONSTANT	6.204* (3.346)	6.717** (3.065)	1.265 (3.628)
	ECT	**-0.594*** (0.155)**	**-0.566*** (0.137)**	**-0.542*** (0.176)**
ANOVA	OBSERVATIONS	37	37	37
	R-SQUARED	0.800	0.799	0.557
	Adj-R-squared	0.673	0.685	0.430
	F-stat (p-value)	6.30(0.000)	7.02(0.000)	4.40(0.002)

Standard errors in parentheses
***** p<0.01, ** p<0.05, * p<0.1**
Source: Authors Computation

From the results, the error correction terms for all the models are found with the right sign (negative) and statistically significant at 1% level of significance. Model 1 (model with both recurrent and development expenditure) has coefficient of -0.594, implying that about 59 percent of the deviations from the long run equilibrium are corrected in the first quarter. The error correction terms for models 2 and 3 imply 57 percent and 54 percent of the short run deviations are corrected in one quarter, respectively.

The overall significance of the model (F-statistic) show that, for all models, the explanatory variables jointly determine growth rate of GDP in Uganda since the P-values associated with the F-statistic are less than 0.05. R-squared shows that 80 percent of the deviations in GDP growth rate are explained by the regressors used in in model 1, R-squared almost remains the same after removing GDE from the model. In addition, both R-squared and adjusted R-squared for model three (with only development expenditure) is severely low. This suggests that GRE is a very important determinant of GDP growth compared to GDE.

Before interpreting and discussing the regression coefficients, it is important to check for robustness of the models. This is done by conducting diagnostic tests whose results are presented in appendix B. The results show that for all the models;

(i) The residuals of the estimated model do not suffer from serial correlation since the p-value associated with the chi-square statistic of Breusch Godfrey test is highly significant; (ii) The estimated model doesn't suffer from heteroscedasticity. This is shown by the results of the Breusch Pagan test for heteroscedasticity which suggests the acceptance of the null hypothesis of constant variance. (iii) The model has no omitted variables. This is shown by the Ramsey RESET test which suggests that the model is correctly specified. (iv) The model also exhibits parameter constancy (stability). This is shown by the CUSUMQ line which is contained within the critical lines of 5% significance suggesting acceptance of the null hypothesis that "parameters are stable" (see appendix 3). (v) The model doesn't suffer from multicollinearity. This is shown by mean VIF of 1.54 which is clearly less than 10

The Jarque-Bera test, however, shows that the residuals of the models are not normally distributed. However, according to the central limit theorem, with a sample size greater than thirty (like the one used in this study), the variables will always tend to normal distribution. We therefore proceed to interpret the regression coefficients

4.5 Interpretation and Discussion of results

4.5.1 GDP growth and growth in government recurrent expenditure

Contrary to Nurudeen & Usman (2010), who find recurrent expenditure to have a negative impact on growth, this study finds positive relationship between GDP growth rate and growth rate of government recurrent expenditure, which is significant at 5 percent level of confidence. The long run coefficient of 0.325 implies that for every one unit increase/decrease in growth rate of government recurrent expenditure, GDP growth rate increases/decreases by 0.325 units, keeping other factors constant. The result supports the argument that increase in recurrent expenditure (for example through increased salaries) increases aggregate demand in the economy therefore supporting production in the country. It's important to note that the coefficient for recurrent expenditure doesn't change even after dropping development expenditure.

The finding further contradicts Attari & Javed (2013), who found recurrent expenditure to have insignificant impact on economic growth. The short run results however show that recurrent government expenditure has a negative impact on economic growth although the impact is not instantaneous (it's realized after one lag).

4.5.2 GDP growth and growth in government development expenditure

The study finds growth in government development expenditure to have a negative impact on GDP growth rate. This possibly supports the crowding out argument discussed by Ahmed (1999), since such expenditures are usually financed by borrowing internally and externally. This result however cannot be emphasized since the coefficient for growth rate of development government expenditure is not significant in all the models (not even in the short run). This results contradict those by Attari & Javed (2013), and Al Gifari (2015), who find development expenditure to have a significant impact on economic growth, although the results agree in terms of the direction of causation (negative).

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter concludes the study by first presenting the conclusions, focusing on the findings. It also presents the policy recommendations supported by the findings in this study, the limitations of this study as well as areas of further research.

5.2. Conclusions of the Study

This study set out to examine the impact of government expenditure on economic growth in Uganda by disaggregating government expenditure into two components, that is; development expenditure and recurrent expenditure. The theoretical framework for the model was drawn from the neoclassical framework using a standard Cobb-Douglas production function. In line with empirical literature, the study also controlled for the effects of inflation and trade openness.

To achieve the objective of the study, ARDL bounds approach to cointegration was adopted. Using this technique, three model specifications were estimated; one with both development and recurrent expenditure, the second with development expenditure removed from the model, and the last one where recurrent expenditure is dropped. This was done to check for robustness of the results.

The study finds growth rate of government recurrent expenditure to have a significant positive impact on GDP growth rate while growth rate of development government expenditure is not significant in the long run.

5.3. Policy Recommendations

Given the empirical findings of this study, there are a number of policy implications and recommendations that can be suggested to improve the process of economic growth in Uganda.

Firstly, the government of Uganda can improve economic growth by increasing its recurrent expenditure levels. This argument is in line with the Keynesian school of thought which suggests that any kind of public expenditure, even of a recurrent nature, can contribute positively to economic growth, that is; increase in recurrent expenditure (for example through increased salaries, wages and allowances) increases aggregate demand in the economy therefore supporting production in the country.

Government of Uganda can also improve the process of economic growth by revising the current framework of development expenditure. This is because the study shows absence of significant impact of government development expenditure in Uganda which is, just like the findings of Dilrukshini, (2002), contrary to the Keynesian school of thought.

Finally, Government should ensure efficiency in expenditure and utilization of public resources if it is to maximize the benefits of economic growth from government expenditure as Sennoga & Matovu (2012) suggests. This might include reallocation of funds from low productive or unproductive areas and sectors to high productive areas and sectors, limitation of leakages and stamping out corruption among others.

5.4 Areas of future research

The current study looked at the impact of government expenditure on economic growth by disaggregating government expenditure into two; recurrent and development expenditure. Further research can be conducted in the same area by disaggregating expenditure according to different sectors which include: Education; Health; Water & Environment; Justice, Law & Order; Accountability; Energy & Minerals; Tourism, Trade & Industry; Lands, Housing & Urban Development; Social Development; Information & Communication Technology; Public Sector Management; Public Administration; and Science, technology and development. In order to do this, one needs to have data set spanning for a much longer period since this type of disaggregation results in many variables which can severely affect the degrees of freedom in case of a small sample. Such long time series data was not available by the time this research was conducted.

5.5 Limitations of the study

The study was unable to cover a much longer period due to lack of data spanning for the long period (especially the disaggregation between recurrent and development expenditure). Because of this, fewer variables were considered in the regression so as to conserve degrees of freedom. This could perhaps be responsible for the unexpected outcomes of some control variables such as capital stock.

REFERENCES

Abu, N. and Abdullah, U. (2010), "Government Expenditure and Economic Growth in Nigeria, 1970– 2008: A Disaggregated Analysis". *Business and Economic Journal, Vol. 4.*

Ahmed, H. (1999). Crowding-out and crowding in effects of the components of government expenditure. *New York: Harpers Publishers*.

Ahmed. A. D. Suardi. S. (2007). "Sources of Economic Growth and Technology Transfer in Sub-Saharan Africa", *South African Journal of Economics Vol 75 N0.2* pp 159-178

Akitoby, B., Clement, B., Gupta, S., & Inchauste, G. (2006). Public spending, voracity, and Wagner's Law in developing countries. *European Journal of Political Economy.*

Al Gifari.H. (2015). The effects of government expenditure on economic growth: the case of Malaysia. *Munich Personal RePEc Archive*

Alexiou, Constantinos (2009) "Government Spending and Economic Growth: Econometric Evidence from the South Eastern Europe (SEE)," *Journal of Economic and Social Research*, 11(1) 2009

Alexiou. C. (2009) "Government Spending and Economic Growth: Econometric Evidence from the South Eastern Europe (SEE)," *Journal of Economic and Social Research, 11(1) 2009*

Alshahrani, S. A., & Alsadiq, A. J. (2014). Economic Growth and Government Spending in Saudi Arabia: An Empirical Investigation. *IMF Working Papers, 14*(3), 1. http://doi.org/10.5089/9781484348796.001

Ashauer, David. A., (1989) "Is Public Expenditure Productive?" *Journal of Monetary Economics.*

Attari, M. I. J., & Javed, A. Y. (2013). Inflation, Economic Growth and Government Expenditure of Pakistan: 1980-2010. *Procedia Economics and Finance, 5*, 58–67.

Banerjee, A., J. J. Dolado. D. F. Hendry, and G. W. Smith (1986). Exploring equilibrium relationships in econometrics through static models: some Monte Carlo evidence. *Oxford Bulletin of Economics and Statistics 48(3)*: 253–277.

Barro Robert Jr (1990). "Government Spending in a Simple Model of Endogenous":

Barro, R. (1990). “Government Spending in a simple Model of Endogenous Growth”. *Journal of Political Economy*, 98, 103 – 125.

Baum, D. N., and Shuanglin. L, (1993) “The Differential Effects on Economic Growth of Government Expenditure on Education, Welfare and Defense,” *Journal of Economic Development,* Volume 18 No. 1

Bonmwa Tontu Gukat1 & Ishmael Ogboru (2017). An Empirical Analysis of Government Expenditure and Economic Growth in Nigeria *Journal of Economics and Development Studies* December 2017, Vol. 5, No. 4, pp. 122-134

Bose, Niloy M. Emranul Haque and Denise R. Osborn, (2003) “Public Expenditure and Economic Growth: A Disaggregated Analysis for Developing Countries,”

Cashin, P. (1995). Government Spending, Taxes and Economic Growth. *International Monetary Fund*,42,237-269.134.

Cooray, A. (2009). Government expenditure, governance and economic growth. *Comparative Economic Studies, 51 (3),* 401-418.

Devarajan, D. (1983). What the Government buy: The Composition of Public Spending and Economic Performance. *World Bank.*

Devarajan, S., Swaroop V., Zou, H. (1996). The Composition of Public expenditure and Economic Growth. *Journal of Monetary Economics,* 37, 313-344.

Deverajan, S. and Nabi, I. (2006). “Economic Growth in South Asia: Promising, Unequalising Sustainable?” *Economic and Political Weekly*, 41(33) 3573 – 3580.

Dilrukshini, W. (2002). Public Expenditure and Economic Growth in Sri Lanka: Cointegration Analysis and Causality Testing.

Engle. R.F and Granger C.W.J (1987). Cointegration and error correction representation, estimation and testing; econometrica 55(2), 251-276

Ergun, D., & Tuck, C. (2006). Government Expenditure and National Income: Causality Tests for Five South East Asian Countries. *International Business and Research Journal.*

Greene.H.W. (2007). Econometric analysis, prentice hall.

Gujarati. D.N. (2004): *Basic Econometrics, 4th Ed*., McGraw-Hill Companies.

Harris, R., & Sollis, R. (2003). *Applied time series modeling and forecasting*: Wiley.

Iheanacho.E. (2016). The Contribution of Government Expenditure on Economic Growth of Nigeria Disaggregated Approach. *International Journal of*

Economics & Management Sciences 5:369. DOI: 10.4172/2162-6359.1000369

Johansen. S. and Juselius A.K. (1990); maximum likelihood estimation and inference on cointegration with application to money demand, *oxford bulletin of economics and statistics* 52(2), 169-210.

Joseph Kivuva Mulinge (2016). Effects of Recurrent Public Expenditure on Economic Growth in Kenya *International Journal of Economics, Commerce and Management* United Kingdom Vol. IV, Issue 8, August 2016

Journal of Political Economy, Vol. 98, No. 5, pp. S103 -S125

Kalam, M. A., & Aziz, N. (2009). Growth of Government Expenditure in Bangladesh: An Empirical Enquiry into the Validity of Wagner's Law. *Global Economy Journal.*

Karagianni, S., Pempetzoglou, M., & Strikou, S. (2002). Testing Wagner's Law for the European Union Economies. *The Journal of Applied Business Research*.

Keynes, J.M. (1936). "The General Theory of Employment, Interest and Money". *Royal Economic Society* 73.

Kneller, R., Bleaney, M. F., & Kneller, N. (1999). Fiscal Policy and Growth: Evidence from OECD Countries. *Journal of Public Economics*.

Kumar, S., Webber, D. J., & Fargher, S. (2009). Wagner's Law Revisited: Cointegration and Causality tests for New Zealand. *University of the West of England Discussion papers*.

Kweka, Y. and Morrissey, O. (2000), Government Spending and Growth in Tanzania, 1965 -1996. Centre for Research in Economic Development and International Trade (CREDIT) Research No. 00/6, *University of Nottingham.*

Lahirushan. K. P. K. S., Gunasekara W. G. V., (2015). The Impact of Government Expenditure on Economic Growth: A Study of Asian Countries. *International Journal of Humanities and Social Sciences Vol:9,* No:9, 2015

Levine, R and Renelt, D. (1992). A sensitivity analysis of cross-country growth regressions, *American Economic Review,* 82, 942-963.

Lin, S. (1994). Government spending and economic Growth. Applied Economics, 26, 83-94.

Loizides, J., & Vamvoukas, G. (2005). Government expenditure and economic growth: Evidence from trivariate causality testing. *Journal of Applied Economics*.

Loto, M. A. (2011). Impact of government sectoral expenditure on economic growth. *Journal of Economics and international Finance, 3*(11), 646-652.

Magazzino, C. (2010). Wagner's Law" in Italy: Empirical Evidence from 1960 to 2008. *Global & Local Economic Review*.

Makhema, Puseletso (2006) "The Impact of Government Expenditure on Economic Growth in Lesotho," *Department of Economics, University of Zimbabwe*.

Mankiw, N. Gregory, Romer David and Weil David (1992). "A Contribution to the Empirics of Economic Growth," *Quarterly Journal of Economics, Vol 152, pp 407-37*.

Marilyne. H., Chantal. L. M, Mariana. V. (2011). The relationship between trade openness and economic growth: some new insights on the openness measurement issue. XIIIème Congrès de l'Association Européenne des Economistes Agricoles (EAAE), Aug 2011, Zurich (CH), Switzerland.

Modebe, N. J., Okafor, R. G., Onwumere, J. U. J., &Ibe, I. G. (2012). Impact of recurrent and capital expenditure on Nigeria's economic growth. *European Journal of Business and Management*, *4*(19), 66-75.

Muhlis, B., &Hakan, C. (2003). Causality between Public Expenditure and Economic Growth: The Turkish Case. *Journal of Economic and Social Research*.

Mulumba, K. C. (2009). Long-run Relationship between Government Expenditure and Economic Growth: Evidence from SADC Countries. Johannesburg, South Africa: University of Johannesburg

Musgrave, R.A., and Musgrave, P. B. (1989). The Theory of Public Finance. New York: McGraw-Hill.

Musila. J. W &Belassi. W., (2004). The impact of education expenditures on economic growth in uganda: evidence from time series data. *The journal of developing areas*, vol. 38, no. 1 (autumn, 2004), pp. 123-133 published by: college of business, Tennessee State University

Musila. J. W. and Belassi. W. (2004). The Impact of Education Expenditures on Economic Growth in Uganda: Evidence from Time Series Data. *The Journal of Developing Areas, Vol. 38, No. 1 (Autumn, 2004), pp. 123-133*

Naftaly. G., Symon. K., Aquilars. K., James. O., Lawrence. k. (2014). Effect of government expenditure on economic growth in east Africa: a disaggregated model. *European journal of business and social sciences, vol. 3, no. 8, November 2014*.pp. 289 – 304

Nikolaos Dritsakis Erotokritos Varelas Antonios Demopoulos (2006). The Main Determinants of Economic Growth: An Empirical Investigation with Granger Causality Analysis for Greece. *European Research Studies* Volume IX, Issue (3-4),

Nkiru. C. P & Izuchukwu. C. D. (2013). Impact of government expenditure on economic growth in Nigeria. *International Journal of Business and Management Review Vol.1, No.4, pp.64-71*, December 2013.

Nkwaton Sevitenyi, L. (2012). Government Expenditure and Economic Growth in Nigeria: An Empirical Investigation (1961-2009). *The Journal of Economic Analysis*.

Nurudeen, A., & Usman, A. (2010). Government Expenditure and Economic Growth in Nigeria, 1970-2008: A Disaggregated Analysis. *Business and Economics Journal*, 1–11.

Nweke Godwin Onyinye1, Odo Stephen Idenyi and Anoke Charity Ifeyinwa (2017) Effect of Capital Formation on Economic Growth in Nigeria *Asian Journal of Economics, Business and Accounting*, Article no. AJEBA.36075

Olorunfemi, S. (2008). "Public Investment and Economic Growth in Nigeria: An Autoregressive model", Journal of international Finance and Economics.

Pesaran, M. S. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics, Vol.16*, p289-326.

Pham, T. (2009). Government expenditure and economic growth: evidence for Singapore, Hong Kong China and Malaysia. *International Bachelor Economics and Business Economics*.

Plossner, C. (1992). The search for growth in policies for long-run economic growth, Federal Reserve Bank of Kansas City, Kansas City, MO

Sennoga. E. B &Matovu. J.M (2012). Public Spending Composition in Uganda and its Implications for Growth and Poverty Reduction.

Seshaiah, S.V., Koti Reddy, T. and Sarma, I.R.S. (2018) General Government Expenditure and Economic Growth in India: 1980-81 to 2015-16. *Theoretical Economics Letters*, 8, 728-740. https://doi.org/10.4236/tel.2018.84050

Shuaib, I. M and Dania Evelyn Ndidi (2015) Capital Formation: Impact on the Economic Development of Nigeria 1960-2013 *European Journal of Business, Economics and Accountancy* Vol. 3, No. 3, 2015 ISSN

Solow. R. (1956). A Contribution to the Theory of Economic Growth. *The Quarterly Journal of Economics*, **70**, (1), 65-94

Wagner, A. (1883) Three extracts in public finance. In R.A. Musgrave and A.T. Peacock (Eds), *Classics in Theory of Public finance*,119 – 136.

Wahab, M. (2004). Economic growth and government expenditure: evidence from a new Test specification. *Applied Economics*.

Were. M. (2001). "The Impact of External Debt on Economic Growth in Kenya: An Empirical Assessment" *WIDER Discussion Paper No. 2001/116*.

APPENDICES

Appendix A: Preliminary results

Government Expenditure and Economic Growth

VARIABLES	Model1	Model2	Model3
L.GDPG	0.406**	0.434***	0.113
	(0.155)	(0.137)	(0.180)
L2. GDPG			0.345**
			(0.157)
GRE	0.132***	0.133***	
	(0.040)	(0.039)	
L.GRE	-0.054	-0.057	
	(0.051)	(0.050)	
L2.GRE	0.115**	0.108**	
	(0.046)	(0.043)	
GDE	-0.005		-0.019
	(0.012)		(0.012)
GKS	0.069	0.080	-0.105
	(0.112)	(0.106)	(0.107)
L.GKS	-0.540***	-0.563***	
	(0.145)	(0.132)	
L2.GKS	0.509***	0.533***	
	(0.126)	(0.111)	
GLF	9.650**	9.836**	9.586**
	(3.833)	(3.739)	(3.821)
L.GLF	-12.827**	-13.699***	
	(4.876)	(4.346)	
L2.GLF	17.581***	18.327***	
	(4.730)	(4.315)	
INF	0.416**	0.410**	0.130
	(0.158)	(0.155)	(0.157)
L.INF	-0.630***	-0.631***	-0.368**
	(0.144)	(0.141)	(0.154)
OPEN	-7.394	-9.030	5.367
	(7.614)	(6.455)	(8.331)
Constant	6.204*	6.717**	1.265
	(3.346)	(3.065)	(3.628)
Observations	37	37	37
R-squared	0.817	0.816	0.595

Standard errors in parentheses

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

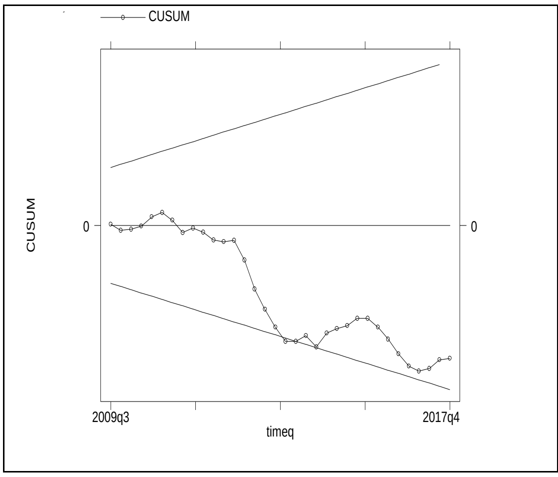
Source: Authors Computation

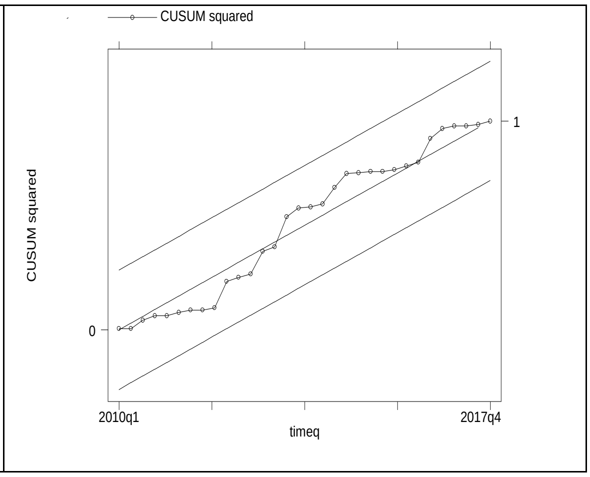
Appendix B: Diagnostic tests

Models	Model 1	Model 2	Model 3
Test	P-value	P-value	P-value
Serial correlation	0.201	0.223	0.0822
Heteroscedasticity	0.621	0.646	0.906
Ramsey RESET	0.386	0.355	0.492
Normality	0.006	0.015	0.006
Multicollinearity (VIF)	3.37	3.12	1.69

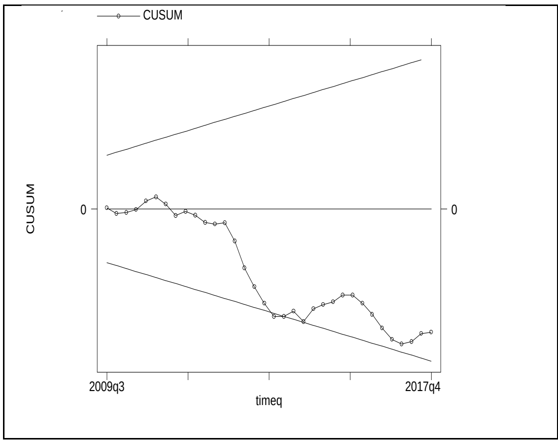
Appendix C: CUSUM and CUSUMSQ curves

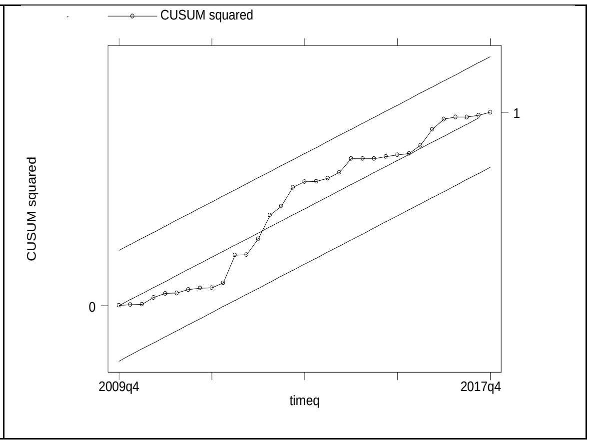
Model 1





Model2





Model 3