

**EFFECT OF DOMESTIC DEBT ON ECONOMIC GROWTH IN  
KENYA**

**MUNYINGI MARY WANGARI**

**A Research Paper presented to the School of Economics in Partial Fulfillment of  
the Requirements for the Award of the Degree of Master of Arts (Economics) of  
the University of Nairobi.**

**November, 2013**

**DECLARATION**

This Research Project is my original work and it has not been presented for an academic award or any other kind of award in any other institution. Secondary sources used in the research paper have been given due acknowledgement.

**SIGNATURE:.....**

**DATE:.....**

**MARY WANGARI MUNYINGI**

**X50/73243/2012**

This research Project has been submitted for examination with our approval as the university supervisors

**SIGNATURE:.....**

**DATE:.....**

**DR. MOSES MURIITHI**

**SIGNATURE:.....**

**DATE:.....**

**MR. JASPER OKELO**

## **DEDICATION**

To my dear Mum Cecilia Wanjiru Munyingi for her great sacrifice in educating me. To my siblings for their love and moral support thank you for your relentless encouragement, love and prayers during this period.

## **ACKNOWLEDGEMENTS**

I am very grateful to the Almighty God for guiding me throughout and loving me unconditionally.

Much thanks to my able supervisors Dr. Moses Muriithi and Mr. Jasper Okelo for their invaluable contributions and guidance, Lecturers School of Economics University of Nairobi for their guidance and academic support throughout the course and in writing this paper.

Special thanks to African Economic Research Consortium (AERC) for the financial support they accorded me throughout the course and also the opportunity to work at The National Treasury.

I also appreciate all the Lecturers at the School of Economics for their input in building an academic base upon which I was able to write this Research Paper. I would also like to thank all my friends and classmates (M.A 2013) for the support and challenges that we offered each other in pursuit of academic knowledge.

Lastly but very important, I would like to thank my dear mum and siblings for supporting me through all my academic life. Their love and support encouraged me to forge forward even when things seemed tough.

I however assume sole responsibility for any errors and omissions that may be contained in this paper.

## TABLE OF CONTENTS

DECLARATION .....	ii
DEDICATION .....	iii
ACKNOWLEDGEMENTS .....	iv
LIST OF TABLES .....	viii
LIST OF FIGURES .....	ix
ABSTRACT .....	x
<b>CHAPTER ONE : INTRODUCTION.....</b>	<b>1</b>
1.0 Background to the Study.....	1
1.1 Kenya’s debt scenario in relation to economic growth.....	3
1.2 Debt Sustainability Analysis.....	5
1.3 The Research Problem .....	8
1.4 The Research Objectives.....	9
1.4.1 Overall Objective .....	9
1.4.2 Specific Objective .....	9
1.5 Research Justification .....	9
<b>CHAPTER TWO : SURVEY OF LITERATURE REVIEW.....</b>	<b>11</b>
2.0 Introduction.....	11
2.1 Theoretical Literature Review .....	11
2.2 Empirical Literature Review.....	13
2.3 Overview of the literature .....	21

<b>CHAPTER THREE : METHODOLOGY.....</b>	<b>23</b>
3.0 Introduction.....	23
3.1 Theoretical Model.....	23
3.2 Model Specification.....	24
3.2.1 Estimable Model.....	24
3.3 Diagnostic Tests.....	26
3.3.1 Unit Root Test.....	26
3.3.2 Cointegration Analysis.....	27
3.4 Estimation Technique.....	27
3.5 Data Type and Source.....	27
<b>CHAPTER FOUR : DATA ANALYSIS, RESULTS AND DISCUSSION .....</b>	<b>28</b>
4.0 Introduction.....	28
4.1 Descriptive Statistics and Diagnostic Test Results.....	28
4.1.1 Descriptive Statistics.....	28
4.1.2 Diagnostic Test Results.....	34
4.2 Regression Results.....	38
4.2.1 Cointegration Analysis.....	38
4.2.2 Error Correction Model.....	39
4.3 Discussion of the Results.....	42

<b>CHAPTER FIVE : CONCLUTIONS AND POLICY RECOMMEDATIONS .....</b>	<b>45</b>
5.0 Introduction.....	45
5.1 Conclusion .....	45
5.2 Policy Recommendations.....	46
5.3 Areas of Further Study.....	47
<b>REFERENCES.....</b>	<b>48</b>

## LIST OF TABLES

Table 1.1: Stocks of Kenya’s Real GDP, external debt and domestic debt in kshs bn as at the end of F/Y for the period 1981-2012 .....	4
Table 3.1 Variables and their expected signs.....	25
Table 4.1: Descriptive Statistics .....	28
Table 4.2 Corelation Matrix.....	35
Table 4.3 Unit Root Test.....	35
Table 4.4: Breusch – Pagan / Cook – Weisberg test for heteroskedasticity .....	36
Table 4.5: Breusch – Godfrey LM test for autocorrelation .....	37
Table 4.6: Ramsey Reset test for Model Specification.....	38
Table 4.7 Engel-Granger two steps test for Cointegration .....	39
Table 4.8 ECM Estimation Results.....	40



## LIST OF FIGURES

Figure 4.1: External Debt and Domestic Debt in Kenya (1981-2012) .....	30
Figure 4.2: Real Gross Domestic Product and Domestic Debt in Kenya (1981-2012) .....	31
Figure 4.3: Domestic Debt in Kenya (1981-2012) .....	32
Figure 4.4 Domestic Debt and Private Sector Credit in Kenya (1981-2012) .....	33
Figure 4.5: Domestic Debt and Inflation in Kenya (1981-2012).....	33
Figure 4.6: Domestic Debt and Population Growth Rate in Kenya (1981-2012).....	34

## **ABSTRACT**

The overall shift of public debt in favour of domestic debt in Kenya coupled with the debt sustainability analysis which showed that domestic debt over the period under the study is not sustainable raises the need for the Kenyan government to formulate and implement prudent domestic debt management strategies to mitigate the effects of the rising domestic debt levels. The effects of the rising domestic debts on economic growth is of main concern. This study seeks to find out if government domestic borrowing from the financial markets has any effects on economic growth in Kenya in order to be able to suggest policy measures aimed at debt management that would promote economic growth. The Ordinary Least Squares Method (OLS) is used to analyse the yearly time series data between 1981 and 2012. The Jacque Bera (JB) and the Augmented Dickey Fuller (ADF) tests have been used in investigating the properties of the macroeconomic time series data in the aspects of normality and unit root respectively. Cointegration analysis was conducted using the Engel-Granger residual, there was evidence of cointegration at 10% level of significance. Having established cointegration an Error Correction Model (ECM) which links the short run dynamics of the model with the long run was used.

The study shows that domestic debt expansion in Kenya, for the period of study, has a positive and insignificant effect on economic growth. In view of this, the study recommends that the Kenyan government should encourage sustainable domestic borrowing by exploring other avenues of financing the budget deficit other than just resulting to more domestic borrowing.

# CHAPTER ONE

## INTRODUCTION

### 1.0 Background to the Study

National debt or government debt is the total amount of money that the government has borrowed from any source. Every level of government, from national to municipal levels can have its own debt. All these debts are included in the total national debt. A national debt is accumulated borrowing by the national government. It is the difference between all the money that our national government has ever spent and all the revenue that it has ever collected since our nation's inception. The annual budget deficit is the amount that our government borrows each year. It is the difference between what the national government spends and the revenue it receives during a particular year. So each year's deficit is added to the existing debt. When revenue exceeds spending it's called a surplus, which subtracts from the debt.

There are two types of national debt; internal and external. Internal debt is funds borrowed from sources within the country. -“Public domestic debt is the debt a government incurs by borrowing in its own currency from the residents of its own country”- (Commonwealth secretariat, 1999).The money for this type of debt is raised by selling securities, government bonds and bills. External debt is funds borrowed from foreign lenders, this can include private sources, other countries and the international

monetary fund (IMF). Other categories of debts include secured and unsecured debts, private and public debts, and syndicated and bilateral debts.

Panizza (2007) and Christensen (2005) have shown that public domestic debt is more expensive than external debt. This is because as the public domestic debt keeps on rising, governments resort to raising interest rate to continue attracting investors which raises cost of public debt servicing. The many initiatives that exist and address external debts clearly show the great focus that has been given to external debt. Such initiatives include the Heavily Indebted Poor Countries (HIPC) and the Multilateral Debt relief initiative by the World Bank and the International Monetary Fund (IMF). There is therefore the need to look at the domestic debts. Kenya has been running net repayments of debt for more than a decade while domestic debt has been accumulating rapidly over the years (Maana et al, 2008).

Further most of the literature on the effects of public debts on the economic performance has been within the context of developed countries. Those done in developing countries mainly focus on external debts. Little is known about the sovereign default of domestic debt. Until recently less attention has been paid to domestic debt in low income countries despite its potential significant effects on government budget, macroeconomic stability, private sector lending and ultimately growth performance (Christensen, 2005).

UNICEF (1999) argues that debt is killing children. Countries are diverting resources away from special provisions to repay debt; those most affected are the poor, especially

women and children. UNICEF (2000) attributed the loss of 30,000 children each day due to poverty as government debt related.

### **1.1 Kenya's debt scenario in relation to economic growth**

Table 1.1 below highlight the trends of Kenya's Real Gross Domestic Product (RGDP), external debt and domestic debt for the period 1981-2012 in Kshs. billions. It shows that both external and the domestic debts steadily rose, with the external debt rising from 13.0 billion in 1981 to 749.2 billion in 2012 while the domestic debt rose from 10.7 billion to 768.7 billion in the same period.

During the first ten years period 1981-1990, the domestic debt did not exceed the external debt and this clearly shows that domestic debt crisis was not an issue of concern by then. This was due to good economic performance, external inflows were large due to cold war and that there also prevailed good economic and political stability in the country. During this period domestic debt are manageable and stable since the real GDP is good enough to cover the budget estimates.

In the next ten years period 1991-2000, we see the domestic debt increase at an increasing rate and even forming a larger portion of the public debt burden. Whereas the real GDP has not been steady, the trend in the domestic debt has been increasing.

Much increase in domestic debt is noted during the last twelve years period 2001-2012, it is now at an alarming figure of 1 trillion. In the earlier years that is 1981 to 1984 real GDP is seen to decrease with the increase in domestic debt after which the economic growth is seen to increase with the increase in domestic debt and thereafter decreases with the increase in domestic debt to its lowest point of actually less than one in year 2000. The economy did so well between years 2003 to 2007 with a significant growth in domestic debt, declined in year 2008, and thereafter picked, still with much growth in the

domestic debts. The analysis above triggers the question; what is the effect of domestic debt on economic growth?

**Table 1.1: Stocks of Kenya's Real GDP, external debt and domestic debt in kshs bn as at the end of F/Y for the period 1981-2012**

<b>Year</b>	<b>RGDP</b>	<b>External</b>	<b>Domestic</b>
1981	102.29	13.0	10.7
1982	86.05	17.2	14.5
1983	78.26	23.4	17.9
1984	72.2	30.6	20.0
1985	66.64	30.9	22.8
1986	69.66	40.6	27.3
1987	67.93	45.6	35.1
1988	64.26	54.3	39.2
1989	59.12	54.3	42.8
1990	52.3	68.4	53.1
1991	44.18	89.2	56.1
1992	34.42	122.3	63.0
1993	23.66	273.1	103.6
1994	18.85	208.1	103.2
1995	19.38	246	111.4
1996	18.54	359	110.5
1997	16.73	325.5	130.8
1998	16.19	336.3	145.5
1999	15.66	413.8	150.5
2000	14.33	395.7	163.4
2001	14.06	293.3	164.8
2002	13.87	345.6	200.6
2003	13	353.3	245.6
2004	12.24	443.2	254.6
2005	11.75	434.5	253.5
2006	10.92	431.2	286.5
2007	10.64	397.1	318.4
2008	8.56	424.3	335.0
2009	8.05	517.0	401.7
2010	8.19	548.7	534.0
2011	7.5	697.8	624.8
2012	7.15	749.2	768.7

Source: World Bank data base

## **1.2 Debt Sustainability Analysis**

Sustainable debt is the level of debt which allows a debtor country to meet its current and future debt service obligations in full, without recourse to further debt relief or rescheduling, avoiding accumulation of arrears, while allowing an acceptable level of economic growth. (UNCTAD/UNDP, 1996)

External-debt-sustainability analysis is generally conducted in the context of medium-term scenarios. These scenarios are numerical evaluations that take account of expectations of the behavior of economic variables and other factors to determine the conditions under which debt and other indicators would stabilize at reasonable levels, the major risks to the economy, and the need and scope for policy adjustment. In these analysis, macroeconomic uncertainties, such as the outlook for the current account, and policy uncertainties, such as for fiscal policy, tend to dominate the medium-term outlook. (IMF, 2000)

World Bank and IMF hold that "a country can be said to achieve external debt sustainability if it can meet its current and future external debt service obligations in full, without recourse to debt rescheduling or the accumulation of arrears and without compromising growth". According to these two institutions, "bringing the net present value (NPV) of external public debt down to about 150 percent of a country's exports or 250 percent of a country's revenues" would help eliminating this "critical barrier to longer-term debt sustainability". High external debt is believed to have harmful effects on an economy.

There are various indicators for determining a sustainable level of external debt. While each has its own advantage and peculiarity to deal with particular situations, there is no unanimous opinion amongst economists as to one sole indicator. These indicators are primarily in the nature of ratios i.e. comparison between two heads and the relation thereon and thus facilitate the policy makers in their external debt management exercise. These indicators can be thought of as measures of the country's "solvency" in that they consider the stock of debt at certain time in relation to the country's ability to generate resources to repay the outstanding balance.

Examples of debt burden indicators include; debt to GDP ratio, foreign debt to exports ratio, and government debt to current fiscal revenue ratio. This set of indicators also covers the structure of the outstanding debt including the share of foreign debt, short-term debt, and concessional debt in the total debt stock.

A second set of indicators focuses on the short-term liquidity requirements of the country with respect to its debt service obligations. These indicators are not only useful early-warning signs of debt service problems, but also highlight the impact of the inter-temporal trade-offs arising from past borrowing decisions. Examples of liquidity monitoring indicators include the debt service to GDP ratio, foreign debt service to exports ratio, and the government debt service to current fiscal revenue ratio. The final indicators are more forward looking as they point out how the debt burden will evolve over time, given the current stock of data and average interest rate. The dynamic ratios show how the debt burden ratios would change in the absence of repayments or new



disbursements, indicating the stability of the debt burden. An example of a dynamic ratio is the ratio of the average interest rate on outstanding debt to the growth rate of nominal GDP.

Faced with increasing expenditure pressures and slowed growth in revenues the Kenya government has borne huge budgetary deficits, which has mainly been financed through borrowing. But heavy borrowing particularly from domestic market carries the danger of crowding out the private sector from credit and throwing the country's debt to gross domestic product (GDP) ratio out of proportion.

According to Parliamentary Budget Office (PBO) the government expenditures have more than quadrupled over the last ten years with total government spending rising by 350 percent to Shs.1.2 trillion in the 2012/2013 financial year from Shs.264.1 billion in 2002/2003 financial year.

A review of our current public debt indicates that the government has in the recent times financed its deficit with an increasing proportion of domestic debt and this represents the risk that the country may find it difficult to service the debt in future under modest economic growth rates, underperformance of revenue, large contingent liabilities and increasing fiscal pressures. Tax experts warn that heavy borrowing from the domestic market will crowd out the private sector from credit.

As at June 2013, Kenya is reported to have a debt to gross domestic product (GDP) ratio that is higher than the internationally accepted standard of 45 percent. At the current debt levels Kenya is reeling from high cost of servicing domestic debt, a situation that is slowly pushing borrowing to unsustainable levels and is likely to stoke interest rates. Cumulative interest and other charges on domestic debt for the period July, 2012 to May,

2013 in the 2012/13 fiscal year amounted to Sh.94.5 billion compared with Shs.69.9 billion during a similar period of the previous fiscal year (CBK, 2012). The current debt level of 48.9 percent of GDP is unsustainable (National Treasury).

### **1.3 The Research Problem**

Public debt in Kenya has been on upward trend especially for the last ten years (CBK, 2012). In 2010 the country's total public debt amounted to Kshs.1.2 trillion with a major shift towards the domestic debts. The effect of the rising domestic debts on private investment and economic growth is of main concern; high domestic debt induces uncertainty and negatively affects investments via high interest rates which reduce investments and consequently slows down economic growth. Domestic borrowing in Kenya crowds out private sector (Maana et al,2008). Credit to the private sector is important in financing short term and long term businesses plans within an economy. Without enough credit, the private sector businesses contribution to the growth of the economy will be impaired due to lack of enough capital necessary for investments. This is of much importance if Kenya is to achieve her vision 2030 ambitious goal of increasing her annual GDP growth rates to an average of 10%.

Maana et al (2008) found out that heavy domestic borrowing in Kenya bids up interest rates which is a disincentive to investment and Osei (1995) alludes that this leads to slow economic expansion. Domestic debt service (interest and principle payments) may lead to debt overhang in which the returns of investment are 'taxed away' by creditors, (Classens S. 1996). Domestic debt channels resources away from productive sectors of the economy hence crowding out private investment and consequently a decline in growth.

Increased domestic debt also reduces the country's credit-worthiness hence scaring potential investors and foreign lenders. The study therefore seeks to find out if government domestic borrowing from the financial markets has any effect on the economic growth of Kenya.

## **1.4 The Research Objectives**

### **1.4.1 Overall Objective**

The overall objective of this study is to empirically examine the relationship between domestic debt and economic growth in Kenya for the period covering 1981 to 2012.

### **1.4.2 Specific Objective**

1. To investigate the trends in domestic debt and economic growth in Kenya for the period 1980-2012.
2. To analyze the relationship between domestic debt and other correlates on economic growth in Kenya.
3. To suggest policy measures aimed on debt management that would promote economic growth.

## **1.5 Research Justification**

Kenya's rising domestic debt has serious implications on the country's development and debt sustainability. There has been a major shift in the composition of overall public debts in favour of domestic debt. A significant proportion of the government budget is allocated to servicing public debts every financial year, leaving inadequate financial resources for development activities. Domestic interest payment as a percentage of total

government expenditure was 8.4 percent in 2004/05 and increased to 8.8 percent in 2006/07. Interest payments on domestic debts as a percentage of government revenue accounted for about 10% in 2006/07, (IMF 2007).

The effect of the rising domestic debts on private investment and economic growth is of main concern. Credit to the private sector is important in financing short term and long term businesses plans within an economy. Without enough credit, the private sector businesses contribution to the growth of the economy will be impaired because of lack of enough capital necessary for investment. Studies on the effects of public debts on the economy in developing countries and in particular Kenya are scanty, as most studies have mainly focused on developed countries. Further, studies on public debt and its impact on private investment have focused on external debt. This research paper aims to filling the gap by using time series data from 1980 to 2012 to determine the effect of domestic debt on the Kenyan economic growth.

The study therefore seeks to find out if government domestic borrowing from the financial markets has any effect on the economic growth of Kenya. The study is important to policy makers as the findings can lead to prudent domestic debt management and decision making that may promote economic growth.

## **CHAPTER TWO**

### **SURVEY OF LITERATURE REVIEW**

#### **2.0 Introduction**

This chapter reviews previous theoretical and empirical studies on domestic debt and its relationship to economic growth. The theoretical literature review has concentrated on two different contrasting views to domestic debt that is the traditional and the Ricardian view. Finally an overview of literature is written on the empirical studies.

#### **2.1 Theoretical Literature Review**

The impact of domestic debt on economic growth can be analyzed in the context of two contrasting views; traditional and the Ricardian views.

In the traditional view an increase in the government debt is a burden on the economy. In the short run, in view of increase of the government debt, the consumer would consider being wealthier and therefore would resort to higher spending. The increased demand for goods and services, in view of sticky prices in the short run, will raise output and employment. As the marginal propensity to consume is higher than the marginal propensity to save, the increase in private savings falls short of the government dissaving. The real interest rate would rise in the economy encouraging capital inflow from abroad. In the long run the higher interest rate would discourage investment and thus crowd out private investment. The lower domestic saving mean a smaller capital stock which would lead to domestic debt burden as each generation burdens the next by leaving behind a smaller aggregate stock of capital.

Theoretically the process of crowding out arises from the fact that once the government borrows heavily from the domestic market, a shortage of funds arises prompted by increased demand for investible funds which drives interest rates up leading to the reduction of private borrowing and hence limiting private investment. Nevertheless, other channels of crowding out exist for example the type of public investment has important bearing on private investment. This has been a strong argument in both economic theory and policy as to whether public and private investments are substitutes or complements. The proponents of free markets argue that government intervention in the economy should be minimal. In this regard, they view state activity as competing with the private sector for the scarce resources in the economy and hence driving prices up. This is so if public sector investments are financed by borrowing which drives interest rates up thereby raising the cost of capital for the private sector. The end result is crowding out of private investments by public sector investments.

In the Ricardian view, government debt is considered equivalent to future taxes, Barro (1974). Considering that consumers are rational and forward looking, the discounted sum of future taxes is equivalent to the current deficit. Thus the shift between taxes and deficits does not generate aggregate wealth effects. The increase in government consumption does not affect consumption. The rational consumer facing current deficits saves for future rise in taxes and therefore total savings in the economy are not affected. A decrease in government dissaving is matched by an increase in private savings. In view

of unchanged total savings, investments and interest rates are also unaffected and so also the national income.

It is also argued that public investment may indeed be beneficial for the development of the private sector. The spill-over from expensive public investment that require long lead time to yield profits (such as infrastructure projects) may benefit the private sector. This is because an economy with world class transport and communication system reduces the cost of doing business and hence profitability. In addition public investment in human capital and health care services improves the skills and quality of life of manpower in the economy hence raising productivity. Thus public investment may not necessarily compete with the private sector for scarce resources. Some private sector investment might not be financed if financial markets are not well developed as in the case of developing countries. As such, public investment becomes handy in the provision of much needed and otherwise expensive investments.

## **2.2 Empirical Literature Review**

In less developed and developing countries, the financial markets and credit markets are still low and under developed. The government borrowing therefore may have negative effects on private credit more than it would in countries with well developed market economies. A number of studies have been undertaken to examine different aspects of these issues and the relationships between various variables that include private credit, public debt, budget deficit, interest rates and inflation. This section reviews some of the relevant studies.

Christensen (2005) analyses the role of domestic debt markets in 27 sub-Saharan African countries (including Kenya) based on the data spanning the period 1980-2000. The study sought to establish whether domestic borrowing crowded out private sector lending in the period. The study found that domestic debt markets in these countries were generally small, highly short term, and had a narrow investor base. The use of domestic debts was also found to have significantly crowded out private sector lending. The findings in this study in respect to Kenya may not hold at the moment given that a lot of reforms have been implemented in the management of domestic debts, and in the financial sector as a whole, since then. Apart from the robust performance of the economy and the broadening of the investor base in government securities, the maturity profile of domestic debts increased significantly during the period. Christensen (2005) observes that by borrowing from the domestic market, government taps into domestic private savings that would otherwise have been available to private sector. This affects the private investment negatively since interest rates go up (if they are flexible). However according to Beaugrand et al (2002), when interest rates are controlled by government, domestic borrowing by government has a more direct crowding out effect on private investment by reducing the amount of credit available to private sector. Beaugrand et al. (2002) viewed domestic debt as more expensive than concessionary external financing. As a result the interest burden of the domestic debt absorbs significant government revenues that would otherwise be allocated for development activities.

Abbas and Christensen (2007) analysed optimal domestic debt levels in low income countries (including 40 sub-Saharan Africa countries) and emerging markets between



1975 and 2004 and found that moderate levels of marketable domestic debt as a percentage of GDP has significant positive effects on economic growth. The study also provided evidence that debt levels exceeding 35 percent of total bank deposits have negative impact on economic growth. However, conclusions pertaining to Kenya based on this study could be obsolete since a lot of developments have been witnessed in the management of domestic debts since then. The country also witnessed an accelerated economic growth between 2005 and 2007 which was not captured in the above study. Abbas and Christensen (2007) argue that the cost of domestic debts may rise sharply due to time inconsistency problems when government credibility is low. If the state has weak (direct) tax collection, as the case in most Low Income Countries (LICs), the state will have a strong incentive to monetise (the) deficit and use net domestic financing window to both generate seigniorage and reduce the real burden of existing domestic debts. It is also argued that where lending to the government is highly attractive providing a constant flow of earnings, it may crowd out riskier private borrowers, Hauner (2006). This makes the banks complacent about costs and they end up reducing their motivation to mobilize deposits in order to fund risky private sector projects.

An empirical study done in Kenya by Maana, Owino and Mutai (2008) sought to analyze the impact of development of public domestic debt markets in Kenya for the period 1996 to 2007 and provide policy recommendations on how to improve domestic debt management in Kenya. The study adopted Barro growth regression model used by King and Levines (1993). The composition of public debt in Kenya was found to have shifted towards public domestic debt. The study concurred with Christensen (2005) that

significant rise in public debt implies higher domestic interest payments. Regression analysis indicated that public domestic debt expansion had a positive but insignificant effect on economic growth during the period. No evidence was found in crowding out private investors was established. Unlike this study by Maana et al, Chirongo C.J.O, (2003) in his study sought to examine the structure, magnitude, level and determinants of public domestic debt in Kenya for the period 1990 – 2001. He further examined the trend and impact of domestic debt directly on the economic growth, and indirectly on capital formation and private cum public sector investment. The study employed time series data and found out that the then domestic debt servicing crowded-out private sector investment though the effect was not significant as at then.

Adoufo and Abula (2010) like Onyeiwu (2012) both in Nigeria analysed causes and effects of rising public domestic debt on the Nigerian economy. Both studies applied Ordinary Least Squares (OLS) technique. Adoufo and Abula (2010) established that domestic debt in Nigeria serve three main purposes; budget deficit financing, monetary policy tool and development of financial sector. Onyeiwu (2012) showed that the domestic debt holding of the Nigerian government was far above threshold of 35 percent of bank deposit and this presented evidence of crowding out of private investment. In both studies regression results showed that public domestic debt had negatively affected growth of the Nigerian economy.

Tayaraman and Choong (2006) examine the nexus between debt and growth in Fiji. They employ the bivariate model which is likely to suffer from deficiencies arising from the

omission of relevant explanatory variables, for this they considered adding two explanatory variables that is real Treasury bill rate and the ratio of wages and salaries to total expenditure which they considered essential for explaining the growth in debt. The paper employed the bounds testing approach to examine the relationship between Fiji's economic growth, public debt, real interest rate and the ratio of government recurrent expenditure to its total expenditure. Their empirical analysis revealed that economic growth had a long-run relationship with public debt, real interest rates and ratio of government recurrent expenditures to total expenditure. Just like the above Nigerian studies by Adoufo and Abula (2010) and Onyeiwu (2012), debt influenced growth both in the short run and in the long run.

Siddiqui and Malik (2002) examine the impact of rising debt burden on economic growth of South Asian countries by considering three different critical ratios which could help in determining debt burden of the countries, these ratios were debt-export ratio, debt-output ratio and debt servicing to export or output. The debt situation was found to have changed and was becoming critical for some countries and as a result it could generate negative impact on economic growth. They examined the impact of external debt on growth through debt-growth ratio and also tested for nonlinearities in the relationship. All the indicators of debt burden, included in the study, highlighted the importance of improving the economic management through improved efficiency of the resource use so that the burden can be effectively reduced. The effect of population growth was found to be negative and this can be controlled by reducing population growth rate and improving human capital which has been omitted in the analysis.

An empirical study by Singh (1999), investigates the relationship between domestic debt and economic growth in India. He employs Cointegration test and the Granger Causality test to explore the relationship between debt and growth, which both support the Ricardian Equivalence Hypothesis between domestic debt and growth. This is, perhaps, the only study that was found to support the Ricardian Equivalence Hypothesis. Ricardian Equivalence implies the neutrality of domestic debt to growth.

Were (2001) in her study of Sub-Saharan Africa (SSA) stated that SSA is still plagued by its heavy external debt burden compounded by massive poverty and structural weaknesses of most of the economies, which has hindered economic growth.

More recently, K.Putunio and M.Mutuku (2013) did their research on domestic debt and economic growth nexus in Kenya and empirically examined the issue using advanced econometric technique and quarterly time series data spanning from 2000 to 2010. The study found that domestic debt expansion in Kenya for the period had a positive and a significant effect on economic growth and in view of this the study recommended that the government of Kenya should encourage sustainable domestic borrowing provided that the funds are utilized in productive economic avenues.

Sheikh et, al (2010) applying OLS technique for the period 1972-2009, observe that the stock of domestic debt affects economic growth positively but domestic debt servicing is inversely related to economic growth in Pakistan.

Wheeler (1999) investigates the macroeconomic impacts of government debt in US by applying variance decompositions and impulse response functions for the period of the 1980s and 1990s. The author tests the Ricardian Equivalence hypothesis by examining the impact of government debt on output price level and interest rates. The results of the study show that government debt has a negative and significant impact on interest rates, price level and output. Bildirici and Ersin (2007) examine the relationship between domestic debt and inflation and the findings showed that, the cost of domestic debt increases on account of inflation and the increasing cost of borrowing are due to non-Ricardian fiscal policies.

Obi and Nurudeen (2009) determined the effects of fiscal deficits and government debt on interest rates in Nigeria by applying a Vector Auto-regression approach for the period of 1981 to 2006. The findings of the study show that fiscal deficits and government debt have a positive impact on interest rates. The authors suggest that the government should increase the revenues and should decrease unnecessary spending.

Kannan and Singh (2009), trace out policy conduct and stability of public debt in India by capturing the dynamic interaction of deficits and debts with macroeconomic variables such as inflation, interest rates, trade gap and output by applying a 2SLS simulation technique for the period of 1971 to 2006. The study finds out that fiscal deficits and debt have an adverse impact on all macroeconomic variables under consideration in the medium to long run.

Jahed, Ramzam and Tarig in the paper domestic debt and inflationary effects: Evidence from Pakistan investigates the impact of domestic debt on inflation in Pakistan for the period 1972 to 2009. The study observes that domestic debt and domestic debt servicing enhance the price level in Pakistan. The effect of the volume of domestic debt and domestic debt serving on price level is found to be positive and statistically significant. Interest rates (cost of borrowing) or debt servicing is found to be one of the major reasons for budget deficits in Pakistan. The study proposes policies to reduce the domestic debt, enhancing the tax base and lowering expenditures through structural reforms.

Trang and Hien in the paper effects of population growth on economic growth in Asian developing countries conclude that, higher population growth rates can lead to a decline in economic growth that is gross domestic product per capita. The main reasons for these negative effects are capital dilution, standards of living, shallow resources and age structure.

Klasen and Lawson in the paper the impact of population growth on economic growth and poverty reduction in Uganda examined the link between population and per capita economic growth and poverty using panel data. Both theoretical considerations and empirical evidence suggested that the high population puts a considerable break on per capita growth prospects and significantly contributed to low achievement in poverty reduction.

Rodrik and Kennedy in the paper real exchange rate and economic growth showed that devaluation of currency (A high exchange rate) stimulates economic growth and this was particularly for developing countries.

### **2.3 Overview of the literature**

Most of the literature available is seen to concentrate on the external debt and or total public debt however there are a number of studies on public domestic debt and in literature above three cases have been reviewed on Kenya.

The review is marked by conflicting results and therefore no consensus reached as far as the effect of domestic debt on the economic growth in Kenya is concerned. It is shown in a number of studies that while domestic debt is important in fiscal policy, excess of cumulated debt negatively affects growth through competing private sector on local resources consequently raising the costs of borrowing. The studies in particular Kenya could also be obsolete in the sense that the current domestic debt exceeds the external debt and is also seen to be greater than economic healthy range of domestic debt to GDP ratio of 45% and hence the need for a study to capture these dynamics in domestic debt in Kenya.

This study will utilize appropriate econometric tools to analyze the effect of domestic borrowing on economic growth in Kenya. This study will use the most current and large

data, that is, from 1981 up to year 2012. It will finally give policy implications towards domestic debt management that will promote economic growth in Kenya.



# CHAPTER THREE

## METHODOLOGY

### 3.0 Introduction

This chapter provides the methodology used to undertake the study and the data requirement. It starts with conceptual framework followed by model specification in which the expected signs of the variables are highlighted. Test for data appropriateness is discussed under diagnostic and Cointegration test which are expected to be undertaken. Data source is finally provided in this section.

### 3.1 Theoretical Model

#### The Harrod–Domar Growth Model

This growth model was developed by Sir Roy Harrod and Evsey Domar in the 40s. It is a long run version of the Keynesian model.

The main prediction of this model is that GDP growth is proportional to the share of investment spending in GDP.

It assumes a Leontief or fixed coefficient production function.

$$Y = \text{Min} \{bL_t, vK_t\} \dots \dots \dots (1)$$

v, b are constants

Assume that labour is in surplus and capital is scarce, a typical characteristic of an LDC.

The production function becomes

$$Y = vK_t \dots \dots \dots (2)$$

By augmenting equation 2 above to include other variables that are not included the equation becomes;

$$Y = f(DD, PC, INFL, PG) \dots \dots \dots (3)$$

### 3.2 Model Specification

This study adopts the Traditional view on government debt. This theory emphasizes on aggregate demand in the short run and crowding out in the long run. According to this view the issuance of government debt stimulates aggregate demand and economic growth in the short run but crowds out the capital and reduces national income in the long run.

The preferred method of analysis is OLS. This methodology was also employed by Onyeiwu (2012), Adoufu and Abula (2010), Siddiqui and Malik (2002) and Were (2001). For purposes of this study, we adopt the model by Onyeiwu (2012).

The general regression model is given by;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots \dots \dots + \beta_K X_K + \varepsilon_i \dots \dots \dots (5)$$

$\varepsilon_i$  satisfies all the OLS assumptions.

#### 3.2.1 Estimable Model

We are going to estimate the following OLS model;

$$RGDP = \beta_0 + \beta_1 DD + \beta_2 PC + \beta_3 INFL + \beta_4 PG + \varepsilon_i \dots \dots \dots (6)$$

Where;

RGDP – Real Gross Domestic Product in Kshs.bn

DD – domestic debt as in KShs.bn

PC – Private Sector Credit as a percentage of GDP

INFL – rate of inflation (reflects macro-economic stability)

PG – population growth rate

$\varepsilon_i$  - stochastic variable (error term)

$\beta_0$  - intercept

$\beta_1, \beta_2, \beta_3, \beta_4$  – slopes

Real GDP is taken as the dependant variable to proxy economic growth and four independent variables are used in the study with public domestic debt as the major variable and private sector credit, inflation rate and population growth rate as the control variables. Other variables like foreign exchange rate, budget deficit and  $M_2$  which also affect economic growth were found to be highly correlated with domestic debt and hence eliminated. Human capital could only affect economic growth in the long run and hence could not be incorporated in a short run model.

**Table 3.1 Variables and their expected signs**

Variable	Expected sign
DD	-,+
PC	+
INFL	-,+
PG	-

These expected signs on variables are from the literature reviewed from other research papers. Some papers have found domestic debt to affect economic growth negatively while others have found domestic debt to affect economic growth positively and the same for inflation. Literature reviewed has it that private sector credit and investment affects

economic growth positively while population growth is seen as a burden to the economy and therefore affects economic growth negatively.

### **3.3 Diagnostic Tests**

Diagnostic test establishes whether the model is consistent or not. These tests include, test for normality, serial correlation and heteroskedasticity test. To test for normality, Jarque-Bera statistics is used to determine whether the residual variances are normally distributed.

Serial correlation tests are used to establish whether the residual variances are correlated. Test of heteroskedasticity is also conducted and this is to determine whether the error terms have equal variances or not. Heteroskedasticity is present if the variances are not constant.

The Ramsey RESET (regression Specification Error Test) is also conducted in order to determine whether the functional specification of the model is appropriate.

#### **3.3.1 Unit Root Test**

Before estimation, test for stationarity is carried out to avoid spurious regressions and inconsistent results. The first step is to conduct unit root tests on the variables used using the Augmented Dickey Fuller Test.

The augmented Dickey Fuller test is used to carry out unit root tests to establish the order of integration of the individual series. This study employs the Augmented Dickey Fuller test on each variable in the specified model. The null hypothesis of this test is the existence of a unit root (non-stationary). The absolute value of the ADF test statistic

should be greater than critical ADF test statistic at either, 1%, 5% or 10% levels of significance for the null hypothesis to be rejected. The null hypothesis of this test is the existence of a unit root (non-stationary). The absolute value of the ADF test statistic should be greater than critical ADF test statistic at either, 1%, 5% or 10% levels of significance for the null hypothesis to be rejected.

### **3.3.2 Cointegration Analysis**

Cointegration analysis is a long-run concept that shows that group of variables move together. The idea behind Cointegration is that although macro-economic variables may trend together overtime, groups of variables may drift together. Variables are said to be co integrated if a linear of these variables assumes a lower order of integration

### **3.4 Estimation Technique**

The main tool of analysis is the Ordinary Least Squares (OLS).

Before estimation, the data is subjected to rigorous econometric tests to deal with the problems of stationarity and correlation. The main software used in this analysis is Stata 12.

### **3.5 Data Type and Source**

The study uses secondary annual time series data for the period covering 1981 – 2012. All the data as obtained from the World Bank data base and harmonized with the data extracted from the economic surveys and statistical abstracts published by the Kenya National Bureau of Statistics (KNBS) in order to ensure the data is correct.

## CHAPTER FOUR

### DATA ANALYSIS, RESULTS AND DISCUSSION

#### 4.0 Introduction

In this chapter, the empirical results are analysed and presented. The chapter is divided into three sections; descriptive statistics section, the regression results section and the discussion of the results section. The section on the results discusses the results in line with the objectives of the study.

#### 4.1 Descriptive Statistics and Diagnostic Test Results

The table 4.1 below shows the descriptive statistics of the data used in this study.

##### 4.1.1 Descriptive Statistics

This section provides the descriptive analysis of the data. The means, standard deviations minimum and maximum statistics are reported in the following table 4.1 below.

**Table 4.1: Descriptive Statistics**

Variables	Observations	Mean	Std. Dev.	Minimum	Maximum
RGDP	32	33.3306	28.4428	7.15	102.29
DD	32	181.55	186.3077	10.7	768.7
PC	32	30.0688	3.8035	24.6	42.3
INFL	32	10.3188	7.6490	0.9	42
PG	32	2.8906	0.6218	1.1	3.8

**Source: Author**

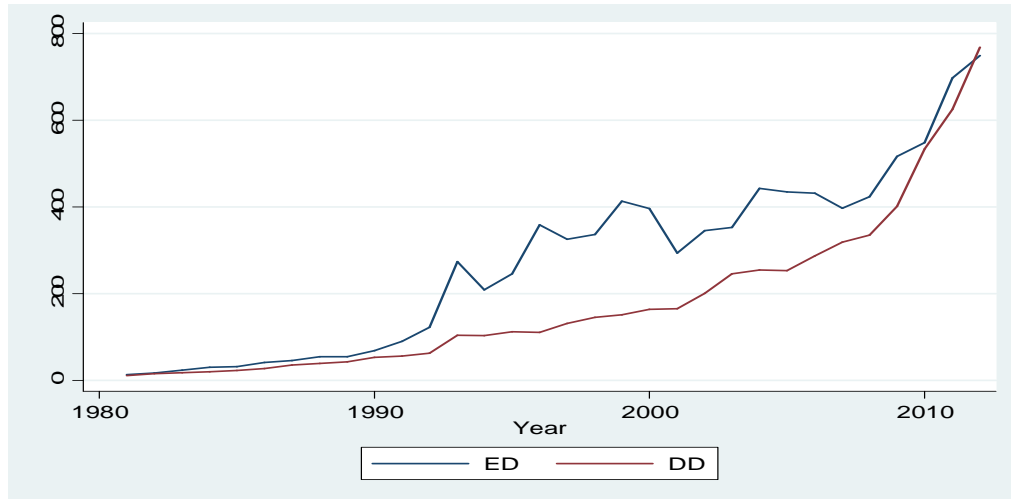
It is observed from the table 4.1 above that the real GDP for Kenya has a mean of 33.33 and a standard deviation of 28.44 over the study period of 32 years. RGDP had a

minimum value of 7.15 and a maximum value of 102.29. Domestic debt over the same period had a mean of 181.55 with a standard deviation of 186.31. This variable had a minimum of 10.7 and a maximum of 768.7 with 32 observations. During the 32 years observation private sector credit had a mean of 30.07 with a standard deviation of 3.80, the minimum observed value of this variable was 24.6 and a maximum of 42.3. Inflation rate had a mean of 10.32 with a standard deviation of 7.65. This variable had a minimum of 0.9 and a maximum of 42 with 32 observations. For population growth rate the mean was 2.89 with a standard deviation of 0.62, a minimum of 1.1 and a maximum of 3.8 with 32 observations.

Out of the table 4.1 above it is clear that the data had thirty two observations for every variable. The mean of the real GDP was 33.33 and that of domestic debt was 181.55, their respective maximums were 102.29 and 768.7 which shows that both RGDP and domestic debt grew over time, though domestic debt is seen to grow at a higher rate than real gross domestic product.

Time plots of variables can also be used to show the trend of the variables over the sample period of thirty two years. Figure 4.1 shows how domestic debt has been trending with external debt, the graph shows that since 1981 external debt was more than domestic debt and this is seen to change after year 2010 where domestic debt is seen to exceed external debt the reason why this work is concerned in looking at what then is the effect of this increasing domestic debt is to the real growth of the economy.

**Figure 4.1: External Debt and Domestic Debt in Kenya (1981-2012)**



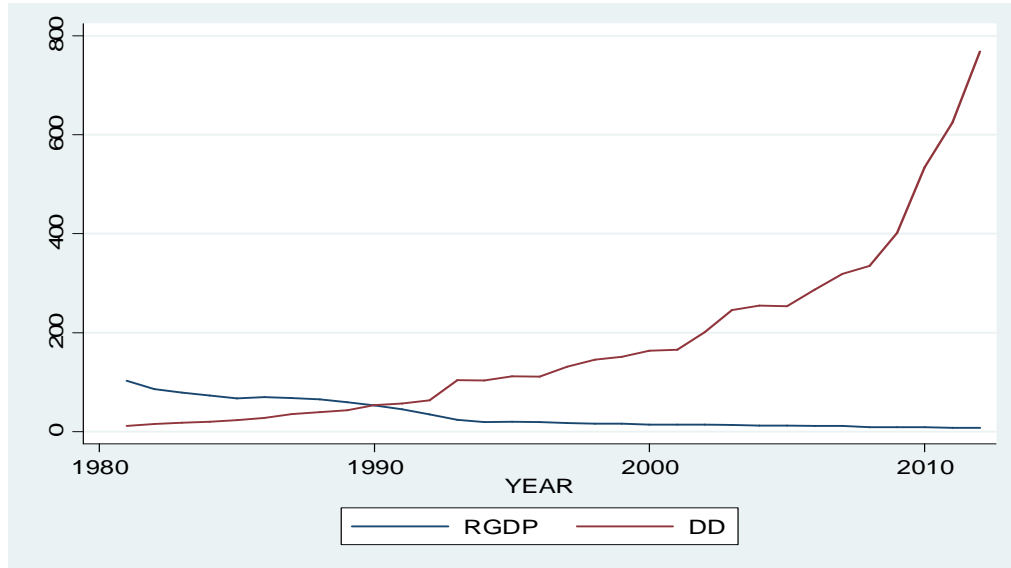
**Source : Author**

There seem to be a higher preference for domestic debt than external debt which could imply domestic debt is being used to service external debt.

Figure 4.2 shows how domestic debt has been trending with real gross domestic product, between 1980 and 1990 real GDP is higher than domestic debt and thereafter domestic debt is more than real GDP up to year 2010 where real GDP is seen to diminish with domestic debt increasing at an increasing rate.



**Figure 4.2: Real Gross Domestic Product and Domestic Debt in Kenya (1981-2012)**

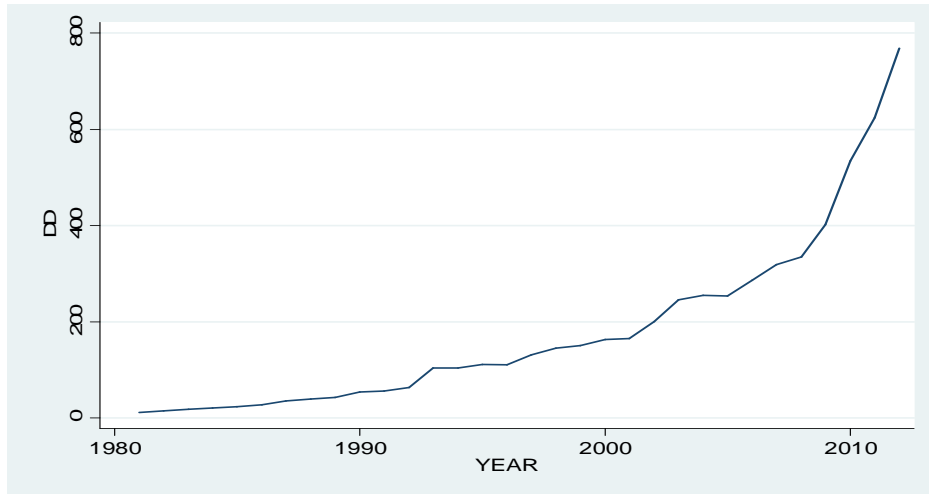


**Source : Author**

From the figure 4.2 above domestic debt and real GDP are seen to equalize in the year 1990 after which real GDP decrease with every increase in domestic debt which would imply that the economy has gone way above the healthy level of domestic debt holding.

Figure 4.3 shows that from 1980 to 1990 domestic debt was increasing slowly after which up to year 2010 it increased rapidly and even more rapidly after 2010.

**Figure 4.3: Domestic Debt in Kenya (1981-2012)**

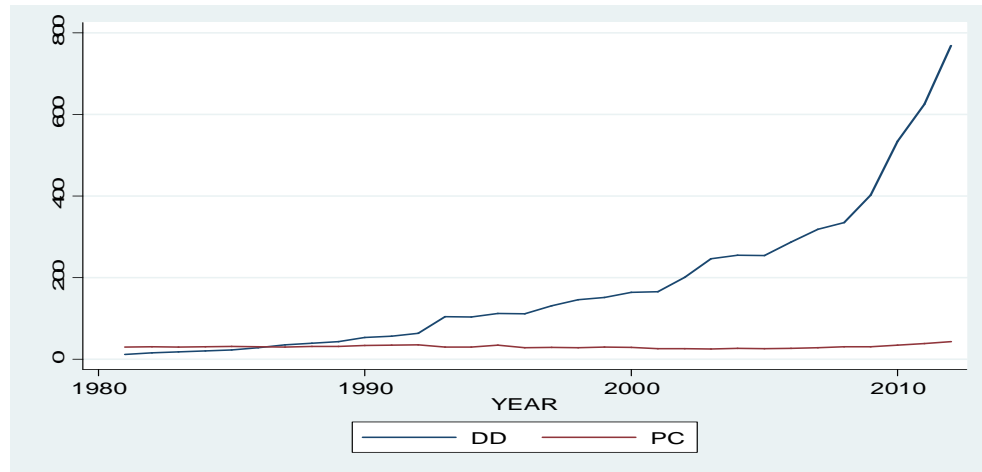


**Source : Author**

The government seems to borrow more internally from its citizens a situation that would imply lack of foreign donors and other nations willing to lend. It would also imply that external borrowing could have become very expensive.

Figure 4.4 shows a scenario whereby at the beginning of 1980s private sector credit was more than domestic debt and soon after domestic debt overtook the private sector credit which is seen to even stagnate with more increase in domestic debt. There seem to be no much change in private sector credit with the rise in domestic debt.

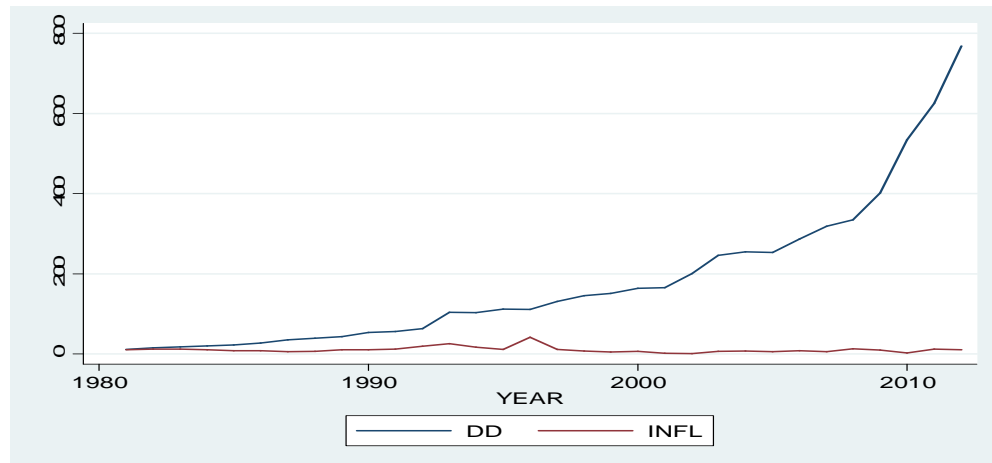
**Figure 4.4 Domestic Debt and Private Sector Credit in Kenya (1981-2012)**



**Source: Author**

Figure 4.5 shows a steady rise in domestic debt with the rate of inflation not varying much. This shows that there is no relationship between domestic debt borrowing and the economy's prevailing rates of inflation.

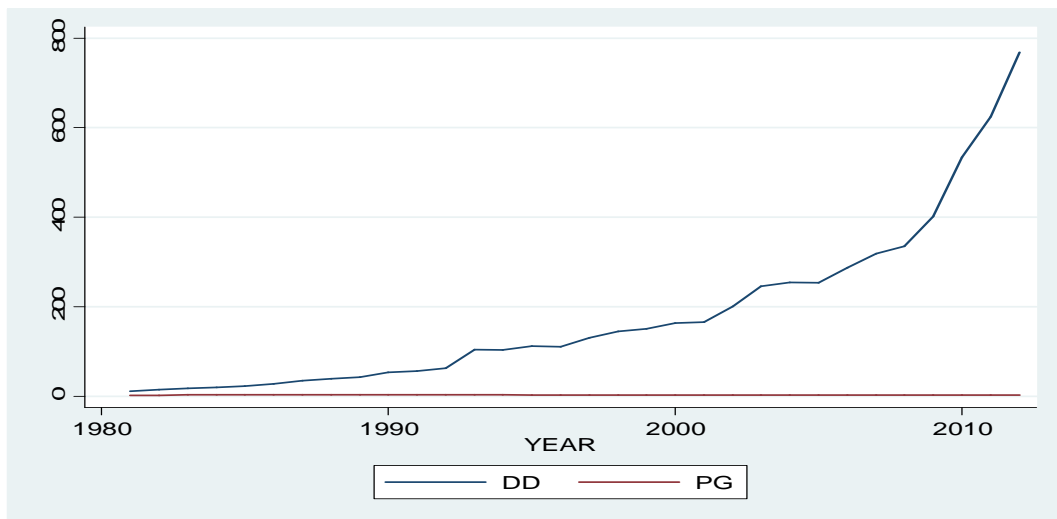
**Figure 4.5: Domestic Debt and Inflation in Kenya (1981-2012)**



**Source: Author**

Figure 4.6 shows domestic debt steadily rise with no much change in population growth rate. From the graph there seems to be no relationship between domestic debt growth and population growth rate. For the government to borrow internally it does not seem to consider its population growth rates.

**Figure 4.6: Domestic Debt and Population Growth Rate in Kenya (1981-2012)**



**Source: Author**

#### **4.1.2 Diagnostic Test Results**

**Table 4.2: Correlation Matrix**

	<b>DD</b>	<b>PC</b>	<b>INFL</b>	<b>PG</b>
<b>DD</b>	<b>1.000</b>			
<b>PC</b>	<b>0.4124</b>	<b>1.000</b>		
<b>INFL</b>	<b>-0.1696</b>	<b>0.1059</b>	<b>1.000</b>	
<b>PG</b>	<b>0.2189</b>	<b>0.1376</b>	<b>0.0521</b>	<b>1.000</b>

**Source: Author**

Table 4.2 above presents the results of Multicollinearity test. The correlation matrix is used to test for multicollinearity which shows the relationship between the explanatory variables. The relationship between domestic debt, private sector credit, inflation and population growth rates is tested. Multicollinearity will be severe if the correlation coefficient is greater than 0.8.

The results presented shows that domestic debt, private sector credit, inflation and population growth rates all have a correlation coefficient of less than 0.8 amongst themselves implying that there is no severe Multicollinearity.

**Table 4.3 Unit Root Test**

Variables	Optimum Lags	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value	P-value	Decision
RGDP	2	-3.908	-3.716	-2.986	-2.624	0.0020	Stationary (1)
DD	1	-6.814	-3.723	-2.989	-2.625	0.0000	Stationary (2)
PC	1	-5.777	-3.716	-2.986	-2.624	0.0000	Stationary (1)
INFL	1	-8.395	-3.716	-2.986	-2.624	0.0000	Stationary (1)
PG	4	-5.295	-3.716	-2.986	-2.628	0.0000	Stationary (1)

**Source: Author**

The results of the Augmented Dickey Fuller (ADF) test are presented in the table 4.3 above and they show that the real gross domestic product, private sector credit, inflation and population growth rates are all stationary and significant at first difference, that is, integrated of order one, I (1), that is, the RGDP absolute test statistic value of 3.908 is greater than all the critical values at all levels of significance. It's also significant since the p-value of 0.0020 is less than the critical p-value of 5%. Domestic debt is stationary

and significant at the second difference, that is integrated of order two, I (2). Its absolute test statistic of 6.814 is greater than the critical values at all levels of significance with a p-value of 0.0000 which means it's significant. Private credit sector, inflation and population growth rates are all significant with their p-value of 0.0000 being equal, their respective absolute test statistic are, 5.777, 8.395 and 5.295 respectively which are all greater than the critical values at all levels of significance and hence statistically significant.

The null hypothesis of this test is the existence of a unit root (non-stationary). The absolute value of the ADF test statistic should be greater than critical ADF test statistic at either, 1%, 5% or 10% levels of significance for the null hypothesis to be rejected.

Breusch-Pagan / Cook-Weisberg test was conducted to test for heteroskedasticity. This tests the null hypothesis that the residuals variance is homogenous. From the table 4.4 below the p-value of 0.0039 suggests that the null hypothesis is rejected at all levels (1%, 5%, 10%) of significance since its less than the critical value of 5% above which we accept the null hypothesis. This implies that the variables do not have a constant variance, that is, they are heteroskedastic. Robust standard errors are used to correct this problem.

**Table 4.4: Breusch – Pagan / Cook – Weisberg test for heteroskedasticity**

Breusch – Pagan / Cook – Weisberg test for heteroskedasticity
Chi2 (1) = 8.35
Prob > chi2 = 0.0039
H <sub>0</sub> : Constant variance
H <sub>1</sub> : No constant variance

**Source: Author**

Breusch-Godfrey LM test of autocorrelation was conducted on the residuals of the model. Breusch-Godfrey LM tests the null hypothesis that there is no serial correlation in the residuals. From the table 4.5 below the p-value of 0.4288 indicated that the null hypothesis could not be rejected at all levels (1%, 5%, 10%) of significance as it is greater than the critical value of 5%. This implied that there was no serial correlation amongst the variables.

**Table 4.5: Breusch – Godfrey LM test for autocorrelation**

Breusch – Godfrey LM test for autocorrelation			
Lags (p)	Chi2	Df	Prob > chi2
1	0.626	1	0.4288
H <sub>0</sub> : no serial correlation			
H <sub>1</sub> : Serial correlation			

**Source: Author**

The Ramsey RESET (Regression Specification Error Test) test was used to determine whether the functional specification for the model is appropriate. From the table 4.6 below the p-value of 0.5416 from the output indicates that the model does not suffer from functional misspecification as the p-value from the output is greater than the critical p-value of 5% thus the null hypothesis of no omitted variables is not rejected. This result implies that the model is correctly specified in its linear form.

**Table 4.6: Ramsey Reset test for Model Specification**

Ramsey Reset Test
F ( 3, 18) = 0.74 Prob > F = 0.5416
H <sub>0</sub> : Model has no omitted variables H <sub>1</sub> : Model has omitted variables

**Source: Author**

## **4.2 Regression Results**

### **4.2.1 Cointegration Analysis**

The Engel-Granger two steps test for Co integration is employed to test whether there is a long run relationship among the variables, that is, whether the variables at levels are co integrated. The first step is to run a regression with the variables at levels after which the residuals are generated from the co integrating regression and finally test the stationarity or the non-stationarity status of the residuals using the ADF unit root test for stationarity.

The results of the Engel-Granger two test for cointegration in table 4.7 below indicated that the residuals were stationary and statistically significant at 10% level of significance and this implied that the variables under investigation were co integrated, thus a long run relationship exists between the dependant variable and the independent variables. The absolute value of the test statistic is 2.923 which is greater than the



critical value of 2.623 at 10% level of significance. The Error Correction Model (ECM) is therefore used to obtain the short run dynamics.

**Table 4.7 Engel-Granger two steps test for Cointegration**

Engel-Granger two steps test for Cointegration				
Dickey fuller test for unit root		Number of observations = 31		
Interpolated Dickey – Fuller				
	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-2.923	-3.709	-2.983	-2.623
MacKinnon approximate p-value for Z(t) = 0.0427				

**Source: Author**

#### 4.2.2 Error Correction Model

Having established Cointegration, an error correction model which links the short run dynamics of the model with the long run was constructed by regressing the differenced dependent variable against the differenced explanatory variables. An ECM investigates the presence of equilibrium or disequilibrium between short run dynamics and long run equilibrium values. This dynamic system works in a way that the deviation of the current status from its long run relationship is fed into its short run dynamics. Residuals from the Cointegration regression are used to generate an error correction term (lagged residuals) which is then inserted in the short run model. Table 4.4 below shows the results of the ECM.

**Table 4.8 ECM Estimation Results**

Number of obs	= 27					
F( 5, 21 )	= 4.04					
Prob > F	= 0.0100					
R-squared	= 0.5256					
Adjusted R-squared	= 0.4126					
Root MSE	= 2.595					
L2rgdp	Coef	Robust Std. Err	t	p> t	[95% Conf. Interval]	
L1dd	.0077875	.0155187	0.50	0.621	-.0244854	.0400603
L1pc	.0182374	.2212117	0.08	0.935	-.4417975	.4782724
L1infl	.0564611	.0567537	0.99	0.331	-.0615648	.1744869
L4pg	-.7155732	.028855	-0.70	0.494	-2.855193	1.424047
L1erroru	.6803985	.1579118	4.31	0.000	.3520028	1.008794
_cons	-.4244302	2.713367	-0.16	0.871	-6.067185	5.218325

**Source: Author**

Table 4.8 above represents the ECM regression results, where the F statistic is 4.04 with a p-value of 0.0100 implying that the independent variables, domestic debt, private sector credit, inflation rate and population growth rate jointly determines the dependant variable real gross domestic product.

The regression result indicated that the measure of goodness of fit, the R-squared is 0.5256 and the Adjusted R-squared is 0.4126, implying that 52.56% of the variations in

the RGDP are explained by the independent variables, that is, domestic debt, private sector credit, inflation rate and population growth rate. From the regression results it is evident that domestic debt, private sector credit, inflation rate and population growth rate are all statistically insignificant in determining real gross domestic product of the economy. On the other hand the ECM error correction term is statistically significant .

Domestic debt has a coefficient of 0.0078 with a p-value of 0.621 which is statistically insignificant at 5% level of significance. This implies that holding all factors constant a one unit increase in domestic debt will increase real economic growth by 0.0078 units. Private sector credit has a coefficient of 0.018 with a p-value of 0.935 which is statistically insignificant at 5% level of significance. This implies that holding all other factors constant a unit increase in private sector credit will increase real economic growth by 0.018 units. Inflation rate has a coefficient of 0.056 with a statistically insignificant p-value of 0.331 at 5% level of significance; holding all other things constant this implies that a unit increase in inflation will increase real economic growth by 0.056 units. Population growth rate has a coefficient of -0.716 with a p-value of 0.494 which is statistically insignificant. This implies that holding all other things constant a unit increase in population growth will decrease the real economic growth by 0.716 units.

Finally but not the least the error correction term has a coefficient of 0.680 with a statistically significant p-value of 0.000. Holding all other factors constant, this implies that a unit increase in the error correction term will increase the real gross domestic product in the short run by 0.680 units.

### **4.3 Discussion of the Results**

This chapter outlined the tests that were carried out in order to determine the effect domestic debt has on real gross domestic product in Kenya. The variables used in the study were all found to be stationary at the first difference except domestic debt which was stationary at the second difference.

The variables were found to be co integrated after being subjected to Engel-Granger two steps test of Cointegration. This means that the variables in the model have a long run relationship and therefore need to test short run dynamics. The ECM was used in the study and a one lag error correction term coefficient was found as 0.6804 and statistically significant at the 5% level of significance at which all other variables were statistically insignificant.

The regression results indicates that 42.44% of the explanatory variables explain the dependant variable holding all other factors constant, with a 1% increase in domestic debt increasing real GDP would increase by 0.78% which is statistically insignificant at 5% level of significance. Private sector credit and inflation are also statistically insignificant at 5% level of significance and positively affects real GDP, Population growth rate is seen to negatively affect real GDP though not statistically significant at 5% level of significance

The first objective was to investigate the trends in domestic debt and economic growth in Kenya for the period 1981 -2012 and the regression results for the period under study indicates that domestic debt is positively though insignificantly related to real economic growth this concurs with the findings of Maana et al (2008) who empirically sought to

analyze the impact of development of public domestic debt markets in Kenya for the period 1996 to 2007. These results also agreed to a more recent study done in Kenya by K.Putunui and M.Mutuku (2013), Domestic Debt Economic Growth Nexus in Kenya. K.Putunui and M.Mutuku found out domestic debt in the period to affect economic growth positively and significantly. Analysis of the relationship between domestic debt and other correlates on economic growth in Kenya indicates that, domestic debt and private sector credit are negatively related as shown in figure 4.4, an increase in domestic debt reduces private sector credit. This concurs with the Kenyan study by Chirongo C.J.O (2003) which sought to examine the structure, magnitude, level and the determinants of public domestic debt for the period 19990 to 2001 where the study found out domestic debt servicing to crowd out private sector investment. The regression results also clearly indicate that domestic debt for the period under study affects economic growth positively and private sector credit as well positively affected economic growth. Both domestic debt and private sector credit are statistically insignificant at 5% level of significance. These findings are also in line with Abbas and Christensen (2007).

Like Klasen and Lawson in the paper the impact of population growth on economic growth and poverty reduction in Uganda, this research paper found out that population growth negatively affects economic growth though statistically insignificant at 5% level of significance. Also Siddique and Malik (2002) and Trang and Hien in the paper effects of population growth on economic growth in Asian developing countries found out that high population growth rates lead to decline in economic growth, that is, gross domestic

product per capita due to negative effects from capital dilution, standards of living, shallow resources and age structure.

## **CHAPTER FIVE**

### **CONCLUSIONS AND POLICY RECOMMEDATIONS**

#### **5.0 Introduction**

This chapter contains the conclusions drawn from the findings, the policy recommendations and also highlights the areas of further study.

#### **5.1 Conclusion**

This study attempted to fill the gap that exists in the formal study of the effect of domestic debt on economic growth in Kenya. It covered the period 1981 – 2012. The overall objective of the study was to empirically examine the relationship between domestic debt and economic growth in Kenya where the findings in this study showed that domestic debt expansion had a positive and insignificant effect on economic growth; this is consistent with the findings of Abbas and Chritensen (2007), Maana, Owino and Mutai (2008). A sustainable domestic debt would positively and maybe significantly promote economic growth.

The study also revealed that population growth rates impacted economic growth negatively and this is consistent with the findings of Siddiqui and Malik (2002) the impact of rising domestic debt on the economic growth of South Asian countries. Private sector credit and Inflation which is taken as a measure to macroeconomic stability are also found to affect economic growth positively though not significant. The signs of the variables are as they were expected to be from theory and other

research works with the coefficient of domestic debt being positive that of private sector credit being positive and that of inflation rate being positive as well. The population growth rate coefficient was found to be negative which was also expected as high population growth rate is deemed to be a burden to the economy.

## **5.2 Policy Recommendations**

The major policy recommendations are as follows;

From the findings it was clear that domestic debt affected economic growth positively though insignificantly. From the debt sustainability analysis it was also clear that Kenyan domestic debt was unsustainable.

The regression results showed that a 1% increase in domestic debt would lead to a 0.77% increase in real GDP. Kenya's debt-GDP ratio stand at 48.9% (CBK 2012) is above the internationally accepted standard of 45% and unsustainable. Therefore, corrective measures are necessary. The government should explore other avenues of financing the budget deficit by improving on the present revenue base other than just resulting to more domestic borrowing. The government should therefore diversify its sources of revenue and reduce too much domestic borrowing. Non-debt creating sources of revenues include grants and foreign direct remittances that improve credit flows in LDCs.

It's alluded from the literature reviewed that domestic borrowing is more difficult to solve as compared to external debt as the borrower (government) cannot default as this would result to crowding out of the private sector credit which is a major drive to



economic growth. The regression results showed that a 1% increase in private sector credit leads to 1.82% increase in real GDP. Therefore the government should avail funds to private investors from jobs creation and by not borrowing too much from internal sources. They should also promote a good and secure investing atmosphere.

### **5.3 Areas of Further Study**

This study focused on the effect of domestic debt on economic growth in Kenya.

Consistent questions during the study were; Is it domestic debt or the repayment and the interest accrued on it that poses more threat to economic growth? What is the healthy ratio between the governments' domestic borrowing and the private sector credit available that would enhance a healthy economic growth? And finally what uses that the government puts the domestically funds to would promote economic growth?

Out of the above questions future studies should focus on domestic debt repayment burden (principle and interest), effect of domestic debt on private sector credit and the uses into which domestic debt is put and how it affects economic growth.

## REFERENCES

- Abbas A., (2005). Public Debt Sustainability and growth in sub-Saharan Africa: *The role of domestic debt*
- Abbas A. and Christensen J., (2007) “The Role of Domestic Debt Markets in Economic Growth: An Empirical Investigation for Low-income Countries and Emerging Markets”. *International Monetary Fund*. IMF WP 07/127
- Adofu and Abula, (2010). Domestic Debt and the Nigerian Economy. Department of Economics. Kogi State University Anyigba, Nigeria.
- AFRODAD (2005) ‘ The Challenges of Maintaining Long Term Debt Sustainability: The case of Kenya.’ African Forum and Network on Debt and Development.
- Ahmed, Shelkh and Tarig in the paper Domestic Debt and Inflationary Effects: an Evidence from Pkistan. *International Journal of Humanities and Social Sciences* vol 2, No 18; October 2012.
- Barro R., The Ricardian Approach to Budget Deficit. “*Journal of economic perspective*” volume 3.
- Beaugrand et al (2002). The choice between External and Domestic Debt Financing Budget Deficits: The case of Central and West African Countries. IMF working paper 02/79. Internatinal Monetary Fund.
- Bildirici, Melike and Ersin, Omer Ozgus (2007). Domestic Debt, Inflation and Economic Crisis: A Panel Cointegration Application to Emerging and Developed Economies. *Applied Econometrics and International development*, Vol 7, No.1.

- Commonwealth Secretariat (1999) "Effective Domestic Debt Management in Developing Countries" Debt Management Series No.1, March 1999
- Christensen J, (2005) "Domestic Debt Markets in Sub-Saharan Africa" *International Monetary Fund*. IMF Vol 52, number 3.
- CBK (Central Bank of Kenya), 1996, "Banking Act, Revised version for 1996." CBK, Nairobi.
- Classens. S. and Diwan I. (1990) "investment incentives." New money, debt relief, debt relief, and role of critical conditionality in debt crisis. *The world bank review*, vol. 4 no. 1
- Classens, S. (1990), "The debt laffer curve, some empirical estimates" *World development report*, vol.18 no.12
- Classens, S. (1996), "Analytical aspects of debt problems of heavily indebted poor countries" A paper presented to IMF|World Bank.
- Chirongo C.J.O (2003) "The structure, magnitude, level and determinants of public debt in Kenya" Unpublished M.A Thesis University of Nairobi, School of Economics.
- Government of Kenya, Economic Survey, various issues
- Gujarat D., (2004). *Basic Econometrics* Forth Edition.
- Hauer, D., (2006) "Fiscal Policy and Financial Development" IMF working paper no. 06|26. International Monetary Fund.
- IMF (International Monetary Fund) 2007, "Regional Economic Outlook for Sub-Saharan Africa – April 2007" published at the IMF's website.
- IMF (International Monetary Fund), Debt and Reserve Related Indicators of External Vulnerability, policy paper; 2002.

- Kannan, Singh and Bhugal (2009): Debt-deficits Dynamics in India and Macroeconomics Effects: A Structural Approach MPRA Paper No 16480.
- King, Robert G., and Ross Levine (1993). "Finance and Growth: Schumpeter Might be Right." *Quarterly Journal of Economics* 108: 717 – 37.
- Klasen S and Lawson D (2007). "The Impact of Population Growth on Economic Growth and Poverty Reduction in Uganda" *Journal of Economic Literature* O15, 132, J13.
- K.Putunui and M.Mutuku (2013). "Domestic Debt and Economic Growth Nexus in Kenya." *Current Research Journal of Economic Theory* 5(1): 1-10, 2013
- Maana, Owino and Mutai,(2008) Domestic Debt and its Impact on the Economy – The Case of Kenya. Paper presented during the 13<sup>th</sup> Annual African Econometric Society.
- MEFMI (2001), Sustainability of Domestic Debt: A MEFMI study.
- Obi, Ben and Nurudeen, Abu (2009). "Do Fiscal Deficits Raise Interest Rates in Nigeria? " A Vector Auto Regression Approach. *Journal of Applied Quantitative Methods*, Vol 4, No 3, PP 306-316.
- Onyeiwe C., (2012) University of Lagos, Nigeria. Domestic Debt and Growth of Nigerian Economy. *Research Journal of Finance and Accounting*
- Osei B.(1995), "Ghana: The burden of debt service payment under Structural Adjustment" Nairobi: AERC Research Paper 33.
- Panizza U, (2008) "Domestic and External Public Debt in Developing Countries" No. 188 March 2008.

- Panizza U and Flassbebeck H, (2008) “Debt Sustainability and debt composition” Report by Debt and Finance Analysis unit, Division of Globalization and Development strategies, UNCTAD.
- Rodrik D and Kennedy F (2008). “The Real Exchange Rate and Economic Growth.” School of Government Harvard University Cambridge, MA 02138.
- Siddiqui R and Malik A, (2002), Debt and Economic Growth in South Asia. *The Pakistan Development Review*
- Shelkh, Ramzan, Faridi and Tarig (2010). “Domestic Debt and Economic Growth in Pakistan: An Empirical Analysis.” *Pakistan Journal of Social Sciences* Vol 30, No.2 (December 2010), PP. 373-387
- Singh C, (1999), “Domestic Debt and Economic Growth in India.” *Journal of Economic and Political Weekly Review*
- Tayaraman T.K and Choong C, (2006). “Public Debt and Economic Growth in the South Pacific Islands: a case study of Fiji.” *Journal of Economic Development*.
- Trang P and Hieu T (2011). “Effects of Population Growth on Economic Growth in Asian Developing Countries.” Bachelor Thesis, Malardalen University.
- Were M., (2001) “The structure and impact of External debt on Economic growth in Kenya 1970-1995.” M.A. Thesis, Economics Department University of Nairobi.
- Wheeler, M Mark (1999). “The Macroeconomic Impacts of Government Debt: an Empirical Analysis of the 1980s and 1990s.” *Atlantic Economic Journal*, Vol 27, No.3, PP 273-284