

**EFFECTS OF PUBLIC DEBT ON ECONOMIC GROWTH OF EAST AFRICAN
COUNTRIES**

By

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MASTER OF SCIENCE IN COMMERCE (FINANCE AND ECONOMICS)

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**A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE
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SCIENCE IN COMMERCE (FINANCE AND ECONOMICS) IN THE SCHOOL
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JULY, 2021

DECLARATION

I declare that this project is my original work and has not been previously published or submitted elsewhere for award of a degree. I also declare that this contains no material written or published by other people except where due reference is made, and author duly acknowledged.

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I do hereby confirm that I have examined the master's dissertation of

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And have certified that all revisions that the dissertation panel and examiners recommended have
been adequately addressed

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ABSTRACT

National debt if properly used can greatly benefit a country and contribute to its economic growth. However, various studies provide mixed findings on the effect of public debt on economic growth in various countries. The purpose of this study was to determine the influence of public debt on economic growth of three east African countries (Kenya, Uganda and Tanzania). Specifically, the study aimed to establish the influence of external concessional public debt, external commercial public debt and domestic public debt on economic growth of the three east African countries. This study applied a causal research design as it sought to assess effect of public debt on economic growth and collect secondary time series data for 57 years (1963 – 2019). The data on public debt and economic growth was collected from World Bank, Central Bank of Kenya, Bank of Uganda, Bank of Tanzania, Kenya National Bureau of Statistics, National Bureau of Statistics, and Uganda Bureau of Statistics. Dynamic panel data regression was used to analyze the collected data. The study findings established that concessional debt and external commercial debt had a significant positive effect on economic growth, while domestic debt had a significant negative effect on economic growth. Based on these study findings, the study makes the following recommendations. First, the study recommends that the three East African countries should source for more external concessional debt through bilateral or multilateral arrangements to plug into their budget deficits, invest in strategic assets and finance projects in neglected sectors. Regarding external commercial debt, the study recommends that the three east African countries should consider this source of funding but ensure that a balance is struck between the different external financing sources. Lastly, the study recommends that the level of domestic borrowing in the three East African countries should be reduced. This is because domestic borrowing is harmful to economic growth of the three countries.

Key words: Public debt, External debt, Domestic debt, Concessional, Commercial, Economic growth.

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DEDICATION

This research project is dedicated to my parents, my family, friends and KCA University fraternity for the unwavering support they have given me in my pursuit for further education to realise my career goals

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ACRONYMS AND ABBREVIATIONS

GDP	Gross Domestic Product
EU	European Union
CBK	Central Bank of Kenya
KNBS	Kenya National Bureau of statistics
SSA	Sub Saharan Africa
KES	Kenya Shilling

TERMS AND DEFINITIONS

Crowding out – This is where private investments and savings are distorted by increased involvement of the government in the market economy and financial markets (Ono & Uchida, 2018).

Domestic debt - The portion of what the country owes that is owed to local lenders which include the public, local financial institutions and local commercial banks (Whajah et al., 2019).

Economic growth – Increase in the ability of an economy to produce services and goods in a given year compared to the preceding year. This is mostly measured in terms of gross domestic product or gross national product (Ahlborn & Schweickert, 2018).

External debt - The portion of what the country owes that is owed to foreign lenders which include international financial institutions, governments, and foreign commercial banks (Butkus & Seputiene, 2018).

Public debt – Amount of money owed by the government to parties who may include individuals, private institutions, finance institutions and other governments (Shahor, 2018).

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Practically all governments globally have expenditures that surpass their revenues and hence experiencing budget deficits. These jurisdictions could improve their revenues by printing money, increasing tax revenues, engaging in external or domestic borrowing, or using prior period's budget surpluses if available (Onafowora & Owoye, 2019). Due to the inappropriateness of the other measures of addressing budgets deficits due to their negative outcomes, governments mostly resort to borrowing which creates financial obligations referred to as public debt (Arčabić et al., 2018). There are various options available to a government when it comes to borrowing to finance budget deficits. These include borrowing from external sources, borrowing domestically from commercial banks, borrowing from its central or federal bank (comparable to money printing) or borrowing from domestic financial entities (Gmez-Puig & Sosvilla, 2017). Each of the available alternatives have differing effects on the economy and present various short-term or long-term implications.

Rather than borrowing from a single source, governments usually combine debt from different sources in a mixed debt strategy. This is done to maximize the benefits while reducing risks appertaining to the different debt sources. Various governments globally have resulted to financing their fiscal deficits by issuing bonds and bills, externally and domestically since expanding tax bases or growing money supply are limited by statutory provisions (Amann & Middleditch, 2017). Foreign and domestic debt are largely applied in developing countries that have key deficiencies in capital formation in their private sectors (Mhlaba & Phiri, 2019). There

are various economic and political studies over the years that have hotly debated the influence of public debt on economic growth of developed and developing countries.

Economic growth is the ability of an economy to produce services and goods in a given year compared to the preceding year. This is mostly measured in terms of gross domestic product or gross national product (Chudik et al., 2018). According to Maisonnave, Chitiga, Mabugu and Decaluwé (2015), public debt can improve the national productivity and employment opportunities in the economy if it is applied to be factors of production such as machinery, technology and knowhow. This concept is supported by the works of early scholars such as Pearson (1968), Chenery and Strout (1966) and Higgins (1959), as quoted by Pegkas (2018), who provided the groundwork for the advancement of an all-inclusive theory of development, economic growth and debt. These scholars had a common perspective that transfer of resources from foreign sources (through grants, aid or loans) to developing and less developed nations could lead to economic transformation in the recipient countries through enhancing their growth rates from negative and low levels to sustainably high growth levels (Chiu & Lee, 2017). The contributions of these scholars and other proponents with similar perspectives indicate that public debt to developing countries is critical as its purpose is to supplement the limited domestic resources with positive influences on the economy.

The significance of the early proponents of the positive influence of public debt on economic growth is that public debt at reasonable levels can enhance economic growth (Mousa & Shawareh, 2017). Moreover, since least developed countries are in the early stages of development, they lack sufficient capital to invest in the numerous opportunities which exist. This is unlike the case in developed countries where the expected rate of return is lower than in the developing or emerging economies (Guei, 2019). Therefore, as long as these emerging and developing

economies use the borrowed funds effectively in productive sectors, they will reap greater returns than the cost of the funds, which will enhance economic growth (Pegkas, 2019). This concept explains why economic growth and public debt have a short-term positive relationship for the countries with reasonable debt levels.

The shortcomings of the early contributions regarding public debt and economic growth is that, the concepts of crowding out or debt overhang are not explained (Liu & Lee, 2018). Based on these limitations of the early contributions, contemporary theories of public debt and economic growth have been formulated. Krugman (1988) is one of the key contributors explaining the long-term effect of public debt on economic growth through the overhang hypothesis. This has informed several theoretical perspectives on the negative effects of public debt on economic growth (Reinhart, Reinhart, & Rogoff, 2015; Chiu & Lee, 2017; Saungweme & Odhiambo, 2018).

Informing this perspective is Krugman (1988) who developed the concept of “debt overhang” as a state where a country’s capacity to repay debt and the positive effect of the debt on the economy is lower than the contractual value of the debt. Moreover, there are situations where public debt can have adverse effects on the economy depending on where the debt has been invested and due to crowding out. This is when too much government involvement in the capital and financial markets reduces the funds available for the private sector and hence reducing investments (Akram, 2011). Besides, Cohen's (1993) theoretical model implies a non-linear effect of foreign borrowing on economic growth. Thus, up to a certain level, accumulation of foreign debt is expected to promote economic growth. However, beyond this level, debt overhang applies and the debt exerts negative pressure on the willingness of investors to provide more capital and hence negatively impacting economic growth.

Borrowed funds if properly used can significantly assist a country and contribute to its economic growth. Nevertheless, the influence of public debt on economic growth of various countries have provided diverse and contradicting findings. For instance, a study by Chiu and Lee (2017) on 61 countries around the globe established that public debt has varying influences on economic growth depending on the risk environment of the country. In countries with high financial, economic and political risk, public debt has been reported to negatively influence economic growth while the opposite is true in countries with low risks. These findings contradicted previous findings by Checherita-Westphal and Rother (2011) in a study on 12 European Union (EU) countries which established that public debt has an inverted U-shape relationship with economic growth. Further, the study determined that the turning point of public debt to GDP ratio was between 90 and 100%.

1.1.1 Trends of Public Debt in East African Countries

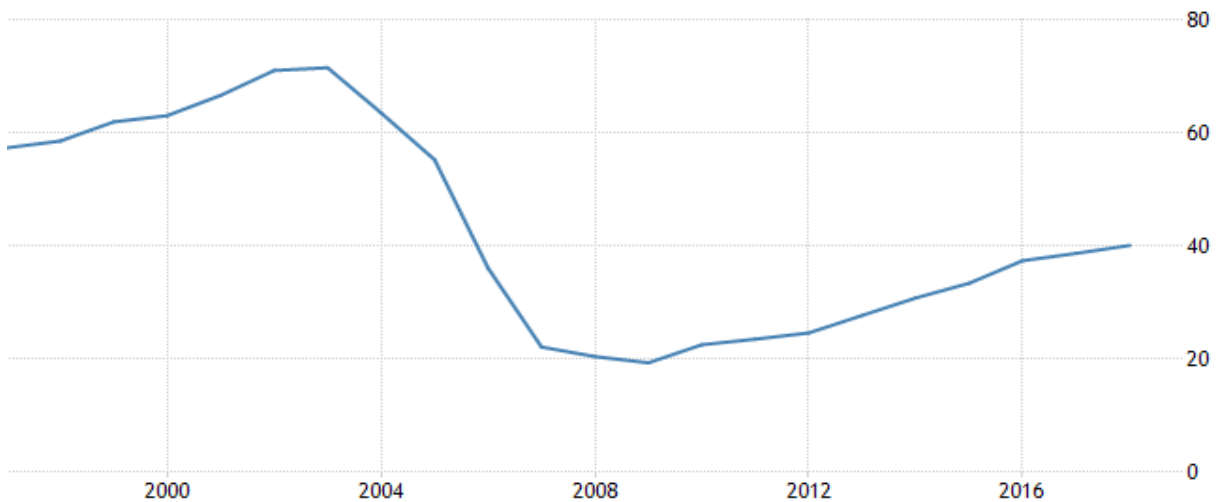
East Africa countries (Kenya Uganda and Tanzania) have been relying on public debt to bridge budget deficits. They have been combining various components of public debt (concessional, commercial and domestic). In Kenya, public debt as a ratio of GDP reached its highest level in 2000 when it was 78% of GDP. However, efforts were made and it was gradually reduced to its lowest point in 2012 of 39% (Figure 2.1). However, from 2012, Kenya's public debt has increased steadily to a ratio of 62.1% recorded in 2019.

FIGURE 1
Kenya's Debt to GDP Ratio (%)



In Uganda there has been notable changes in the debt to GDP ratio over the years (Figure 2). The ratio reached its highest level in 2003 at 72%. However, measures were taken to reduce the ratio to its lowest level at in 2009 at 20%. From 2009 to 2018, the level has increased steadily to 40%.

FIGURE 2
Uganda's Debt to GDP Ratio



Tanzania’s debt to GDP levels have also experience major disruptions over the years (Figure 3). the highest recorded level was in 2000 when the public debt to GDP levels were 50%. This was reduced steadily to its lowest levels in 2008 (22%). However, form 2008, the levels of debt to GDP have risen steadily to its 2018 level of 37.5%. Among the east African countries, Tanzania has the lowest current level of debt to GDP ratio.

FIGURE 3
Tanzania’s Debt to GDP Ratio



1.1.2 Trends of Economic Growth of East Africa Countries

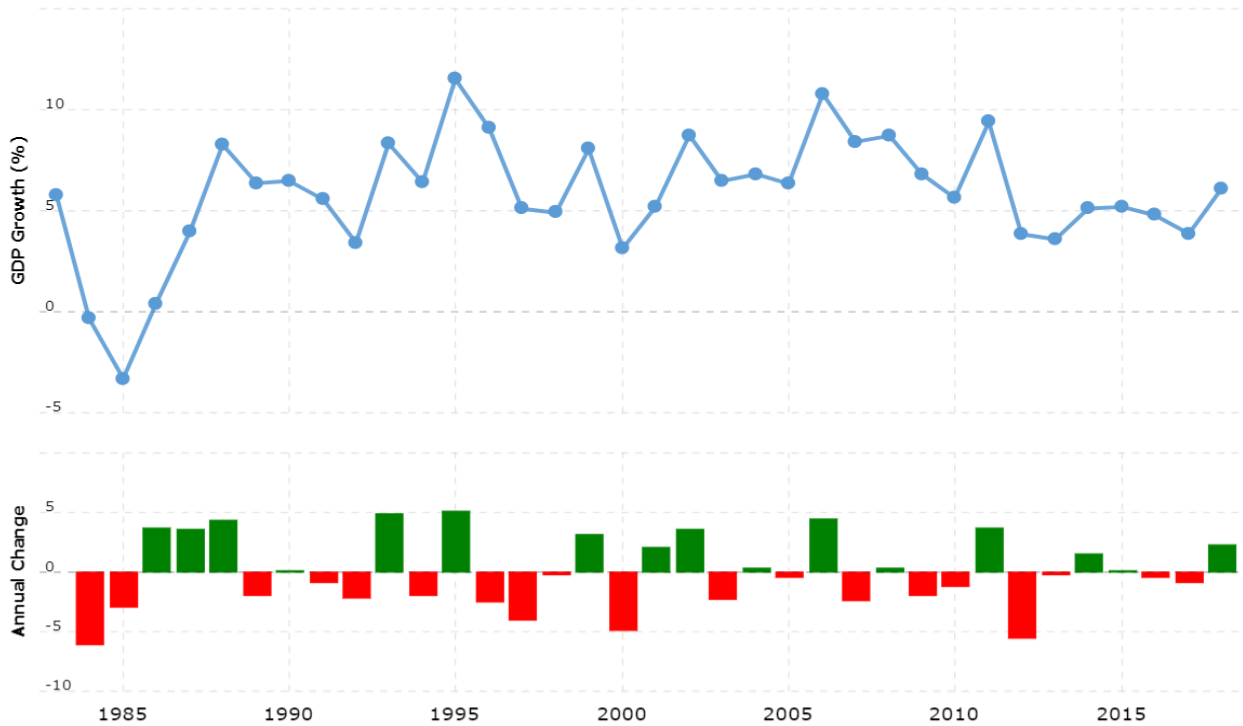
The East Africa, Tanzania has experienced the highest economic growth on average over the years. It has been closely followed by Kenya and then Uganda. In Kenya, (Figure 4) the greatest economic growth was experienced in 1971 (22%). This was fuelled by agriculture, services and industry. However, this was followed by a year of economic contraction (-5%). From the 1980s to date, economic growth has ranged from -2% to 7%. In 2019, the county recorded a GDP growth rate of 5.9%.

FIGURE 4
Kenya's GDP Growth rate



The economic growth of Uganda reported its lowest level in 1985 (-3%). From that year, the country has never recorded a negative GDP growth. The highest ever GDP growth recorded in Uganda was 12% in 1995. From 1995, GDP growth has fluctuated from 2% and 11% over the years (Figure 5). In 2019, the country recorded a 6.3% GDP growth.

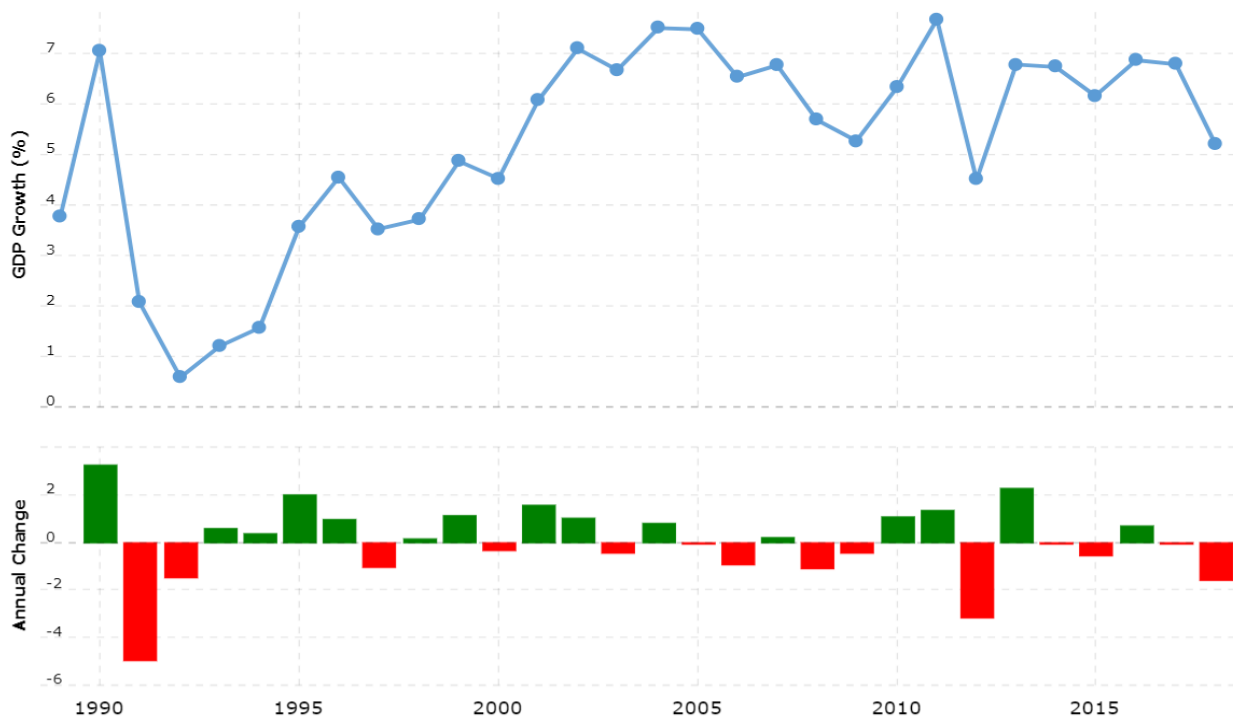
FIGURE 5
Uganda's GDP Growth Rate (%)



Tanzania recorded its lowest ever economic growth in 1992 at 0.5%. The country has never experienced a negative GDP growth rate (Figure 6). It has enjoyed the greatest economic growth in east Africa on average over the years. From the 1990s to date, its GDP growth rate has average between 4 and 9 percent. In 2019. The country recorded a 6.8% GDP growth rate in 2019.

FIGURE 6

Tanzania's GDP Growth Rate (%)



1.1.3 Public Debt and Economic Growth

According to past research, public debt (domestic debt, public concessional debt and public commercial debt) may have a beneficial or negative impact on the economy as a whole. The impact is determined by the quantity of debt and its purpose. The debt-to-GDP ratio is often used to calculate the amount of debt to be borrowed. Cohen (1993), on the other hand, argued that the ratio should be no more than 90%. With a debt threshold of less than 90%, the economy would still be able to expand. Public debt that exceeds the threshold has a negative impact on the economy. It is experimentally shown by looking at the example of emerging nations, where the debt threshold was discovered to be 88.2 percent (Liu & Lee, 2018). When the debt level is below the threshold, the economy may develop favourably. When the public debt to GDP ratio reaches a certain level, however, growth begins to slow.

High levels of public debt can lead to increased long-term interest rates, greater distortionary tax rates, inflation, and a general restriction on countercyclical fiscal measures may all have a detrimental impact on capital stock accumulation and economic development, leading to increased volatility and lower growth rates (Mousa & Shawareh, 2017). According to research on the pathways through which debt has a negative effect on growth, when the debt-to-GDP ratio reaches a certain level, the private sector seems to begin dissaving. These results go counter to the Ricardian equivalence theory, according to Mhlaba and Phiri (2019), which argues that consumers are forward-thinking and raise their savings in response to increases in government borrowing.

1.2 Statement of the Problem

The global financial crisis was followed by an immense upsurge in public sector borrowing. Globally, total outstanding public debt increased to \$70 trillion at the end of 2018 from \$35 trillion recorded in 2007. Over similar period, public debt increased to 102% of gross domestic debt (GDP) from 70% in developed countries and to 50% of GDP from 35% in developing and emerging economies (Whajah et al., 2019). In Kenya, public debt as a percentage of GDP increased to 62% at the end of 2019 from 31% in 2010 (CBK, 2020). In Uganda, public debt as a ratio to GDP is at 40% with Tanzania experiencing a debt to GDP ratio of 38%. Though debt to GDP ratios have been increasing, GDP growth has mostly stagnated in the three countries. This fast upsurge in public debt has stimulated much debate regarding the effects of public debt on the different economies globally (Liu & Lee 2018; Butkus & Seputiene, 2018; Djiogap, 2017).

Though public debt is critical in bridging budget deficits, sustained high debt to GDP ratio can have negative effects on the economy in the long term (Saungweme & Odhiambo, 2018). Large sustained budget deficits could crowd out private investment and lead to fiscal imbalances

and thus negatively affecting economic growth. Moreover, when a high debt to GDP ratio is sustained for long periods, this can result to lower national income and savings, higher interest payments, large spending cuts and tax increases, greater risk of fiscal crisis and decreased capacity to respond to macroeconomic issues. However, Chudik, Mohaddes, Pesaran and Raissi (2018) observed that the relationship between economic growth and public debt is complex as it varies across countries and influenced by global factors. Indications are that there is no clear-cut world-wide level above which debt to GDP significantly decreases growth. However, high and rising public debt levels becomes a burden and suppresses economic growth in the long term.

Various scholars have attempted to determine the effect of public debt on economic growth of different countries globally. Mhlaba and Phiri (2019) established that public debt has a long-term negative association with South Africa's economic growth. Another study by Chiu and Lee (2017) established that the effect of public debt is influenced by the risk environment of the country. A country's economic growth is impaired by raising its public debt if it has a high-risk environment. However, a country with low composite and economic risk environments will experience enhanced growth if it increases its public debt. This study included 61 countries but excluded Kenya. In Jordan, Mousa and Shawareh (2017) established that public debt has a negative relationship with economic growth. Locally, Musyoka (2017) determined that public debt has an adverse influence on economic growth in Kenya while Achwoga (2016) established that economic growth is negatively and significantly associated with both domestic and external debt. Another study by Kobey (2016) established that public debt had a negative relationship with economic growth, but had no significant effect on economic growth. Moreover, Matiti (2013) established that public debt has a negative but insignificant relationship with economic growth of Kenya. These studies used time series regression to assess the influence of public debt on economic growth

while the current study applied macro panel data and performed dynamic panel data analysis to assess how public debt of three east African countries influence economic growth. Moreover, the reviewed studies did not segregate public debt into domestic, concessional and commercial debt which was conducted in the current study. Moreover, the current study used more current data than that used in the two studies. Besides, a lot of changes in economic growth and public debt had occurred from the time of these two studies were conducted. This justified the current study.

1.3 Research objectives

The general objective of the study was to determine the effect of public debt on economic growth of Kenya.

The specific objectives of the study were to;

- i) Establish the effect of external concessional public debt on economic growth of three east Africa countries.
- ii) Determine the effect of external commercial public debt on economic growth of three east Africa countries
- iii) Assess the effect of domestic debt on economic growth of three east Africa countries.

1.4 Research Hypotheses

The study tested the following hypotheses;

H₀₁: External concessional public debt has no significant effect on economic growth of three east Africa countries

H₀₂: External commercial public debt has no significant effect on economic growth of three east Africa countries

H₀₃: Domestic debt has no significant effect on economic growth of three east Africa countries

1.5 Significance of the Study

The public debt in East African countries is increasing at rates that are alarming scholars and policy makers both domestically and globally. The Kenya's public debt as a percentage of GDP increased to 62% at the end of 2019 from 31% in 2010 (CBK, 2020). In Uganda, public debt as a ratio to GDP is at 40% in 2019 with Tanzania experiencing a debt to GDP ratio of 38% in the same year. Though debt to GDP ratios have been increasing, GDP growth had mostly stagnated in the three countries. This rapid increase in government debt had sparked debate on how this is projected to influence economic growth of the country. Though public debt is critical in bridging budget deficits, sustained high debt to GDP ratio can have negative effects on the economy in the long term. The findings from this study will hence be valuable for policy and practice relating to public debt and its effects. The findings from this research are expected to be significant to politicians, policy makers and the scholarly world.

1.5.1 Policy makers

First, the results from the study are expected to inform national planners, the public debt management office and other policymakers on how economic growth is affected by public debt. This could inform their existing and future decision making and policy on issues relating to the economy and public debt. Moreover, the study findings could inform government officials on the influence of public debt on the economy both in the short- and long-term. This could provide evidence that will inform their decisions on the past, present and future levels of public debt. Besides, the study findings might assist policymakers in designing appropriate fiscal policy by investigating how existing debts influence economic growth.

1.5.2 Scholars, academicians and researchers

Secondly, the findings can shed more light on the debt-economic growth nexus and hence inform the contributions and debate of scholars and intellectuals on the issue of public debt and economic growth on formal and informal forums. These can influence decision relating to public debt and economic growth. Moreover, the findings would be useful to the different publics including the media, general public and human rights groups. These publics advocate for human rights and justice and the findings from this study can inform their crusade for or against public debt.

1.5.3 Politicians, and the public

Lastly, the findings could be useful to politicians and other stakeholders as they can use them to rally their constituencies against or for public debt as a budget deficit fixing policy. Moreover, politicians can use their legislative forms and mechanisms to design evidence-based policy on public debt.

1.6 Scope of the Study

This study focused on determining the influence of public debt on economic growth of three east African countries (Kenya, Uganda and Tanzania). The components of public debt included in the study were external concessional debt, external commercial debt and domestic public debt. The study focused on Kenya, Uganda and Tanzania and considered the period between 1963 and 2019 (57 years).

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents the review of literature that informs the research study. This include the theoretical literature, empirical literature and the conceptual framework. The theoretical literature includes the three theories that were used to anchor the study; Keynesian model, debt overhang theory and crowding out theory. The empirical review comprises of local, regional and global studies on public debt and its effect on economic growth in different countries. The gaps that were identified from the review of empirical studies are provided. Further, the chapter provides the conceptual framework that provides the hypothesized relationship among the study variables and the operationalization framework that provides the variables and how they were measured.

2.2 Theoretical Review

The study was based on three theories. These are the Keynesian theory, debt overhang hypothesis and crowding out theory. The proponents of these theories, the years these theories were developed and the application of the theories in the study are provided in the following sections.

2.2.1 Keynesian theory of public debt

The Keynesian theory of public debt was developed by Keynes (1936) and its key proposition is that there is no real burden associated with public debt and government involvement in economic activities. The theory indicates that the government's intervention in the economy is vital to correct market imperfections and also supplement the actions market. Further, Keynesian model proposes that public borrowing is not damaging to the economy as indicated by classical economists but it

contributes to the smooth functioning of the economy by reducing imbalances (Yolcu, 2018). It is therefore expected that if well managed, public debt will spur economic growth (Shahor, 2018). This is because public debt is expected to involve the government in value adding activities and thus adding to national wealth and the growth of the country as a whole.

Keynesian theory of public debt also hypothesizes that when government is involved in economic activities, it avoids negative externalities and hence positively contributing to economic growth and development (Keynes, 1936). Besides, public authorities borrow to counter disturbing social and economic phenomena and promoting economic growth. Further, government can borrow to finance sectors that they feel that are underfinanced (Liu & Lee, 2018). Such policies require engagement of the government in borrowing to reduce unemployment, support recovery during recession and accelerate growth (Ono & Uchida, 2018). This theory was used in this study to support the hypothesis that concessional public debt has a significant effect on economic growth when applied properly to reduce imbalances in the market.

2.2.2 Debt overhang theory

Krugman (1988) created the “debt overhang” concept as a state in which the external debt repayment ability of the country falls below the contractual value of public debt. This theory posits that public debt burdens the country as many countries invest the funds in investments with lower returns than the interest on those debts. This makes the debt to have adverse effects on the economy. Cohen’s (1993) theoretical model supported this by indicating a non-linear effect of public borrowing on economic growth and investment. Therefore, up to a certain level, accumulation of public debt could promote investment and economic growth. However, beyond

that level, accumulation of more debt will have negative effects on investments and economic growth due to debt overhang.

The debt overhang theory has been supported by various studies which have found an inverted U-shape association between economic growth and public debt. These studies include Mhlaba and Phiri (2019), Ssempala et al. (2019) and Anning et al. (2015). This theory assumes that if public debt is used appropriately in productive sectors, it will have a positive effect up to a certain level of public debt to GDP ratio. However, beyond this level, more debt will have diminishing returns due to increases risk, crowding out and other externalities. This theory was applied in this study to advance the argument of either a negative or positive effect of commercial public debt on economic growth depending on the level of public debt to GDP ratio.

2.2.3 Crowding out theory

The crowding out theory dates back to the 1970s after the seminal works of Bacon and Eltis (1976). The authors argued that increased government involvement in the financial and market economy adversely affects the remainder of the market. The theory when applied to domestic borrowing hypothesizes that increased government domestic debt leads to a shortage of funds for the private sector leading to rise of interest rates and thus negatively affecting private investments. This theory has been supported by various empirical studies which indicate that when government increases its domestic borrowing, this increases interest rates and thus making a huge number of private entities to be unable to get access to funds for investments (Yolcu, 2018). However, the crowding out effect depends on the nature of the macroeconomic policies and environment.

The economic situation in the country influences the extent of government's domestic debt crowding out private investments. For instance, Spilioti and Vamvoukas (2015) note that when the economy is at full employment or capacity, increase in government borrowing creates competition for scarce funds between private sector and the public sector. This in turn leads to a rise in interest rates, reduced access of funds by the private sector and hence reduced private consumption and investment. This results to a decrease in economic growth. However, when the economy is below full employment or capacity, increase in domestic borrowing, enhances economic growth since there are deficit funds in the economy which needs to be used (Mhlaba & Phiri, 2019). This hence explains how domestic borrowing in such an environment would result in enhanced economic growth. This theory was used in the study to explain how domestic borrowing can have an effect on economic growth.

2.3 Empirical Review

This section provides a review of empirical literature relevant to the subject of public debt and economic growth. The studies reviewed include local, regional and global studies. Further, the review is presented based on the study's research objectives.

2.3.1 Influence of external concessional public debt on economic growth

A study by Casares (2015) assessed the influence of public debt on economic growth. The research presents an endogenous growth model which incorporates non-tradable and tradable goods. According to the author, external debt can have a non-linear impact on a county's economic growth. When the indebtedness is high, an increase in the proportion of external debt to GDP hurts the economy while when the indebtedness is low, the increase in proportion promotes economic

growth (Casares, 2015). The findings are supported by Kobey (2016) study that examined the impact of public debt on the economic growth in Kenya. The research used a linear regression model to examine data from 1993 to 2015. Inflation and unemployment rates were used as control variables. From the study, proportion external debt and debt servicing have a significant influence on the economic growth within the country.

Ngugi (2016) research sought to investigate the impact of public debt on the Kenyan economic growth pattern. The study included data collected between 1983 and 2013 which was analysed through the causal research design to derive the findings. From the study results, external debts, lagged GDP, private investment, and real exchange rates had a positive impact on the economic growth. According to Were (2001) the Kenya's external debt is official and from multilateral sources. The level of the debts have consistently increased with burden indicators increasing steadily since 1990. Using the time series information, empirical findings show that external debts have a negative impact on the Kenyan economic growth. A similar study by Saungweme and Odhiambo (2018) posit that there is inconsistent evidence on the effect of external public debt on the economic growth. The systematic review concludes that foreign debts can have varying impact on GDP growth depending with the level of indebtedness.

A study by Ejigayehu and Persson (2013) examined whether external debts influence economic growth of heavily indebted poor African states through debt crowding out and overhang effect. The findings of the study show that external debts influence the economic growth through debt crowding which relates to debt servicing. Corresponding research by Atique and Malik (2012) investigated the influence of domestic and external debts on Pakistan's GDP growth. The findings of the study show that the relationship between external debt and economic growth is inverse. The level of eternal debts slows down the growth as compared to domestic debts and its impact is

stronger (Atique & Malik, 2012). According to Kobey (2016), external debts increase a country's access to resources unlike domestic borrowing which transfer resources within a state. It is therefore conclusive to note that foreign debts play a significant role in determining the level of economic growth especially in developing countries.

Matiti (2013) affirms that public debt is a major macroeconomic indicator which forms a country's image in international markets. The author categorizes it as an inward foreign direct investment flow determinant. According to Matiti (2013), public debt management aids in stability and GDP growth through resource mobilization in situations where there is limited financial risks and low borrowing costs. Research by Senadza, Fiagbe, and Quartey (2017) investigated the impact of external debt on the economic growth of Sub-Saharan Africa. The study incorporated 39 countries and employed the System Generalized Methods on Moments to arrive at the findings. The research results show that external debts have a negative impact on the economic growth of SSA states. This finding differs from Matiti (2013) that shows a positive correlation between the two variables. According to Senadza, Fiagbe, and Quartey (2017) there is a linear relationship between external debts and economic growth.

Fiagbe (2015) study examined the relationship between external debt and economic growth in Sub-Saharan countries. The research used 39 SSA countries and incorporated data collected between 1990 and 2013. The findings of this research show that the Direct Effect of Debt Hypothesis applies for the SSA states. Fiagbe (2015) exemplifies that external debt reduces long-term investments and negatively affects economic growth. The results amplify Senadza, Fiagbe, and Quartey (2017) argument that there is no non-linear association between the two variables. Corresponding research by Shah and Pervin (2012) examined the relevance of reliance of Bangladesh economy on external public debt. From the study findings, there is a negative and

positive effect on the economic growth in the long run. The short-term disequilibrium implications are modified in the long-term. Shah and Pervin (2012) posit that as sub-Saharan countries increase their debt burden, strain is transferred to the economy which results to decline. The level of external debt determines the trends in economic growth or decline.

Kharusi and Ada (2018) examined the relationship between external debt and economic growth through a case of Oman as an emerging economy. The time series data between 1990 and 2015 was used in the study. From the findings, there is a negative and significant association between government external borrowing and economic growth. A similar study by Shkolnyk and Koilo (2018) investigated the relationship between external debt and economic growth in emerging economies with a case of Ukraine. According to the researchers, there is a significant problem in effective public debt management. The misappropriation accounts for the negative impact of high levels of external debts on the economic wellbeing. Ndemange et al. (2018) posit that one of the significant barriers to economic growth in Kenya is the soaring debt obligations. The study that investigated the impact of foreign debt servicing on the GDP shows a significant correlation between the two variables. From the research, external debts have a noteworthy impact on the economic growth depending on the level of borrowing and debt management.

2.3.3 Influence of external commercial public debt on economic growth

Kamundia (2016) affirms that commercial external debt has higher interest rates which increases the level of indebtedness for emerging economies. According to the author, the primary debt burden for developing and under-developed states lies on commercial debts that are incurred at high annual interest charges. The high demands of commercial external borrowing increase the interest rates thus negatively affecting economic growth. According to Kamundia (2016)

government impose tax increase to raise finances for paying commercial public debts and the associated interests. Matiti (2013) supports this argument that shallow economies results to increased commercial borrowing after they exhaust concessional finance. Research show that the high interest rates on commercial external enhances the cost of financing projects and private investments thus limiting economic growth. Interest payments on commercial public debts have adverse impact on trade balance which is an essential parameter for economic growth (Matiti, 2013). It is conclusive that the high the rates of payable interests on commercial public debts, the higher the deficit on current account and increased debt burden.

Casares (2015) posits that commercial public debts have a significant negative economic impact due to the high interest rates and restrictive covenants. Ncanywa and Masoga (2018) investigated the role of public debt in stimulating public investment and economic development in South Africa. According to the researchers, high interest rates have an adverse effect on GDP growth. Ncanywa and Masoga (2018) findings reveal that high interests on commercial external debt result to high debt costs which forces government to impose more taxations. The outcome of this is reduced finances for investment and sluggish economic growth. Casares (2015) supports Ncanywa and Masoga (2018) argument that high interest rates on commercial external debt induce deficits on current account and forces states to borrow more. Research affirms that interest payment on commercial public debt can contribute to crowding out of investment and discourage investors (Ncanywa & Masoga, 2018). As developing and underdeveloped states continue to attain commercial public debts to finance development, the level of interests in future minimizes the capacity to increase GDP growth.

Muinga (2014) examined the relationship between external commercial debt and economic growth in Kenya. The variables included capital labour, external public debt, interest payments on

external debts, debt repayment, and inflation. The findings of this research show that interest payments on government foreign borrowings have a negative impact on economic growth in Kenya. A corresponding study by Ibrahim (2015) investigated the impact of external debt on the economic development in East African countries. The findings of this research had a different argument that real interest rates do not have a significant impact on economic development. Ibrahim (2015) acknowledges that interest accruing from external and domestic debts are financed through taxation which reduces the lifetime consumption of taxpayers and savings. As a result, interest payment contributes to reduction in GDP and capital stock. Eventually, the increase in interest payment result to decline in economic growth within east African countries.

Moki (2012) posit that long-term interest rates on commercial external debt have a significant impact on crowding out effect of investments. The study population focused on 53 countries and involved time series data from 1980 to 2010. From the research, through imposed taxes to finance interest payment on public debts, elements such as capital stock and consumer savings are reduced. As a result of declining human capital, the economic growth is adversely affected (Moki, 2012). Ejigayehu and Persson (2013) affirm that increased interest rates had a severe impact on the world recession of 1981 to 1983 which imposed decline in exports and earnings. This argument exemplifies that interest payments results to sluggish economic growth in developed states (Ejigayehu & Persson, 2013). A comparable study by Mwaniki (2016) examined the effect of government borrowing on gross domestic product in Kenya. According to the authors, interests associated with domestic debts may absorb government revenues and result to crowding out of investment.

Kasidi and Said (2013) investigated the effect of external commercial debt on the Tanzanian economic growth. According to the researchers, high interest payments on external

commercial debts creates hindrance in economic expansion since it increases debt burden. A corresponding study by Ntshakala (2013) examined the relationship between public debt and economic growth in Swaziland. Ntshakala (2013) show that interest rates on government's domestic borrowing reduces the disposable funds and revenues critical for development and result to crowd-out effect. As the Swaziland government embark in borrowing, the resulting effect is decline on economic growth due to increasing interest payments. Kobey (2016) examined the impact of public debt on Kenyan economic growth. According to the Kobey, the higher the level of interest payment, the heavier the deficit on current account and increased debt burden. This argument corresponds to Kasidi and Said (2013) concept that high interest payments negatively affect GDP growth.

Kamundia, Gitahi, and Mwilaria (2015) study investigated the impact of commercial public debt on private investments in Kenya. According to the authors, the rate of interest rates on commercial public debt do not result to increased cost of private credit thus does not reduce but improves the demand for private investment. Kamundia, Gitahi, and Mwilaria (2015) affirm that private investment has a significant role in enhancing economic growth thus its improvement will contribute to sluggish GDP growth. King'wara (2014) investigated the relationship between commercial public debt and private investments in Kenya. The research involved four independent variables including commercial external debt, GDP, public domestic debt, and public investment. The findings of this study show that domestic borrowing is associated with high interest rates which accounts for increased debt burden and reduced private investment due to crowd out effect.

2.3.3 Influence of domestic public debt on economic growth

Njoroge (2015) research investigated the relationship between government domestic borrowing and economic growth in Kenya. The research used quarterly data from 2003 to 2013 which totalled to 44 observations. From the findings, the total domestic debt was \$53.4 billion out of the total 61 billion dollars. Njoroge (2015) posits that unemployment and inflation rates were 9.4% and 8.6% for the period under study. From the results, the relationship between GDP growth and debt is negative. The author exemplifies that there is no causal effect on the economic growth resulting from domestic borrowing. According to Matiti (2013) domestic debts are associated with high rates of interests as compared to external debts thus expensive to maintain. Servicing the liabilities absorbs significant part of government revenues which would have been allocated to boost economic growth. Matiti (2013) supports the argument that domestic government borrowing have a negative impact on GDP growth due to few resources allocate to developmental projects.

Ebi, Abu, and Clement (2013) examined the potency of domestic and foreign debts on performance of Nigerian economy. Time series data between 1970 and 2011 was derived from secondary sources. From the study results, domestic debts have an adverse effect on the country's ability to grow economically. According to Ebi, Abu, and Clement (2013), government foreign borrowing is superior to domestic debts in relation to its influence on economic growth. Abbas and Christensen (2010) investigated the role of domestic debt on economic growth in low-income countries. The research incorporated 93 emerging economies and used data from 1975 to 2004 to analyse the relationship. From the findings, high levels of domestic debt undermine the growth rate and negatively influences development. Both Abbas and Christensen (2010) and Ebi, Abu, and Clement (2013) agree that government domestic borrowing has a negative impact on economic growth especially in emerging economies.

There are differing concepts relating to the impact of domestic debts on economic growth within emerging economies. Lotto and Mmari (2018) study investigated the relationship between domestic debt and economic growth through the case Tanzania. According to the researchers, there is a consistent improper utilization of domestic borrowed funds which include paying principals, funding budgetary deficits, and financing mature debts which results to negative impact on economic growth. The findings show that there is an inverse association between domestic debts and GDP growth in emerging economies. Putunoi and Mutuku (2013) has a different result in relation to domestic debt and economic growth. The study examined the relationship between the two variables in Kenya. The empirical research used econometric technique to analyse data spanning from 2000 to 2010. The findings show a differing argument that domestic borrowing has a positive impact on the Kenyan economic growth. According to Putunoi and Mutuku, the expansion of domestic debts over the period of study resulted to increased economic development.

Akram (2013) notes that domestic debts have a positive impact on economic growth but an adverse effect on investment. Corresponding research by Charles (2012) investigated the association between domestic debt and economic growth in Nigeria. The author affirms that the debt levels determine the impact of on GDP growth. Charles (2012) findings show that the high levels of domestic borrowing in emerging economies is attributed to the declining GDP growth. A corresponding study by Titus, Chidi, Tochukwu, and Babatunde (2016) examined the relationship between government domestic borrowing and economic growth in Nigeria. From the research findings, domestic borrowing has short and long-term growth potential on the economy. With effective management of debts and adequate deployment in key sectors, domestic borrowing can have significant impact on the GDP growth (Titus, Chidi, Tochukwu, & Babatunde, 2016). This

is exemplified by Putunoi and Mutuku (2013) study that supports the argument that domestic borrowing has a positive correlation with economic development.

Mbate (2013) examined the effect of domestic debt on economic growth in 21 Sub-Saharan countries using time series data between 1985 and 2010. The findings show a non-linear relationship between the two variables. Mbate (2013) exemplifies that the maximum turning point is at 11.4% of GDP and the domestic debts result to crowding of private sector. The research recommends effective debt management approaches and incorporation of debt ceiling to limit indebtedness and its negative impact on development. This argument is supported by Matiti (2013) that identifies the negative and positive economic impact associated with domestic debts. Depending with the level of indebtedness and interest rates, domestic borrowing has the potential to increase growth and result to stagnation and decline. Research suggest that governments have a role of implementing wider reforms in managing domestic debts as an approach to initiate GDP growth and shield private investors (Matiti, 2013). It is evident that domestic debts can result to stability or economic failure depending with managerial strategies.

Babu, Kiprop, Kalio, and Gisore (2015) explored the impact of domestic debt on the economic growth of East African Community by using time series data from 1990 to 2010. The research was based on Solow growth model and Levin-Lin Chu test. The findings of the study show that domestic debt have appositive impact on per capita GDP growth within the region. This differs from a prior argument by Ebi, Abu, and Clement (2013) that domestic debts have an adverse effect on economic growth as compared to external borrowing. Different scholars have varying arguments in relation to domestic debts in emerging economies (Matiti, 2013). It is clear that the level of indebtedness has a significant role to play determining the influence on GDP growth.

2.4 Knowledge Gaps

The reviewed empirical studies left some theoretical, contextual and conceptual gaps. For instance, studies such as Casares (2015), Kobey (2016) and Ngugi (2016) focussed on public debt levels but did not segregate public debt into external and external. Besides, the studies only focussed on Kenya and did not examine how the public debt of east African countries influenced economic growth in the region. Moreover, the studies by Musyoka (2017), Achwoga (2016), Mwaniki (2016) and Gicheru and Nasieku (2016) did not consider segregating external public debt into concessional and commercial debt. This would create deeper insights into how the different categories of external public debt influence economic growth. These studies therefore, left a conceptual gap which the current study sought to fill.

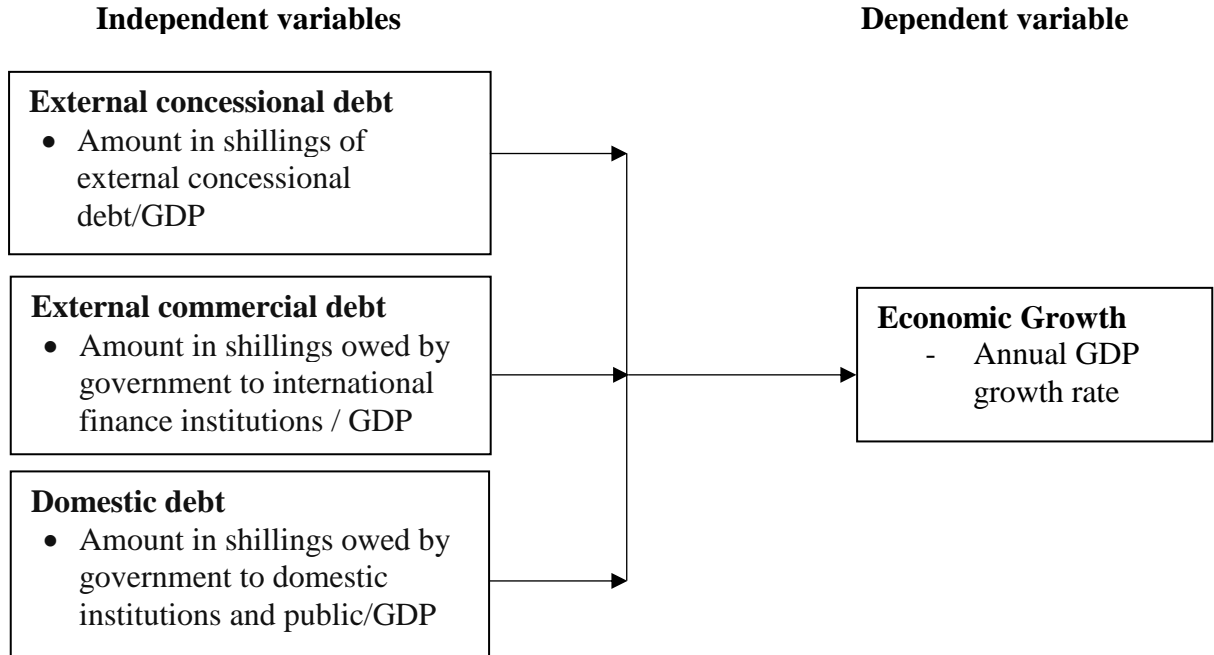
Moreover, most of the studies were conducted in markets which had critical developmental, economic, social and political differences with the east African region and hence making these findings to be ungeneralizable to the east African context. Such studies include Ejigayehu and Persson (2013), Fiagbe (2015), Senadza et al. (2017) and Kharusi and Ada (2018) among others. Moreover, there were other studies that had applied methodologies and models that were not fit for the type of data collected. Such a study is Eze et al. (2019) which applied ordinary least squares regression despite collecting time series data. This study applied dynamic panel regression model which was appropriate for the kind of data being used.

2.5 Conceptual Framework

The study was based on conceptual framework presented in Figure 7. The independent variables in the study are public debt components (external concessional debt, external commercial debt and domestic debt). The dependent variable is economic growth measured using real GDP growth rate.

FIGURE 7

Conceptual Framework



2.6 Operationalization of Variables

This section shows how each of the study variables was measured (Table 2.1). This includes the independent variables (external concessional debt, external commercial debt and domestic debt) and dependent variable (economic growth).

TABLE 1**Measurement of Variables**

Variable	Notation	Type of variable	Measurement scale	Measurement
External concessional public debt	ECoD	Independent	Ratio	Amount in shillings of external concessional debt/GDP
External commercial public debt	ECmD	Independent	Ratio	Amount in shillings owed by government to international finance institutions / GDP
Domestic public debt	DPD	Independent	Ratio	Amount in shillings owed by government to domestic institutions and public/GDP
Economic Growth	EG	Dependent	Ratio	Real GDP growth rate

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter discusses the methodology that was applied in conducting the study. This includes a discussion of the research design, sampling technique and sample size. Moreover, the chapter provides a discussion of the data collection techniques, the data analysis methods, presentation, and the model that was applied in the analysis. Lastly, the diagnostic tests that were conducted before and after model estimation are also presented.

3.2 Research design

This study applied a causal research design as it sought to collect secondary dynamic panel data to establish the relationship between public debt and economic growth. According to Pischke and Angrist (2014) a causal research design is appropriate when one seeks to assess the relationship that exists between variables observed over time or the cause and effect relationship amongst the study variables. Moreover, Creswell and Creswell (2017) observe that causal studies focus on determining the patterns of relationships and the direction of the relationship amongst study variables. This was hence appropriate for this study as the study sought to collect data on public debt and economic growth over a period of 57 years and establish the relationship.

The data collected in this study was historical as it entailed data compiled for public debt and economic growth for the three east African countries. Causal research is useful in situations where one or two variables need to be related to establish how they associate with one another. In the current study, the objective was to establish the influence of public debt on economic growth in the three east African countries.

3.3 Target Population and Sampling

The study focussed on Kenya, Uganda and Tanzania. These were selected as they are the leading economies in East Africa and at the same time, they have recorded high and growing debt to GDP ratios. The study focussed on available data for the countries for 57 years (1963 – 2019). This period was considered to utilize all the available data from independence of the three countries to date. This enabled the study to establish the long run status of public debt and the expected effect of the public debt components on economic growth.

3.4 Research Instrument

The study applied a secondary data collection sheet which was used to gather the data required for the study. This is a spreadsheet (Appendix) which ensured that the required data for all the study years and the three countries was accurately collected and reported.

3.5 Data collection procedure

The secondary data that was used in this study was collected from the World Bank, Kenya National Bureau of Statistics (KNBS), Central Bank of Kenya (CBK), National Bureau of Statistics, Bank of Tanzania, Uganda Bureau of Statistics and Bank of Uganda. The data procured from World Bank, KNBS, National Bureau of Statistics and Uganda Bureau of Statistics was data on economic growth for the three countries. Data on concessional and commercial external debt and domestic public debt was collected from CBK, Bank of Tanzania and Bank of Uganda. The researcher contacted the entities and requested access to the data for 1963 - 2019. Preferably, data was requested in Excel format which was a more usable format. The data was then cleaned, and entered in the form required ready for analysis.

3.6 Data Processing and Analysis

Dynamic panel-data (DPD) analysis model was used in analysis of the data as the time dimension was greater than the number of entities. Before analyzing the data through the DPD model, the data was explored using descriptive statistics (mean and standard deviations) and trend analysis. This was done through the aid of Stata statistical software version 16.

The DPD data regression model was applied since the data could have underlying effects which could either require the fixed effects or the random effects. This enabled the testing of the role of the independent variables on economic growth of the three east African countries. This also enabled examination of the role of the three independent variables (external concessional debt, external commercial debt and domestic public debt) on economic growth. The procedure for data analysis involved three steps. The first step was conducting a Hausman test which established which of the two models (fixed effects or random effects) was appropriate for the data. The second step was to conduct the best model between random effects or pooled ordinary least squares regression (if random effects was selected using the Hausmann test). This was conducted using the Breusch-Pagan Lagrange multiplier (BPLM) test. The selected model was then run.

The empirical model is of the form;

$$Y_{it} = \beta_1 X_{1it-1} + \beta_2 X_{2it-1} + \beta_3 X_{3it-1} + \varepsilon_{it} \dots\dots\dots (i)$$

Where,

Y = Economic growth

X₁ = External concessional debt

X₂ = External commercial debt

X₃ = Domestic public debt

t = time period (1963 - 2019)

$i = \text{Country (Kenya Uganda and Tanzania)}$

$\varepsilon_t = \text{error term}$

DPD diagnostics (test for multicollinearity, test of heteroscedasticity, test of serial correlation and test of normality of residuals) were conducted. The first test to be conducted before model fitting was the multicollinearity test. This assessed whether there were any two independent variables that were highly related. After this test, the model was then fitted. After model fitting, test for heteroscedasticity was conducted. The study utilized the modified Wald test for group wise heteroscedasticity (Creswell, 2013). Robust errors would be used if heteroscedasticity is present.

Further, serial correlation test was conducted. This is mostly relevant to macro panels with long time series of over 20 years. Autocorrelation or serial correlation inflates the r squared of the model and deflates the standard errors of the coefficients. In this study, Wooldridge test was used to assess serial correlation (Chandra & Sharma, 2013). Lastly, the study tested for normality of the regression residuals. This was conducted using the kernel normal density function.

CHAPTER FOUR

FINDINGS AND DISCUSSION

4.1 Introduction

This chapter provides the analysis of data, the study findings and the discussion of the findings in relation to theory and empirical literature. First, the chapter provides the descriptive statistics of the study variables; ratio of external concessional debt to GDP, ratio of external commercial debt to GDP, ratio of domestic debt to GDP and the real GDP growth rate. The chapter also provides the diagnostics tests conducted that include test of multicollinearity, heteroscedasticity, serial correlation and normality of residuals. Further, the results of the Hausmann test are provided. The chapter also presents the fitted model and a discussion of the study findings.

4.2 Descriptive Statistics

This section provides the panel data descriptive statistics which were generated from the data collected for the three countries; Kenya (country 1), Uganda (country 2) and Tanzania (Country 3). The data was collected for 57 years (1963 – 2019) and included data for Real GDP growth rate, Concessional debt as a proportion of GDP, Commercial debt as a proportion to GDP and Domestic debt as a proportion of GDP. The descriptive statistics (Table 2) are provided which include the means, standard deviations, maxima and minima.

The results in Table 2 show that Real GDP Growth rate (GDPg) averaged 4.925% for the 57 years for the three countries. The standard deviation was high (Std deviation = 3.662) indicating that there was a high dispersion from the mean for the GDP growth rate. This is indicated by the range of the GDP growth rate that was from minimum (-9.523%) to maximum (22.17%).

TABLE 2
Descriptive Statistics

Variable		Mean	Std. Dev.	Min	Max	Observations	
GDPg	overall	4.925229	3.661756	-9.523244	22.17389	N =	171
	between		.1000158	4.830443	5.029761	n =	3
	within		3.66084	-9.428458	22.18364	T =	57
Con	overall	22.41802	13.68545	4.67484	79.30172	N =	171
	between		3.253505	19.17564	25.68254	n =	3
	within		13.42361	3.058057	76.0372	T =	57
Comm	overall	2.024778	2.353159	.0486	10.85147	N =	171
	between		.1266647	1.879058	2.108513	n =	3
	within		2.350872	-.026315	10.99718	T =	57
Dom	overall	14.09731	9.442805	2.5	48.58	N =	171
	between		5.043443	8.435088	18.10772	n =	3
	within		8.491717	-.7204094	44.56959	T =	57

The study results in Table 2 also show that the ratio of concessional debt to GDP (Con) averaged 22.42% for the three countries over the 57 years. The standard deviation was high (Std deviation = 13.69%). This was supported by the findings on the range (4.675% - 79.30%) which showed that there was high disparity amongst the levels of concessional debt to GDP amongst the three countries over the 57 years. On commercial debt (Comm), the study results show that the average commercial external debt to GDP ratio was 2.025% in the 57 years for the three countries. The standard deviation was high (std deviation = 2.353) indicating that there was a high dispersion of commercial external debt in the study period for the three countries. This is supported by the high range (0.0486 – 10.85) of the ratio of commercial external debt to GDP. Further, the results on domestic public debt indicate that the average domestic debt to GDP ratio was 14.1% with a standard deviation of 9.443. This indicates a higher dispersion over the study period for the three countries.

4.3 Study Variables

This section provides the exploratory analysis of the study variables through trend analysis. All the trends are overlain to give a view of the comparable trends of the three countries over the study period (1963 – 2019). The variables presented are concessional debt as a ratio of GDP, Commercial debt as a ratio of GDP, Domestic debt as a ratio of GDP and the real GDP growth rate.

4.3.1 Concessional Debt as a Ratio of GDP

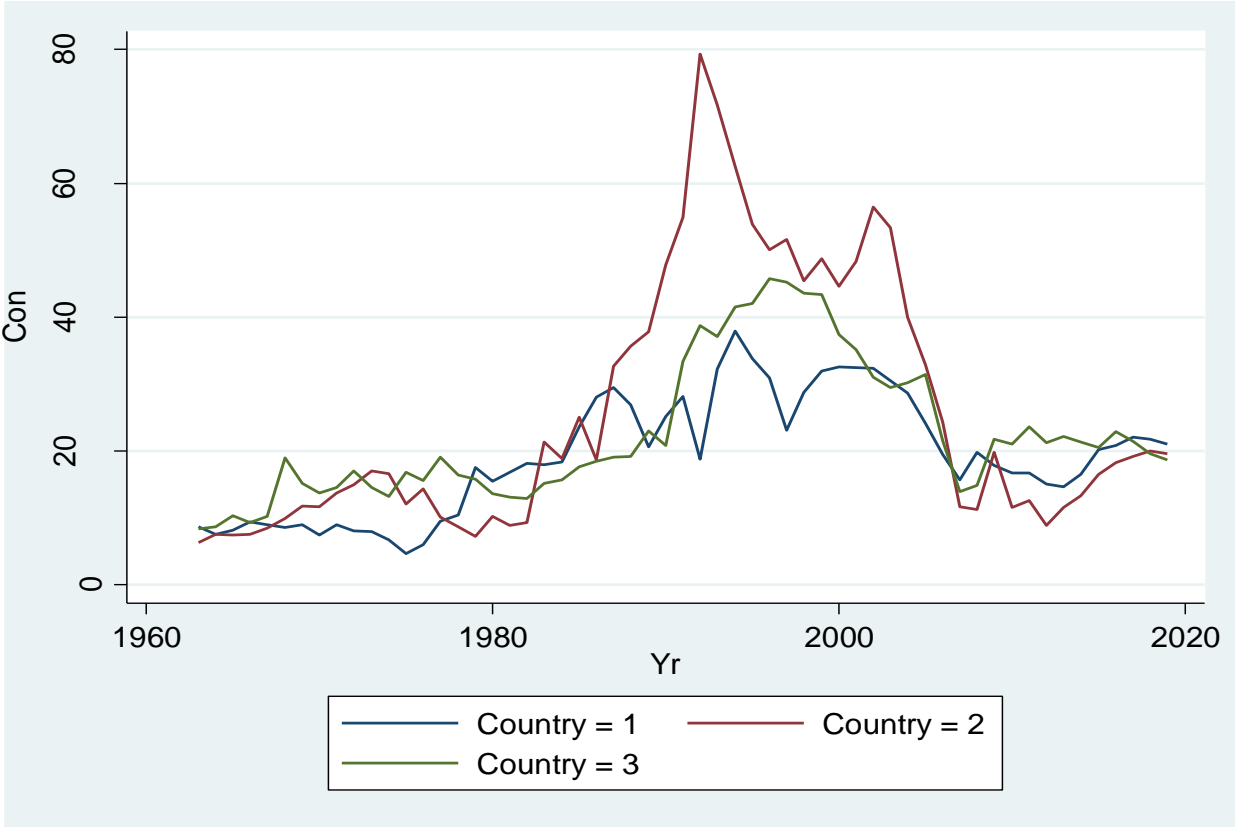
The study developed the overlain plots for concessional debt as a ratio of GDP as provided in Figure 8. The trends show that for Kenya (Country 1), concessional debt as a ratio of GDP has a slow rise from 1963 to 1978 ranging from around 8.6% to around 10.46%. However from 1975, it rose sharply to a high of 37.9% in 1994. From that high, it reduced sharply to around 15.71% in 2008. Further, it has risen steadily to the figure recorded in 2019 of 21.06%.

The concessional debt to GDP ratio for Uganda (country 2) has witnessed the most changes amongst the three east African countries. Recording a ratio of concessional debt to GDP of 6.322% in 1963, the country recorded a relatively stable level but with a steep rise up to 1986 where a level of 18.64% was recorded. However, from that year, the level of concessional debt to GDP ratio rose sharply to a high of 79.3% recorded in 1986. This level was however reduced drastically to a low of 8.927% recorded in 2012. The level has remained generally stable with a slow rise to the level of 19.6% recorded in 2019.

The trend of concessional debt to GDP ratio for Tanzania mirrors that of Kenya. Starting at 8.344% in 1963, the value rose steadily to 20.79% recorded in 1990. However, from that year, the level rose sharply to a high of 45.7% recorded in 1996. From this year, the level was sharply

reduced to 13.94% in 2007. The level has recorded slight changes over the years up to 2019 where the ratio of concessional debt to GDP was recorded at 18.68%.

FIGURE 8
Plots for Concessional Debt as a Ratio of GDP

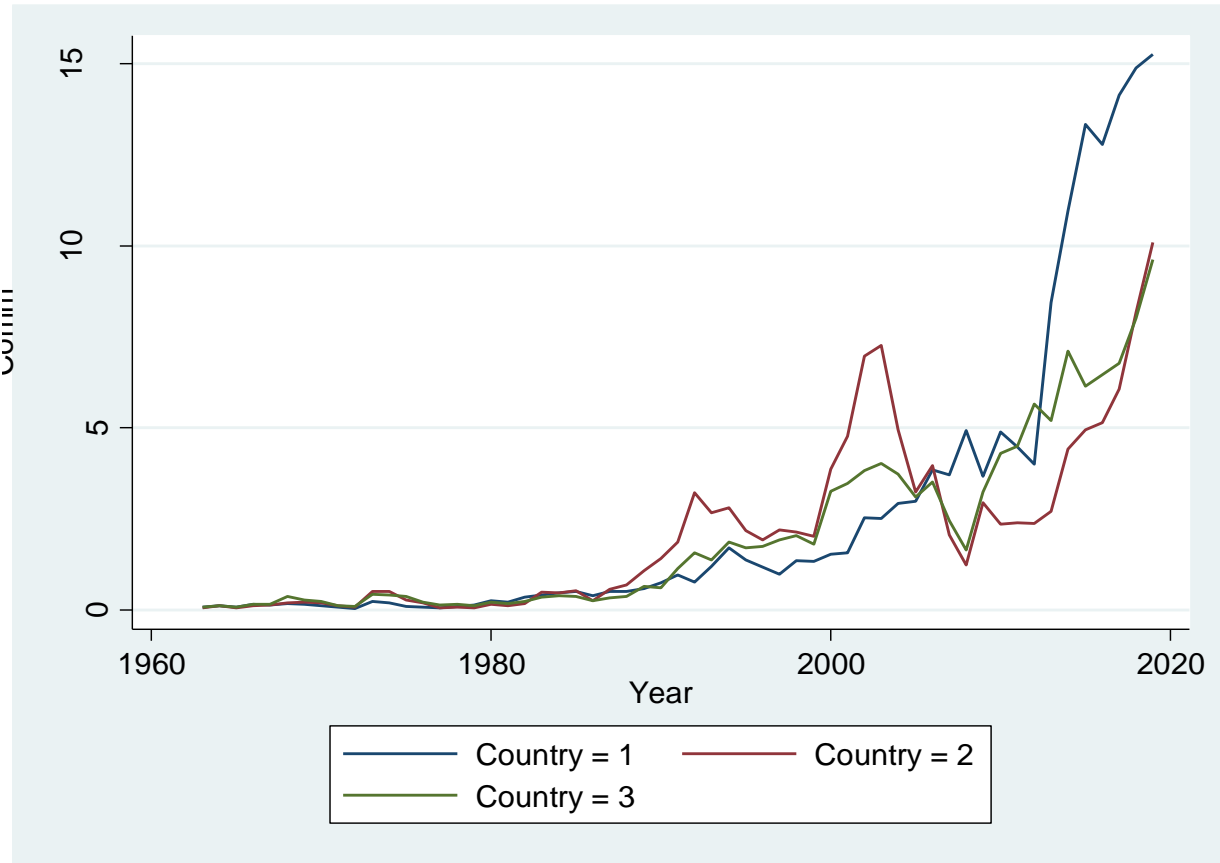


4.3.2 Commercial External Debt as a Ratio of GDP

The study developed the overlain plots for the ratio of commercial external debt to GDP. The plots are provided in Figure 9. The trends show that for Kenya (Country 1), commercial debt as a ratio of GDP remained below 2% until 2001 when a figure of 1.573% was recorded. In 2002 the level rose to 2.537% and then rose steadily to 4.9% recorded in 2010. However, since then, the level rose sharply to 15.24% in 2019. In 2019, Kenya had the highest commercial debt to GDP ratio compared to the other two east African countries.

The commercial debt to GDP ratio for Uganda (country 2) remained below 1% from 1963 to 1988 where a level of 0.69% was recorded. However, a steady rise was recorded from 1988 to 2003 where a level of 7.27% was recorded. This was then steadily reduced to 2.37% in 2012 but then increased to the level of 10.1% recorded in 2019. In Tanzania, the trend of commercial debt to GDP ratio remained below 1% from 1963 to 1990. From that year, the level has steadily risen to the level recorded in 2019 of 9.622%. Amongst the three east Africa countries, Tanzania has the least commercial debt to GDP ratio.

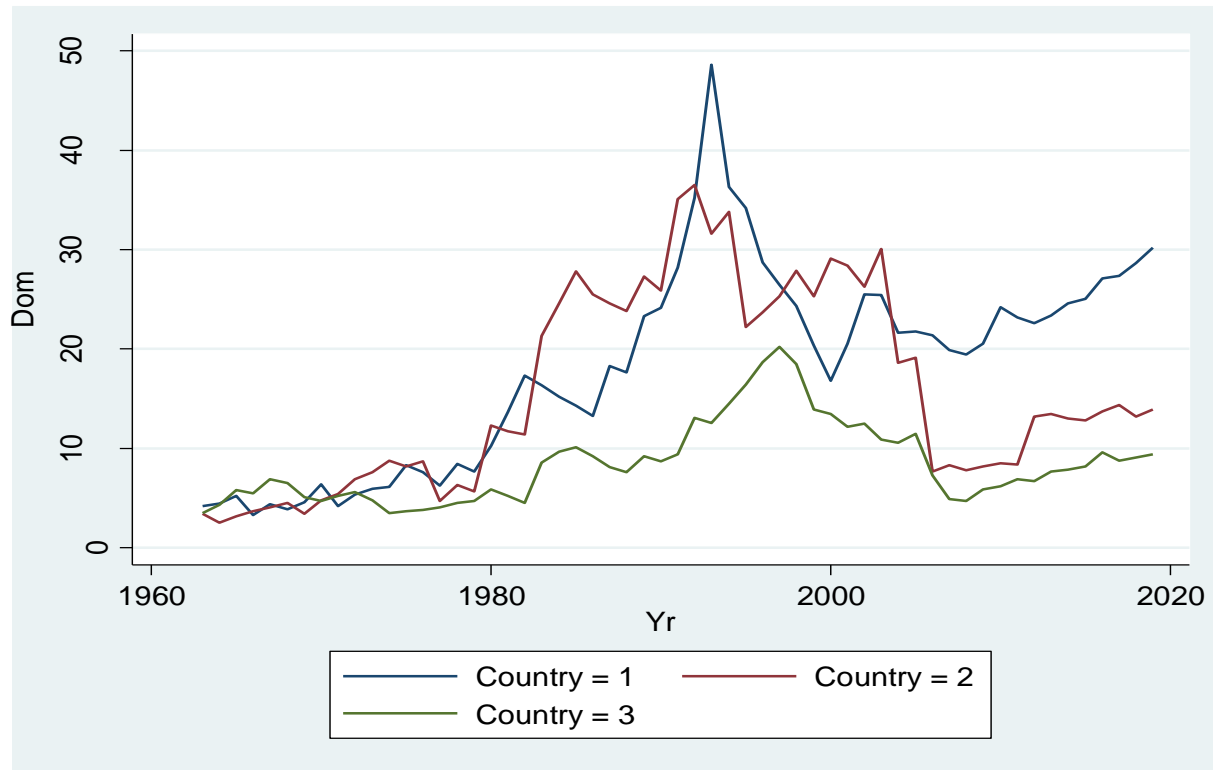
FIGURE 9
Plots for Commercial Debt as a Ratio of GDP



4.3.3 Domestic Public Debt as a Ratio of GDP

The overlain plots for domestic public debt as a ratio of GDP were developed and are as provided in Figure 10.

FIGURE 10
Plots for Domestic Public Debt as a Ratio of GDP



The trend for Kenya indicates that domestic debt to GDP ratio was 4.21% in 1963 and had a steady year on year marginal rise to 7.68 recorded in 1979. However between 1980 and 1989, the figure more than doubled from 10.24% to 23.29%. The level then rose to a high of 48.58% recorded in 1993. This was then significantly reduced to 19.45% by 2008, but had increased steadily over the succeeding years to the level of 30.22% recorded in 2019. By 2019, Kenya had the highest ratio of domestic debt to GDP compared to the other two east African countries included in the study.

For Uganda, ratio of domestic debt to GDP was 3.4% in 1963 and steadily rose to 8.8% in 1974 but later reduced marginally to 5.9% in 1979. However, the level rose sharply in 1980 to 12.3% and over the years increased to a high of 36.5% recorded in 1992. The levels has experienced several up and down movements over the years to settle at 13.9% recorded in 2019.

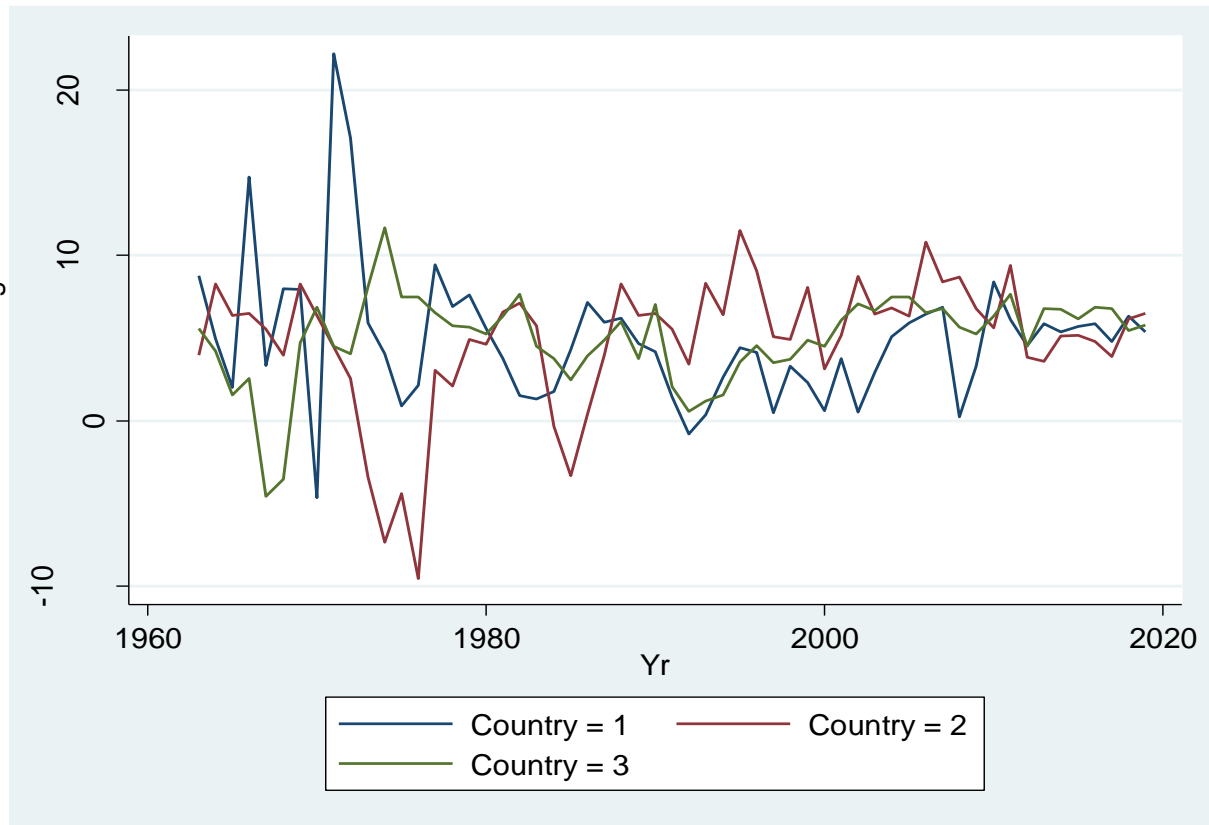
For Tanzania, the trend of the ratio of domestic debt to GDP has on average been lower than that of the other two east African neighbours. Recording a level of 3.5% in 1963, the level rose gradually to 13.1% in 1992 and then to a high of 20.2% in 1997. The level was however steadied and reduced gradually to the level of 9.4% recorded in 2019.

4.3.4 Real GDP Growth Rate for Three East African Countries

Real GDP growth trends for the three east African countries have experienced various shocks over the years as indicated by the trends in Figure 11. For Kenya, the highest GDP growth rate recorded over the entire study period was in 1971 when a rate of 22.17% was recorded. The lowest ever was recorded in the years before (1970) where the growth rate was -4.655%. In 2019, the country recorded a real GDP growth rate of 5.366%. In Uganda, the highest GDP growth rate recorded over the entire study period was 11.52% recorded in 1995. Its lowest GDP growth rate for the study period was in 1976 where the growth rate was -9.523%. In 2019, the country recorded a real GDP growth rate of 6.507%. For Tanzania, the lowest real GDP growth rate for the entire period was -4.544% recorded in 1967 while the highest was 11.67% recorded in 1974. The real GDP growth rate for 2019 was 5.791%.

FIGURE 11

Real GDP Growth Rate for Three East African Countries



4.4 Diagnostic Tests

Fitting the model through regression analysis is based on various assumptions and hence it is essential to ensure that the data to be used in the model satisfies those assumptions. This section provides the various regression assumptions and how they were tested in the study. According to Linton (2017), regression diagnostics enables an evaluation of the model assumptions and determine whether the data contains observations that could have an adverse effect on the model. The study conducted tests on multicollinearity, heteroscedasticity, serial correlation and normality of residuals.

4.4.1 Multicollinearity Test

Multicollinearity exists when there is a high association between any two independent variables. Multicollinearity can influence the stability of the model since it can cause coefficient estimates to fluctuate wildly by inclusion of such independent variables, and thus making the coefficients of the model to be very sensitive to slight model changes. Besides, multicollinearity could reduce the efficiency of the model coefficients, which could weaken the hypothesis testing capacity and statistical power of the model. Moreover, the p-values of the various independent variables may not be reliable (Wooldridge, 2015). In the current study, multicollinearity was assessed using VIFs. The findings are presented in Table 3.

TABLE 3
Multicollinearity Test

Variable	VIF	1/VIF
Dom	1.90	0.525692
Con	1.87	0.535448
Comm	1.13	0.883365
Mean VIF	1.63	

The study results in Table 3 show that all the independent variables had VIFs that were below 2. The ratio of domestic debt to GDP (Dom) had the highest VIF with 1.9 while the ratio of commercial debt to GDP (Comm) had the lowest VIF at 1.13. The mean VIF was 1.63. According to Gujarati (2011), VIFs of below 5 indicate that there is no multicollinearity amongst any two independent variables.

4.4.2 Test of Heteroscedasticity

After fitting the model using ratio of commercial external debt to GDP, ratio of concessional external debt to GDP and ratio of domestic debt to GDP as independent variables, and real GDP growth rate as dependent variable, the study assessed the scatter of the variance of the residuals. Heteroscedasticity is when the errors have unequal scatter while its opposite is homoscedasticity; which indicates equal variance of the errors. While Hilmer and Hilmer (2013) indicate that heteroscedasticity does not cause the regression estimates to be biased, it reduces their precision and efficiency and thus increasing the confidence intervals. Besides, heteroscedasticity causes inflation of the p-values and thus making hypothesis testing unreliable using the coefficient estimates. Heteroscedasticity in this study was conducted using white's test for Homoscedasticity. The findings are presented in Table 4.

TABLE 4

White's Test for Heteroscedasticity

```
White's test for Ho: homoskedasticity
      against Ha: unrestricted heteroskedasticity

      chi2(9)          =      10.75
      Prob > chi2     =      0.2935

Cameron & Trivedi's decomposition of IM-test
```

Source	chi2	df	p
Heteroskedasticity	10.75	9	0.2935
Skewness	0.39	3	0.9418
Kurtosis	4.15	1	0.0417
Total	15.29	13	0.2898

The results in Table 4 show that the null hypothesis of homoscedasticity could not be rejected (p = 0.2898). This indicates that the variance of the residuals had a constant variance.

According to Linton (2019), this is an indication that the p-values are reliable and the model is suitable for testing the study hypotheses.

4.4.3 Test of Autocorrelation

Since the data used in the study was panel, serial correlation test was conducted to assess whether error terms of successive time periods were related. Wooldridge (2015) observes that autocorrelation has various consequences for a regression model that include inefficiency of the estimators, making variances of the estimated coefficients to be inconsistent and biased and therefore, any hypothesis testing based on such a regression model is invalid. To assess autocorrelation in the study, Wooldridge test was applied. The null hypothesis in the test is that there is no first order autocorrelation. The results are presented in Table 5.

TABLE 5
Test for Autocorrelation

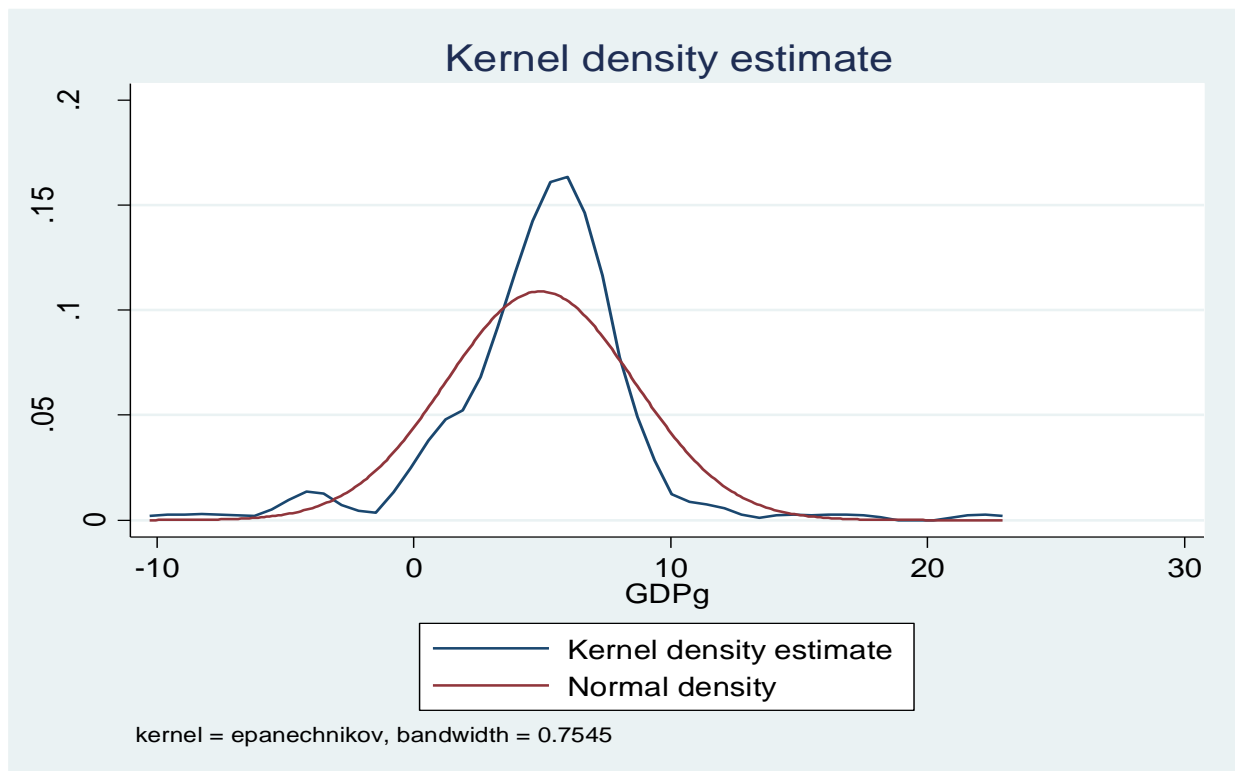
```
Wooldridge test for autocorrelation in panel data
H0: no first order autocorrelation
      F( 1,          2) =          7.004
      Prob > F =          0.1180
```

The results presented in Table 5 show that the p value was not significant ($p = 0.1180$). This indicates that there was no evidence to reject the null hypothesis. The implication of the findings are that there was no autocorrelation in the errors of the regression model. Gujarati (2011) indicates that when there is no evidence of autocorrelation, this is an indication that the variances of the estimated coefficients are consistent and unbiased and therefore, any hypothesis testing based on such a regression model is valid.

4.4.4 Test of Normality of Errors

Normality of residuals is essential to enable the study to make valid inferences from the model. Though violation of the normality assumption does not contribute towards inefficiency or bias of the regression estimates, normality of residuals is vital for the computation of the p values for test of significance (Hilmer & Hilmer, 2013). In the current study, testing of normality of the errors applied the kernel density estimate. The results are presented in Figure 12.

FIGURE 12
Test of Normality of Residuals



The study results presented in Figure 12 indicate that compared to the normal density, the kernel density estimate of the residuals was not perfectly normally distributed. However, apart from the high peakedness, the estimate did not deviate much from normal density. This was hence interpreted to indicate that the residuals from the regression were normally distributed. Wooldridge

(2015) indicates that when the residuals are normally distributed, the p values computed are reliable and accurate.

4.4.6 Hausman Test

A Hausman test was conducted to assess which of the two models between random effects model or fixed model. Linton (2017) observes that the Hausman model specification test assist in selecting the model that is best suited for the panel data. The null hypothesis in the test is that the appropriate model is random effects. Specifically, the test assesses the relationship between the independent variables and the unique errors. The null hypothesis indicates that there no relationship between the independent variables and the unique errors. The results of the Hausman test are presented in Table 6.

TABLE 6
Hausman Test Results

hausman fixed random				
	—— Coefficients ——			
	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
Con	.1061717	.0517097	.054462	.0174176
Comm	.3746884	.3143455	.0603429	.
Dom	-.2413434	-.1357446	-.1055987	.0343434

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(3) = (b-B)' [(V_b-V_B)^(-1)] (b-B)
= 9.41
Prob>chi2 = 0.0243
(V_b-V_B is not positive definite)

The results in Table 6 show that the null hypothesis was rejected (p = 0.0243) and hence

this indicates that the fixed effects model is the one suitable for the study. This implies that there is a relationship between relationship between the independent variables and the unique errors and therefore, the fixed effects model is the appropriate one.

4.5 Dynamic Panel Data Model Fitting

The DPD model was determined to be appropriate for the study. According to Angrist and Pischke (2014), linear dynamic panel data models incorporate lag dependent variables as covariates, as well as fixed or random unobserved effects and exogenous regressors. Wooldridge (2015) notes that because of the existence of lagged dependent variables, a partial adjustment process may be modelled. The DPD model fitted in this study is presented in Table 7.

The study findings presented in Table 7 establish that the model was statistically significant and a good fit (wald chi square = 57.55; $p < 0.05$). These findings indicate that at least one of the independent variables (lag of GDP growth, concessional external debt, commercial external debt and domestic public debt) had a significant influence on economic growth. Besides, the findings indicate that the first lag of GDP growth rate had a significant influence on GDP growth rate ($\beta = 0.3577$, $z = 4.66$, $p < 0.05$). However, the second lag of GDP growth rate did not have a significant influence on GDP growth rate.

The findings in Table 7 indicate that concessional debt had a significant positive effect on economic growth ($\beta = 0.0909$, $z = 3.04$, $p < 0.05$). These findings suggest that concessional debt was important for economic growth for the three East African countries. Additionally, the results imply that a 1% increase in the ratio of concessional debt to GDP would result to an increase economic growth rate by 0.0908%. These findings led to rejection of the first null hypothesis of the study which was;

H₀1: External concessional public debt has no significant effect on economic growth of three east Africa countries. The alternate hypothesis was therefore accepted.

TABLE 7

Fitted Arellano-Bond DPD Model of Public Debt on Economic Growth

Arellano-Bond dynamic panel-data estimation		Number of obs	=	162		
Group variable: Country		Number of groups	=	3		
Time variable: Year		Obs per group:				
				min	=	54
				avg	=	54
				max	=	54
Number of instruments = 163		Wald chi2(5)	=	57.55		
		Prob > chi2	=	0.0000		
One-step results						
	GDPg	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
	GDPg					
	L1.	.3577111	.0767	4.66	0.000	.2073818 .5080403
	L2.	.0244102	.0756513	0.32	0.747	-.1238636 .1726841
	Dom	-.1895916	.0518519	-3.66	0.000	-.2912195 -.0879637
	Con	.0908532	.0299009	3.04	0.002	.0322486 .1494578
	Comm	.2432501	.0918965	2.65	0.008	.0631362 .423364
	_cons	3.129226	.6841459	4.57	0.000	1.788325 4.470127
Instruments for differenced equation						
GMM-type: L(2/.)GDPg						
Standard: D.Dom D.Con D.Comm						
Instruments for level equation						
Standard: _cons						

The findings presented in Table 7 further established that commercial external debt had a significant positive effect on economic growth ($\beta = 0.2433$, $z = 2.65$, $p < 0.05$). These findings imply that increase in external commercial debt was important in stimulating economic growth in the three East African Counties. The findings further showed that a 1% increase in the ratio of

commercial external debt to GDP would result to an increase of 0.2433% in economic growth. These study findings led to rejection of the second study hypothesis which was;

H₀₂: External commercial public debt has no significant effect on economic growth of three east Africa countries. The alternate was hence accepted.

Regarding effect of domestic debt, the study findings presented in Table 7 show that domestic borrowing had a significant negative effect on economic growth ($\beta = -0.1896$, $z = -3.66$, $p < 0.05$). These findings imply that increase in domestic debt was detrimental to economic growth. The findings further show that a 1% increase in the ratio of domestic debt to GDP would result to a reduction in GDP growth rate by 0.1896%. The study results led to rejection of the third hypothesis of the study which was;

H₀₃: Domestic debt has no significant effect on economic growth of three east Africa countries. The rejection of the null hypothesis meant that the alternate hypothesis was accepted.

The study findings led to the following fitted model

$$Y_{it} = L1Y_{it} + 0.0909X_{1it} + 0.2433X_{2it} - 0.1896X_{3it} \dots\dots\dots (ii)$$

Where,

L1Y = One year lag of economic growth

Y = Economic growth

X₁ = External concessional debt

X₂ = External commercial debt

X₃ = Domestic public debt

4.6 Discussion of Findings

4.6.1 Effect of concessional public debt on economic growth in east Africa

H₀₁: External concessional public debt has no significant effect on economic growth of three East Africa countries.

The study findings led to the rejection of the alternate hypothesis and acceptance of the alternate hypothesis. The study findings established a significant positive effect of external concessional debt on economic growth of the three East African Countries. The implication of these findings is that external concessional debt was important for economic growth for the three East African countries. These findings support the main propositions of the Keynesian theory that was developed by Keynes (1936), that there is no real burden associated with public debt and government involvement in economic activities. Since the study established that external concessional debt positively affects economic growth that gives credence to this theory as it hypothesizes that government's intervention in the economy is vital to correct market imperfections and also supplement market actions. Further, Keynesian model proposes that public borrowing is not damaging to the economy as indicated by classical economists but it contributes to the smooth functioning of the economy by reducing imbalances. This proposition is also supported by the study findings of positive and significant effect of concessional debt on economic growth. The theory proposes that if well managed, public debt will spur economic growth because public debt is expected to involve the government in value adding activities and thus adding to national wealth and the growth of the country as a whole. The findings from this study hence supports this theory and it is implied that the three East African countries were able to manage the received external concessional debt effectively to spur economic growth.

Apart from receiving concessional loans to engage in economic activities, the Keynesian theory also hypothesizes that when government is involved in economic activities, it avoids negative externalities and hence positively contributes to economic growth and development. The study findings of the positive effect of external concessional debt on economic growth supports this proposition as it implies that the three East African countries could have borrowed to successfully counter disturbing social and economic phenomena and thereby, promoting economic growth. Besides as indicated by Liu and Lee (2018), while supporting the theory, government borrowing in the economy is critical to reduce unemployment, support recovery during recession and accelerate growth. This proposition of this theory was also supported by the findings of this study as concessional public debt has a significant effect on economic growth of the three East African countries.

The study findings of a significant positive effect of external concessional debt on economic growth of the three East African Countries support some of the previous study findings. Specifically, the study partially agrees with the findings from a study by Casares (2015) that assessed the influence of concessional public debt on economic growth. This research indicated that concessional external debt can have a non-linear impact on a county's economic growth. When the indebtedness is high, an increase in the proportion of external debt to GDP hurts the economy. However, when the indebtedness is low, the increase in proportion promotes economic growth. The findings in this study implies that the concessional debt to GDP ratio for the three East African countries was not high enough to have a negative effect of economic growth. The study findings are supported by Kobey (2016) who examined the impact of public debt on the economic growth in Kenya. From the study, proportion of external concessional debt had a significant influence on the economic growth within the country.

Besides, the study findings of the positive effect of external concessional debt on economic growth agrees with the findings by Ngugi (2016) who sought to investigate the impact of public debt on the Kenyan economic growth pattern. Using annual data for thirty years, the study results indicated that external concessional debt had a positive impact on the economic growth. These findings were also supported by Matiti (2013) who affirmed that public debt is a major macroeconomic indicator which forms a country's image in international markets and boosts economic growth. Matiti's study established external concessional debt as an inward foreign direct investment flow determinant that was invested in strategic sectors that boosted economic growth. Besides, the findings by Matiti (2013) are supported by the findings from the current study that external concessional debt aids in stability and GDP growth through resource mobilization in situations where there is limited financial risks and low borrowing costs.

The study findings, however, contradict some previous findings. For instance, the study results contradict the findings by Were (2001) which indicated that external concessional debt had a negative impact on the Kenyan economic growth. The contradictory findings could be due to the differences in the study contexts and the time periods considered in the two studies. Additionally, the findings also disagree with the findings by Ejigayehu and Persson (2013) who examined whether external debts influence economic growth of heavily indebted poor African states through debt crowding out and overhang effect. The study findings established that external debt negatively influence the economic growth through debt crowding which relates to debt servicing. A study with similar findings by Atique and Malik (2012) investigated the influence of external bilateral and multilateral debts on Pakistan's GDP growth. The findings of the study showed that the relationship between external debt and economic growth was inverse. These findings disagree with the findings from this study which established a positive effect. The study by Atique and

Malik (2012) determined that the level of external multilateral and bilateral debt slows down economic growth due to burden of debt servicing and investment of the borrowed funds in low productivity or non-productive sectors.

The findings from this study also contradict the findings from a research by Senadza, Fiagbe, and Quartey (2017) who investigated the impact of external debt on the economic growth of Sub-Saharan African countries. Incorporating 39 countries in the study, the study findings established that external debt has a negative impact on the economic growth of SSA states. These findings are also supported by another study by Fiagbe (2015) which determined that external debt reduces long-term investments and negatively affects economic growth. Besides, the findings are echoed in a study by Shah and Pervin (2012) which established that as sub-Saharan countries increase their debt burden, strain is transferred to the economy which results to decline. The level of external debt has an inverse relationship with economic growth and it determines the trends in economic growth or decline. This is contrary to the findings in this study.

The findings from the current study of a positive effect of concessional external debt on economic growth in the three East African countries contradict the findings by Kharusi and Ada (2018) who examined the relationship between external debt and economic growth in Oman. The findings determined a negative and significant association between government external borrowing and economic growth. Besides, these findings were collaborated by the findings from a study by Shkolnyk and Koilo (2018) who investigated the relationship between external debt and economic growth in Ukraine. The study by Shkolnyk and Koilo established that there is a negative impact of high levels of external debt on the economic wellbeing. The contradictory findings could be explained in the differences in context between the current study and these two studies conducted in Oman and Ukraine.

4.6.2 Effect of external commercial public debt on economic growth of three east Africa countries

H₀₂: External commercial public debt has no significant effect on economic growth of three east Africa countries.

The study findings led to rejection of this hypothesis and acceptance of the alternate hypothesis. The study findings established that commercial external debt has a significant positive effect on economic growth of the East Africa countries. These findings imply that increase in external commercial debt is important in stimulating economic growth in the three East African Countries. These findings support the debt overhang theory by Krugman (1988) which hypothesizes that at a certain level of debt to GDP, external debt has a positive effect on GDP but beyond this level, external debt repayment ability of the country falls below the contractual value of public debt which leads to burdening of the country. This makes the debt to have adverse effects on the economy. This view was also held by Cohen's (1993) theoretical model which established a non-linear effect of public borrowing on economic growth and investment. Therefore, up to a certain level, accumulation of public debt could promote investment and economic growth. However, beyond that level, accumulation of more debt will have negative effects on investments and economic growth due to debt overhang. The findings from this study indicated that none of the three East African countries have attained the level of public debt to GDP that would be harmful to the economy.

The study findings of the positive effect of commercial external debt, however, contradicts the results of various previous studies. For instance, the findings contradict the results by Kamundia (2016) who determined that commercial external debt has higher interest rates which

increases the level of indebtedness for emerging economies. Kamundia indicated that the primary debt burden for developing and under-developed states lies on commercial debts that are incurred at high annual interest charges. The high demands of commercial external borrowing increase the interest rates thus negatively affecting economic growth. Besides, the findings by Kamundia were supported by Matiti (2013) who indicated that small economies engage in increased commercial borrowing after they exhaust concessional finance. The high interest rates on commercial external debt enhances the cost of financing projects and private investments thus limiting economic growth. This was contrary to the effect of external commercial debt that was established in the current study.

The current study findings of positive effect of commercial external debt on economic growth also contradict the findings by Casares (2015) which established that commercial public debt was expensive and had significant negative economic impact due to reduced return on investments. The current study findings also contradict the findings by Ncanywa and Masoga (2018) who investigated the role of public debt in stimulating public investment and economic development in South Africa. Ncanywa and Masoga indicated that levels of commercial external debt had an adverse effect on GDP growth. Ncanywa and Masoga established that by having high levels of commercial external debt, this calls for high costs of debt servicing which forces government to impose higher taxations. The outcome of this is reduced finances for investment and sluggish economic growth. This was contrary to the findings in the current study that established that commercial external debt had a positive effect on economic growth.

The current study findings that commercial external debt has a positive effect on economic growth agree with the findings by Muinga (2014) who examined the relationship between external debt and economic growth in Kenya. The findings by Muinga showed that the levels of external

debt had a positive impact on economic growth in Kenya. The findings by Muinga were supported by Moki (2012) whom posited that long-term external commercial debt have no significant impact on crowding out effect of investments, thus not affecting economic growth adversely.

Moreover, the findings of the study also support the findings by Kamundia, Gitahi, and Mwilaria (2015) who investigated the impact of commercial public debt on private investments in Kenya. According to Kamundia and colleagues, the level of commercial public debt led to increased investments in neglected sectors which enhanced the overall economic growth in the country. Besides, the findings agree with the results by King'wara (2014) who investigated the relationship between commercial public debt and private investments in Kenya. The research involved four independent variables including public external debt, GDP growth rate and public investment. The findings of this study showed that external commercial borrowing is beneficial to the economy if it is invested in productive sectors and assets that bring returns that are higher than the interest on the debt. This relates to the findings in this study which established a positive significant effect of external commercial borrowing on economic growth.

4.6.3 Effect of Domestic debt on economic growth of three east Africa countries

H₀₃: Domestic debt has no significant effect on economic growth of three east Africa countries. The findings from the study led to the rejection of the null hypothesis and hence acceptance of the alternate hypothesis. The study findings determined that domestic borrowing had a significant negative effect on economic growth. The implications of these findings are that increase in domestic debt was detrimental to economic growth. These findings support the crowding out theory by Bacon and Eltis (1976) whose proposition is that increased government involvement in the financial and market economy adversely affects the remainder of the market. The theory when

applied to domestic borrowing hypothesizes that increased government domestic debt leads to a shortage of funds for the private sector leading to rise of interest rates and thus negatively affecting private investments. This theory was supported by the empirical findings in this study which indicates that when governments increase their domestic borrowing, this decreases economic growth. Despite hypothesizing that domestic borrowing has negative effects on economic growth, their theory indicates that increase in government borrowing creates competition for scarce funds between private sector and the public sector. This in turn leads to a rise in interest rates, reduced access of funds by the private sector and hence reduced private consumption and investment. This results to a decrease in economic growth. This relates to the current study since government borrowing in the three East African countries was negatively associated with economic growth.

The findings of the negative effect of domestic borrowing on economic growth relate to findings from previous studies. For instance, the findings support the findings by Njoroge (2015) who investigated the relationship between government domestic borrowing and economic growth in Kenya. Using quarterly data for ten years, the study established that the relationship between GDP growth and domestic debt is negative. Besides, the findings support the results by Matiti (2013) that domestic government borrowing have a negative impact on GDP growth due to crowding out funds that could have been allocated to private investments.

The findings of the negative effect of domestic debt on the economic growth of the three east African countries also supports the findings by Ebi, Abu, and Clement (2013) who examined the potency of domestic and foreign debts on performance of Nigerian economy. Using time series data for forty years, the study determined that domestic debts have an adverse effect on the country's ability to grow economically. The current study findings also agree with the findings by supported by Abbas and Christensen (2010), Lotto and Mmari (2018). Lotto and Mmari in a study

in Tanzania established that there is a consistent improper utilization of domestic borrowed funds which include paying principals, funding budgetary deficits, and financing mature debts which results to negative impact on economic growth. These findings are supported by the findings from this study. The current study findings also support the findings by Charles (2012) who investigated the association between domestic debt and economic growth in Nigeria. The Charles affirmed that high levels of domestic borrowing in the country led to declining GDP growth.

The current study established that domestic debt has a negative effect on economic growth. These findings agree with the findings by Mbate (2013) who examined the effect of domestic debt on economic growth twenty-one Sub-Saharan countries using time series data for twenty-five years. Mbate determined that domestic debts result to crowding out the private sector. The study findings also agree with the findings by Matiti (2013) who established negative economic impact associated with domestic debts. Besides, the findings from the study support the findings by Babu, Kiprop, Kalio, and Gisore (2015) who explored the impact of domestic debt on the economic growth of East African Community by using time series data for twenty years. The findings of the study by Babu and colleagues determined that domestic debt have an inverse effect on per capita GDP growth within the region.

The findings of the negative effect of domestic borrowing on economic growth, however, disagree with the findings by Putunoi and Mutuku (2013) who examined the relationship between the two variables in Kenya. Putunoi and Mutuku established that domestic borrowing had a positive impact on the Kenyan economic growth. According to Putunoi and Mutuku, the expansion of domestic debts over the period of study resulted to increased economic development. The difference in findings from the two studies may be due to inclusion of Uganda and Tanzania in the current study, and the difference in time periods in the two studies. The findings from the current

study also contradict the findings by Akram (2013) which indicated that domestic debts have a positive impact on economic growth.

The summary of the hypotheses test is provided in Table 8.

TABLE 8 Summary of Hypotheses Testing Based on the Significance of Results

	Hypothesis	Sign	Significance	Decision
H ₀₁	External concessional public debt has no significant effect on economic growth of three east Africa countries	+	Significant	H ₀ Rejected
H ₀₂	External commercial public debt has no significant effect on economic growth of three east Africa countries	+	Significant	H ₀ Rejected
H ₀₃	Domestic debt has no significant effect on economic growth of three east Africa countries	-	Significant	H ₀ Rejected

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The summary of the research findings, study conclusions and the recommendations made in the study are presented in this chapter. The summary of the research findings are provided based on the study objectives which sought to assess the effect of concessional foreign debt, commercial foreign debt and domestic debt on economic growth of their East African countries. The conclusions are derived from the findings while the recommendations are made for public debt policy and practice improvement.

5.2 Summary

This section provides study results regarding the three-study hypotheses. These three hypotheses were; External concessional public debt has no significant effect on economic growth of three east Africa countries, external commercial public debt has no significant effect on economic growth of three east Africa countries and domestic debt has no significant effect on economic growth of three east Africa countries.

5.2.1 Effect of External Concessional Public Debt on Economic Growth

The study findings established that concessional debt had a significant positive effect on economic growth. These findings suggest that concessional debt was important for economic growth for the three East African countries. Besides, the results implied that an increase in the ratio of concessional debt to GDP would result to an increase economic growth rate. These findings provide credence to the Keynesian theory which indicates that there is no real burden associated

with public debt and government involvement in economic activities. The findings also show that government involvement in the economy through injection of external concessional debt, provides the required government intervention in the economy to correct market imperfections and also supplement market actions.

The study findings of the positive effect of concessional external debt on economic growth indicate that if the borrowed funds are well managed, they will spur economic growth. This is because public debt is expected to involve the government in value adding activities and thus adding to national wealth and the growth of the country as a whole. Besides, the findings imply that when the three East Africa governments are involved in economic activities financed by concessional external debts, they avoid negative externalities and hence positively contributes to economic growth and development.

5.2.2 Effect of External Commercial Public Debt on Economic Growth

The findings established that external commercial debt had a significant positive effect on economic growth. These findings imply that increase in external commercial debt was important in stimulating economic growth in the three East African countries. The findings further showed that an increase in the ratio of commercial external debt to GDP would result to an increase in economic growth. These findings are in line with the debt overhang theory which hypothesizes that at a certain level of debt to GDP, external debt has a positive effect on GDP but beyond this level, external debt repayment ability of the country falls below the contractual value of public debt which leads to burdening of the country. This makes the debt to have adverse effects on the economy.

The findings of the positive effect of external commercial debt suggest that that none of the three East African countries have reached the ratio of external commercial debt to GDP that is damaging to the economy. This further, indicates that accumulation of external commercial debt could promote investment and economic growth. However, beyond that level, accumulation of more commercial debt is expected to have negative effects on investments and economic growth due to debt overhang. The indication of the findings, however, is that the external commercial debt by the three East African countries are stimulating economic growth.

5.2.3 Effect of Domestic Debt on Economic Growth

Study findings showed that domestic borrowing had a significant negative effect on economic growth. These findings imply that increase in domestic debt was detrimental to economic growth. The findings further show that an increase in the ratio of domestic debt to GDP would result to a reduction in GDP growth rate. These findings are in line with the crowding out theory whose proposition is that increased government involvement in the financial and market economy adversely affects the remainder of the market. The theory when applied to domestic borrowing hypothesizes that increased government domestic debt leads to a shortage of funds for the private sector leading to rise of interest rates and thus negatively affecting private investments and economic growth

The findings from the study provide evidence that increase in government borrowing in the three east African countries creates competition for scarce funds between private sector and the public sector. The findings hence suggest that crowding out of the private sector has been experienced in the three countries. This in turn could lead to a rise in interest rates, reduced access of funds by the private sector and hence reduced private consumption and investment. This results

to a decrease in economic growth. This relates to the current study since government borrowing in the three East African countries was negatively associated with economic growth.

5.3 Conclusions

The conclusions that were derived from the study findings are presented in this section. These include conclusions regarding the effect of external concessional debt, external commercial debt and domestic debt on the economic growth of the three east African countries of Tanzania, Uganda and Kenya.

5.2.1 Effect of External Concessional Public Debt on Economic Growth

The study concludes that external concessional debt is essential for the economic growth of the East Africa countries of Uganda, Tanzania and Kenya. The study further concludes that the accrued external concessional debt does not act as a burden to the countries' economies but plays a critical role in providing the requisite government intervention in the economy to correct market imperfections and also supplement market actions. Further, the study concludes that the external concessional debt in the three countries is applied in value adding activities which adds to the national wealth, thus promoting economic growth.

5.2.2 Effect of External Commercial Public Debt on Economic Growth

Regarding external commercial debt, the study concludes that this form of debt is critical for economic growth of the three east African countries. Besides, the study concludes that the funds plugged into the economies of the three countries from external commercial sources play a role of stimulating economic growth in the three East African countries. Further, the collusion is made

that the three countries have not attained the level of commercial debt to GDP for debt overhang to kick in and make the commercial debts to have a negative effect on economic growth. This hence shows that the external commercial debts borrowed by these three countries are employed in productive assets and sectors which improve the overall growth of the economies.

5.2.3 Effect of Domestic Debt on Economic Growth

The study concludes that domestic borrowing in the three East African countries is harmful to economic growth of the three countries. Besides, the study concludes that domestic borrowing by the governments in the region, crowds out credit, spending and market involvement of the private sector, thus driving down economic growth. The study also concludes that increased government borrowing in the three east African countries leads to a shortage of funds for the private sector leading to rise of interest rates and thus negatively affecting private investments and economic growth. This is because of the competition created in the domestic market for scarce funds between private sector and the public sector.

5.4 Recommendations

Based on the study conclusions, the study makes the following recommendations. First, the study recommends that the three East African countries should source for more external concessional debt through bilateral or multilateral arrangements to plug into their budget deficits, invest in strategic assets and finance projects in neglected sectors. This is expected to drive economic growth of the different sectors while managing market imperfections. However, effective debt management should be observed to ensure that any external funds are applied prudently.

Regarding external commercial debt, the study recommends that the three east African countries should consider this source of funding but ensure that a balance is struck between the different external financing sources. This will ensure that this source does not take a big portion of external funding since it is more expensive than other sources, such as concessional debt. Besides, while increasing external commercial debts, effective management of this debt should be observed to ensure that debt overhang level is not reached.

Lastly, the study recommends that the level of domestic borrowing in the three East African countries should be reduced. This is because domestic borrowing is harmful to economic growth of the three countries. Besides, the three governments should consider other approaches to financing government spending but should not compete with the private sector in the financial markets for the limited resources.

5.5 Recommendations for Future Research

This study assessed the influence of public debt on economic growth of three East African countries. The study pointed out that external concessional and commercial debt had positive effect on economic growth while domestic debt had negative effect on economic growth. The study focussed on three East African countries with the largest economies. A future study should be conducted and include the entire eastern Africa region that includes Rwanda, Burundi, South Sudan and Ethiopia and establish how debt influence economic growth in the entire region.

Besides, another study should be conducted to determine the factors fuelling the increase in external commercial debt in relation to the other components of public debt. Factors fuelling increase in public debt that should be investigated in future studies should include fiscal discipline, economic growth, inflation, interest rates, exchange rate, and balance of payments among others.

5.6 Limitations of the Study

This study focussed on the influence of public debt on economic growth for the three east African countries of Uganda, Kenya and Tanzania. There are several limitations that emanated from the study due to the context and methodology used. This study focussed on the three countries only and hence generalization of these findings to the entire Eastern African region or other parts of the world should be conducted with caution. Besides, the study focussed on the period from when these three countries attained independence in early 1960s and hence, this long period included in the study might dilute the effect of public debt on economic growth in more current years. Therefore, any use or generalization of the study should be conducted with these limitations in mind.

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APPENDIX: Secondary Data

Country	Year	GDP Growth	Domestic debt: GDP	Concessional debt: GDP	Commercial debt to GDP
Kenya	1963	8.77834022	4.21	8.68116	0.07884
	1964	4.96446729	4.49	7.5254	0.1146
	1965	2.00909417	5.21	8.15593	0.07407
	1966	14.7285664	3.29	9.40731	0.16269
	1967	3.36123203	4.38	8.9544	0.1456
	1968	7.98268997	3.91	8.5848	0.1752
	1969	7.95922446	4.59	8.9362	0.1638
	1970	-4.6554469	6.39	7.41182	0.12818
	1971	22.1738919	4.23	8.97846	0.08154
	1972	17.0824293	5.39	8.0514	0.0486
	1973	5.89658021	5.91	7.92336	0.23664
	1974	4.06561735	6.11	6.7609	0.2091
	1975	0.88220318	8.31	4.67484	0.10516
	1976	2.1539645	7.63	6.05404	0.08596
	1977	9.45379785	6.25	9.55266	0.06734
	1978	6.91249355	8.44	10.4643	0.1057
	1979	7.61522604	7.68	17.56832	0.14168
	1980	5.59197621	10.24	15.46848	0.25152
	1981	3.7735442	13.65	16.79874	0.22126
	1982	1.50647825	17.31	18.16812	0.35188
	1983	1.30905024	16.37	17.98657	0.42343
	1984	1.75521698	15.22	18.37875	0.47125
	1985	4.30056182	14.29	23.58411	0.50589
	1986	7.17755539	13.26	27.99254	0.39746
	1987	5.93710745	18.31	29.52932	0.51068
	1988	6.20318382	17.64	26.93826	0.52174
	1989	4.69034877	23.29	20.63556	0.59444
	1990	4.19205097	24.16	25.11977	0.75023
	1991	1.43834679	28.21	28.1397	0.9603
	1992	-0.799494	35.23	18.81638	0.76362
	1993	0.35319726	48.58	32.30364	1.20636
	1994	2.63278452	36.32	37.8972	1.7028
	1995	4.40621653	34.21	33.77915	1.37085
	1996	4.14683927	28.73	30.87378	1.18622
	1997	0.47490192	26.49	23.07354	0.98646
	1998	3.29021372	24.37	28.7073	1.3527
	1999	2.3053886	20.34	32.00144	1.3333931
	2000	0.59969539	16.83	33.87297	1.5300036
	2001	3.7799065	20.58	34.06285	1.5729232

	2002	0.54685953	25.52	33.78063	2.5370572
	2003	2.93247555	25.46	32.16296	2.5072033
	2004	5.10429978	21.61	29.26285	2.9273434
	2005	5.90666608	21.78	23.56518	2.9971037
	2006	6.4724943	21.36	18.76272	3.8546844
	2007	6.85072977	19.89	14.76721	3.7108564
	2008	0.23228275	19.45	17.09268	4.9305299
	2009	3.30693982	20.54	16.87209	3.6729102
	2010	8.40569922	24.22	15.27672	4.9006431
	2011	6.10826372	23.18	15.39802	4.4711542
	2012	4.56320913	22.58	15.09658	4.0130138
	2013	5.87868057	23.37	9.672823	8.4508608
	2014	5.35712564	24.63	11.08262	10.962007
	2015	5.71850713	25.06	12.95172	13.320023
	2016	5.8789493	27.14	13.87205	12.786087
	2017	4.80569652	27.40	14.87209	14.123615
	2018	6.3184507	28.68	15.76092	14.883333
	2019	5.36574897	30.22	16.67267	15.243401
Uganda	1963	3.96190279	3.4	6.32258	0.05742
	1964	8.26707354	2.5	7.55495	0.11505
	1965	6.36194125	3.2	7.45232	0.06768
	1966	6.47414015	3.7	7.55927	0.13073
	1967	5.5540955	4.1	8.44272	0.13728
	1968	3.96190279	4.5	9.9078	0.2022
	1969	8.26707354	3.4	11.71526	0.21474
	1970	6.36194125	4.8	11.70753	0.20247
	1971	4.47414015	5.4	13.68571	0.12429
	1972	2.5540955	6.9	14.9597	0.0903
	1973	-3.4183569	7.6	17.04105	0.50895
	1974	-7.3262925	8.8	16.5967	0.5133
	1975	-4.4036357	8.2	12.11742	0.27258
	1976	-9.5232438	8.7	14.35616	0.20384
	1977	3.07211458	4.7	10.14846	0.07154
	1978	2.10000186	6.3	8.712	0.088
	1979	4.90526548	5.7	7.22176	0.05824
	1980	4.62736839	12.3	10.22376	0.16624
	1981	6.56271982	11.7	8.85339	0.11661
	1982	7.1276732	11.4	9.32931	0.18069
	1983	5.74455771	21.3	21.32791	0.50209
	1984	-0.3446767	24.6	18.82725	0.48275
	1985	-3.30638	27.8	25.03303	0.53697
	1986	0.39008695	25.5	18.6354	0.2646
	1987	3.96190279	24.6	32.69458	0.56542

	1988	8.26707354	23.8	35.62011	0.68989
	1989	6.36194125	27.3	37.77192	1.08808
	1990	6.47414015	25.9	47.83146	1.42854
	1991	5.5540955	35.1	54.86758	1.87242
	1992	3.41835689	36.5	79.30172	3.21828
	1993	8.32629252	31.6	71.7216	2.6784
	1994	6.40363574	33.8	62.48253	2.80747
	1995	11.5232438	22.2	53.92171	2.18829
	1996	9.07211458	23.7	50.076	1.924
	1997	5.10000186	25.3	51.61338	2.20662
	1998	4.90526548	27.9	45.46755	2.14245
	1999	8.05394838	25.3	48.6912	2.0288
	2000	3.14190734	29.1	44.6016	3.8784
	2001	5.18366113	28.4	48.2937	4.7763
	2002	8.73268576	26.3	56.4171	6.9729
	2003	6.47325867	30.1	53.328	7.272
	2004	6.80723334	18.6	39.9877	4.9423
	2005	6.33256512	19.1	32.8692	3.2508
	2006	10.7847444	7.7	24.3552	3.9648
	2007	8.41242597	8.3	11.6705	2.0595
	2008	8.7087519	7.8	11.259	1.251
	2009	6.80151735	8.2	19.749	2.951
	2010	5.63761164	8.5	11.537	2.363
	2011	9.39165549	8.4	12.6	2.4
	2012	3.83745561	13.2	8.927	2.373
	2013	3.58690583	13.5	11.583	2.717
	2014	5.10630732	13	13.275	4.425
	2015	5.18785986	12.8	16.555	4.945
	2016	4.78100029	13.7	18.252	5.148
	2017	3.89774766	14.4	19.228	6.072
	2018	6.15507998	13.2	20.022	8.178
	2019	6.50734253	13.9	19.602	10.098
Tanzania	1963	5.58432213	3.5	8.34422	0.07578
	1964	4.20580081	4.3	8.67785	0.13215
	1965	1.56766177	5.8	10.31631	0.09369
	1966	2.56991187	5.5	9.25003	0.15997
	1967	-4.5443668	6.9	10.26312	0.16688
	1968	-3.5252782	6.5	19.0218	0.3882
	1969	4.7085116	5.1	15.21118	0.27882
	1970	6.86386376	4.7	13.73251	0.23749
	1971	4.52078463	5.2	14.54788	0.13212
	1972	4.07080829	5.6	17.00734	0.10266
	1973	8.09319498	4.8	14.53587	0.43413

	1974	11.6727898	3.5	13.2017	0.4083
	1975	7.50381466	3.7	16.86072	0.37928
	1976	7.47631926	3.8	15.60838	0.22162
	1977	6.53222139	4.1	19.05567	0.13433
	1978	5.7685352	4.5	16.3944	0.1656
	1979	5.68641686	4.7	15.75296	0.12704
	1980	5.26910525	5.9	13.64808	0.22192
	1981	6.33652343	5.2	13.13697	0.17303
	1982	7.67215543	4.5	12.89034	0.24966
	1983	4.50015356	8.6	15.16304	0.35696
	1984	3.76828274	9.7	15.70725	0.40275
	1985	2.45878363	10.1	17.68074	0.37926
	1986	3.93846476	9.2	18.4382	0.2618
	1987	4.89246368	8.1	19.09969	0.33031
	1988	5.98726737	7.6	19.20798	0.37202
	1989	3.76444341	9.2	23.00724	0.66276
	1990	7.04507164	8.7	20.78911	0.62089
	1991	2.07198821	9.4	33.37117	1.13883
	1992	0.58432213	13.1	38.69947	1.57053
	1993	1.20580081	12.6	37.09472	1.38528
	1994	1.56766177	14.5	41.49552	1.86448
	1995	3.56991187	16.4	42.00531	1.70469
	1996	4.5443668	18.7	45.70398	1.75602
	1997	3.52527819	20.2	45.2648	1.9352
	1998	3.7085116	18.5	43.548	2.052
	1999	4.86386376	13.9	43.392	1.808
	2000	4.52078463	13.5	37.444	3.256
	2001	6.07080829	12.2	35.126	3.474
	2002	7.09319498	12.5	31.061	3.839
	2003	6.67278983	10.9	29.48	4.02
	2004	7.50381466	10.6	30.171	3.729
	2005	7.47631926	11.5	31.486	3.114
	2006	6.53222139	7.3	21.586	3.514
	2007	6.7685352	4.9	13.94	2.46
	2008	5.68641686	4.7	14.85	1.65
	2009	5.26910525	5.9	21.75	3.25
	2010	6.33652343	6.2	20.999	4.301
	2011	7.67215543	6.9	23.604	4.496
	2012	4.50015356	6.7	21.251	5.649
	2013	6.7815856	7.7	22.194	5.206
	2014	6.73246187	7.9	21.3	7.1
	2015	6.16062877	8.2	20.559	6.141
	2016	6.8671162	9.6	22.932	6.468

	2017	6.78568011	8.8	21.432	6.768
	2018	5.44496763	9.1	19.596	8.004
	2019	5.79137138	9.4	18.678	9.622