

**THE IMPACT OF HIGH AND INCREASING PUBLIC DEBT ON
ECONOMIC GROWTH OF KENYA**

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DECLARATION

I declare that this is my original work and has not been submitted to any other institution for academic purposes.

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Signature _____ Date _____

DEDICATION

To my family members and friends

ACKNOWLEDGEMENT

The completion of this thesis project was made possible by a number of people, to whom I am profoundly grateful. First I thank God for being with me throughout the process. Very special thanks go to my supervisor Dr. Samuel Nyandemo for all the support, encouragement and patience and for being readily available whenever I needed guidance. I would also like to thank my family for their love, patience and support during the entire academic pursuit. My gratitude also goes to all my classmates for the knowledge shared during this period in terms of corrections and editorial work.

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ABSTRACT

This study was carried out to establish the relationship between high and increasing public debt and economic growth in Kenya. It used quarterly data from 2008 to 2018 from World Development Indicators and Kenya National Bureau of Statistics. The Gross Domestic Product is the proxy for economic growth. The explanatory variables are external debt, domestic debt and debt service payments. Since the data was time series the augmented Dickey Fuller Unit Root test was used to ascertain stationarity. The econometric technique of Ordinary Least Square (OLS) was employed in the data analysis. The data analysis tool was E-views. The results showed that CBK Overdraft ($B = - 0.00105$), Treasury Bonds ($B = - 0.00107$), Treasury bills ($B = - 0.00108$) and commercial bank advance ($B = - 0.00114$) have a negative and significant effect on economic growth of Kenya ($\text{Prob} < 0.05$). However, domestic debt ($B = 0.00108$), external debt ($B = 0.00000^*$) and debt service ($B = 0.00000^*$) are positively related with economic growth but only domestic debt ($\text{Prob} < 0.05$) has a significant effect on economic growth. The study concluded that in the last decade domestic borrowing instruments that is Treasury Bills, Treasury Bonds, CBK Overdraft, Commercial Bank Advances and overall Domestic Debt, External debt and Debt Service account for up to a third (36.8 percent) of the variation in economic growth of Kenya while other factors explain the remaining percentage. The study also concludes that domestic borrowing through CBK Overdraft, Treasury Bonds, Treasury bills and commercial bank advance severely and significantly hinders economic growth. This is due to crowding out of the private sector denying investors' money for investment. Another conclusion is that domestic debt, external debt and debt service are positively related with economic growth. But only domestic debt as a whole has a significant effect on economic growth. This demonstrates that while the effect of debt service and external debt is not significant, local borrowing under manageable levels can spur economic growth. In light of the results and conclusions from the study, in light of the results and conclusions discussed in the foregoing paragraphs, it can be recommended that the Kenyan government policy makers should adopt an optimal balance in borrowing both locally and externally in order to spur economic growth. Even though the effect of external borrowing was insignificant given a short time period, instruments of domestic borrowing such as treasury bills, CBK overdrafts, commercial banks advances and treasury bonds were detrimental to the economy thus, the government should manage borrowing through these instruments since they have the potential of crowding out the private sector. There is also a need to have prudential fiscal debt management policies so as to manage the increasing debt rates. Reduced borrowing would coarce the government to exploit their tax revenue efficiently in investment and not repayment of debts thus encouraging an improvement in economic growth. This is because as the economy grows, debt servicing is equally growing.

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CHAPTER ONE

INTRODUCTION

1.1 Introduction

Financing is very important stimulator for economic growth as a means of balancing national budget (Puiga & Rivero, 2017). Generally, the bulk of revenue is provided through taxation while public borrowing is sought to close the gap that exists between the revenue collected and the actual or projected expenditure. Salotti and Trecroci (2016) argue that in most developing countries just like in some developed countries, this equation is hardly ever balanced since external sources provide the bulk of funding as opposed to taxation. As a result, during budgeting, debt financing takes a major percentage of government revenues leaving little or no capital to be invested in development projects that would boost economic growth. According to Lee and Ng (2015) one characteristic of such shallow markets is that domestic debt increase leads to an increase in the cost of interest as large amounts of debt will be held in short term instruments. Tasos (2014) explains that public debt especially foreign debt has a sovereign existence outside the public budget and public finances.

Countries borrow to meet macro-economic needs and to finance transitory Balance of Payments (BOP) deficits (Teles & Mussolini, 2014). However, debt can stimulate GDP growth and also hamper the growth of the economy depending on the structure as well as the size of government debt as well as the utilization of the borrowed resources (Malik & Atique, 2012). According to Cesar and Fuentes (2013) a fundamental cause of rising debt is overreliance on external resources to close the gap between revenue collected and expenditure made while complementing domestic economy's capital formation. This is especially so since the high interest payment coupled with high current account deficit translates to high debt burden. As Minescu (2011) explains, for a country to cope with its debts, the rate of its debt service must be higher than the rate at which it is being exposed financially.

Economic growth is the increment in a country's production based on the increase in the country's economy (Cesar & Fuentes , 2013). It can be either negative implying that an economy is shrinking or is facing economic depression or positive implying growth. Public debt management has to be prudent for economic growth to be realized. This can be realized when the country reduces the rate of borrowing as well as reduce its exposure to financial risk (Woo & Kumar, 2015). According to Buchanan, (1958) if domestic interest payments are allowed to consume a significant part of government revenue, then domestic private savings that would be used for private lending will be used up thereby crowding out private lending.

1.1.1 Determinants of Economic Growth

The growth of the economy is not only determined using public debts that determine government spending. Other factors come into play in as far as economic growth is concerned. The essential aim of any country is attaining suitable strategies for its economy and further implementing appropriate economic measures that are adequate at a particular moment in time. From a theoretical perspective, those factors that affect economic growth are determined by the macroeconomic definition in the expenditure based approach (Dinca & Dinca, 2013). Some key determinants include economic policy, economic growth sufficiency, political factors as well as demographic factors.

According to Lora and Olivera(2006) FDI is also a crucial determinant of how the economy grows as supported by neoclassical and endogenous growth models whereby neoclassical school places importance of investment during the transition period while the other school argues that its importance is permanent. Other scholar's places importance on FDI in enhancing technology and ultimately promoting growth of the economy (Rockerbie, 2014). Lensink and Morrissey (2006) also argue that FDI was critical in promoting economic growth.

The two models also indicate that human capital is crucial in enhancing economic growth (Cesar & Fuentes , 2013). Human capital takes the form of workers' know-how and skills acquisition through training and education (World Bank, 2013). Using education related proxies; there has been a link between GDP and human capital among previous interrogations which established that it has a significant impact (Hanushek & Kimko, 2000). Equally, other scholars have found opposing results (Smith, 2010).

Political situation of a country has also been linked to its economic growth. An interrogation by Lipset (1959) established that economic progress of a country relied on its political environment. According to Amadi (2012) in its most fundamental form, political instability discourages investment and increases uncertainty which leads to a deterioration of the economy. The degree of democracy in a country has also been linked to economic growth in both positive and negative manner (Panizza & Presbitero, 2014). Factors such as civil freedom, political instability and political regimes have been used to gauge the quality of political environment. Brunetti (1997) identifies five classes of pertinent political variables to include subjective perception of politics, democracy, political volatility, political violence and government stability.

Institutional framework is another determinate of economic growth close to political environment. According to Rodrik (2000) there exist key institutions related to social insurance, conflict management and property rights among others which influence key economic processes (Fatma & Zouhaier, 2014). IMF (2012) explains that these factors can only impact economic performance if they are developed not only on a trustworthy institutional environment but on stable institutional environment as well. The commonly applied measures of the institutions' quality in secondary literature factors the risk of among other factors, corruption, property rights and rule of law (Alam & Taib, 2013).

Economic policies affect a number of factors in the economy ranging from human capital, investment in infrastructure as well as improvement of political institutions (Dinca & Dinca, 2013). Macroeconomic variable that affect economic growth are known. However, substantial attention has focused on budget deficits, inflation, tax burdens and fiscal policy. Openness to trade has been associated with economic growth. Rabia and Kamran (2012) explain that trade openness influences the growth of the economy but through several channels that encompass technology transfer, exposure to competition and increasing economies of scale.

1.1.2 Debt Crises

The world watched as the mid 2008 financial crisis unfolded into a dramatic debt crisis in many advanced economies. According to (Minescu, 2011) the world's major debt crises such as the Greece crisis and the Asian Crisis were all preceded by long periods of fast growth of credit, risk premiums that were low, strong leveraging, availability of liquidity, asset prices soaring and real estate sector bubbles. Nelson et al (2010) reported that, in the case of Greece, the reasons behind the crisis included but were not limited to weak collection of revenue, sky rocketing government spending, and feeble enforcement of EU rules on debt. Due to its membership in the Euro zone, Greece found it difficult to undergo the process of devaluing its currency. The country also had other challenges related to over hiring in its labor force as well as over expenditure in the public sector (The Economist, 2010). The country recording a Debt to GDP ratio of 176.9 percent by the year 2015 although the figure was an all-time high of 180.1 percent in the year 2014. On average however, the country recorded a Debt-GDP ratio of 95 percent between the year 1980 and 2015. Tasos (2014) documents that Portugal suffered as a result of Greece's debt and it recorded a debt ratio to GDP of 129 percent in the year 2015. In the same time period, Ireland had a ratio of 93.8 percent and the same averaged 73.5 percent between the year 1980 and 2015. The highest recorded was 120.10 percent in 2012 and the lowest recorded at 23.60 percent in 2006. As a result of these crises, Euro zone countries have adopted austerity actions that have continually led to economic instability, political tensions and increased protests.

Most developing countries have not been able to combat the growing public debt rates to ensure that the country still remains with enough revenue after servicing the debt. According to M'Amanja and Morrissey (2005) Sub-Saharan Africa domestic debt was as much as 23% of total debt for the period between 1995 and 2000 with a debt-to-GDP ratio of 16%. Central Bank of Libya, in 2014, reported debt to GDP ratio in the tune of 6.1 percent and between the year 2003 and 2014, the same average to 10.2 percent. The highest recorded was 21.20 percent in 2003 and the lowest recorded being 5.90 percent in 2012. Algeria also has reported sustainable debt at 8.76 percent of GDP in 2014. However, other countries such as Egypt, Sudan and Zimbabwe registered high Debt amounting to 90.50 per cent, 79.00 per cent and 77.00 percent of GDP respectively in 2014.

Table 1.1 Public Debt as a % of GDP in East African Countries, 2008-2018

Country	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Kenya	45.6	47.5	49.9	48.5	47.2	45.3	45.3	52.8	53.2	54.2	56.1
Rwanda	21.4	23.0	23.2	24.0	25.8	24.3	22.2	28.0	37.2	40.5	42.6
Uganda	23.6	22.1	22.2	27.0	29.3	31.07	33.26	34.70	37.4	40.0	42.9
Tanzania	36.0	39.0	42.7	45.4	46.8	48.8	50.3	39.90	38.0	37.0	38.2

Source: IMF Report 2018

1.1.3 Public Debt in Kenya

Kenya is currently stuck in stagnating real revenue receipts and unending debts which has led to accumulated stocks of both domestic and foreign debts. The Central Bank of Kenya (CBK) reports indicated that by the year 2015, Kenya had debts amounting to 52.80 percent of GDP and averaging 54.93 percent between 1998 and 2015. The highest recorded was 78.30 percent in 2000 with the lowest being 42.80 percent in 2008. According to Mankiw(1992) for debt to influence economic growth, government debt must be used to finance productive investment. Unfortunately for Kenya, accumulation of debt has been used to finance a myriad of unprofitable, unrealistic, and low efficiency projects. For the past twenty years, the country has borrowed huge amounts with the expectation of putting the country on a fast rate of development path through investments and growth but the results are not as expected (Lidiema, 2017).

The Kenyan budget estimates stood at ksh.1,924.9 billion in 2014/2015 which was 26 percent increase from Ksh. 1,533.0 billion in 2013/2014 (Economic survey, 2015). The revenue collection for 2014/2015 was projected to be Ksh.1,176.224 billion which represents 18.6 percent increase from Ksh. 991.987 2013/2014. Total deficit in 2014/2015 stood at Ksh.533.94m up from Ksh.316.992m, which is 64.44 per cent growth. The stock of outstanding debt was KSh. 2,217.3 billion as at the end of June 2014 (41 per cent of GDP) out of which 51.3 per cent is external debt. Shiundu(2016) writing for Standard Digital notes that as at 2016, each Kenyan owes the world Ksh 79,000 due to the massive amount of debt that the country is engrossed in. It is feared that if Kenya does not collect higher revenues, there is eminent risk that development goals will not be met. As at Mid 2016, the country's budget controller reported that Ksh 230 billion had been borrowed from the domestic market with and additionla Ksh 450 billion borrowed from foreign market. An article on Daily Nation by Okoth(2016) reports that

up to a fifth of the county's revenue in 2016/2017 will be used to finance debt. While reading the budget for 2016/2017, the cabinet secretary of finance announced that Kenya's debt was at 3.2 trillion putting the debt as the highest in the region. By the year 2015, the country had a debt-GDP ratio of 49.7 percent This was after an increase in external borrowing by Sh420.9 billion. Of this figure, China has the highest share. During this period, the government has continued to borrow extensively internally from companies, individuals and banks through selling Treasury Bills and bonds.

Massive government expenditure on luxury and other un-accounted for spending has steadily increased internal and external debt (Amadi, 2012). With up to a fifth of the country's collected revenue being used in debt service, not much is left for the level of development that will encourage the growth of Kenya's economy. There is desperate need for provision of vital services in sectors such as agriculture, health, education and transport. As Okoth (2016) puts it, it is dangerous that Kenya's debt obligation surpasses the budget allocation by far making achievement of sustainable development an elusive goal. KENDREN (2009) reports that as the debt burden continues to accumulate, citizens of Kenya continue to be impoverished. They are also denied their socio-economic rights and political sovereignty. If the trend continues, the government will have to aggressively seek debt moratoria or radically restructure its public expenditure. There is need for Parliament to prioritize legislation public debt ceiling.

Inconsiderate internal borrowing structures alongside weak debt systems and policies are the major factors contributing to the debt crisis in most of the African countries (Fayed, 2013). In Kenya, for instance, lack of clarity in how much has been borrowed and the reasons for borrowing, further worsens the debt crisis. Management of internal debt is extremely crucial in stopping the emergence of another debt crisis in the event that current debt is cancelled.

1.2 Problem Statement

Public debt is a macroeconomic indicator that shapes a nation's image in foreign markets and also determines the extent of Foreign Direct Investments FDIs (Ntshakala, 2015). Most governments borrow mainly through domestic money markets by issuing securities whose interest rates greatly impact future and present economic and social welfare. The impact of domestic public debt on the economy is a contradictory topic as far as academia and policy is

concerned (Panizza & Presbitero, 2014). Both empirical and theoretical studies over the years have tried to analyze the impact of domestic debt to establish whether it shows negative or positive effects on growth rate.

Kenya's extremely huge and increasing debt is as a result of the many years of unplanned borrowing. It also provides evidence of the many years of public money mismanagement. Think of the Eurobond scandal, the chicken gate scandal and even more recently the National Hospital Insurance Fund (NHIF) scandal, millions of taxpayers' money as well as borrowed money has been misused without thinking of the implications on the economy of the country. The Scandals facing the current leadership regime is evidence of mismanagement of public funds through looting, collusion with non-existent companies within the country and internationally despite having raised the funds through debts (Shiundu , 2016).

In as much as corruption and poor governance have been seen as the basis of Kenya's economic woes, debt has almost similarly affected the economy and has further brought complications in macro-economic management. According to Babu et al. (2015) Kenya has over the years resorted to expensive short-term borrowing and occasional debt rescheduling to finance the ever growing government expenditure. Kenya's natural resource base is relatively limited. Kenya Revenue Authority (KRA) hardly collects revenue close to projected revenue either monthly or annually. Because of this under- collection, the country has to resort to borrowing. Between 2005 and 2015, Debt-to-GDP ratio has grown at high rate at average of 3%. Yearly, the gap between the projected expenditure and revenue estimates continues to widen and so does the gap between actual expenditure and collected revenue. According to Economic Survey (2015) total annual deficit continues to balloon while, the total nominal deficit of the country continues to grow at a faster rate compared to nominal GDP rate over the last decade. According to Babu *et al.* (2015) the deficits are attributed to incorrect and ambitious revenue projections, large increase on public expenditure with the aim of realizing vision 2030 and delivering on ruling party promises.

From economic theory, low and moderate borrowing can spur the growth of the economy. On the other hand, excessive borrowing can affect the economy in a negative manner. There is scarce empirical research on debt-growth relationship in Kenya especially in the wake of huge

public debts such as the Eurobond and endless misuse of funds borrowed to finance investments. Therefore, there was a need to further explore this relationship.

1.3 Study Objectives

1.3.1 General Objective

To find out the impact of high and increasing government debt on economic growth of Kenya

1.3.2 Specific Objectives

1. To examine the structure, type and composition of Kenya's debt.
2. To examine GDP growth trend in Kenya between 2008- 2018.
3. To establish whether debt servicing payments has any significant effect on economic growth.

1.4 Research Questions

1. What is the structure, type and composition of Kenya's debt?
2. What is the GDP growth trend in Kenya between 2008- 2018?
3. Do debt servicing payments have any significant effect on economic growth?

1.5 Significance of the Study

Kenya has increasingly accumulated both external and domestic debt over the years which lead to concerns over its sustainability. In the presence of weak regulatory framework and weak institutional framework governing debt management, there was a need to establish causal relationship between the variables. This was paramount in providing a prudent approach to debt management but also help improve the rating of creditworthiness of the country. The interrogation also provided an analysis of the evolution of public debt for the last 10 years and this could be useful for policy makers as it highlights the impact that borrowing has on our economy. Further, in the wake of increasing and unmanageable debts, the study adds to the body of literature for other research which would deem it necessary to interrogate this theme in other contexts or longer time periods.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews other empirical work related to public debt and economic growth. Within the literature review, two related economic theories are highlighted, followed by empirical findings of previous related studies.

2.2 Theoretical Review

2.2.1 Dynamic Theory of Public Spending, Taxation, and Debt

Proposed by Barro (1979), the theory argues that the government can use budget deficits as a buffer to the increasing tax changes. Battaglini and Coate (2008) explain that during seasons of high government expenditures, deficits are imminent while during periods of low government spending surpluses are imminent. An assumption is made that government spending not only fluctuates with time but also that there exist dead weight income costs taking a convex form (Sassi, 2014).

However, most of the policies are made by the legislature which might not be generous. The theory argues that the legislature can come up with policies which enhance revenue generation such as issuance of bonds (Blake, 2015). Public revenues are used in the financing of the provision of goods that are public in nature and are beneficial to all citizens while to providing targeted transfers. Baron and Ferejohn (1989) posit that the citizens value public goods in a stochastic manner that reflects economic shocks like wars. On the other hand, the parliament decision making is by majority rule. This makes the public debt level to be a state variable linking policy making periods dynamically.

2.2.2 Keynesian Theory

The Keynesian theory (1935) documents the inefficiency created by some microeconomic-level actions on the entire macroeconomic aggregates. Keynes related public expenditure to economic growth positively in contradiction to the effect of public debt on economic growth (Brunetti, 1997). From Keynes point of view, the economy is prone to changes and because of this, forces of supply and forces of demand balance out well at an equilibrium state that does not deliver the

economy's full employment. To solve this challenge, all that is required is the replacement of the absent private investment with public investment. This is to be deliberately financed by budget deficits. This means that the government would be required to borrow funds to cover expenditures on social needs. As a result, the deficit spending will end up creating jobs while increasing the purchasing power of the citizenry (Mankiw, 2013).

Efforts to balance the government's budget during economic downturns will however worsen economic conditions of a country. Keynes therefore utilized an array of approaches that included the concept of aggregate demand, standardized national income accounting and the multiplier. In this case, Keynes's approach laid the macroeconomics foundation that treats the economy wholesomely while focusing on government's use of fiscal policy tools and measures. These approaches are to be used to control aggregate demand and ultimately ensure full employment. Consequently, the government is required to reduce its expenditure during times of recovery and times of expansion (Sassi, 2014).

The allusion of the Keynesian theory is that governments ought to take a supervisory role in the economy since it is the one with the ability to make interventions and manage failures in the market effectively (Rockerbie, 2014). Keynes viewed government intervention to be more powerful compared forces of market supply and market demand. Keynesian theory cemented the intellectual basis for a supervised and welfare oriented form of capitalism in the worlds developing economies and developed economies. The Keynesian approach has been widely adopted and has been attributed to the generally high employment levels attained by majority of the developed economies and for a noteworthy reorientation in perceptions toward the role of the state in economic wellbeing (Zhou, 2013). This could lead to an economy operating lower than its latent output and potential growth rate.

The Keynesian school of thought pushes for adoption of stabilization policies in the reduction of the uncertainties of business cycle. Keynes argued that to solve the great depression, the ultimate strategy was to grow the economy through combination of fiscal measures such as reducing interest rates and increasing in government expenditure in infrastructure (Baron & Ferejohn, 1989). This will result in increased spending in the economy and consequently stimulates production and investment with increased income and expenditure. According to Mankiw (1992)

economic stimulation is a series of events characterized by multiple investment choices. The Keynesian theory emphasizes that no self-regulating mechanism can shift the economy towards full employment levels since other economic tools assume an inclination towards equilibrium.

2.2.3 Theoretical Underpinnings and Variable Linkages

Modigliani (1961) advanced the views by Buchanan (1958) and Meade (1958), arguing that future generations will always suffer from the previous debt burdens. Consequently, high debt burdens reduced income flows as a result of reduced private capital stock as well as crowding out of the private sector. According to him, whichever debt increment will generally bear future costs to future generations even if it is advantageous to current generations. Krugman (1988) similarly indicated that economic growth is affected by private investment through the overhang effects of external borrowing. This happens when the external and domestic lenders to the government deter to lend more. This therefore leads to negative effects on the economy.

Stiglitz (2000) argued that there is the possibility of increased incomes in under developed countries even with an annual growth rate exceeding 5 percent. Accordingly, the government is advised to borrow only for investment and not as a means to fund current expenditures. As a result, investment spending will be protected. In the process automatic stabilizers will be able to work without affecting the sustainability of long-term fiscal measures. This means that debt is to be used solely to finance productive government spending that have the potential to bring increment in public capital formation while promoting sustainable and robust economic growth.

Buchanan (1958) discussed the Ricardian Equivalence theory asserting that the emphasis on debt and deficits is of no use and therefore it is a misplaced notion. Accordingly, debt is just postponed taxation and assumption is made that consumers will set aside enough savings to pay for these taxes at some point in the future. This to mean that financing government spending with taxes or debt is equivalent and therefore both taxation and borrowing to have equal impacts on economic growth.

2.3 Empirical Literature Review

Lidiema (2017) interrogated the association between development and both domestic and external borrowing in Kenya. It was revealed that in the short run, domestic borrowing affected gross

fixed capital and investment negatively but GDP per capital and investment were positively related. This demonstrates that crowding out of the private sector exists although not significantly. Szabo (2015) related debt, economic growth and economic development in selected 27 EU members. The study modelled a quadratic equation and established an inverse effect of debts to the growth in economy. Specifically, it was ascertained that an increase in the debts by 1 percent, leads to a 0.027 percent decrease in the GDP growth.

In Kenya, Putunoi and Mutuku (2012) focused on economic growth and public debt and established an empirical study which also made use of econometric analysis. The study made use of data between the year 2000 and 2010 collected quarterly. It was revealed that in the period of the study, domestic debts had increased and its effect on economic growth was both positive and significant. Cesar and Fuentes (2013) similarly linked debt to economic growth in a different context on a five year period. Their study adopted neoclassical growth model and used panel data from Latin America countries, Central America countries and South America countries for a five year period between 2001 and 2005. An inverse relationship was determined between the variables. Accordingly, robust institutions, domestic policies of high quality, and policies that are outward-oriented have the potential of moderating the adverse effects on economic growth.

Blake (2015) focused on a similar study but on a five year period in the context of Jamaica. He used 24 years quarterly data from the year 1990 to the year 2014. The method of analysis was an ARDL regression model to establish both short and long run effects which showed that the relationship between the variables was not linear in nature although the debts attributes affected the nature of the relationship. In another study, Checherita and Rother (2010) linked public debt to GDP per capita growth of selected EU countries spanning 40 years. It was demonstrated that through variables such as private savings, sovereign interest rates and investments, debts affected economic growth negatively. Mencinger, *et al.* (2014) empirically examined the change mechanism relating variables in the short run. Their data set included a panel 25 sovereign EU member states for a 30-year period starting 1980. The study adopted panel regression analysis and demonstrated that the effect was not linear but was significant.

Panizza and Presbitero (2014) similarly demonstrated that even though there was an inverse relationship between them, causal effect was absent. Zhou (2013) using a 14 year period analysis,

accounted for a vast range of economic growth determinants and a wide array of estimation issues including omitted variable and heteroskedasticity and suggested a converse relationship between the variables. Georgiev (2012) conducted a similar study but focusing on 17 European countries. Data used spanned the period between 1980 and 2012. The study utilized panel data regressions for data analysis. The study showed that high levels of public debt led to incremental servicing rates with a subsequent decrease in investments levels which consequently impacts economic growth negatively.

Taylor *et al.* (2011) in the USA context modelled the interactions between primary fiscal deficit, economic growth and debt after the great recession. The econometric estimates from the study verified that the historical pattern of increase in net borrowing by the government was lower than the decrease in private borrowing. It was also demonstrated that when interest rates are considered, there exist a positive relationship. Akram (2010) conducted a study in Pakistan using an ARDL model on data between 1972 and 2009 and proved that external debt overhang effect was portrayed by external borrowing which was similarly established to affect per capita in a negative and significant manner. Domestic debt negatively and significantly affected investments which demonstrated presence of crowding out. In Swaziland, Ntshakala (2015) guided by the neoclassic growth model used data between the year 1988 and 2013 and established that external debt was not a significant determinant of economic growth while domestic debt affected economic growth positively and significantly. In Malaysian context, Lee and Ng (2015) while focusing on data between 1991 and 2013, revealed an inverse relationship.

A study by Maana *et al.* (2008) which used data between the year 1996 and 2007 proved presence of crowding out in the Kenyan context while Matiti (2013) who used data between the year 2002 and the year 2012 using an OLS regression showed that local debt features by higher interest rates in comparison to interest rates on foreign debt. Accordingly, foreign debts are expensive to maintain since they are contracted mainly on concessional terms. Babu *et al.* (2015) focused on a panel of EAC countries between the year 1990 and 2010 to find out whether indeed public debt was a significant determinant of their GDP growth. Basing on Solow Growth Model, it was demonstrated that domestic borrowing was a key driver of per capita. In another investigation, Polly (2009) using data spanning 1970 to 2007, showed that debt decremented investment.

2.4 Study Gap

Literature has shown that efforts have been placed by other studies to link debts to economic growth but variations lies in the contexts. It was however clear that there exists scarce empirical substantiation on the impact of high and growing public debt in Kenya. Out of the studies done in the Kenyan context, most have spanned up to 2013. Methodologically, most of the studies have not been corrected for reverse causality and correct endogeneity. It was based on these gaps that this study was carried out.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

The chapter presents an interrogation of the entire process building to data gathering, analysis, and interpretation methods. The chapter also gives both the theoretical and empirical model of the study.

3.2 Model Specification

Hypothesis

H₁: Government debt has an impact on Kenya's Economic Growth

To gauge and test the existence of this relationship, a simple open macro-economic debt growth model was applied.

The functional relationship between the variable and proxies can be expressed as:

$$NI = f(\text{Domestic Debt, External Debt}) \dots\dots\dots (1)$$

The model employed in the study includes the following.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + U \dots\dots\dots (2)$$

Where:

Y = Economic growth measured by GDP

X₁ = Domestic Debt (DD) measured by total value in Kshs

X₂ = External Debt (ED) measured by total value in Kshs

U = Stochastic error term

β₁, β₂, β₃ = slope of the regression equation

This model has been expanded into the following model:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + U \dots\dots\dots (2)$$

Y = Economic growth (Measured by change in GDP)

X₁ = Treasury Bonds (Measured by total value in Kshs)

X₂ = Treasury Bills (Measured by total value in Kshs.)

X₃ = Debt Service (Measured by total value in Kshs.)

X₄ = Overdraft at the Central Bank of Kenya (Measured by total value in Kshs.)

X₅ = Advances from Commercial banks (Measured by total value in Kshs.)

X₆ = External Debt

3.3 Data Collection

The study collected secondary data on public debt and GDP growth spanning 10 years between 2008-2018. The data collected was quarterly and the period was suitable because it comprised of changes in the political regime, presidency, post-election violence as well as increased debts and new constitution. These changes therefore played a far reaching role in shaping the economy.

3.4 Estimation Methods

The time series data was analyzed through an Ordinary Least Square regression technique. Equation 3 indicates the simple mathematical form of the model:

$$NI = \beta_0 + \beta_1 DD + \beta_2 ED + U \dots\dots\dots (3)$$

Based on theoretical arguments in the previous literature, it was expected prior that either a positive or negative relationship could be established. Data collected was tested for heterogeneity, unit roots and also corrected for reverse causality. The study was at 0.05 level of significance.

An OLS regression model was adopted to determine the effect of debt on economic growth. OLS assumes that variance is constant across all observations and failure of which is Heteroskedasticity. To test for Heteroskedasticity, Breusch-Pagan test was used.

Collinearity test was also carried out. There is supposed to be no high relationship between the study variables. To test for multicollinearity, a Variance Inflation Factor (VIF) method was applied.

The study also tested for serial autocorrelation. OLS assumption is that the error term should not be correlated over time. To test for this relationship Breusch-Godfrey LM test was used to test for serial correlation.

Since the data used is time series, stationarity test was carried out using Augmented Dicky-Fuller (ADF) method. A Pearson correlation was also used to interrogate relationships in the two variables.

CHAPTER FOUR

FINDINGS AND DISCUSSION

4.1 Introduction

In the chapter, an exploratory data analysis involving trend analysis as well as descriptive statistics and normality tests of Jarque Bera statistic and the unit root test for stationarity have been presented. The relationship between the variables was also established using correlation test and diagnostic tests conducted before running the multivariate regression model. The residual diagnostic tests involving tests of First Order Serial Correlation, Heteroscedasticity and Normality of residuals were also conducted. The study collected quarterly data on the study variables between the year 2008 and 2018.

4.2 Trend Analysis

The study conducted the trend analysis in so as to establish and graphically present the variables change over time. The trends in the section are presented per debt instrument against GDP growth on a quarterly basis between the year 2008 and 2018. GDP growth was captured as the annual growth rates as a percentage while the other debts instruments were captured in Kshs. Millions. The GDP growth rate trends indicated in Figure 4.1 indicate that even though the Kenyan economy was growing steadily up to the year 2011 quarter one, it afterwards assumed an unsteady increasing and decreasing trends. This can be attributed to economic expansion. Due to post election violence, the year 2008 and 2009 had the lowest GDP growth rate.

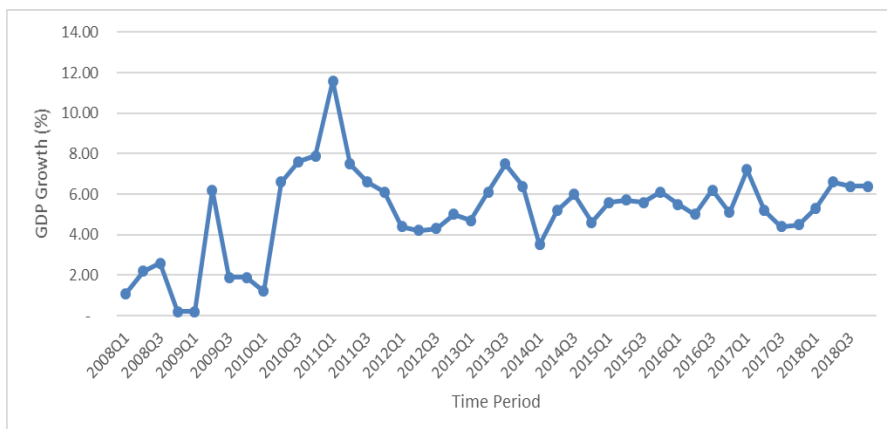


Figure 4.1 GDP Growth Rate Trend Analysis

The trends in Figure 4.2 reflecting GDP and treasury bonds indicate that since the first quarter of the year 2008, the stock of treasury bonds has been steadily increasing as compared to GDP growth rate which has been unsteadily increasing and decreasing. The trends demonstrate that even as the economy was struggling, the government was increasing domestic borrowing in terms of bonds.

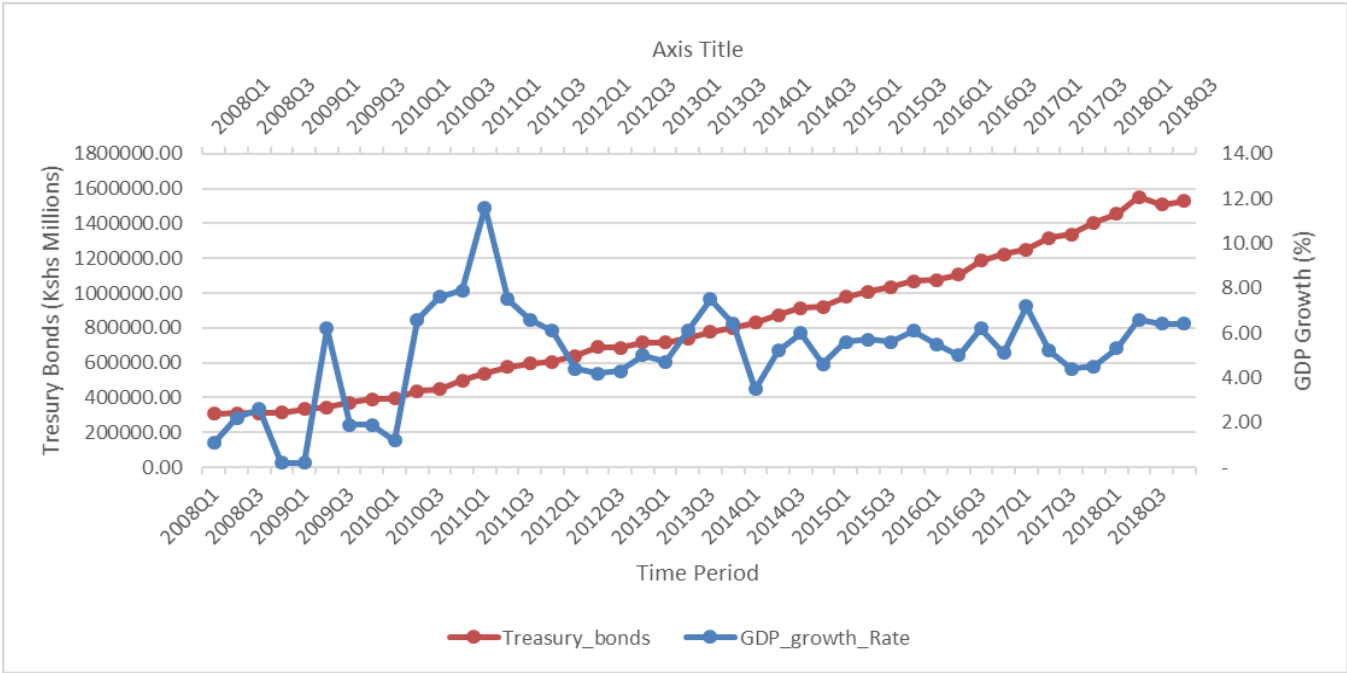


Figure 4.2 Trend Analysis of GDP against Treasury Bonds

The trends in Figure 4.3 further reflects a steady increase in the government domestic borrowing through the treasury bills between the year 2008 and 2018 compared to the struggling GDP growth. However, compared to treasury bonds, the rate of borrowing through treasury bills is slower.

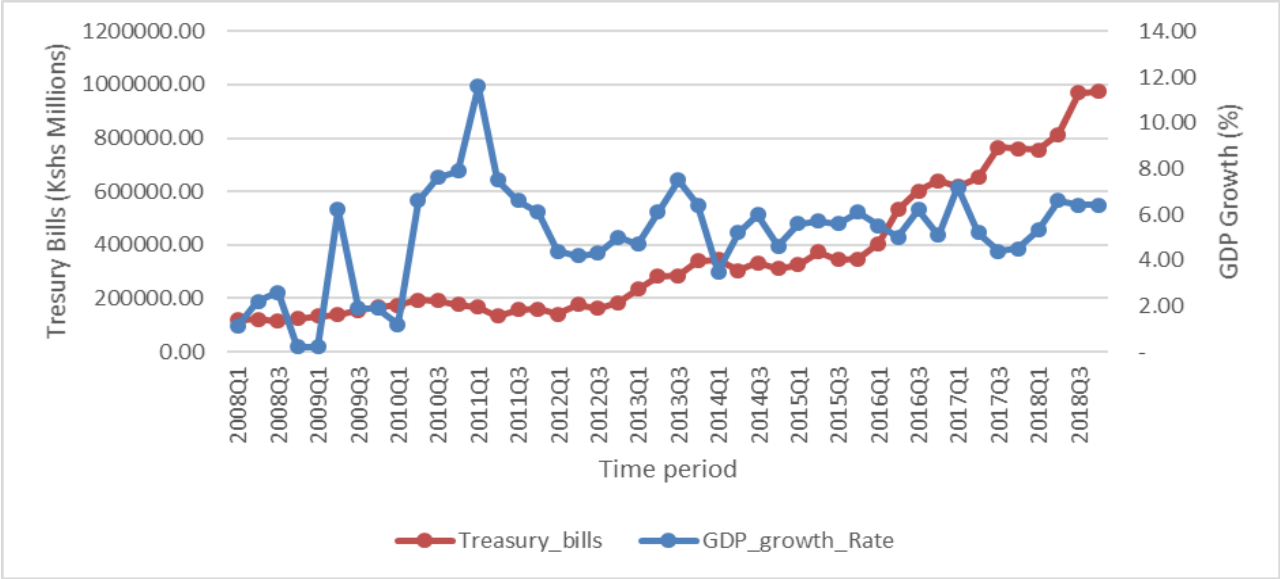


Figure 4.3 Trend Analysis of GDP against Treasury Bills

Compared to the growth rate of GDP, the trends shown in Figure 4.4 reflects increasing debt service values at a steady rate since the first quarter of 2008 to the year 2018. This demonstrates that the government has been spending more on servicing its public debts.

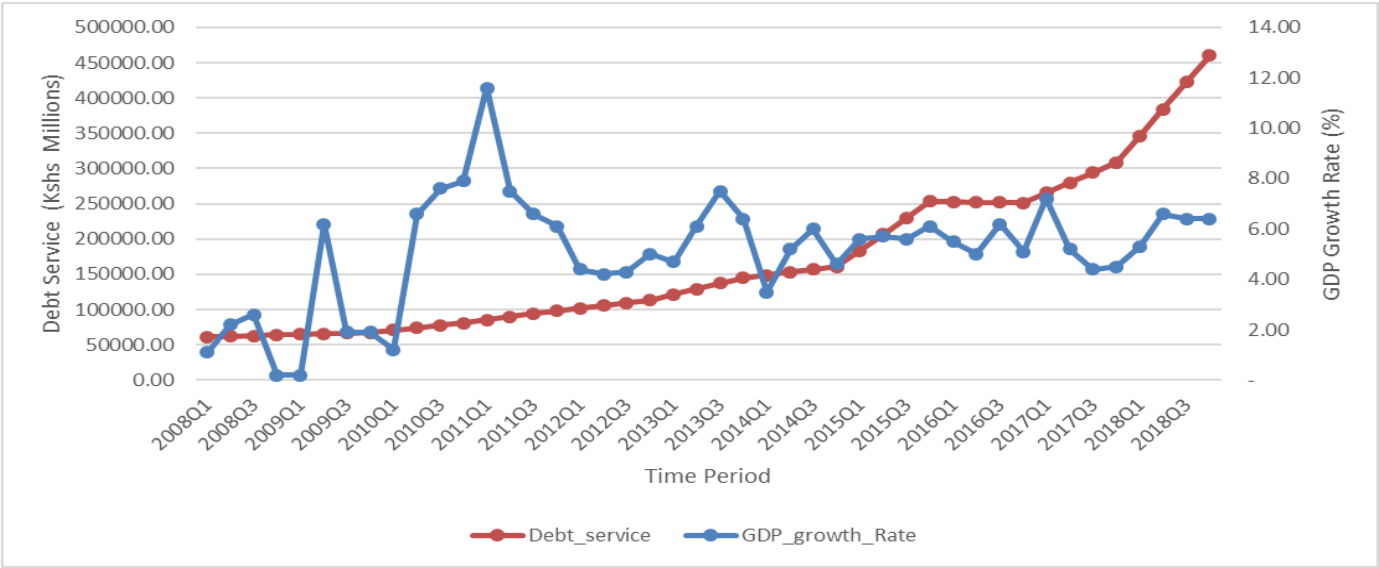


Figure 4.4 Trend Analysis of GDP against Debt Service

The trends analysis in Figure 4.5 indicate that whereas the economy has been growing unsteadily, the domestic borrowing in terms of CBK overdraft has also similarly been unsteadily

been growing. However, the composition of CBK overdraft against the total domestic debt is low compared to treasury bills and bonds.

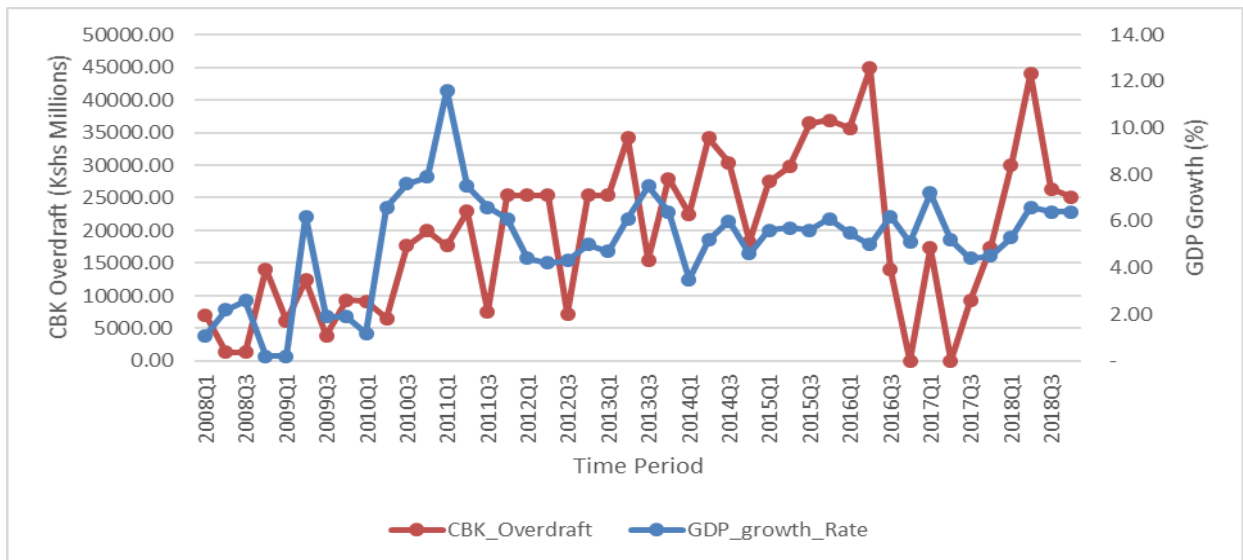


Figure 4.5 Trend Analysis of GDP against CBK Overdraft

The trends analysis in Figure 4.6 indicates that the GDP growth rate has assumed unsteady trends similar to the one on commercial bank overdraft in Kenya. The composition of commercial bank advances against the total domestic debt is low compared to treasury bills and bonds. This is not a preferred means of government borrowing in Kenya for the last 10 years.

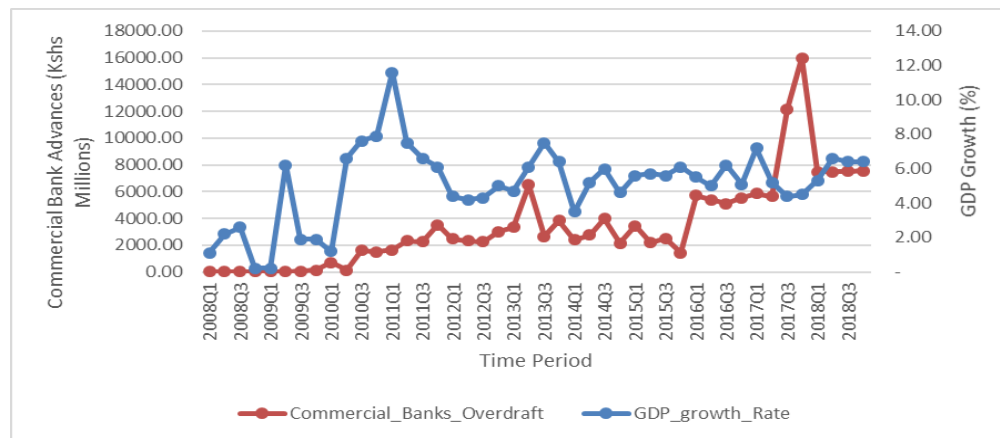


Figure 4.6 Trend Analysis of GDP against Commercial Bank Advances

The external debt forms the leading share of total public debt in Kenya. As shown in Figure 4.7, it has steadily been increasing in the last 10 years at a faster rate than the GDP has been growing. This therefore explains why the government has also been spending a lot on debt servicing.

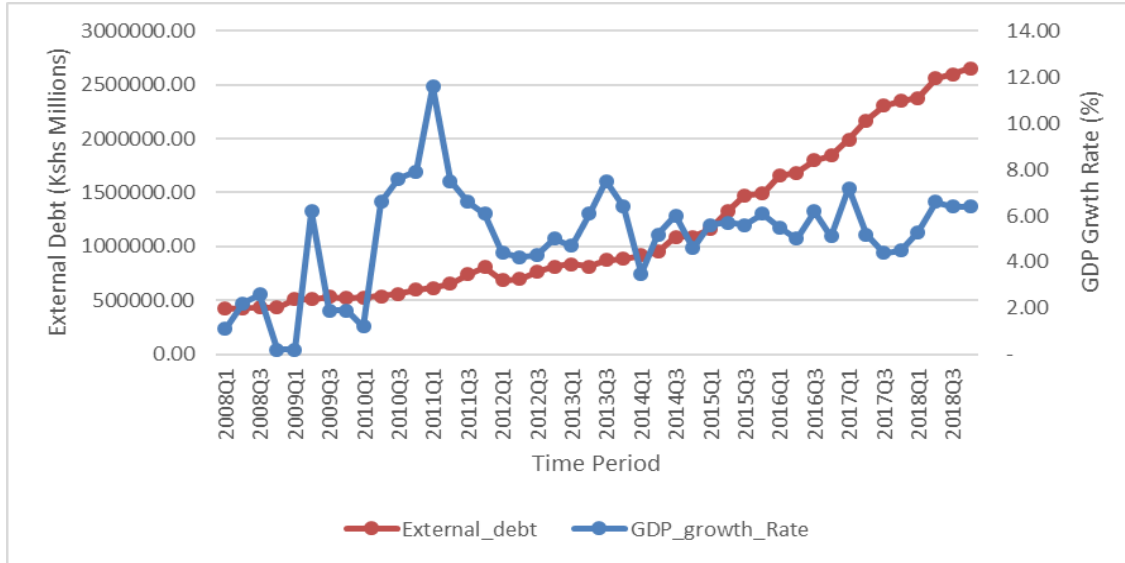


Figure 4.7 Trend Analysis of GDP against External Debt

4.3 Descriptive Statistics

Descriptive statistics obtained are as presented in Table 4.1.

Table 4.1 Descriptive Statistics

	GDP growth Rate	CBK overdraft	Comm banks overdraft	Debt Service	Domestic Debts	External debt	Treasury Bills	Treasury Bonds
Mean	5.093	19,743.23	3,465.22	168,541.89	1,195,172.79	1,152,865.71	350,207.37	820,904.99
Median	5.400	19,131.11	2,481.06	133,384.00	1,072,106.70	854,419.73	283,533.88	758,843.26
Maximum	11.600	44,873.88	15,977.18	460,135.00	2,535,751.88	2,654,689.44	974,725.55	1,550,054.62
Minimum	0.200	0.00	6.85	61,242.00	428,148.13	424,205.02	113,833.30	308,146.51
Std. Dev.	2.218	11,989.85	3,323.26	106,849.76	630,604.78	700,779.08	248,027.83	384,825.27
Skewness	(0.202)	0.12	1.63	1.00	0.64	0.87	1.11	0.34
Kurtosis	3.901	2.17	6.42	3.13	2.29	2.39	3.07	1.97
Jarque-Bera	1.786	1.36	4.81	7.37	3.97	3.22	7.07	2.82
Probability	0.409	0.51	0.13	0.03	0.14	0.18	0.15	0.24
Observations	44	44	44	44	44	44	44	44

The table indicates that the average rate of GDP growth in Kenya for the last 10 years in the study period between the year 2008 and 2018 was 5.1% with a high standard deviation indicating fluctuations in GDP growth rate over the years. The minimum value record in the past 10 years was 0.2% in one of the quarters while the maximum was 11.6% in one of the quarters.

The mean value of treasury bonds recorded in the 44 quarters in the last 10 years was Kshs. 820,904.99 Million with a high standard deviation which means that there have been high variations in the amount borrowed locally through treasury bonds in the 44 quarters of the last 10 years. The lowest amount of Treasury bonds recorded in the last 44 quarters was Kshs. 308,146.51 Million and the highest was Kshs. 1,550,054.62 Million.

In regard to treasury bills, it was established that an average of Kshs. 350,207.37 Million was being borrowed per quarter. The standard deviation value reflected high variations in government borrowing through treasury bills. In the last 44 quarters, it was demonstrated that the lowest value of Treasury bill borrowed was Kshs 113,833.3 Million while the highest value was Kshs. 974,725.55 Million.

The average debt service per quarter recorded in the last 10 years was Kshs. 168,541.89 Million. The standard deviation is big to indicate that there were high fluctuations in debt service over the quarters. It was also revealed that the lowest value of debt service per quarter was Kshs. 61,242.000 Million while the highest value of debt serviced per quarter was Kshs.460,135.00 Million.

An average CBK Overdraft value of Kshs. 19,743.23 Million quarterly annually for the last 10 years reflects a low rate of borrowing using this instrument compared to other instruments. The value has however been varying over time. The minimum value was 0 and the highest value borrowed through this instrument in a quarter considering the last 10 years was Kshs. 44,873.88 Million.

Commercial Bank Advances is the least amount of domestic debt in Kenya as shown by an average value of Kshs. 3,465.22 Million per quarter. A standard deviation value of Kshs. 3,323.26 Million indicated fluctuating Commercial Bank Advances over the quarters. The lowest amount of Commercial Bank Advances in the last 44 quarters Kshs. 6.85 Million while the highest amount was Kshs. 15,977.18 Million in a quarter.

External debt formed the highest proportion of the public debt at an average of Kshs. 1,152,865 Million per quarter in the last 10 years. A high standard deviation reflected a high variation in the rate at which the government has been borrowing from external sources for the last 10 years. The lowest amount of external debt recorded in a quarter in the last 10 years was Kshs. 424,205.02 Million while the highest amount borrowed in a quarter for the last 10 years was Kshs. 2,654,689.44 Million.

The probability for the Jarque Bera values for every variable was greater than 0.05 (Prob > 0.05) this implied that the null hypothesis of normality was not rejected. The data therefore assumed a normal distribution and hence it was not logged.

4.4 Diagnostic Tests

Before using a multivariate regression model, the study tested for the assumptions of a linear regression model. Tests of Heteroscedasticity, Autocorrelation, Unit roots, Collinearity and normality of the error term were conducted and presented in this section.

4.4.1 Collinearity Test

The study tested for multicollinearity using a VIF method. A VIF value below 10 indicates absence of multicollinearity. The findings in Table 4.2 indicate that apart from CBK overdraft and commercial bank advance, the other variables were highly correlated.

Table 4.2 Collinearity Test

	Collinearity Statistics	
	Tolerance	VIF
Debt Service	0.013	77.492
Treasury Bills	0.029	34.489
Treasury Bonds	0.039	25.866
CBK Overdraft	0.362	2.764
Domestic Debt	0.035	28.87
Commercial Banks Advance	0.193	5.168
External Debt	0.012	86.811

This is so considering that they compose public debt and the government borrows locally to service external debt. Furthermore, as the GDP increases, the government borrowing also increases hence the multicollinearity.

Williams (2008) as well as Achwoga and Simiyu (2016) argue that one of the ways of dealing is to acknowledge the presence of Multicollinearity, acknowledge its consequences and ignore it. They argued that in as much as the recommendation is to “drop” the offending variable, “dropping” the variable if it really belongs in the model can lead to specification error, which may at times be even worse than Multicollinearity. Hence even though there was a high Multicollinearity between domestic and external debt compositions, the variables were not dropped.

4.4.2 Heteroscedasticity Test

Heteroscedasticity exist in a scenario where the error term variations are not constant. When this happens, the study potentially arrives at estimators that are unbiased and consistent, however the estimators remain inefficient. This test was carried out to ascertain the sufficiency of using a multiple regression model in OLS using Breusch-Pagan-Godfrey test as shown in Table 4.3.

Table 4.3 Heteroscedasticity Test: Breusch-Pagan-Godfrey

F-statistic	2.036	Prob. F(7,36)	0.0771
Obs*R-squared	12.479	Prob. Chi-Square(7)	0.0859
Scaled explained SS	9.531	Prob. Chi-Square(7)	0.2168

If the calculated statistics value exceeds critical table value, the null hypothesis of homoscedasticity is rejected. The results indicate that the observed probability chi square significance of 0.085 was not significant (Prob. Chi-Square (6) > 0.05) hence the H_0 of existence of homoscedasticity is not rejected. This meant that based on this test alone the fitted multiple regression models were a good fit and Heteroscedasticity was absent. Using a multivariate regression model would not violate the assumption of OLS.

4.4.3 Autocorrelation Test

Correlation of residuals across time was tested using Breusch–Godfrey test where the H_0 demonstrates absence of first order serial /auto correlation. The results in Table 4.4 showed that the observed probability chi square was significant (Prob. Chi-Square (2) < 0.05) hence the H_0 was rejected implying that there existed first order serial correlation. The study therefore used robust standard errors when estimating regression model in order not to violate the assumption of OLS.

Table 4.4 Breusch-Godfrey Serial Correlation LM Test

F-statistic	5.513	Prob. F(2,34)	0.008
Obs*R-squared	10.775	Prob. Chi-Square(2)	0.005

4.4.4 Residual plot

Residual analysis is a post regression estimation test that evaluates the goodness of the fit of the fitted regression model. If the graph of fitted versus residuals form a pattern is an indication that the regression model might not be a good fit. Results in Figure 4.8 indicate that the residuals don't form patterns and that indicate that the regression model was a good fit. An OLS regression model was thus found to be sufficient for analyzing the data in this study. The study thus proceeded to analyze the data using a multivariate regression model.



Figure 4.8 Residual Plot

4.4.5 Unit Root Test

ADF test was used to determine existence stationarity or otherwise. ADF was chosen because it takes care of autocorrelation in case it is present in the series. The null and alternative hypotheses of this test are indicated below:

$H_0: \alpha = 0$ (the series has a unit root).

$H_1: \alpha \neq 0$ (the series has no unit root).

In the test, comparison of the tau calculated at different levels of significance was compared with the DF critical value and if it is greater than tau calculated value, then the data is not stationary. The results in Table 4.5 indicated that all the variables were non-stationary at level implying that they could only predict long run relationships but in order to predict a short term relationship, there was a need for first differencing.

Table 4.5 Unit Root (None and Level)

Variable name	ADF Statistic	1% Level	5% Level	10% Level	Comment
GDP Growth Rate	(0.869)	(2.620)	(1.949)	(1.612)	Non -Stationary
Treasury Bonds	7.837	(2.620)	(1.949)	(1.612)	Non-Stationary
Treasury Bills	4.111	(2.620)	(1.949)	(1.612)	Non-Stationary
Debt Service	2.088	(2.635)	(1.951)	(1.611)	Non-Stationary
CBK Overdraft	(1.457)	(2.620)	(1.949)	(1.612)	Non- Stationary
Commercial Bank Advances	(1.046)	(2.620)	(1.949)	(1.612)	Non- Stationary
External Debt	6.939	(2.620)	(1.949)	(1.612)	Non -Stationary
Domestic Debt	8.808	(2.620)	(1.949)	(1.612)	Non -Stationary

All the variables were differenced at first difference and unit root test conducted again. The results in Table 4.6 indicated that all the variables became stationary at none after first differencing. Therefore, an error correction model was adopted with these variables to predict both short run and long term relationship between the variables.

Table 4.6 Unit Root (None and First difference)

Variable name	ADF Statistic	1% Level	5% Level	10% Level	Comment
D(Treasury Bonds)	(12.804)	(2.623)	(1.949)	(1.612)	Stationary
D (Treasury Bills)	(7.075)	(2.626)	(1.950)	(1.612)	Stationary
D (Debt Service)	(9.071)	(2.624)	(1.949)	(1.612)	Stationary
D(CBK Overdraft)	(8.337)	(2.624)	(1.949)	(1.612)	Stationary
D(Commercial Bank Advances)	(7.724)	(2.631)	(1.950)	(1.611)	Stationary
D (External Debt)	(8.099)	(2.626)	(1.950)	(1.612)	Stationary
D (Domestic Debt)	(7.032)	(2.626)	(1.950)	(1.612)	Stationary

4.5 Pearson Product Moment Correlation

Correlation results as shown in Table 4.6 was used to show relationships between the variables. The results in Table 4.7 indicate that CBK Overdraft and Commercial Bank Advance severely affect the economic growth. The effect of Treasury bond and CBK overdraft is significant (P-value < 0.05). On the other hand, the effect of debt service, domestic debt and external debt on economic growth is positive meaning that if the government utilizes the debts prudently, it would improve the economic growth. The results also imply that as the public debts increases, the economy also increases and debt services similarly increases. The effect of domestic debt on

economy growth is however significant at 5% (P-value < 0.05). The effect of both external debt and debt service is however significant at 10% (P-value < 0.05).

Table 4.7 Pearson Product Moment Correlation

		1	2	3	4	5	6	7	8
Debt Service (1)	Pearson Correlation	1							
	Sig. (2-tailed)								
Treasury Bills (2)	Pearson Correlation	.969**	1						
	Sig. (2-tailed)	0.000							
Treasury Bonds (3)	Pearson Correlation	.965**	.938**	1					
	Sig. (2-tailed)	0.000	0.000						
CBK Overdraft (4)	Pearson Correlation	.409**	0.263	.442**	1				
	Sig. (2-tailed)	0.006	0.085	0.003					
Commercial Banks Advance (5)	Pearson Correlation	.772**	.821**	.818**	0.277	1			
	Sig. (2-tailed)	0.000	0.000	0.000	0.069				
Domestic Debts (6)	Pearson Correlation	.981**	.975**	.992**	.393**	.832**	1		
	Sig. (2-tailed)	0.000	0.000	0.000	0.008	0.000			
External Debt (7)	Pearson Correlation	.983**	.977**	.971**	.328*	.830**	.987**	1	
	Sig. (2-tailed)	0.000	0.000	0.000	0.03	0.000	00.000		
GDP Growth Rate (8)	Pearson Correlation	0.279	- 0.242	0.347*	-.374*	- 0.249	.316*	0.266	1
	Sig. (2-tailed)	0.067	0.113	0.021	0.012	0.103	0.037	0.081	
	N	44	44	44	44	44	44	44	44
** Correlation is significant at the 0.01 level (2-tailed).									
* Correlation is significant at the 0.05 level (2-tailed).									

4.6 Error Correction Model

Since the variables were not stationary but stationary at order (1), an error correction model was suitable to test both the short run and long run effect of debts on economic growth in Kenya. The use of non-stationary variables could otherwise have produced spurious results. The ECM results in Table 4.8 were used to test the study objectives.

Table 4.8 Regression Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Sig
Constant	(0.11371)	0.46301	(0.24558)	0.80744
D (Treasury Bills)	(0.00108)	0.00025	(4.31097)	0.00013
D (Treasury Bonds)	(0.00107)	0.00025	(4.27741)	0.00014
D (CBK Overdraft)	(0.00105)	0.00025	(4.19724)	0.00018
D (Commercial Bank Advances)	(0.00114)	0.00029	(3.88302)	0.00044
D(Domestic Debt)	0.00108	0.00025	4.31177	0.00013
D (External debt)	0.00000	0.00001	0.45879	0.04692
D (Debt Service)	0.00000	0.00003	0.06152	0.95130
R-squared	0.368			
Adjusted R-squared	0.242			
S.E. of regression	1.709			
Sum squared residual	102.234			
Log likelihood	(79.635)			
F-statistic	2.912			
Prob(F-statistic)	0.016			

The results also indicate that the regression model R-square was 0.368. This implies that Treasury Bills, Treasury Bonds, CBK Overdraft, Commercial Bank Advances, Domestic Debt, External debt and Debt Service can be used to predict up to 36.8% of the variation in economic growth of Kenya while other factors explain the remaining percentage. The F statistic value also demonstrated that the model linking Treasury Bills, Treasury Bonds, CBK Overdraft, Commercial Bank Advances, Domestic Debt, External debt and Debt Service to economic growth of Kenya was a good fit (Prob (F-statistic) = 0.016 < 0.05).

The regression coefficient results in Table 4.8 indicate that holding other factors constant, other factors in the economy positively affect economic growth. CBK Overdraft (B = - 0.00105), Treasury Bonds (B = - 0.00107), Treasury bills (B = - 0.00108) and commercial bank advance (B = - 0.00114) have a negative and significant effect on economic growth of Kenya (Prob < 0.05). This implies that domestic borrowing through these instruments severely hurts the economy and deteriorates growth significantly. This is due to crowding out of the private sector denying investors' money for investment.

The results also demonstrated that domestic debt (B = 0.00108), external debt (B = 0.00000*) and debt service (B = 0.00000*) are positively related with economic growth. Lidiema

(2017) similarly demonstrated that domestic borrowing negatively affects gross fixed capital formation. Szabo (2015) also showed that additional debts harm economic development. Putunoi and Mutuku (2012) indicated a positive and significant effect of debts on economic growth while Cesar and Fuentes (2013) proved existence of a negative and robust effect of public debt on growth.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

Based on the findings in chapter four, this section presents the conclusions and the recommendations for policy as well as areas for further study.

5.2 Conclusions

This study concluded that in the last decade domestic borrowing instruments that is Treasury Bills, Treasury Bonds, CBK Overdraft, Commercial Bank Advances and overall Domestic Debt, External debt and Debt Service account for up to a third (36.8 percent) of the variation in economic growth of Kenya while other factors explain the remaining percentage. The study also concludes that domestic borrowing through CBK Overdraft, Treasury Bonds, Treasury bills and commercial bank advance severely and significantly hinders economic growth.

This is attributed to crowding out of the private sector denying investors' money for investment. Another conclusion is that domestic debt, external debt and debt service are positively related with economic growth. But only domestic debt as a whole has a significant effect on economic growth. This demonstrates that as much as the impact of debt service and external debt is not significant, local borrowing under manageable levels can spur economic growth.

5.3 Recommendations for Policy Implications

In light of the results and conclusions discussed in the foregoing paragraphs, it can be recommended that the Kenyan government policy makers should adopt an optimal balance in borrowing both locally and externally in order to spur economic growth. Even though the effect of external borrowing was insignificant given a short time period, instruments of domestic borrowing such as treasury bills, CBK overdrafts, commercial banks advances and treasury bonds were detrimental to the economy thus, the government should manage borrowing through these instruments since they have the potential of crowding out the private sector.

There is also a need to have prudential fiscal debt management policies so as to manage the increasing debt rates. Reduced borrowing would push the government to exploit their tax

revenue efficiently in investment and not repayment of debts thus encouraging an improvement in economic growth. This is because as the economy grows, debt servicing is equally growing.

5.4 Limitations of the study

The application of the study was limited to economic growth in the Kenyan economy since in reality there are more than the enumerated variables that determine a country's economic growth. The time period in consideration, 2008 to 2018 is a constraint to getting a more robust view of the relationship between the variables. Using a longer time period may give different results, but due to limited time and resources as well as availability of data, the study was limited to the specified time period.

5.5 Areas for Further Study

The study was limited to a period of 10 years. This opens up an avenue for other studies to widen the scope since the findings in this study are confined to this period only. The study did not consider other control variables that affect the real GDP other than public debts. This can well be considered by other studies in future. The use of an OLS also opens up an avenue for other studies to adopt other methods of analysis other than this.

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APPENDICES

APPENDIX I: DATA SET

Period	GDP growth Rate	Debt service	Treasury bills	Treasury bonds	CBK Overdraft	Commercial Banks Overdraft	Domestic debts	External debt
2008 Q1	1.10	61242.00	118166.55	308146.51	7021.59	11.50	434621.39	424205.02
2008 Q2	2.20	62147.00	122381.40	312015.86	1355.44	12.78	437870.94	425992.78
2008 Q3	2.60	63052.00	113833.30	311342.46	1340.37	8.82	428148.13	432808.95
2008 Q4	0.20	63957.00	124265.80	315013.81	14071.82	8.46	454685.97	434487.59
2009 Q1	0.20	64862.00	133066.55	334418.21	6198.69	6.85	474749.81	512475.65
2009 Q2	6.20	65767.00	138870.60	343454.86	12371.31	25.40	497450.16	511981.59
2009 Q3	1.90	66672.00	154148.25	371205.25	3909.48	69.72	530400.97	532144.51
2009 Q4	1.90	67577.00	166879.40	389887.45	9334.74	114.21	567125.13	523899.66
2010 Q1	1.20	70930.75	174479.10	395461.20	9179.71	686.88	580721.47	525552.75
2010 Q2	6.60	74284.50	194059.15	437474.35	6544.79	123.12	639116.32	537424.84
2010 Q3	7.60	77638.25	191267.55	448615.35	17649.38	1595.86	660267.68	562941.95
2010 Q4	7.90	80992.00	176380.85	498137.90	19961.29	1485.23	696132.65	598080.46
2011 Q1	11.60	85382.00	167344.35	538569.95	17628.60	1653.89	730197.77	615604.98
2011	7.50	89772.00	134537.50	574489.65	22926.07	2335.83	735460.06	652675.73

Q2								
2011 Q3	6.60	94162.00	157388.10	595661.35	7571.00	2243.30	764222.80	744486.60
2011 Q4	6.10	98552.00	159349.10	605849.50	25373.20	3505.02	794565.56	810011.60
2012 Q1	4.40	102325.00	140384.55	640132.85	25373.20	2473.64	809278.11	686718.48
2012 Q2	4.20	106098.00	177399.25	689983.30	25373.20	2313.67	896036.72	700900.00
2012 Q3	4.30	109871.00	161830.05	686950.90	7256.50	2255.71	858829.55	767390.00
2012 Q4	5.00	113644.00	182914.05	717648.66	25373.20	3002.05	929321.62	812307.84
2013 Q1	4.70	121540.00	233713.70	715568.29	25373.20	3349.13	978335.91	833609.46
2013Q2	6.10	129436.00	283449.75	740996.00	34186.64	6512.77	1065609.39	816796.56
2013 Q3	7.50	137332.00	283618.00	776690.51	15488.16	2638.17	1078604.00	875230.00
2013 Q4	6.40	145228.00	340867.75	801846.54	27979.68	3851.64	1174782.27	887991.23
2014 Q1	3.50	149071.00	344532.60	831319.29	22473.86	2382.34	1200901.86	920500.71
2014 Q2	5.20	152914.00	304969.20	874652.84	34186.64	2743.55	1216759.23	950981.15
2014 Q3	6.00	156757.00	333331.95	913247.10	30377.85	3977.01	1281093.66	1089655.77
2014 Q4	4.60	160600.00	311615.80	922099.93	18300.92	2128.81	1254913.42	1088832.15
2015 Q1	5.60	183767.75	326463.20	977080.38	27486.55	3454.26	1334642.80	1163350.79
2015 Q2	5.70	206935.50	374136.60	1009167.63	29769.47	2190.15	1415431.51	1326835.19
2015 Q3	5.60	230103.25	345543.15	1035706.68	36494.18	2488.47	1420444.38	1473143.70
2015	6.10	253271.00	348309.75	1067419.10	36873.24	1430.89	1454245.39	1490713.76

Q4								
2016 Q1	5.50	252813.50	404324.80	1076604.05	35665.27	5726.48	1522769.88	1654744.49
2016 Q2	5.00	252356.00	533403.45	1104673.83	44873.88	5377.16	1689039.25	1685269.16
2016 Q3	6.20	251898.50	602705.75	1186119.82	14006.12	5093.46	1808641.64	1797696.38
2016 Q4	5.10	251441.00	641655.15	1224209.95	0.00	5530.12	1872102.82	1844474.96
2017 Q1	7.20	265702.75	619529.60	1250696.81	17304.25	5857.26	1894094.99	1992795.15
2017 Q2	5.20	279964.50	651292.05	1317024.09	0.00	5657.06	1974666.22	2167254.83
2017 Q3	4.40	294226.25	764550.85	1337153.94	9209.00	12169.33	2123788.59	2305538.33
2017 Q4	4.50	308488.00	759655.95	1402493.31	17382.49	15977.18	2196204.77	2353124.93
2018 Q1	5.30	346399.75	755312.40	1453911.31	29917.29	7472.41	2247295.02	2377522.47
2018 Q2	6.60	384311.50	812968.10	1550054.62	44025.33	7476.00	2415234.64	2562178.53
2018 Q3	6.40	422223.25	969503.90	1509003.52	26340.05	7503.83	2513046.50	2601071.15
2018 Q4	6.40	460135.00	974725.55	1527620.85	25174.32	7550.44	2535751.88	2654689.44