

Strathmore
UNIVERSITY

**IMPACT OF GOVERNMENT EXPENDITURE ON GROSS
DOMESTIC PRODUCT IN EAST AFRICA.**

Kamau Ken King'au- 082504

Submitted in partial fulfillment of the requirements for the Degree of
Bachelor in Business Science Financial Economics at Strathmore University

Strathmore Institute of Mathematical Sciences

Strathmore University

Nairobi, Kenya

(November, 2017)

This Research Project is available for Library use on the understanding that it is
copyright material and that no quotation from the Research Project may be published
without proper acknowledgement.

DECLARATION

I declare that this work has not been previously submitted and approved for the award of a degree by this or any other University. To the best of my knowledge and belief, the Research Project contains no material previously published or written by another person except where due reference is made in the Research Project itself.

© No part of this Research Project may be reproduced without the permission of the author and Strathmore University

..... Ken King'om Karuu [Name of Candidate]

..... [Signature]

..... 27/11/17 [Date]

This Research Project has been submitted for examination with my approval as the Supervisor.

..... DR JOHN OLUKURU [Name of Supervisor]

..... [Signature]

..... 27/11/2017 [Date]

Strathmore Institute of Mathematical Sciences

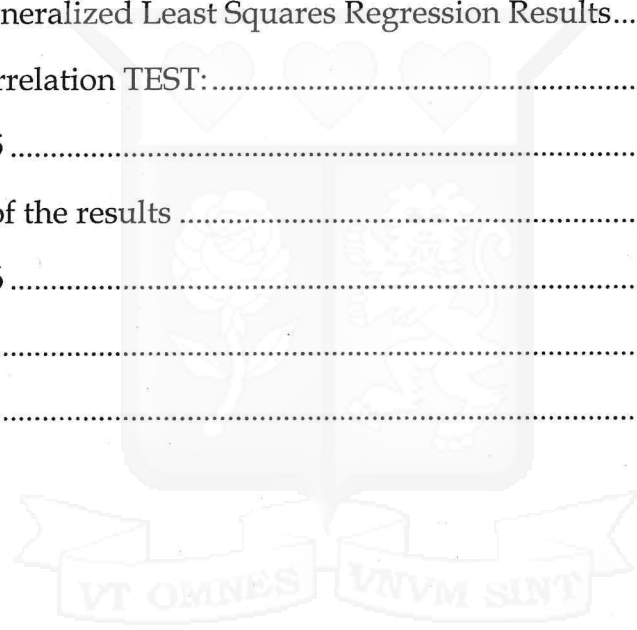
Strathmore University



TABLE OF CONTENTS

DECLARATION	ii
TABLE OF CONTENTS.....	iii
ABSTRACT.....	v
CHAPTER ONE	1
INTRODUCTION	1
1.1 Background	1
1.1.1 GDP Trends in East Africa.....	2
1.1.2 Government expenditure in East Africa.....	4
1.1.3 Government expenditure and economic growth.....	6
1.2 Problem statement.....	7
1.3 Research questions.....	7
1.4 Objectives of the study.....	8
CHAPTER TWO	9
LITERATURE REVIEW	9
2.1 Introduction.....	9
2.2 Theoretical Literature.....	9
2.2.1 Keynesian Theory	9
2.2.2 Classical Theories.....	9
2.3 Empirical literature	10
2.4 Literature gap	12
CHAPTER THREE	13
METHODOLOGY	13
3.1 Introduction	13
3.2 Research Design	13
3.3 Theoretical framework.....	13

3.4	Model specification.....	14
3.5	Definition of Variables and Measurement of Variables.....	15
3.6	Types and sources of data.	15
3.7	Data Analysis	15
CHAPTER 4		16
RESULTS AND ANALYSIS.....		16
4.1	Descriptive Statistics of the variables used	16
4.2	Diagnostic tests.....	19
4.3	Granger causality	20
4.4	Fixed Generalized Least Squares Regression Results.....	22
4.5	Serial correlation TEST:.....	23
CHAPTER 5		24
Discussion of the results		24
CHAPTER 6		26
Conclusion		26
Bibliography		27



ABSTRACT

It is important for a country to determine how much government expenditure that should be spent on different sectors of the economy so as to promote economic growth. The study aimed at developing a model that will explain the relationship between government expenditure and GDP in East Africa, i.e. Kenya, Uganda and Tanzania. The study proposed to use non-experimental research design with data from 1990-2015 and the data was obtained from various sources: World Bank Open Data, IMF data bank. The study focused on four key sectors of the economy: health, infrastructure, education and defense and aimed to conclude on the relationship between government expenditure in these various sectors and GDP, i.e. whether it is positive or negative.

The Granger Causality test determines the casual relationship between GDP growth and government expenditure components (Ender, 1995). The study findings indicated that; both Military and health expenditure have a positive significance to economic growth whereas infrastructure and education expenditure have a negative effect on economic growth in East Africa. The governments should emphasize to increase expenditure to military and health so as to influence GDP positively thereby promoting economic growth.

CHAPTER ONE

INTRODUCTION

1.1 Background

Effective government expenditure management is vital in contributing to economic growth and providing a stable fiscal environment in an economy. Countries that have managed their public expenditure in a controlled way, have benefited from high growth and stable macro economies (UDOKA, 2015). The major factors that governments should consider when developing their public expenditure: are cost and benefits of the expenditure.

The major reason why countries spend on public goods is to propel high growth and wealth creation. However, according to Classical extremists, government expenditure has no effect on GDP due to complete crowding out between government expenditure and investment (Fouladi, 2010). Ineffective government expenditure management starts with a country borrowing without noting the growth of its expenditure stock levels as a percentage of Gross Domestic Product or hiding their expenditure position. (Agbonkhese, 2014)

The importance of expenditure management has been emphasized in the present with Europe experiencing a recession that emanated from the Expenditure crisis in Greece, Italy and Spain. The most important thing noted here is how a government should allocate public spending across various sectors of an economy in order to maximize prospects of achieving its growth and development objectives (EGBO, 2016).

The World Bank and IMF have come up with "Guidelines for Public Expenditure Management". This was designed to help sovereigns establish institutional framework for managing public expenditure along with new risk management applications. The coming up of these guidelines was very important because the size and complexity of government expenditure portfolio can pose a substantial risk to economic stability and sovereignty of a country. This risk is even greater for developing countries like Kenya, Uganda and Tanzania

Tanzania which are prone to shocks generated both externally and internally and which have less diversified and less modernized governance structures to monitor the public expenditures.

1.1.1 GDP Trends in East Africa

The East African economy had an impressive average growth of 6% in 2011 and a GDP of \$83 billion (African Economic Outlook, 2016). The growth has been attributed to expansion of trade activities within the region although imports have continued to dominate. Also, foreign direct investments have taken center stage in the development of the region. Several sectors also such as healthcare, financial services and cement production have also greatly impacted on the growth in each country. In figure 1.1 below it is noted that since 2011 all the three countries have had tremendous growth in GDP. Tanzania's growth has dominated the region's growth with over 6% growth annually. This may also be attributed to regime changes in the region. Uganda's economy was not as efficient with its growth reduced down from 4.4% in 2012 to 3.2% in 2013, driven by efforts to stabilize inflation, high interest rates and uncertainty as donors announced they were suspending aid to Uganda following alleged mismanagement of funds.

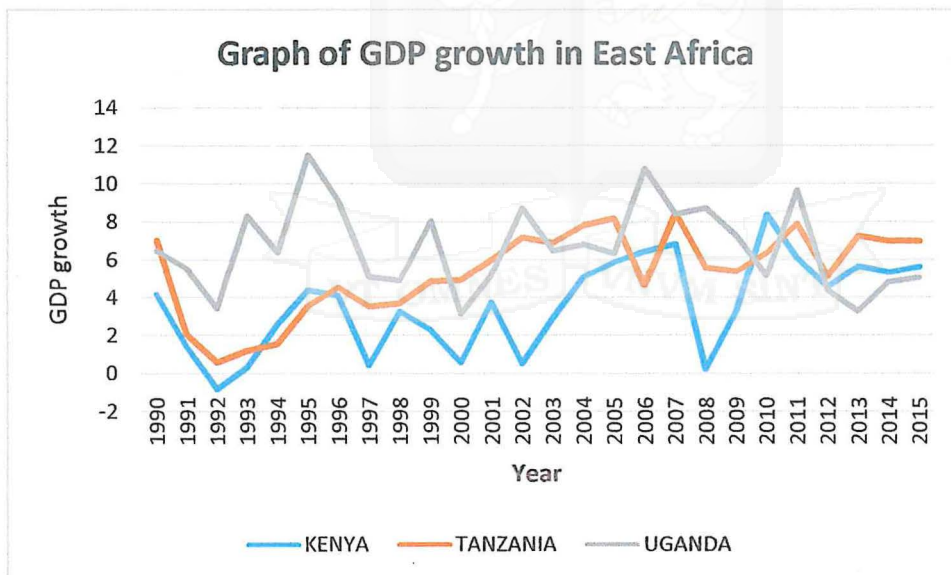


Figure 1.1 GDP growth rates in Kenya, Uganda and Tanzania

Source of data: World Development Indicators

The GDP of Kenya in 2015 was \$63.398 billion ahead of its neighbouring countries in the region, i.e. Tanzania had \$45.625 billion while Uganda had a mere \$27.529 billion, according to the World Bank Open data. Even though Kenya's GDP in real terms was the highest, the growth rate was lower than that of its counterpart Tanzania.

In Kenya Real GDP growth was 5.3% (African Economic Outlook , 2016) in 2014 and 5.5%, 6.0% in 2015 and 2016 respectively. In 2017 projections show economic expansion of 6.4%. In 2014 and 2015, the economy experienced a stable macroeconomic environment, with single-digit inflation despite a 10.0% currency depreciation in 2015. At the same time, calls to amend the constitution to increase finances to the 47 county governments dominated the political scene. GDP growth remained robust in 2014 at 5.3%. The expansion of construction projects that ranged from new roads, to a new railway line that links Nairobi to Mombasa (the Standard Gauge Railway), manufacturing, finance and insurance, information, communications and technology, and wholesale and retail trade raised the GDP level. The economy slowed in the first half of 2015 reached 5.5% by year-end. GDP growth prospects are 6.0% and 6.4% for the years 2016 and 2017 respectively according to (African Economic Outlook , 2016).

In Tanzania the economy grew by 7% (African Economic Outlook , 2016) in 2014 and around the same growth rate in 2015, mainly driven by the services, industry, construction, and information and communication sectors. The fiscal position was healthy with an overall deficit of 3.4% of GDP in 2013/14. Most of this can be attributed to the successful and peaceful general elections in October 2015 transferred power to a new president who has committed to prudent resource management, fighting corruption and pursuing inclusive growth.

Uganda's economy continued to improve in 2015, despite external shocks, with real GDP growth at 5.1% (African Economic Outlook , 2016) in 2016, and projections show an increase to 5.8% in 2017, driven by industry, services and public infrastructure investment. Uganda's economic stance remains focused on containing inflationary pressures and on enabling growth by ensuring exchange rate stability and maximising domestic resource mobilisation.

1.1.2 Government expenditure 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).

The figure below shows the government expenditure in East Africa from 1990 to 2015.

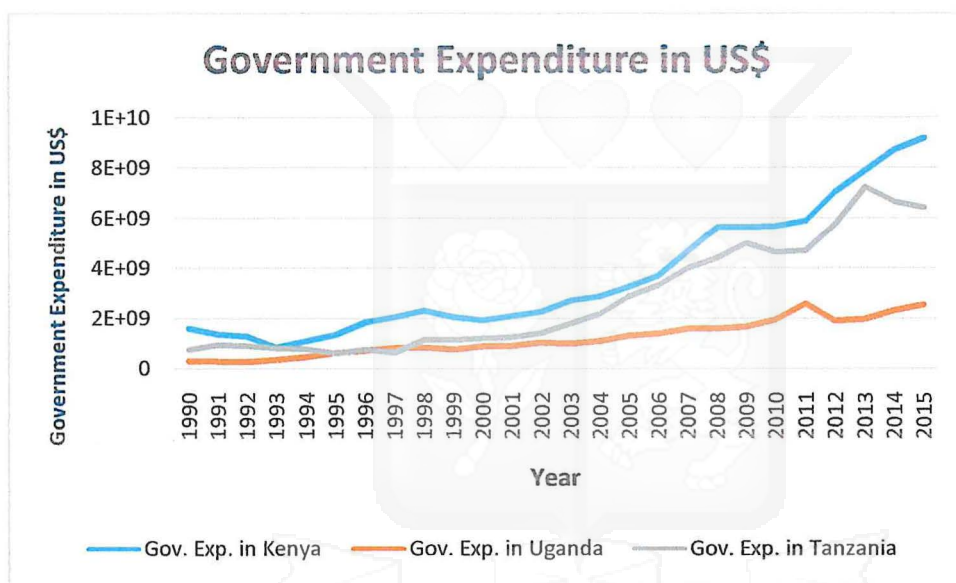


Fig. 1.2 Government Expenditure in Kenya, Uganda and Tanzania

Source: World Development Indicators

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.

The figures below show the government expenditure in Kenya, Uganda and Tanzania from 1990 to 2015.

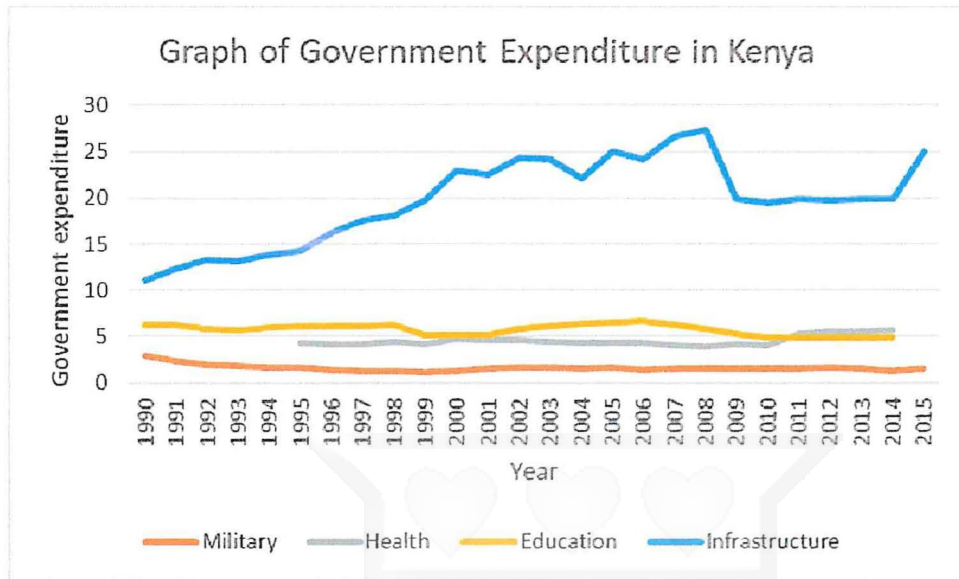


Figure 1.3 Government expenditure in Kenya

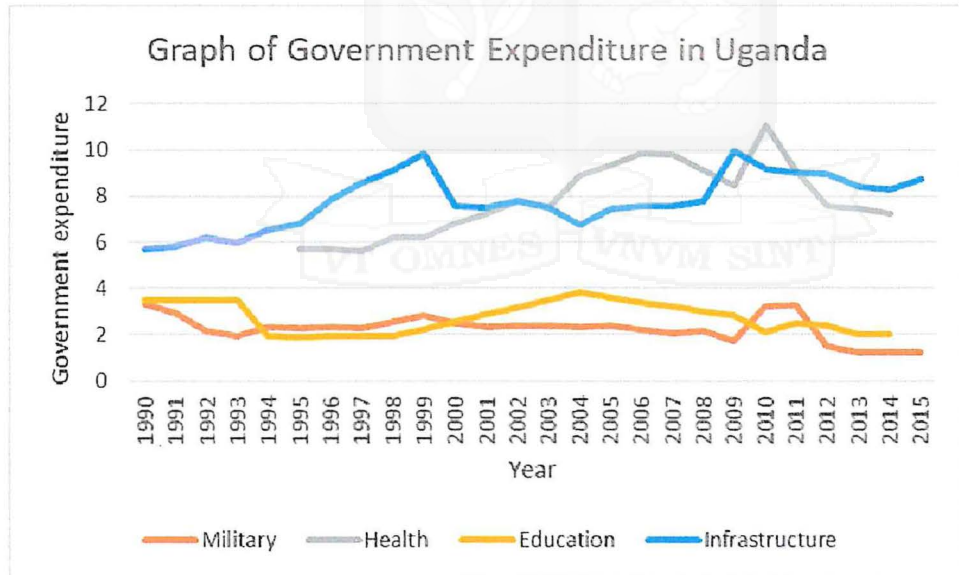


Figure 1.4 Government expenditure in Uganda

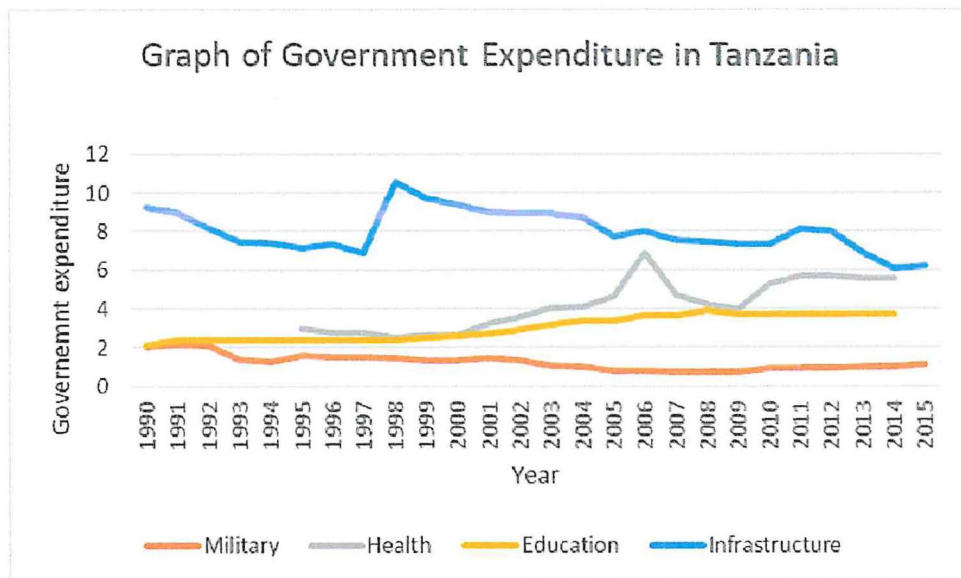


Figure 1.5 Government expenditure in Tanzania

It is clear to see that from the three countries; their respective governments spend more on infrastructure than any other sector. In fig 1.3, 1.4 and 1.5, it is also worth noting that the three governments spend the least amount of funds on Military expenditure.

1.1.3 Government expenditure and economic growth

The relationship between economic growth and the size of the public expenditure is an important subject of review and analysis. The subject of debate is whether or not public-sector spending increases the growth rate of the economy since policymakers are divided as to whether government expansion helps or hinders economic growth (Daniel J. Mitchell, March 31, 2005). Economic growth refers to a steady physical increase in a country's productive capacity which is identifiable by a sustained increase in a country's real output of goods and services or real income over time (Robert, 2003).

Sustained and equitable economic growth is an important objective of public expenditure policy. Many public policy programs are predominantly aimed at promoting sustained and equitable economic growth. Public expenditure has played an important role in physical and human capital formation over time. Development of sectors such as education, health, electricity, transport, defense etc., are important for a country to grow and improve on the standards of living of its people. Kenya, Uganda and Tanzania are no exception on this

The East African Community (EAC) is among the fastest growing regions economically. The average economic growth rate for the past decade 2004-2013 has been at 6.2%. (IMF, 2014).

The question of whether or not public expenditure stimulates growth has dominated theoretical and empirical debate. One viewpoint corresponding to Keynesians is that government involvement in economic activity is vital for growth, but this view is opposed by monetarists who hold that government operations are inherently bureaucratic and inefficient and therefore stifle rather than promote growth (Dandan, 2011).

1.2 Problem statement

From figure 1.2 above it can be seen that government expenditure in Kenya, Uganda and Tanzania is rising gradually and uniformly. In 2002, the expenditure shot up in Kenya and this was when the rule of the presiding political party came to an end. Tanzania is also seen to rise in 2010, the year they elected a new president. In figure 1.1 we see that Kenya's GDP shot up in 2002 and 2010 as well. While Tanzania's GDP shot up in 2010. Tanzania is also seen to have the highest GDP growth but Kenya has the highest government expenditure. It is therefore important to study the effect of government expenditure on GDP as this directly contradicts most research studies carried out. It is also important to analyze the impact of political stability on military government expenditure and hence on GDP in East Africa. And this will be done by comparing the impact of government expenditure on GDP before and after the year 2002.

1.3 Research questions

- i. What is the impact of government spending on GDP in East Africa with reference to the four key sectors of the economy, i.e. health, infrastructure, education and defense?
- ii. Does political stability affect the government spending and hence impact GDP?
- iii. Which sector of the economy has the highest impact on GDP?

1.4 Objectives of the study

- i. To investigate the impact of government expenditure on GDP in East Africa with reference to the four key sectors of the economy, i.e. health, infrastructure, education and defense.
- ii. To investigate if political stability has an effect on government spending and hence GDP.
- iii. To investigate which sector of the economy has the highest impact on GDP.



CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The study aims at relating the theoretical literature to the empirical literature. The study compares the two dominant demand theories, i.e. the Keynesian theory and the Classical theory. The study however focuses on the Keynesian theory and its relation to government expenditure and economic growth. The literature review included literary works from both developed countries and developing countries so as to compare the two.

2.2 Theoretical Literature

2.2.1 Keynesian Theory

This theory suggests that governments should play a much larger role in the economy since the theory postulates that government expenditure is needed to increase economic output and promote growth. (Keynes, 1964) advocated for government expenditure to create jobs and employ capital that has been unemployed or underutilized when an economy is in a downturn with high unemployment of labour and capital.

Keynes's theory has been one of the implicit rationales for the current federal stimulus spending: it is needed to boost economic output and promote growth (Ramey, 2009). And because of this, it will play a key role in my study as I try to uncover the relationship between GDP and government expenditure. If his theory holds, then the more the respective governments spend on various sectors, then the faster their economy's will grow.

2.2.2 Classical Theories

This theory states that the only way to encourage growth was to allow free trade and free markets and they believed that the government should not intervene to try to correct this as it would only make things worse. And so, essentially, this approach places total reliance on

markets and anything that prevent markets clearing properly should be done away with. Much of Adam Smith's early work was on this theme, and he introduced the notion of an invisible hand that guided economic activity and led to the optimum equilibrium (Barro, 2005).

2.3 Empirical literature

(Josaphat, 2000) examined the impact of government spending on economic growth in Tanzania using time series data over 1965-96 and found that increased industrious expenditure has a negative effect on growth while consumption expenditure stimulates growth.

(Dar and Khalkali, 2002) set out to determine how government size affected the economic growth by looking at OECD countries in the period 1970 – 1999. The study using panel data alluded to the fact that the government size had a negative and statistically significant impact on economic growth. The only countries which did not fall under the above conclusion were USA, Sweden and Norway with their coefficients turning out to be statistically insignificant.

(Kanano, 2006) in his study on the determinants of public expenditure in Kenya used time series data just as (Josaphat, 2000) did in Tanzania. The main objective of the study was to analyze government budgetary resource composition and; examine the impact of the government budgetary resources on public expenditure growth. The study results showed that public expenditure growth was explained by internal debt. A strong positive relationship between government revenue and public expenditure was also revealed.

(Gregorous, 2007) made use of the heterogeneous panel data as did (Dar and Khalkali, 2002) to study the impact of government expenditure on economic growth. They had contradicting results such that (Dar and Khalkali, 2002) suggested a negative impact between government expenditure and GDP while (Gregorous, 2007) concluded that countries with large government expenditure tend to experience higher economic growth.

(Olorunfemi, 2008) studied the direction and strength of the relationship between public investment and economic growth in Nigeria, using time series data from 1975 to 2004 and observed that public expenditure impacted positively on economic growth and that there was no link between gross fixed capital formation and Gross Domestic Product.

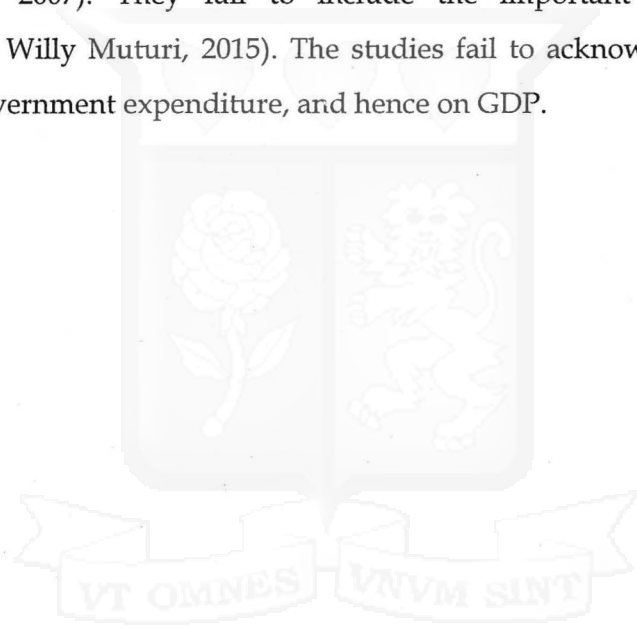
(Jerono, 2009) conducted a study on the impact of government spending on economic growth in Kenya and found that though expenditure on education had a positive relationship with economic growth. The study also asserted that a mere expenditure growth does not necessarily spur growth.

Ramon, Vinod and Yan (2010) studied the effect of fiscal policies on the quality of growth. Results from their studies pointed out that government spending on public goods is strongly associated with faster economic growth as well as with greater poverty reduction. In other words, more spending on public goods is linked to accelerate economic growth which contradicted (Jerono, 2009) who concluded that only increasing expenditure is not enough to lead to economic growth and reduced poverty. In contrast, government expenditures on private goods and on subsidies to firms that distort markets, as opposed to public goods, are associated with weaker economic growth and greater structural inequality. According to them however, many other dimensions of quality of economic growth can be considered including the nature of health outcomes, level and variability of education, macroeconomic fluctuation and volatility of growth (Olopade and Olopade, 2010).

(Muthui, 2013) while investigating the impact of government expenditure components: (education, infrastructure, health, defense and public order and security) on economic growth in Kenya found out that government expenditure on education is positively related to economic growth and it does not spur any significant change to growth as opposed to (Jerono, 2009) who also carried out a study in Kenya but concluded that an increase in expenditure only could not lead to an increase in GDP. The study also found out increased expenditure on the health sector might be justified solely on the grounds of its impact on labour productivity.

2.4 Literature gap

The question of whether or not government expenditure stimulates economic growth has dominated theoretical and empirical debates for a long time. One viewpoint believes that government involvement in economic activity is pro-growth, but an opposing view holds that government operations are inefficient, and therefore stagnates growth, while some studies still are of the view that government expenditure is indeterminate of economic growth (Longhi, 2010). In East Africa, studies on government expenditure and its impact on economic growth are rare and even the ones available have reported contradicting results as to the impact of public expenditure on economic growth as some of the studies have argued that the expenditure cannot predict economic growth (Were, 2001) while others strongly conclude that it does (Gregorous, 2007). They fail to include the important sectors, i.e. Military and Infrastructure (Dr Willy Muturi, 2015). The studies fail to acknowledge the effect of political stability on the government expenditure, and hence on GDP.



CHAPTER THREE

METHODOLOGY

3.1 Introduction

The study begins with the research design used. Then the theoretical framework in order to specify the model and the methodology that will be used to examine the relationship between the public expenditure and economic growth in East Africa is outlined. The variables used in the study are also discussed. Also, panel data issues in the last section are outlined.

3.2 Research Design

Time series research design under non-experimental research design will be adopted to achieve the study the impact of government expenditure on economic growth in Kenya, Uganda and Tanzania.

3.3 Theoretical framework

The theoretical framework that the study is 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 (Eiyya, 2011), (Jerono, 2009), stated that government expenditure components influence growth and the relationship can be defined as in equation 3.1

$$GDP = f(H, Me, Edu, inf) \dots \dots \dots (3.1)$$

Where:

H= Health Expenditure

Me= Military Expenditure

Edu = Education Expenditure

inf= Infrastructure Expenditure

3.4 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:

$$(GDP)_{i,t} = \beta_0 + \beta_{Exp(H)}_{i,t} + \beta_{Exp(edu)}_{i,t} + \beta_{Exp(me)}_{i,t} + \beta_{Exp(inf)}_{i,t} + \epsilon_{i,t} \dots\dots\dots(3.2)$$

Where:

GDP = Gross Domestic Product

Exp (H) = Expenditure on health

Exp (AGRI) = Expenditure on agriculture

Exp (ME) = Expenditure on military spending

Exp (INF) = Expenditure on infrastructure

β = Regression coefficient

$\epsilon_{i,t}$ = Error term

i = Country

t = Time variable



3.5 Definition of Variables and Measurement of Variables

Table 3.1: 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 will be measured as percentage rate of change of the real GDP
Expenditure on Defense	This is the fraction of expenditure on defense against the gross government expenditure.	It includes military expenses as a percentage of expenditure
Expenditure on Education	This is the share of expenditure in education to total government expenditure	It includes the expenditure the government incurs to fund basic education and up to higher education
Expenditure on Health	This is the share of public expenditure on health to total government expenditure	It consists of the amount the government spends on health
Expenditure on Infrastructure	This is the share of public funds over the total government expenditure directed to activities such as, construction of air and seaports, construction of highways.	It is infrastructure as a percentage of expenditure

3.6 Types and sources of data.

Secondary data for the period 1990 to 2015 will be collected and used for analysis in this study. The data will be derived from: Economic reports, the World Bank official website (World Bank Open Data) and World Development Indicators data.

3.7 Data Analysis

This study seeks to address the four objectives. The general objective will be to establish the impact of public expenditure on economic growth in East Africa. The specific objectives will be achieved by the estimation of equation 3.2 by using a panel data model.

CHAPTER FOUR

RESULTS AND ANALYSIS

4.1 Descriptive Statistics of the variables used

This section highlights descriptive statistics for GDP, Military Expenditure, Health Expenditure, Infrastructure Expenditure and Education Expenditure.

Tables 4.11 to 4.13 provide statistics on the mean, median, maximum, minimum and the standard deviation for each variable for each of the three countries.

Table 4.11. Descriptive statistics for Kenya

	GDP	EDUCATION	HEALTH	INFRASTRUCTURE	MILITARY
Mean	4.02	5.64	4.53	21.21	1.50
Median	4.28	5.78	4.33	19.94	1.55
Maximum	8.40	6.64	5.72	27.40	1.69
Minimum	0.23	4.88	3.90	14.29	1.18
Std. Dev.	2.33	0.63	0.55	3.45	0.15
Observations	20	20	20	20	20

The GDP growth of Kenya averaged at 4.02 from 1990 to 2015. The minimum GDP of 0.23 was attained in 1992. This low GDP score may be attributed to the multiparty democracy struggle that took place in the same year in Kenya.

Table 4.12. Descriptive statistics for Uganda

	GDP	EDUCATION	HEALTH	INFRASTRUCTURE	MILITARY
Mean	6.66	2.75	7.83	7.78	2.27
Median	6.44	2.80	7.56	7.68	2.31
Maximum	11.52	3.80	11.03	9.97	3.34
Minimum	3.14	1.90	5.56	5.67	1.21
Std. Dev.	2.27	0.67	1.57	1.20	0.58
Observations	26	25	20	26	26

The GDP growth of Uganda averaged at 6.66 from 1990 to 2015. In 2010, there were two major bombs set off. One was at a restaurant that was showing the world cup, and another was at a rugby club in Kampala. This led to the death of about 74 people, and this was the worst attack in East Africa since the bombings of the US embassies in Kenya and Tanzania in 1998. The US among other countries offered aid and offered their support in catching the perpetrators. This was the year they recorded one of their lowest GDP, as well as one of their highest expenditure on infrastructure and military. This was in an attempt to track down the Somali Islamist group, Al-Shabab, that was behind the blasts.

Table 4.13. Descriptive statistics for Tanzania

	GDP	EDUCATION	HEALTH	INFRASTRUCTURE	MILITARY
Mean	5.32	3.02	4.19	8.03	1.25
Median	5.47	2.93	4.08	7.88	1.22
Maximum	8.46	3.89	6.86	10.55	2.18
Minimum	0.58	2.10	2.54	6.09	0.71
Std. Dev.	2.24	0.63	1.29	1.08	0.42
Observations	26	25	20	26	26

The GDP growth of Tanzania averaged at 5.32 from 1990 to 2015. In 1998, the United States embassies in Dar es Salaam, Tanzania and Nairobi, Kenya were simultaneously bombed. This led to Tanzania attaining one of their lowest GDP in years. This was the worst attack seen in in East Africa and led to the death of about 200 people. (Hamm, 2007). The US Government also rapidly and permanently increased the monetary aid to East Africa. Immediate changes included a \$42 million grant targeted specifically towards the victims. (Aronson, 2004)

Table 4.14. Descriptive statistics for East Africa

	GDP	EDUCATION	HEALTH	INFRASTRUCTURE	MILITARY
Mean	3.61	1.62	4.53	19.72	5.71
Median	3.96	1.56	4.33	19.89	5.80
Maximum	8.40	2.87	5.72	27.40	6.64
Minimum	-0.80	1.17	3.90	11.06	4.88
Std. Dev.	2.39	0.34	0.54	4.62	0.58
Observations	78	78	70	78	75

In the year 2000, the East African Treaty came into effect. The terms of the treaty were: Harmonization of policies, easing of cross border movement of persons and goods, infrastructure development, among others.

The second development strategy was in the years 2001 - 2005, launched by the East African summit on 24th April 2001. The main goal was: establishment of a customs union and a common market, widening and deepening cooperation for mutual benefit of partner states, liberalization of cross border trade and movement of persons, development of infrastructure and support services. (East African Community, 2008). This explains the increased infrastructure from the year 2001 in all 3 countries.

The military expenditure averaged 1.62 and the minimum being 1.18 share of GDP. Infrastructure development accounted for the highest average with 19.72. This is because the three countries have been struggling to lay their growth strategies by laying foundations under infrastructure. The expenditure on education remained below 10% although human development is very key to growth.

4.2 Diagnostic tests

This is done to ensure that variables are stationary and that shocks are only temporary and will dissipate and revert to their long-run mean (Maysami, Howe, & Hamzah, 2004). The data series must obey the time series properties i.e. the time series data should be stationary, meaning that, the mean and variance should be constant over time and the value of covariance between two-time periods depends only on the distance between the two-time period and not the actual time at which the covariance is computed.

This section presents the results of the panel unit root test.

Table 4.21: Panel Stationarity Tests (unit root test)

Variables	ADF FISHER CHI- SQUARE	Levin lin chu	CONCLUSION
GDP	14.77 (0.0222)	-3.32 (0.0004)	At levels
Military expenditure	62.66 (0.0000)	-8.86 (0.0000)	At levels
Education expenditure	28.71 (0.0001)	-2.88 (0.0020)	At first difference
Health expenditure	37.61 (0.0000)	-6.09 (0.0000)	At first difference
Infrastructure	38.90 (0.0000)	-5.80 (0.0000)	At first difference

This test is used to investigate for stationarity. A series is stationary if its mean and auto-covariances do not depend on time. E-views panel unit root test (Breitung, 2000), (Levin, Lin and Chu, 2002) all have the same hypothesis. The null hypothesis is that panel data has a unit root while the alternate is that panel data has no unit root meaning it is stationary. (Hadri, 1999) has a different hypothesis the null is panel data has a unit root while the alternate panel data has no unit root.

From table 4.21 both GDP and Military expenditures observations were stationary at levels while education, health and infrastructure were nonstationary at levels but at first difference they were. Stationarity aspect portrayed that the data was now mean reverting.

4.3 Granger causality

The Granger Causality test determines 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.

The data was subjected to granger causality test to confirm whether there existed a unidirectional or bi-directional relationship. The decision criteria were based on the rule that we accept null hypothesis when p value is greater than 5% and reject it when it is below 5%.

The granger causality tests indicate that there were various causal relationships running from: real gross domestic product to government expenditure on education; government expenditure on infrastructure; government expenditure on health; government expenditure on education. Moreover, this necessitated for a need for further tests to determine the extent and nature of these relationships.

Table 4.3: Granger causality

Null Hypothesis:	Obs	F-Statistic	Prob.
MILITARY does not Granger Cause GDP	72	1.35	0.26
GDP does not Granger Cause MILITARY		0.032	0.97
HEALTH does not Granger Cause GDP	51	1.03	0.36
GDP does not Granger Cause HEALTH		1.96	0.15
EDUCATION does not Granger Cause GDP	66	5.22	0.0081
GDP does not Granger Cause EDUCATION		0.79	0.46
INFRASTRUCTURE does not Granger Cause GDP	69	16.64	2.E-06
GDP does not Granger Cause INFRASTRUCTURE		10.78	9.E-05
HEALTH does not Granger Cause MILITARY	51	1.27	0.29
MILITARY does not Granger Cause HEALTH		0.38	0.69
EDUCATION does not Granger Cause MILITARY	66	2.30	0.11
MILITARY does not Granger Cause EDUCATION		7.24	0.0015
INFRASTRUCTURE does not Granger Cause MILITARY	69	0.75	0.48
MILITARY does not Granger Cause INFRASTRUCTURE		11.45	6.E-05
EDUCATION does not Granger Cause HEALTH	61	8.04	0.0010
HEALTH does not Granger Cause EDUCATION		1.66	0.2006
INFRASTRUCTURE does not Granger Cause HEALTH	61	18.36	1.E-06
HEALTH does not Granger Cause INFRA		1.45	0.24
INFRASTRUCTURE does not Granger Cause EDUCATION	66	0.81	0.45
EDUCATION does not Granger Cause INFRASTRUCTURE		2.95	0.06

From table 4.3, the null hypothesis that infrastructure doesn't granger cause GDP and vice versa cannot be rejected at five percent level of significance. Also, the null hypothesis that education granger causes GDP cannot be rejected. Finally, infrastructure does not granger cause health. This implies the sectors are not independent of each other.

4.4 Fixed Generalized Least Squares Regression Results

Table 4.4: Regression results

Variable	Coefficient	P-value	t-Statistic	Prob.
MILITARY	4.89	2.30	2.12	0.04
HEALTH	0.81	0.93	0.87	0.38
EDUCATION	-1.15	0.90	-1.29	0.20
INFRASTRUCTURE	-0.061	0.14	-0.43	0.67
C	-3.41	3.50	-0.98	0.33

Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.11	Mean dependent variable		4.00
F-statistic	1.044	Durbin-Watson stat		1.78
Probability (Fstatistic)	0.41			

The Durbin Watson statistics shows that the Fixed effects model is appropriate because its value of 1.78 shows it has no autocorrelation between the disturbances. Therefore equation 3.2 above will have the following parameters:

$$(GDP)it = -3.41 + 4.89 (ME)it + 0.81 (H)it - 1.15 (EDU)it - 0.061 (INF)it$$

$$(-0.98) \quad (2.12) \quad (0.87) \quad (-1.29) \quad (-0.43)$$

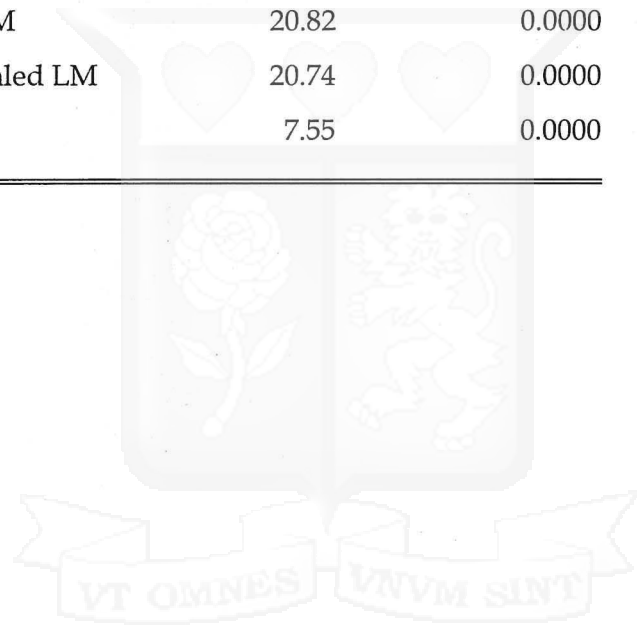
Where the figures in brackets represent the t-statistic. Expenditure on Education and Infrastructure are statistically not significant since their t-statistic values are less than the level of significance (0.05). Military expenditure and Health expenditure are statistically significant since the t-statistic value is greater than the level of significance (0.05).

4.5 Serial correlation TEST:

Before interpretation of the results serial correlation test was performed to test for equality of variances for the various periods considered in the study.

Table 4.7. Serial correlation

Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	57.00	3	0.0000
Pesaran scaled LM	20.82		0.0000
Bias-corrected scaled LM	20.74		0.0000
Pesaran CD	7.55		0.0000



CHAPTER FIVE

DISCUSSION OF THE RESULTS

This research empirically explores the effects of government expenditure on economic growth. This study set out to investigate the effect of government expenditure on economic growth and the government expenditure was divided into education expenditure, health expenditure, defense expenditure and infrastructure expenditure. Health expenditure and consumption expenditure had a positive impact on economic growth and this means that the various East African governments should invest more in these sectors and reduce their spending on defense.

This study aims to find out the impacts which are important to the policy makers in the East African community. In order to account for the impact of government expenditure on economic growth the unit root test was done on the variables the independent variables were all stationary at the first difference, except Military expenditure which was stationary at levels and GDP was stationary at level. Health expenditure has a positive coefficient and it is therefore significant to explain GDP. Military expenditure has the largest positive coefficient and therefore has the largest impact on the GDP.

As shown from the results above, whenever there is political instability, from an attack or even events such as elections, there is a drop in GDP. This is especially due to lack of confidence by foreign investors and pulling out of local investors from the local market. The 3 governments should aim to increase expenditure on military so as to enhance confidence in these investors. And since military expenditure has a positive impact on GDP, economic growth is sure to increase.

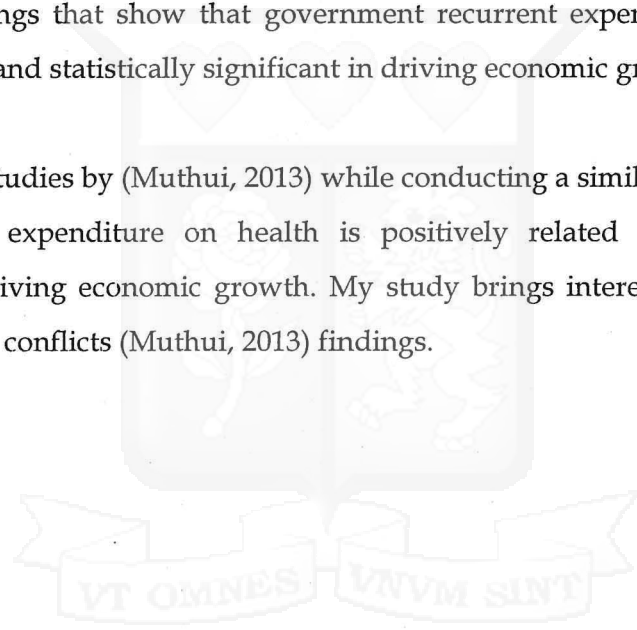
(Al-Jarrah, 2005) examined the causal relationship between defense spending and economic growth for 1970-2003 using time-series methodologies. He found evidence that defense

spending lowered economic growth which is in-line with the above findings that a 1% increase in defense spending will cause a -54.4% decline in GDP growth for EAC countries.

(Maingi, 2011) study on the impact of government expenditure on economic growth showed that government expenditure on foreign debts servicing, public administration was growth retarding in Kenya. (Jerono, 2009) while conducting a similar study found that though government expenditure on education had a positive impact on economic growth it was statistically insignificant in driving economic growth in Kenya.

(Saheed, 2012) while conducting a similar study in Nigeria found out that government expenditure on social services has a positive effect on economic growth. These empirical studies validate my findings that show that government recurrent expenditure on social services is positively related and statistically significant in driving economic growth in Kenya.

However, recent studies by (Muthui, 2013) while conducting a similar study in Kenya found out that government expenditure on health is positively related to growth but statistically insignificant in driving economic growth. My study brings interesting finding to this debate because it actually conflicts (Muthui, 2013) findings.



CHAPTER SIX

CONCLUSION

Both Military and health expenditure have a positive significance to economic growth whereas infrastructure and education expenditure have a negative effect on economic growth in East Africa. However, it takes a much longer time period for infrastructure to show an effect on GDP since infrastructure development happens gradually and over a long time period.

According to the results, each 1% increase in health expenditure will cause a 0.81% increase in GDP. While a 1% increase in Military expenditure will cause a 4.89% increase in GDP. Therefore, the government should aim to increase expenditure to military since this will cause a larger increase in the GDP and hence promote faster economic growth.



Bibliography

- (n.d.).
African Economic Outlook. (2016).
- Agbonkhese, A. O. (2014). IMPACT OF PUBLIC EXPENDITURE ON THE GROWTH OF NIGERIAN ECONOMY. *European Scientific Journal*, Vol 10, NO. 28, 11.
- Aschauer, D. (1989). Is public expenditure productive? *Journal of Monetary Economics*, 23.
- Barro, R. J. (2005). Government spending in a simple model of Endogenous growth. *The Journal of political economy*, Vol 98, No. 5, part 2, 24.
- Dandan, D. M. (2011). GOVERNMENT EXPENDITURES AND ECONOMIC GROWTH IN JORDAN. 2011 *International Conference on Economics and Finance Research IPEDR vol.4 (2011)*, 5.
- Daniel J. Mitchell, P. (March 31, 2005). The Impact of Government Spending on Economic. *Backgrounder No. 1831*, 20.
- Deller, D. a. (2000). Quality of life in the planning literature. *Journal of planning literature*, 26.
- Dr Willy Muturi, C. M. (2015). The Effect of Public Expenditure on Economic Growth in the East African Community. *JOURNAL OF BUSINESS MANAGEMENT AND ECONOMICS*, 5.
- Duncan Last, C. A. (2014). International Monetary Fund. *FISCAL TRANSPARENCY EVALUATION*, 65.
- EGBO, O. (2016). Analysis of Government Disaggregated Expenditures and Growth of Nigerian Economy. *Journal of Internet Banking and Commerce*, April 2016, vol. 21, no. 2, 17.
- Eiya, C. O. (2011). Determinants of Growth in Government Expenditure: An Empirical Analysis of Nigeria. *Research Journal of Business Management*, 7.
- Elmendorf, D. W. (1998). Government Debt. *Handbook of Macroeconomics*, 84.
- Fouladi, M. (2010). The Impact of Government Expenditure on GDP. *Iranian Economic Review*, Vol.15, No.27, Fall 2010, 26.
- Gisore, N. (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, 16.
- Gregorous, A. a. (2007). "Fiscal Policy in an Endogenous Growth Model with Public capital and pollution. *Japanese Economic review*, 13.
- Jerono. (2009). Impact of public expenditure on economic growth in Kenya.
- Kambua, N. I. (2013). EFFECTS OF GOVERNMENT SPENDING ON ECONOMIC GROWTH. 75.
- Kanano. (2006). Determinants of public expenditure growth in Kenya.
- Kenya, R. o. (2002). Budget speech.
- Keynes, J. M. (1964). *Critical Assessment*.
- Longhi, S. N. (2010). Joint impacts of immigration on wages and employment: review and meta-analysis. *Journal of Geographical Systems*, 32.
- Mulinge, J. K. (2016). EFFECTS OF RECURRENT PUBLIC EXPENDITURE. *International Journal of Economics; Commerce and Management Vol. IV, Issue 8*, 33.
- Muthui, J. N. (2013). The Impact of Public Expenditure Components on Economic Growth in Kenya 1964-2011. *International Journal of Business and Social Science*, 21.
- Njiru, T. M. (2002). *Financing Infrastructure Projects*.
- Olorunfemi, S. (2008). Public Investment and Economic Growth in Nigeria: An Autoregressive model. *Journal of International Finance and Economics*.
- Robert, N. M. (2003). *Modern Economics*. Focus Publishing Limited.

- Saheed, Z. S. (2012). Impact of government capital expenditure on exchange rate in Nigeria. *Journal of Economics and Sustainable Development*, 7.
- UDOKA, C. O. (2015). The Effect of Public Expenditure on the Growth and Development of Nigerian Economy (1980-2012). *International Review of Management and Business Research*, 11.
- Zee, V. T. (2000). Tax Margins for emerging markets: Developing countries. *IMF working paper*, 35.
- Aronson, S. L. (2004). United States Aid to Kenya: Regional Security and Counterterrorism Assistance Before and After 9/11.
- East African Community. (2008).
- Hamm, M. S. (2007). Terrorism As Crime: From Oklahoma City to Al-Qaeda and Beyond.

