THE IMPACT OF EXTERNAL DEBT ON PUBLIC INVESTMENT AND ECONOMIC GROWTH IN KENYA (1970 - 2007)

BY

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DECLARATION

This is my original work and has not been presented for any degree award in any other university.

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DEDICATION

I dedicate this research work to my Daughter and my Husband, who inspire and encourage me more than words can tell. I am eternally grateful to my Dad and Mum for their encouragement, patience and supporting me all the way.

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I thank the almighty God for giving me the strength and for being with me every step of the way. I am thankful to my family for their support and I appreciate what they have all done for me. I would like to express my deepest gratitude to my Professor Leo Mureithi for his insight, guidance and technical advice and without whom this research paper would not have been possible.

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LIST OF ABBREVIATIONS

ADB	African Development Bank
ADF	African Development Fund
AGOA	African Growth and Opportunity Act
EIB	European Investment Bank
ECT	Error Correction Term
EDT	Debt stocks
EDT/GDP	Total external debt as a ratio of GDP
GDP	Gross Domestic Product
HIPC	Heavily Indebted Poor Countries
IBRD	International Bank for Reconstruction and Development
IDA	International Development Association
IMF	International Monetary Fund
LDCs	Less Developed Poor Countries
MDRI	Multilateral Debt Relief Initiatives
ODA	Official Development Assistance
OLS	Ordinary Least Squares
SSA	Sub Saharan Africa
TDS	Total Debt Service
TDS/XGS	Total external debt service as a ratio of exports of goods and services
TOT	Terms of Trade
XGS	Exports of goods and services

ABSTRACT

Kenya has had to acquire external debt to supplement domestic savings due to scarcity of capital. Kenya has over the years relied heavily on foreign financing from both official and private sources. Unfortunately, this has resulted to a build up of the level of stock of external debt that has led to payment difficulties. This has led to funds being diverted to debt servicing at the expense of economic development and domestic consumption. The study used time series data for the period 1970-2007 and reduced form growth model augmented with debt variables to examine the impact of external debt on public investments and economic growth in Kenya.

The findings of the study indicate that the key debt indicators have been above the critical level since 1982. The Empirical results of the time series data analysis for the period 1970-2007 indicate that debt service ratio is significant at explaining the GDP growth in Kenya. Public investment has a negative relationship with both the stock of external debt expressed as a percentage of GDP and debt service ratio. The results indicate that debt relief could act as a catalyst for investment recovery and economic growth in Kenya. The Kenyan government should also embark on an aggressive poverty reduction drive, focus on growth enhancing policies that will lead to increased export earnings, provide a stable environment for investments and implement measures that will increase investor confidence in local investments.

Chapter 1: Introduction

1.1 Background Information

The issue of external debt and its servicing has assumed critical importance and resulted into 'the debt crises'. Most of the countries which fall under the category of the world's heavily indebted poor countries are in Sub-Saharan Africa. The majority of these countries are not only poor, but have reported low or even negative rates of growth of per capita income.

The external debt problem in Africa has led to an investment pause and has reduced growth performance substantially. (Ndung'u, 2003).

Developing countries contracted large amounts of debts, often at highly concessional interest rates particularly in the 1970s. The hope was that these loans would put them at faster development path through higher investment and faster growth. But as debt service ratios reached very high levels in the 1980s, it became clear that for many of these countries, debt repayment would not only just constrain economic performance in their countries, but more importantly it would be virtually impossible to repay back these loans and leave a favorable balance to support their domestic economy. (Audu Isa, 2004).

The external debt situation of the sub-Saharan countries can be attributed to both external and internal factors. The external factors are relatively high interest rates during the 1970s and 1980s (some countries even borrowed at floating interest rates which compounded their debt problem), the oil shocks of the 1970s which led to trade deficits and Balance of Payments problems, the declining terms of trade and weak commodity prices. The internal factors include mismanagement, high budget deficits, wrong exchange rate policies and in many cases, corruption, war or civil strife and drought in some countries. Some debtor countries' did not properly utilize the funds borrowed. The funds that were borrowed were not put into investments that could yield adequate returns that could service the external debt. The foreign borrowing were not used to develop a

resource base in tradable goods especially export industries which would be adequate for future debt servicing.

After the oil crisis in 1973-74, many developing countries reeling from oil price increases, were eager to receive loans to counter the effects of high inflation that they were experiencing. However, these loans were used for current consumption, and not for productive investment. The loans were also obtained and used in an unstable economic environment whereby global economic relationships had been steadily declining. The developing countries began to experience a long-term, decline in demand for their products as the developed countries reduced the demand for these products in order to pay for oil and as they initiated tariffs and quotas to reduce their balance of payments deficits. Interest rates shot up and global demand for exports from developing countries decreased. The deep global recession of 1981-82 also made it difficult for developing countries to generate sufficient income to pay back their loans on schedule.

The debt crisis exploded in August 1982 as Mexico declared inability to service its international debt, and the similar problem quickly spread to the rest of the world. To counter this, macroeconomic tightening (budget cuts and low credit growth to reduce domestic expenditure) and structural adjustment (liberalization and privatization) were administered, often through the conditionality of the IMF and World Bank.

The debt crisis exposed the vulnerability that developing countries face to changes in the world economy over which they have little direct control; their sensitivity to monetary changes in the advanced industrialized countries, and their dependence on primary commodities as sources of export earnings. Ferraro and Rosser, (1994).

The governments of developing countries were unable to repay their debts, and therefore financial rescue operations became necessary. The IMF and the World Bank in late 1996 implemented the Heavily Indebted Poor Countries (HIPC) initiative, with the aim of reducing to sustainable levels the external debt burdens of the HIPCs. To date 29 countries in Africa have received debt relief over time.

However, some Heavily Indebted Poor Countries (HIPCs) many of them in Sub Saharan Africa could not escape from the debt trap even with repeated structural adjustment programs and debt rescheduling. Some of them went to the Paris Club for debt relief several times, or more. They however, continued to suffer from economic stagnation and heavy debt burden well into the 1990s. It was clear that their problem was insolvency that their economic prospects were bleak with a huge debt overhang and a new approach had to be taken to stimulate development.

The structural adjustment programmes have invariably resulted in worsening economic conditions. The HIPC initiative formulated by the World Bank has fallen short of what is required to re-establish the condition of sustained economic growth.

In the last several years, the international donor community began to respond to the debt crisis of the poorest countries by a combination of debt forgiveness and strengthened poverty reduction drive. Since 2002, the international organizations (especially the World Bank) have started to re-emphasize the role of economic growth and infrastructure in the process of poverty reduction.

The debt crisis, compounded by massive poverty and structural weaknesses of most of the economies of the countries in Sub Saharan Africa (SSA) has made the attainment of rapid and sustainable growth and development difficult.

Many developing countries continue experiencing difficulties in servicing their debts which has constrained their investments both domestic and foreign and hence reducing their economic growth.

The paper analyzed the effects of external debt on economic growth and public investment in Kenya and is organized as follows: Chapter 1 provides the background information on Kenya's economic and debt situation for the period 1970 to 2007. Chapter 2 provides the theoretical and empirical literature on external debt, public investment and economic growth. Chapter 3 provides the model specification while chapter 4 provides

the data analysis and interpretation of the results. Chapter 5 provides the conclusions and policy implications of the findings.

1.2 Causes of Kenya's external debt problem

Kenya, with a population of around 30 million people is saddled with a huge debt which is hampering the country's economic growth. The country's debt has being attributed to several factors. These include the oil crisis of the 1970's, the deteriorating terms of trade, low export growth, misuse of borrowed funds, corruption and poor governance.

Kamau (2002) attributes Kenya's debt problem to government actions particularly in accumulating external debt for development projects. In order to strengthen the economy, Kenya undertook public projects with donor support and heavy use of foreign financing in the form of loans. Many of the development projects were designed to improve the domestic industry and infrastructure rather than boost export production directly.

The huge investments associated with donor funding in the 1970s were not matched with increased government revenue sources. Instead, the government implemented market intervention policies, such as price and exchange rate controls, formation of state corporations' e.t.c. which led to a further increase in government expenditure. Attempts to restore the growth trends achieved in the 1970s and reduce the financial gap of the late 1970s and early 1980s, led to increase in borrowing. (Njeru, 2003)

The first and second oil shock of 1973 and 1979-80 respectively led to deteriorating terms of trade and declining export earnings. As a result of diminishing export earnings and increasing import prices, Kenya like many other Sub Saharan Countries found it difficult to service its loans. (Greene, 1989).

Kenya experienced diminished export earnings in the eighties, and therefore found it increasingly difficult to meet its debt service obligations while at the same time maintaining an acceptable volume of imports. Drought conditions led to food imports

which was made possible by availability of external loans. Moreover the government pursued policies that weakened its external position such as growing fiscal deficits and surging private credit demand which led to rapid monetary expansion which resulted in inflation since the currency was overvalued, exports were inhibited and parallel exchange markets formed. (Greene, 1989).

Further the debt problem can be attributed to external factors such as protectionism in the developed countries which limited the access to foreign markets and processing of raw markets domestically. The weak and sluggish performance of the world economy in the eighties led to loss of export markets and fall in the foreign exchange earnings. Abbott, (1993).

Kenya's exports are concentrated in a limited number of agricultural commodities like coffee, tea and horticultural flowers. There has been long term deterioration in real prices for tea and coffee which has resulted in export revenue instability. World Bank data estimates that Kenya's global market share losses from 1997-2001 reduced the growth rate of exports by about 4 percent per year. Despite the United States initiative African Growth and Opportunity Act (AGOA), Kenya's apparel industry is struggling to hold its ground against Asia competition and runs a trade deficit with the United States. The poor performance is significant because exports provide the foreign exchange earnings from which external debts are serviced and basic necessities, such as imports of basic equipment and raw materials, are purchased.

According to Were (2001) the causes of Kenya's external debt problem include; the decline in export's earnings in the 1980's, overvalued exchange rate, rise in foreign interest rates due to the anti inflationary programs in the developed countries, negative real interest rates as well as import-substituting industrial strategy which was characterized by overprotection.

Krumm (1985) attributed the rise in interest rates as a contributing factor in the rise of external debt. However, this was of less importance due to the nature of external debt

which was predominantly official. Compounding the debt service problem was the decline in real capital inflows, including external assistance during the 1980's.

The growing balance of payments deficit experienced in the eighties due to declining terms of trade that is, international prices for agricultural commodities greatly outweighed by prices for capital goods and high international oil prices, compelled Kenya to borrow heavily especially from the World Bank. The World Bank loans were subject to numerous conditionalities (requirements) known as Structural Adjustments Programmes (SAPs). The conditionalities centered on trade liberalization and decrease in the role of government. However, SAPs led to worsening economic conditions in Kenya.

In 1992 and 1997 donors withheld funds (aid freeze) because they were dissatisfied with the way the government was implementing aid conditionalities. This led to increased budget deficits and increase in external payment arrears.

The 1990s witnessed a steady decline in development assistance to Kenya occasioned by a perception of poor governance and mismanagement of public resources and development assistance. The debt crisis of the early 1990s turned Kenya into a highly indebted nation. The government thus resorted to occasional debt rescheduling and expensive short-term domestic borrowing to finance its expenditures.

1.3 Kenya's Debt Position

The debt burden and servicing capacity of external debt indicators are;
EDT/GDP - Total external debt as a ratio of GDP (Debts to GDP ratio). This ratio captures the debt overhang effect.
TDS/XGS – Total debt service as a ratio of export of goods and services (Debt service ratio). This ratio captures the crowding out effect.

A country's ability to service external debt is evidenced by the stream of foreign exchange it earns. The ratio of external debt to exports is thus seen as an important debt

indicator. A high debt/export can be associated with lower investments in two ways. First, a portion of the payment on foreign indebtedness reduces the funds available for investment in the domestic economy in the current period. Second, a nation loses the amount of money that, if it had been invested domestically, would have had a multiplier effect and been a catalyst for future investment.

The table below shows Kenya's burden indicators since 1970 to 2007.

Where; EDT (debt stocks); XGS (Exports of goods and services); TDS (total debt service)

Table 1 Kenya's Debt Burden Indicators and Real GDP growth rate (%)

Year	EDT/GDP	TDS/XGS	GDP	Public Investment/GDP
1970	31	5	6.2	5.5
1971	29	10	4.9	8.1
1972	28	8	6.4	9.6
1973	35	9	4.0	9.6
1974	40	10	3.1	9.1
1975	41	15	2.9	8.3
1976	45	15	4.4	9.6
1977	39	21	8.1	10.9
1978	43	14	7.7	10.7
1979	45	18	4.9	11.5
1980	48	21	3.9	11.4
1981	49	27	6.0	10.4
1982	55	31	3.4	8.6
1983	63	34	3.0	6.9
1984	59	35	0.4	7.5
1985	71	39	5.1	10.7
1986	66	36	5.5	8.1
1987	76	40	4.9	7.1
1988	71	39	5.2	8.3
1989	74	37	5.1	8.1
1990	87	35	4.2	9.4
1991	98	33	2.1	8.3
1992	91	31	0.5	7.1
1993	156	27	0.3	8.0
1994	107	33	3.0	8.5

1995	85	30	4.9	7.4
1996	77	28	4.6	7.0
1997	64	22	2.4	6.4
1998	62	21	1.8	3.3
1999	63	27	1.4	3.0
2000	61	17	0.6	3.1
2001	52	15	4.4	2.7
2002	50	15	0.4	2.7
2003	48	16	2.9	5.2
2004	47	15	5.1	4.8
2005	45	17	5.8	6.4
2006	39	16	6.4	5.6
2007	37	14	7.0	5.0
2008	20	5	1.7	6.7

Source: World Bank 2008 (Global Development Finance) and various series of Economic Surveys by Kenya National Bureau of Statistics

The above table shows that the debt service ratio and the debt to GDP ratios was above the critical levels for the period 1982-2002 that is above 15 percent and 50 percent respectively. The average GDP growth rate, which stood at 5.14 between 1970 and 1980, fell to 2.42 percent between 1990 and 2000.

Kenya's growth rate of GDP averaged 5.8 percent per annum in 1965-73. However, economic growth slowed in the mid 1970s, to an average of 3.6 percent per annum in 1973-76. One of the principal causes was the negative impact of the five-fold increase in oil prices in 1973 and 1979 which greatly affected the economy given the country's total dependence on imported petroleum products: the boom/bust cycle in coffee and tea prices in 1976-79 whereby the coffee/tea boom led to increase in export earnings which increased both consumer and government spending. The government then proved unable to reduce spending sufficiently when coffee and tea export revenues fell sharply in 1977. The economy was also set back by the break up of the East African Community in 1977 which ended the favoured access for Kenyan exporters to the Ugandan and Tanzanian markets. Attempts to restore the growth trends achieved in the 1960s and early 1970s, led to increased borrowing especially from the multilateral donors under the structural adjustment programme (SAP) loan facility.

GDP growth rate averaged only 2.3 percent per annum during 1982-84, with a severe drought in 1984 also affecting the growth rate. In the early 1990s the economy fell into severe recession, with the growth rate falling from 4.2 percent in 1990 to 0.5 percent in 1992 and 0.3 percent in 1993. The economy began to recover in the 1994-96 period attaining an average growth of 4.2 percent per annum. The IMF suspended financial support to Kenya in 1997 for a three year period due to the government's failure to maintain reforms and curb corruption. This coupled with adverse weather conditions resulted to a decrease of GDP to 2.4 percent. Low investor confidence, meager donor support and drought conditions led to further decline in GDP to 0.6 in 2000. Kenya's economy performed well during the period 2003-2007 under the Economic Recovery Strategy undertaken by the government in an effort to resuscitate the economy. The GDP grew by an average of 5.44 percent for the period 2003-2007.

The Public Investment as a percentage of GDP averaged 10.2 percent for the period 1975-1979 before declining to 7.46 percent for the period 1993-1997. From 1998-2002 Public Investment as a percentage of GDP further declined to about 2.96 percent. In an effort to contain the fiscal deficits, cuts in government spending were undertaken resulting to declining public investment expenditure especially on infrastructure.

According to various issues of Republic of Kenya Economic Survey and Statistical Abstracts, Public or government investments accounts for slightly over 10 percent of total government expenditure. For the period 1970-79 government investment expenditure was 19.1 percent of total government expenditure, while for the period 1980-89, government investment expenditure was 13.4 percent of total government expenditure, for the period 1990-99, the government investment expenditure was at 10.3 percent of total government expenditure.

The debt ratios indicate the build up of debt in Kenya. The debt to GDP ratio was 31 percent in 1970 but reached a high of 156 percent in 1993 before declining to 50 percent in 2002. Kenya's debt to GDP ratio has been falling since 1995 reflecting in part the withholding of disbursements of development assistance by donors. The debt service

ratios were above the critical level for the period 1982-2002 despite the concessional nature of external financing provided by the multilateral and bilateral creditors.

Table 2 Kenya's external debt stock, debt service (million US $)

Year (Million	External debt US $)	Debt service (Million US $)
1970	477.5	50.0
1971	497.9	52.4
1972	581.2	48.3
1973	844.7	65.2
1974	1152.7	97.2
1975	1290.2	151.0
1976	1493.3	169.3
1977	1658.9	326.0
1978	2173.7	215.7
1979	2721.0	299.3
1980	3386.8	433.5
1981	3228.2	485.0
1982	3367.8	496.9
1983	3638.3	515.0
1984	3511.5	578.7
1985	4181.3	621.2
1986	4603.6	677.3
1987	5783.7	691.4
1988	5809.7	737.6
1989	5888.7	708.8
1990	7055.1	790.9
1991	7453.1	719.4
1992	6897.9	669.9
1993	7111.3	631.5
1994	7124.2	880.8
1995	7309.0	901.4
1996	6813.6	844.4
1997	6465.0	669.1
1998	6823.9	611.7
1999	6474.5	716.0
2000	6320.0	481.0
2001	5520.9	417.0
2002	6207.0	299.0
2003	6868.6	394.2
2004	6918.8	329.3
2005	6428.3	207.3

2006	6534.2	174.3
2007	7354.6	319.2

Source: World Bank 2007 (Global Development Finance)

The total debt stock rose from US $477.5 million in 1970 to US $ 7412.4 million in 1995 while the total debt service payments rose from US $50 million to US $901.4 million in the same period. The external debt more than doubled in the 1980s, rising from US$ 3386.8 million in 1983 to US$ 7453.1 million in 1991. The external debt stood at US$ 7354.6 in 2007.

Word bank data for 2000 indicate that Kenya's Gross Domestic Product was US $10.4 billion and it had an external debt of US $6.32 billion. The debt servicing and interest payments for the same year amounted to US $706 million (over 14 percent of GDP) to creditors. Of Kenya's US$6.32 billion external debt in the year 2000, US$2.61 billion (41 percent) is owed to the World Bank and the IMF.

Kenya's outstanding stock of external debt as at the end of 2002 amounted to US $6.2 billion (42 percent of GDP), of which US $3.9 billion was on concessional terms. Of the total debt 57.5 percent was owed to official multilateral creditors, while debt to official bilateral and commercial creditors accounted to 32.2 percent and 8.5 percent, respectively. (IMF Country Report, 2003).

Debt servicing as a percentage of GDP for the period 1997-2002 averaged 13.8 percent while the Development expenditure as a percentage of GDP averaged 3.6 percent. Debt servicing as a percentage of GDP is higher than development expenditure as percentage of GDP. This means that Kenya spends more on debt servicing than on development. In 2007, the debt servicing rose to US$ 319 million due to the resumption of payment of debts not covered under the 2004 Paris club rescheduling agreement.

Kenya had avoided debt arrears until the recession experienced in the 1990s which led to severe balance of payments constraints and shortages in foreign exchange and with the curtailment of donor balance of payments support in late 1991, the government began to accumulate arrears on official debt.

According to the World Bank and IMF, Kenya's external debt is sustainable and therefore Kenya does not qualify for relief under the HIPC initiative. This opinion is based on the IMF and World Bank Debt Sustainability Analysis carried out in 2003 whose results indicate that Kenya's external debt burden is sustainable.

Despite the view by the IMF/World Bank that Kenya's external debt is sustainable, Kenya has been unable to service its loans without rescheduling under the Paris club arrangements or by accumulating arrears. The decision to reschedule the debts is an indicator of debt servicing difficulties.

Although Kenya does not qualify for debt relief under both the HIPC and Multilateral Debt Relief Initiatives (MDRI), the government policy has been to seek for deeper relief on bilateral basis by seeking debt-for-development swap arrangements and debt cancellation.

Kenya has managed to reschedule its bilateral debts through the Paris club in 1994 (US$ 540 million), 2000 (US$288 million) and 2004 (US$350 million). It also rescheduled its commercial debts in 1998 (US$43 million) and 2001 (US 10$ million). Under the Paris club rescheduling, Official Development Assistance is repaid over 20 years including 10 years grace period at below market interest rates. (Annual Public Debt Management Report 2005/2006, Treasury March 2007)

Between 1986 and 1992 bilateral donors provided debt forgiveness of Official Development Assistance (ODA) of US $700 million. The major sources of ODA debt relief were the US (US $118.5 million), Germany (DM 600 million), Canada (US$90 million) and UK. China, Finland and Netherlands opted to cancel debts amounting to US $30 million instead of rescheduling the debt under the Paris Club in the period 2000-2002.

According to the International Monetary Fund, Kenya's exports in 2001 totaled US $ 1.89 billion while the imports totaled US $ 3.18 billion resulting in a trade deficit of US $ 1.29. The balance of trade deficit renders the country to be highly dependent on loans to finance needed imports.

Despite the fact that Kenya has managed to reschedule some of its debts while other debts were forgiven by the creditors, Kenya is still unable to meet its debt service obligations. This has led to an accumulation of debt arrears and low levels of economic growth.

Kenya like other low-income countries is usually a net recipient of concessional loans and aid that is low interest loans with grace periods and long maturities. A greater proportion of the debt is long term and is usually contracted by the public sector. The greater proportion of Kenya's external debt consists of official debt (multilateral and bilateral) contracted on Official Development Assistance (ODA) concessional terms.

Although the government borrowing strategy has been to contract external loans with high level of concessionality from both multilateral and official bilateral sources, these creditors do not extend loans to finance security or military related projects. The government therefore resorts to borrowing from commercial creditors to finance these categories of expenditures. Commercial loans are contracted on shorter repayment period and market interest rates.

The main multilateral lenders have been the International Bank for Reconstruction and Development (IBRD) and International Development Association (IDA). The World Bank Group accounted for almost 80 percent of total loans in 1970-1996. Other major multilateral creditors are the International Monetary Fund (IMF), European Investment Bank (EIB), the African Development Bank (ABD) and its soft lending arm the African Development Fund (ADF). IBRD and IDA are mainly concerned with project lending while IMF is mainly concerned with policy based lending (budget support).

As at June 2006, the leading multilateral creditor was IDA (47.7 percent of total external debt), followed by the African Development Bank Group (6 percent) and the European Investment Bank (3.1 percent) while Japan (18.4 percent) was the leading bilateral creditor.

Japan, Germany and France are the major bilateral creditors. Among the notable trends within the multilateral groups is the decline in the share of the United Kingdom, which was Kenya's leading development partner in the immediate post-independence years of 1960s and early 1970s. The nominal value of UK debt has risen only modestly over the years, from an average of US $37 million per annum in the 1970s to US$62 million in the 1980s, falling back to US$55 million per annum in the 1990s. While Japan's annual average ODA to Kenya has increased from insignificant levels in the 1970s to US$60 million per annum in the 1980s and to US$170 million per annum in the 1990s.

The main debtors are Central Government, the Central Bank of Kenya and Parastatals (Annual Public Debt Management Report, March 2007).

1.4 Statement of the Problem

Efforts by the government to develop the economy have been constrained by the undeveloped natural resources, a high population growth rate, and reliance on agriculture, insufficient capital and technological backwardness. This has led to external borrowing with the hope that the loans would increase the pace of investment and growth.

According to Abbot (1993) Kenya's debt service ratio has been above the critical ratio leading to the deterioration of the level and quality of services as a large proportion of exports is devoted to debt servicing. Debt service leads to crowding out effects as servicing of a growing stock of debt reduces the nationals savings available for investments. This results in limited resources to be divided among domestic consumption, investment and external transfer to service the existing debt. The government cannot afford to lower consumption and funds that could be potentially have been used for public investment are used to service the external debt.

This means that, due to debt repayment obligations, the resources that could have been allocated to investment are instead channeled abroad for debt repayment. This may act as a strong disincentive not only to invest but also to partake in any adjustment programs aimed at increasing growth. The large amount of capital outflows through debt servicing and interest payments in Kenya have had an adverse impact on the country's ability to develop. The government could have allocated more funds to health, education, and other development projects if it were not for the net loss of capital outflows in terms of debt service and interest payments.

By cutting down expenditure on social and economic infrastructure, the government appears to have constrained public sector investment and growth through lost externalities. This has reduced total investment, since public investment is significant proportion of the total investment in the country.

The large debt service requirements dry up foreign exchange and capital, because they are transferred to principal and interest payments which in turn reduces the budget available for development expenditures. (Adnan, Gul, 2008)

A significant proportion of the government budget allocation is to service public debt leaving inadequate financial resources for pro-poor development programs. (Annual Public Debt Management Report, March 2007).

Kenya's economy has not grown fast enough to sustain debt obligations and maintain domestic investment. Kenya's external indebtedness means that the resources that could have been allocated to consumption and investment are being channeled abroad. This has had detrimental effects on the economy's growth and the welfare of the citizens.

1.5 Objectives of Study

The purpose of the study was to establish the impact of Kenya's external debt on public investments and economic growth.

The specific purpose of the study was;

1 Determine the effects of external debt on public investment and economic growth.

2 Draw policy implications on the findings of the study and give recommendations for further research.

1.6 Research Questions

1. What are the effects of external debt on public investment and economic growth in Kenya?
2. What will be the policy implications of the study?

1.7 Hypotheses

1. Ho : External debt has an effect on economic growth

H1 : External debt does not have an impact on economic growth

2. Ho : External debt has an effect on public investment

H1 : External debt does not have an effect on public investment

1.8 Justification of the study

The debt burden crowds out domestic expenditure needed for supporting productive capacity thereby making it difficult to stimulate investment and growth. A substantial amount of revenue collected by the government goes to servicing external debts leaving little for domestic expenditure on social and economic infrastructure and consequently hampering the country's economic growth.

Most studies on external debt have concentrated on the impact of private investment and have ignored the impact that external debt has on public investment.

This research adds to the existing stock of knowledge and gives policy recommendations on how to reduce the adverse effect of external debt on economic growth and public investment.

Chapter 2: Literature Review

2.1 Theoretical Literature

In various theoretical models, reasonable levels of current debt inflows are expected to give a positive effect on growth. In traditional neoclassical models, the ability of a country to borrow and lend, increases transitional growth.

External resources contribute by relieving certain bottlenecks inhibiting domestic growth and development, increasing the efficiency of the domestic resources (Chenery and Strout, 1966).

According to Sachs (2002) argues that growth will not take off until capital stock has risen to a given threshold. As capital rises, and investment and output rise, in a virtuous circle, the saving level will also continue to rise. After a given level, the rise in both capital and savings will be sufficient to engender self sustaining growth. The 'dual gap' theory provides the reason for opting for external finance as a means of ensuring sustained development rather than utilizing only domestic resources. The 'dual gap' theory postulates that investment is a function of saving, and that in developing countries, the level of domestic savings is not sufficient to find the needed investment to ensure economic development.

Clements et al (2003) argue that at low levels of debt, additional foreign borrowing could stimulate growth, to the extent that the additional capital financed by this new borrowing enhances the country's productive capacity. Higher output, in turn, would make it easier for a country to service its debt. As debt and capital stock increase, however, the marginal productivity of investment falls. Up to a certain threshold, increased borrowing makes repayment of debt more likely. Beyond that threshold, further increases in external debt reduce the prospects of creditors being repaid. As a country's access to loans drops, its ability to accumulate capital suffers, and growth may slow.

External debt does not automatically transform into debt burden when funds are optimally utilized. In an optimal condition, the marginal return on investment is greater or equal to the cost of borrowing. According to Ajayi and Khan (2000), if the acquisition of additional foreign debt increases the debt servicing burden more than it increases the country's capacity to bear the burden, such an acquisition becomes undesirable and the situation must be reversed through export expansion. If exports are not expanded, more borrowing will be necessitated for servicing of debt and external debt will pile up above the country's ability to bear.

External borrowing was originally intended to finance domestic investment opportunities (as well as to smooth terms of trade) but poor policies and continued borrowing in the face of negative external conditions meant that the investment, to the extent it actually took place, did not contribute much to growth.

According to Gomanee et al (2005) foreign financing has a beneficial impact on growth in Sub-Saharan African countries through financing public investment, although the impact on growth is small because productivity is low.

For investment to translate to economic growth, the existence of appropriate political and social infrastructure is necessary. Private and public investment are related as public investment may crowd in (if it provides the infrastructure to support the private sector) or crowd out (by increasing costs of borrowing) private investment. Public investment itself affects growth either directly, via its productivity, or indirectly via its effects on private investment. Public investment in human capital (health and education), law and order, research and development, and social and economic infrastructure leads to creation of positive externalities which in turn improve the productivity of private investment. Therefore one would expect a positive relationship between public investment and economic growth. (Barro,2003).

In a liberalized environment, public expenditure on capital goods such as basic infrastructure improves investors efficiency and lowers the cost of doing business leading to a higher levels of private investment.

The stock of debt is assumed to affect growth both directly (by reducing a government's incentives to undertake structural reforms) and indirectly (by dampening investments). Large debt stocks are typically expected to lower growth through the channel of reduced investment which is usually described by the debt overhang hypotheses. Outstanding debt ultimately becomes so large that investment will be inefficiently low without sizable debt or debt service reduction. The burden of large debt sooner or later can lead to extreme scarcity in liquidity, negatively impacting upon capital formation, growth, and consumption. The resultant effect is low public and private investment because a larger and larger share of resources is transferred abroad for debt servicing. That is some of the returns from investing in the domestic economy are effectively taxed away.

Debt servicing requirements may result to liquidity constraints leading to reduction of public investment. This is important for consideration because public investments are likely to be a major determinant of the economic activities in may functional sectors. (Fosu, 2007).

According to Hadjimichael (1995) there are two channels through which debt affects growth and investment. The first channel concerns the resources used to service the debt, which crowds out public investment and discourage private investment. The second channel is the debt overhang, which leads to the anticipation by economic agents of future tax liabilities for its servicing. The second channel posits that since an indebted country benefits partially from increased output, or exports (some of the proceeds are paid to creditors), there is a disincentive effect not to initiate programs that will lead to future growth.

External debt can affect GDP growth indirectly through its effect on public investment. One reason is that the cost of servicing debt decreases fiscal revenues and tends to

depress public investment. This crowding-out of investment intensifies with rising debt service to GDP ratio, thereby suggesting a non-linear relationship between debt, debt service and growth.

High debt crowds out the effects of new aid in two ways. First, in stagnant economies, rising debt service drains the fiscal resources needed for development. Second, a large stock of debt may signal taxes on future success and raises questions about the availability and sustainability of reforms. High and fixed debt service obligations increase countries leverage and raise uncertainty. In such circumstances investors wait until returns are high enough to cover their risk. (Elbadawi et al, 1997),

Lancaster and Wanwe (2000) postulated that foreign aid crowds out investment. This can occur if recipient governments in coming up with the counterpart funds needed to match aid inflows, increase their expenditures through borrowing from the banking system, making credit scarce and discouraging private investors. A significant expansion in government expenditures can also be financed through higher taxes or credit creation. Either of these alternatives can also discourage investors.

Clements et al (2003) explains that external debt service (in contrast to the total debt stock) can potentially affect growth by crowding out private investment or altering the composition of public spending. Other things being equal, higher debt service raises the government's interest bill and the budget deficit, reducing public savings; this, in turn may either raise interest rates or crowd out credit available for private investment, dampening economic growth. Higher debt service payments can also have adverse effects on the composition of public spending by squeezing the amount of resources available for infrastructure and human capital, with negative effects on growth.

Cohen (1993) holds that due to the crowding out effect, a reduction in the current debt service should lead to an increase in current investment for any given level of future indebtedness. If a greater portion of export revenue is used to service external debt, very little is available for investment and growth.

The debt overhang theories may explain why large levels of accumulated debt lead to lower growth. Debt overhang describes a situation where the debt stock of a country exceeds its future capacity to repay it. The debt overhang theories imply that large debt stocks lower growth partly by reducing investment. The accumulation of a large stock of debt threatens the country's ability to repay its past debt, which in turn scares away potential lenders and investors.

Debt overhang acts as a disincentive to current investment because the investors think that the proceeds of any new project will be taxed away to service the pre-existing debt.

According to Pattillo et al, (2002), the continued borrowing and poor export performance of developing countries have led to a very high accumulated debt stocks that have likely created uncertainty and debt overhang effects.

Agenor and Montiel (1996) explain that debt overhang also depresses growth by increasing investor's uncertainty about actions the government might take to meet its onerous debt servicing obligations. As the stock of external debt rises, investors may worry that the government will finance its debt service obligations through distortionary measures, such as rapidly increasing the money supply (which causes inflation) and/or prompt a currency depreciation/devaluation because of excess demand for foreign currency created by debt servicing needs and distortionary types of taxation, such as the inflation tax, or cuts in productive public investment. Amid such uncertainty, wary would-be-investors tend to remain on the sidelines. And even when they do invest, they are more likely to opt for projects with quick returns rather than for projects that enhance growth on a sustainable basis over the long run.

If there is some likelihood that, in future, debt will be larger than the country's repayment ability, expected debt service costs will discourage further domestic and foreign investment and thus harm growth. This is because some of the returns from investing in the domestic economy are effectively 'taxed away' by foreign creditors and investment

by domestic and foreign investors and thus economic growth is discouraged. (Krugman, 1988).

Moreover, debt overhang may also discourage efforts by the government to carry out structural and fiscal reforms that could strengthen the country's economic growth and fiscal position, because a government whose financial position is improving almost inevitably finds itself under increasing pressure to repay foreign creditors.

Hjertholm et al, (2000) argues that administrative costs of government efforts to seek debt rescheduling and related uncertainties about future debt profile can also weaken administrative capacity and create further uncertainty. These uncertainties about the future dampen the incentive to invest and result in low investment and slow growth.

The relationship between external debt and economic growth can be represented in a debt "Laffer Curve" which shows that larger debt stocks tend to be associated with lower probabilities of debt repayment. The debt Laffer curve shows that as the external debt stock rises, the indebted country will try to produce less (discouragement effect) or intentionally default on the existing debt (sabotage) so the foreign lenders will receive less than full repayment. There is a critical debt stock beyond which both the lenders and borrowers lose. If the debt stock is already above this level, it is in the self interest of lenders to forgive some of the debt.

Debt has an inverted U- relationship with growth. When countries open up to external borrowing, the impact on growth is likely to be positive up to a certain level known as the growth maximizing level. Additional debt eventually slows growth down even though the overall debt level continues to make a positive contribution to growth. As the debt increases, it reaches a certain point where the overall contribution turns negative that is the country is worse off than in the case of indebtedness.

Mwega (2004) argues that a large external debt and its servicing undermine the credibility of domestic policies, causing deterioration in the relationship between African

countries and its creditors, hence reducing the amount of trade financing that could be obtained.

Agenor (1996) argues that when debtor countries are unable to meet their debt service obligations promptly, the debtors will face bad credit status and find it difficult to borrow. As a result, debtor countries will pay high rate to obtain new credit.

Calvo (1998) links the debt and growth problem to capital flight. In a relatively simple model, high debt is associated with low growth since a distortionary tax burden on capital is required to service the debt, leading to a lower rate of return on capital, lower investment and growth, low debt regimes have high growth for the opposite reasons.

According to Cohen (Cohen and Sachs, 1986; Cohen, 1991, 1992) developing countries, access to international financial market is limited because of the risk of debt repudiation. Growth is high in the early stages as the country borrows and invests. The later, growth falls to a lower level, but one that Cohen stresses is still higher than it would be if there were no international borrowing and lending (financial autarky). The stage of repaying the countries' debts does not crowd out investment; but rather encourages it because lenders are more patient and value growth more than the debtor country itself. This result, however, depends on the ability of the lenders to implement an optimal rescheduling policy. If they are not able to commit to this policy over the life of the lending relationship, a debt overhang scenario will occur and investment and growth in the later stages will be even lower than in financial autarky.

2.2 Empirical Literature

Various empirical literatures support negative relationship between external debt and public investment. Krugman (1988) showed that there is a limit at which debt accumulation stimulate investment and growth. He argued that at high levels of indebtedness, growth and investment would only improve if part of the current debt service obligations of a debtor country were forgiven.

Iyoha (1999) in his study on external debt and economic growth in Sub Saharan African (SSA) countries confirmed the debt overhang hypotheses in SSA countries since the elasticity of investment with respect to debt overhang variable was found to be -0.337. The study also confirmed the presence of the crowding out effect. He concluded that a large stock of external debt and heavy debt service payments have depressing effects on investment in SSA economies. He recommends debt reduction preferably through debt forgiveness as to stimulate investment and growth in SSA countries.

Hansen (2001) carried out a study to analyze the impact of aid and external debt on growth and investment. He used data from 54 developing countries where the empirical results showed that initial stock of external debt has a negative impact on growth as predicted by debt overhang theories. Hansen found a significant negative influence of debt-service on growth. His study revealed that a 10% increase in debt service ratio, as experienced by the average HIPCs, implies a drop in the growth rate of about 1%. Unlike most debt investment studies, which mainly use private investment as the dependent variable, Hansen uses the impact of debt and aid on gross domestic investment. Based on empirical results, Hansen's study concludes that aid and debt stock have no impact on investment whereas there's a significant crowding out effect from the debt service.

Saah (2001) in his study applied the externally constrained accelerator model to determine Ghana's external indebtedness and its implications on private investment. He used time series data covering the period 1970-1996. Public investment in the previous period was found to crowd in private investments; its magnitude depends on how the government finances external debt service.

Audu Isa (2004) examined the impact of external debt on economic growth and public investment in Nigeria using the Ordinary Least Square (OLS), on time series data covering the period 1970-2002. He found out that the debt servicing pressure in the country has had a significant adverse effect on the growth process. He found out that Nigeria frequently diverts resources to take care of pressing debt service obligations instead of being allocated to the development of infrastructures that would improve the well being of the citizenry. The coefficient of past debt accumulation relates positively to economic growth, thus contradicting the prescription of the debt overhang hypotheses in Nigeria. He found out that debt service ratio is positively related to investment and statistically significant at 5% level, thus contradicting the prescription of crowding out hypotheses in Nigeria. The results also suggest that GDP growth rate is positively related to public investment through accelerator mechanism and this supports the a priori expectation of economic theory that the rate of growth of GDP should be positively related to investment.

Pattilo et al.(2002) assessed the non linear impact of external growth using panel data set of 93 developing countries for the 1969-98 period, with time series data averaged over a 3 year period to remove short term fluctuations. They augmented a standard growth specification and used a 2-SLS estimation method. The results showed that debt has non-linear effects on growth and the average impact of debt on per capita growth appeared to be negative for debt levels above 160-170 percent of exports and 35-40 percent of GDP. The study concluded that doubling external debt levels would reduce per capita income growth by between half and full percentage point. Furthermore high debt lowers growth mainly by lowering the efficiency of investment rather than its volume. Pattilo et al concluded that the level of investment does not appear to be the main channel through which excessive external indebtedness reduces growth.

Kiriga (2002) in his study on impact of external debt on economic growth in Kenya used the time series data for the period 1970-2002. The study adopted the model used by Pattilo et al (2002) and utilized the 2-SLS method to estimate. The results showed that the coefficient of the model, which excluded the investment variable, was only slightly

different from the model with the investment variable. The conclusion of the study was that the external debt affects growth and the impact is mainly through the quality rather than the level of investment.

Degefe (1992) looked at the relationship between external debt and growth of the Ethiopian economy through the use of a simple macro model. He used a production function where the output was a function of imported and domestically produced inputs and labour. The empirical results showed that external capital contributed positively to growth between 1964 and 1977, and thereafter, it had a negative impact. He emphasized that, it is not foreign debt, but rather how it was used, that made the difference.

Ajayi (1991) while studying the macroeconomic approach to external debt for the Nigerian case used a debt cum growth model. Through simulations, he analyzed the effect of different interest rates on the contraction/expansion of external debt where he found that variations in interest rates had little effect on debt burden and debt service capacity. Empirical results indicated that doubling of interest rates from 4 percent to 8 percent had the same effect on the growth of GDP.

Cohen (1993) looked at the correlation between developing countries debt and low investment in the 1980s. Using the sovereign debt model and for a sample of 81 countries, he estimated equations prior to the debt crisis and assessed their predictive power during the period of the crisis. (The sub-periods were 1965-1973, 1974-1981, and 1992-1997). The study findings showed that the nominal debt rescheduling countries was so large that crowding out effects was not proportional to the nominal value of the debt but to the amounts of resources creditors actually commanded. A 1% of GDP paid abroad, reduced domestic investment by 0.3% of GDP this he concluded the presence of crowding out effects.

Deshpande (1997) studied the debt overhang and the disincentive to investment. The study relied on the panel data with 13 highly indebted countries for the period 1971-91. Using the model of Least Squares dummy variables, the study showed that the

relationship between external debt and investment is consistently a negative one. However separating the period into two, the first half (1971-82) showed a strong time influence that exercised a positive effect on investment. For the second half of the period, tome effects turns negative explaining the fall in investment levels observed after 1982. The study finds debt overhang to be valid. He concludes that in the first phase, the countries found themselves in a favourable international economic environment, which contributed to build-up of the external debt. Furthermore, very low interest rates, availability of surplus funds and the optimistic expectations encourage most countries to borrow large amounts.

Clements et al (2003) found that on average, every percentage point increase in debt service as a share of GDP reduces public investment by about 0.2 percentage point, implying that reducing debt service by about 6 percentage point of GDP, which, in turn, would result in a modest increase of about 0.2 percentage point in growth.

In their study, Clements et al (2003) found that although high levels of debt can depress economic growth in low income countries, external debt slows growth only after its face value reaches a threshold level estimated to be about 50 percent of GDP (or, in net present value terms, 20-25 percent of GDP).

Clements et al (2003) also found out that although the stock of public debt does not appear to depress public investment, the cost of servicing the debt does; the relationship is non linear, with the crowding out effect intensifying as the ratio of debt service to GDP rises. For everyone percentage point of GDP increase in debt service, public investment declines by about 0.2 percent of GDP that is as debt service absorbs a growing share of national income, it begins to crowd out public investment.

Greene and Villanueva (1991) find external debt service dampens private investment, while Serieux and Samy (2001), and find a similar link between debt service and total investment.

For a large sample of developing countries, including some HIPCs, Savvides (1992) finds that debt service crowds out public investment spending.

Poorer countries have had to learn to manage with aid flows of about 5 per cent of GDP per year, while ensuring that the debt stock is maintained below the 50 percent of GDP threshold, and that the borrowing is on concessional terms to ensure low debt service obligations each year. Beyond these thresholds, aid and debt will negatively impact upon GDP growth.

Elbadawi, et al (1997) confirmed a debt overhang effect on economic growth using cross-section regression for 99 developing countries spanning SSA, Latin America, Asia and Middle East. They identified three direct channels in which indebtedness in SSA works against growth; current debt inflows as a ratio of GDP (which should stimulate growth), past debt accumulation (capturing debt overhang) and debt service ratio. The further indirect channel works through the impacts of the above channels on public sector expenditures. They found that debt accumulation deters growth while debt stocks spurs growth.

According to Elbadawi, et al (1996) these debt burden indicators also affect growth indirectly through their impact on public sector expenditures. As economic conditions worsen, governments themselves with fewer resources and public expenditure is of this expenditure destined for social programs.

Using data for Cameroon, Mbanga and Sikod (2001) found that there exists a debt overhang and crowding out effects on private and public investments respectively.

Chapter Three: Model Specification

3.1 The Growth Model

This study will use the growth model developed by Clements et al 2003 which uses a reduced form growth model as shown below;

$$GRPCYt = \alpha_r + \alpha_1 TOTt + \alpha_2 POPt + \alpha_3 PIt + \alpha_4 FISBALt + \alpha_5 OPENESSt + \alpha_6 DEBTEXt + \alpha_7 DEBTt + \alpha_8 INFt + \mu t$$

Where

GRPCY = growth of real per capita income (GDP)
TOT = percentage change in terms of trade
POP = population growth rate, in percent
PI = public investment in percent of GDP
FISBAL = central government fiscal balance in percent of GDP
OPENESS = openness indicator (exports plus imports as a share of GDP
DEBTEX = total debt service in percent of exports of goods and service
DEBT = total external debt as a ratio of GDP
INF = rate of inflation
μt = error term

This study followed earlier studies in which the standard growth model is augmented with debt variables to assess the impact of external debt on growth. The model used two indicators of external debt: the face value of the stock of external debt as a share of GDP and the external debt service as a share of exports of goods and services.

Population growth and public investment were proxies for the rates of growth of factor inputs (labour and capital) in the production process. The terms of trade variable was intended to capture external shocks to the economy. The central government fiscal balance was included to control for the impact of fiscal balances on growth. The openness indicator took account of the substantial literature arguing that economies that are more open to trade enjoy higher long-term rates of growth of per capita real income. Sachs and Warner (1995). To distinguish between debt overhang and the crowding out effect, both contemporaneous debt service and a measure of the stock of external debt were included in the analysis. Total debt service in percent of

exports of goods and service captured the crowding out effect while stock of external debt to GDP ratio captured the debt overhang effect.

3.2 Methodology

Data types and sources

The data was extracted from secondary sources such as:

- World Bank and IMF publications such as World Debt Tables and Global Development Finance
- Kenya National Bureau of Statistics Economic Surveys and Statistical Abstracts
- Kenya Ministry of Finance Annual Public Debt Management Report

Chapter Four: Data analysis and interpretation of results

This chapter presents the descriptive statistics and the regression analysis results which will help in answering the research questions and the problem statement for this particular study.

4.1 Descriptive Statistics

Normality tests are very important since that inform on the distribution of the error term. This forms the basis for the identification of an appropriate estimation technique. Central tendency measures such as the mean, median; skewness and kurtosis are used to describe the data. For a normal distribution, the mean and the median are equal. The table below presents the summary statistics for the variables under study.

Table 3 Summary Statistics

Measures	GDP	DEBT	DEBTEX	OPENESS	PI	POP	INF	TOT	FISBAL
Mean	2.076	56.921	23.053	0.380	7.475	3.182	12.526	93.602	-3.792
Median	1.5	53.5	21.5	0.3788	8.05	3.5	10.6500	89.5	-3.8500
Maximum	7	98	40	0.511778	11.5	8.7	46.0000	135.1	0.1000
Minimum	-2.8	28	5	0.266695	2.7	-10	1.60000	67.8	-7.700
Std. Dev.	2.911	18.811	10.11006	0.06693	2.4880	3.00043	8.10781	17.408	2.064420
Skewness	0.202	0.3701	0.112404	0.077757	-0.3942	-2.1873	2.14601	0.629	0.269927
Kurtosis	2.098	2.2341	1.756876	2.036578	2.3642	11.7090	9.17508	2.3980	2.273660
Jarque-Bera	1.548	1.7965	2.526834	1.507913	1.6243	150.392	89.5423	3.0796	1.296769
Probability	0.461	0.4073	0.282686	0.470501	0.4439	0	0.00000	0.2144	0.52289
Observations	38	38	38	38	38	38	38	38	38

For the variables in this study, there is none for which the mean and the median are equal indicating that they are not normally distributed although the distribution is not far from normal. The mean is typically higher than the median in the positively skewed distributions for all other variables except PI and POP while the mean is lower than the median in negatively skewed distributions. The Jarque–Bera statistic test used to test for the normality of the series indicates that the series is not a normal distribution. The statistics indicated assume a chi-square distribution. The probability of accepting a type 1

error for each variable and accepting the null hypothesis of normal distribution is close to zero and therefore we reject the null hypothesis that the distribution is normal.

For a normal distribution the degree of skewness is zero. Therefore the variables do not exhibit a normal distribution. Kurtosis is a measure of whether the distribution is peak or flat relative to a normal distribution. For a normal distribution, the kurtosis is 3. There is evidence that this series has kurtosis since the measure of kurtosis is less than 3.

Correlation tests show the degree of association or the relationship between independent variables. Correlation test however do not imply causality but rather just informs on the magnitude with which a variable changes due to a one percent change in another variable. The table below presents the correlation matrix for the variables under study.

Table 4 Correlation matrix

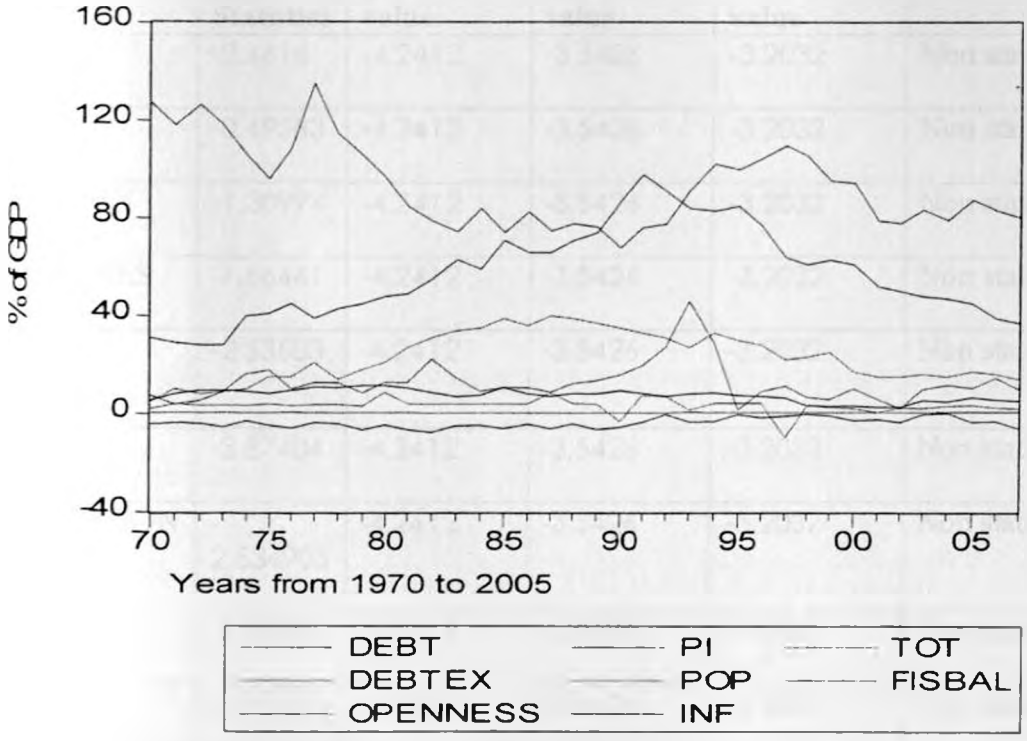
VARIABLE	GDP	DEBT	DEBTEX	OPENNESS	PI	POP	INF	TOT	FISBAL
GDP	1.00000	-0.571115	-0.52394	0.38529	-0.06666	-0.15770	-0.5596	0.46513	0.10245
DEBT	-0.5711	1.00000	0.80437	-0.33817	-0.03885	0.05192	0.4395	-0.51931	0.19718
DEBTEX	-0.5239	0.80437	1.00000	-0.61649	0.16971	0.20424	0.2916	-0.60446	-0.18427
PI	0.38529	-0.33818	-0.61649	1.00000	-0.23229	-0.24926	0.0443	0.26967	0.34233
POP	-0.0666	-0.03885	0.16972	-0.23229	1.00000	0.25646	0.2464	0.25319	-0.53446
OPENNESS	-0.1577	0.05193	0.20424	-0.24926	0.25646	1.00000	0.0595	-0.10620	-0.19624
INF	-0.5596	0.43959	0.29162	0.04432	0.24645	0.05953	1.0000	-0.19426	-0.06486
TOT	0.46514	-0.51931	-0.60447	0.26967	0.25319	-0.10620	-0.1942	1.00000	0.14966
FISBAL	0.10245	0.197183	-0.18428	0.34232	-0.53445	-0.19623	-0.0648	0.14966	1.00000

According to Gujarati (2003), multicollinearity becomes a serious problem if the pair wise or zero-order correlation coefficient between two regressors is in excess of 0.8. A correlation coefficient which is close to 1 implies that there is a strong positive or negative relationship for a positive and a negative sign respectively. This is likely to impair the normality of the residuals forming the long-run relationship. The signs inform on whether the relationship is positive or negative

4.2 Unit root tests

For time series data, unit root test is important since running regression analysis with non stationary variables result in spurious results which cannot be relied upon. A number of approaches can be used to assess whether there is unit root. A graphical approach is first used where the trend assumed by the variables is observed to check whether it is uniform. The following figure represents the graphical representation of the variables.

Figure 1: Line Graph of the study variables



Source: Various issues of Economic Surveys by Kenya National Bureau of Statistics and World Bank (Global Development Finance)

The above graph shows that there have been fluctuations in the variables over time. This is an indication that the variables are not stationary. An alternative approach is therefore necessary to test for unit root using the Augmented Dickey Fuller (ADF) test. This test is first performed to see whether the variables are stationary at levels. If not stationary, a first difference is obtained and the test is carried out again. Further differencing is done until the variables are stationary. Where differencing is done, there is loss of long run

information and this calls for a co integration test to assess whether a linear combination of the variables is I(0) or I(1). The Akaike Information Criterion (AIC) is used to determine the number of lag lengths to be used.

For the ADF test, the null hypothesis of a unit root is rejected against the one-sided alternative if the calculated t- statistic (ADF) is less than the critical t value. The table below presents the unit root test results.

Table 5 Unit root test at levels

Variable	ADF Statistics	1% critical value	5% critical value	10% critical value	comments
GDP	-2.4616	-4.2412	-3.5426	-3.2032	Non stationary
DEBT	-0.49583	-4.2412	-3.5426	-3.2032	Non stationary
DEBTEX	-1.30994	-4.2412	-3.5426	-3.2032	Non stationary
OPENNES	-1.86441	-4.2412	-3.5426	-3.2032	Non stationary
PI	-2.53503	-4.2412	-3.5426	-3.2032	Non stationary
POP	-3.87404	-4.2412	-3.5426	-3.2032	Non stationary
INFLATION	-2.534905	-4.2412	-3.5426	-3.2032	Non stationary
TOTGR	-2.31755	-4.2412	-3.5426	-3.2032	Non stationary
FISCAL BALANCE	-1.71777	-4.2412	-3.5426	-3.2032	Non stationary

The test shows that no variable is stationary at levels. A first difference is therefore necessary to see whether the variables will become stationary. This is represented in the following table.

Table 6 Unit root tests at first difference

Variable	ADF Statistics	1% critical value	5% critical value	10% critical value	Comments
GDP	-4.6253	-4.2505	-3.5468	-3.2056	Stationary
DEBT	-4.04295	-4.2505	-3.5468	-3.2056	Stationary
DEBTEX	-3.69806	-4.2505	-3.5468	-3.2056	Stationary
OPENNES	-3.33656	-4.2505	-3.5468	-3.2056	Non stationary
PI	-3.74868	-4.2505	-3.5468	-3.2056	Stationary
POP	-6.99311	-4.2505	-3.5468	-3.2056	Stationary
INFLATION	-3.788904	-4.2505	-3.5468	-3.2056	Stationary
TOTGR	-3.48172	-4.2505	-3.5468	-3.2056	Non stationary
FISCAL BALANCE	-3.547018	-4.2505	-3.5468	-3.2056	Stationary

The test shows that all the variables except openness and terms of trade are stationary after first differencing. A second difference is therefore necessary for those specific variables. This is found in the following table.

Table 7 Unit root test at second difference

Variable	ADF Statistics	1% critical value	5% critical value	10% critical value	Comments
GDP		-4.2605	-3.5514	-3.2081	Stationary
DEBT		-4.2605	-3.5514	-3.2081	Stationary
DEBTEX		-4.2605	-3.5514	-3.2081	Stationary
OPENNES	-5.41889	-4.2605	-3.5514	-3.2081	Stationary
PI		-4.2605	-3.5514	-3.2081	Stationary
POP		-4.2605	-3.5514	-3.2081	Stationary
INFLATION		-4.2605	-3.5514	-3.2081	Stationary
TOTGR	-4.94587	-4.2605	-3.5514	-3.2081	Stationary

FISCAL BALANCE		-4.2605	-3.5514	-3.2081	Stationary

All the variables are now stationary. A co integration test is performed to test whether the non stationary variables are co integrated at levels. Differencing of the variables to achieve stationarity leads to loss of long-run properties. The concept of co integration implies that if there is a long-run relationship between two or more non stationary variables, deviations from this long-run path is stationary. Predicted residuals obtained using Engle-Granger two step procedures from the long-run equation of the non-stationary variables, are tested for unit root using the ADF test.

The table below represents the long run model for the co integrating equation.

Table 8 Long run model

Long run path				
Dependent Variable: GDP				
Method: Least Squares				
Date: 08/19/09 Time: 00:51				
Sample(adjusted): 1972 2007				
Included observations: 36 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
DEBT	-0.015717	0.031826	-0.493832	0.6253
DEBTEX	-0.105698	0.074779	-1.413461	0.1685
PI	0.394684	0.160145	2.464535	0.0201
POP	-0.083085	0.106366	-0.781121	0.4413
DOPENNESS	14.75444	6.338775	2.327649	0.0274
INFLATION	-0.201886	0.048288	-4.180848	0.0003
DTOTGR	-8.243979	2.787830	-2.957132	0.0062
C	7.369554	5.120089	1.439341	0.1611
R-squared	0.659040	Mean dependent var		1.830556
Adjusted R-squared	0.573800	S.D. dependent var		2.788017
S.E. of regression	1.820130	Akaike info criterion		4.228823
Sum squared resid	92.76043	Schwarz criterion		4.580716
Log likelihood	-68.11881	F-statistic		7.731571
Durbin-Watson stat	1.034385	Prob(F-statistic)		0.000033

From the long-run model, debt as a percentage of GDP was found not to be significant at all levels while debt service as a percentage of exports was found to be significant at 90% level of significance in explaining the GDP growth in the country. The coefficient is negative implying that a 1% increase in external debt as percentage of GDP and ratio of debt service to exports expressed as a percentage of GDP lowers the GDP growth by 1.57% and 10.57% % in Kenya respectively. The regressors were found to explain 57.38% of the variation in the dependent variable. Jointly, all the variables were found to be significant as postulated by the F-statistic.

Table 9 (Stationarity test for the residual of the Co-integrating regression).

ADF Test Statistic	-4.929780	1% Critical Value*	-4.2505
		5% Critical Value	-3.5468
		10% Critical Value	-3.2056

*MacKinnon critical values for rejection of hypothesis of a unit root.

The ADF test revealed that the residuals were stationary at 1%, 5% and 10% levels of significance. The residuals become the error correction term and consequently, an error correction formulation is adopted. The ADF statistic indicates that the series is co integrated calling for an error correction model.

4.3 Error Correction Modeling

The error correction model includes the error correction term (ECM) in the stationary variables to obtain the short run model. This term captures the long run relationship which may have been lost after differencing the non stationary variables. It reflects attempts to correct deviations from the long-run equilibrium. The coefficient of the error correction term reflects the speed of adjustment. The following table represents the error correction model which also forms the short run equation.

Table 10 Short run model

Dependent Variable: DGDP
Method: Least Squares
Date: 08/19/09 Time: 00:56
Sample(adjusted): 1973 2007
Included observations: 35 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DDEBT	-0.017977	0.028135	-0.638964	0.5284
DDEBTEX	-0.098298	0.064829	-1.516260	0.1415
DPI	0.319673	0.142445	2.244189	0.0336
DPOP	-0.103558	0.092372	-1.121089	0.2725
DDOPENNESS	10.03570	5.669293	1.770186	0.0884
DINFLATION	-0.167201	0.043464	-3.846900	0.0007
DDTOTGR	-5.015766	2.596302	-1.931888	0.0643
ECM	0.612626	0.198505	3.086197	0.0048
C	6.231048	4.455722	1.398437	0.1738
R-squared	0.736100	Mean dependent var		1.682857
Adjusted R-squared	0.654900	S.D. dependent var		2.682019
S.E. of regression	1.575558	Akaike info criterion		3.964130
Sum squared resid	64.54195	Schwarz criterion		4.364077
Log likelihood	-60.37228	F-statistic		9.065270
Durbin-Watson stat	1.965968	Prob(F-statistic)		0.000007

The short-run model portrays that the external debt as percentage of GDP is not significant at both 1% and 5% levels. However, the share of external debt service to exports expressed as a percentage of GDP is significant at 90%. The explanatory variables explain 65.49% of the variation in the dependent variable. As in the long run model, the variables are significant jointly as depicted by the F-statistic. The lagged error correction term (ECT), included in GDP growth model to capture the long run dynamics between the co-integrating series is positive and is statistically significant. It indicates that the speed of adjustment from one period to another is positive. Positive deviations from the stationary relationship are corrected by increases in growth. The coefficient 0.61 which represents the speed of adjustment is fast. This indicates that deviations from the long run relationship take a shorter period to be fully corrected.

Chapter Five: Conclusions and Policy Implications

5.1 Conclusions

The focus of the study was to establish the impact of Kenya's external debt on economic growth and public investment. A significant proportion of the government budget allocation goes to servicing Kenya's external debt leaving inadequate resources to be divided amongst domestic consumption and investment. The resources that should be used for effective public investment and to improve people's living standards are instead diverted to debt payments. This has made the attainment of sustainable economic growth difficult.

From the above analysis, debt service as a percentage of exports was found to be significant at explaining the GDP growth in Kenya. The negative coefficient implies that an increase in the ratio of debt service to exports lowers the GDP growth. There is therefore an inverse relationship between the debt service ratio and the GDP growth rate. This is because a significant proportion of the government resources go to servicing of external debts instead of being allocated for investment and development programs. Stock of external debt as a percentage of GDP was however, not found to be significant in explaining GDP growth in the country.

The results also indicate that there is a negative correlation between public investment and debt service as a percent of exports of goods and services and between public investment and stock of external debt expressed as a percentage of GDP. This implies that the stock of external debt and debt service ratio appear to depress public investment. Large stocks of external debt and the cost of servicing the debt decreases fiscal revenues and tends to depress public investment with negative effects on economic growth.

The study, further established that terms of trade have a real effect on GDP. The terms of trade and GDP display a negative relationship. The terms of trade assume a negative

coefficient. This implies that unfavourable terms of trade dampen the growth in level of GDP. Kenya runs a balance of trade deficit mainly due to its dependence of exports of limited agricultural products which are subject to price fluctuations. This has led to export revenue instability. The Balance of trade deficit renders the country highly dependent on loans and aid in order to finance the needed imports.

Inflation also has a negative effect in relation to growth in GDP. As established from the analysis inflation has a negative coefficient. This implies that as inflation increases growth in GDP decreases. Inflation might result in Balance of payments deficit and may erode the purchasing power of money thus lowering consumption and investment which are key components of the Gross Domestic Product.

Population density is also seen to have an effect on the growth in GDP. This study depicts that as the level of population in the country increases the growth in GDP decreases. This is due to the pressure on land which is exerted on the scarce land resources. The only way the food basket can be increased is when new and improved farming methods are adopted and the productive capacity increased through training.

5.2 Policy Recommendations

This study focused on the impact of Kenya's external debt on economic growth and public investment. The study established that despite the spirited campaigns stepped up by the government to raise GDP growth, more remains to be done.

The Kenyan government should aggressively pursue debt relief measures in order to release some of the resources used to repay the external debt. In order for the government to reap economic benefits from the debt relief, the government needs to allocate a significant share of the debt relief into public investment. The resources should be used for productive public investments which will consequently have a multiplier effect and a catalyst for future investment. In addition to higher spending on capital outlay, the

government needs to increase its domestic revenues in order to prevent an increase in the budget deficit. With the increased investment the national income will raise leading to an increase in the GDP growth rate.

The debt relief may act as an incentive for government to carry out fiscal reforms that could strengthen the country's economic growth. This is because debt reduction policies combine a liquidity effect resulting from the reduction in debt service payments and an incentive effect resulting from debt relief.

The government should promote the rational and proper utilization of resources, maintain debt stock at manageable levels and borrowing of funds should be on concessional terms in order to ensure low debt service obligations. This is because debt service reduction if combined with appropriate domestic policies may lead to the establishment of sustainable economic growth.

The government needs to focus on growth enhancing policies that will lead to increased export earnings. Such policies include export diversification from over reliance on primary exports like tea and coffee to other products such as exports of garments to the United States under the AGOA initiative. On the same note there should be effort made to reduce the level of imports by banning importation of goods and services that can be produced locally at a reasonable cost. With the increase in exports and decrease in imports the national income will increase and there will be growth in the GDP rate. The government should also work towards improving the terms of trade amongst their trading partners. The favourable terms of trade may raise the investments and hence economic growth.

The government needs to create credibility in order to increase investor confidence for local and foreign investments by implementing measures to reduce the level of corruption. public resources mismanagement and also provide a stable environment for

investments. Increased investments will lead to higher rates in GDP growth. Also with the increase in investment there will be creation of more job opportunities and it will increase the standard of living of the citizens.

Reforms should also be instituted in the industrial sector to avoid collapse of local industries since this may lead to huge losses as well as loss of trust in the locally produced goods. Some of the stiff requirements which include licenses which are expensive to acquire should be scrapped to encourage more people to venture into this sector. However, this must be accompanied by rules and regulations to avoid exploitation of the countries resources by investors.

Regarding inflation, when there is inflation the imports becomes more expensive and the exports become cheaper. Since Kenya imports more than it exports, this will leads to a situation where the net exports values are negative because the returns from exports are not enough to cover the cost of imports. Consequently, this results to deteriorating terms of trade leading to Balance of Payments deficits which might have to be financed through borrowing resulting to an increase in external debt. Therefore the central bank needs to put in measures to ensure that the rate of inflation is low and stable.

Economic empowerment of masses is very important in any economy. This can be enhanced through increased participation in the labor markets as a result of increased creation of jobs and self employment. This will help in raising income which in turn leads to a growth in GDP. The government must therefore step in to ensure that more jobs are created and for the self employed, the government should ensure that raw materials are acquired at affordable prices besides creating markets for the finished goods.

5.3 Recommendations for further research

This study focused on the impact of external debt on public investment and economic growth. This study shows that inflation has negative effect on economic growth. It would be useful to also examine the significance of increase in inflation on the level of external

debt. The demand for real money balances decline with inflation and it may be interesting to assess the impact this would have on external debt.

There is also need to compare Kenya's external debt and domestic debt. Kenya's domestic debt has been on an increasing trend. The increasing domestic debt has been attributed to among other reasons, the suspension of donor funds in the 1990s and the conditionalities attached to the funds by the multilateral and bilateral lenders. It would be useful to compare the impact of external debt and impact of domestic have on economic growth in Kenya.

It is recognized that private and public investments are related. There is need for an empirical study on the complementary relationship between private and public investment.

5.4 Limitations of the study

The study used secondary data from several sources which might be ingrained with errors and therefore might affect the findings. The study also had to exclude some variables which might be important in explaining investment in Kenya such as the politico-institutional variable and political business cycles variable due to lack of available data.

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