THE EFFECTS OF EXTERNAL PUBLIC DEBT SERVICING ON ECONOMIC GROWTH IN KENYA : 1970 – 2003

By

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A research project submitted to the School of Economics in partial fulfillment of the

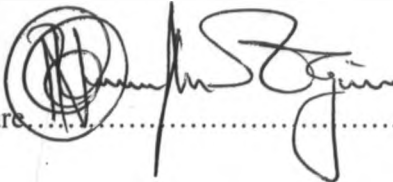requirements for the Degree of Master of Arts (Economics) of University of Nairobi

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DECLARATION

This research paper is my original work and has not been submitted or evaluated for a degree programme in any other university.

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This research paper has been submitted for examination with our approval as university supervisors.

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DEDICATION

To my parents, for the support they have always given me during my studies.

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ABSTRACT

Kenya has been receiving aid from donor community for over three decades now. The need to service a large amount of external debt has led to "crowding–out" of investment besides reducing the country's credit worthiness internationally (World Bank, 2004). With a lot of money being spent on debt servicing, the Kenyan economy has plunged into a deficit and recession and has thus affected investment growth negatively. The Kenya government has hence had no other options but to borrow domestically to finance its budget deficit. This has increased the total public debt and resulted in low levels of investment leading to low economic growth in the recent past. Past empirical studies on debt in Kenya have not addressed the issue of debt servicing specifically and usually tend to deal with effects of debt in general for example Elbadawi and Ndungu, 1996 and Were, 2001.

The study set out to establish the effects of external public debt servicing on economic growth in Kenya and the magnitude, size and structure of Kenya's external debt. To achieve these objectives the study used time series data for 33 years in regressing a GDP growth rate equation. The time series data for the GDP growth rate and the stock of external debt to GDP lagged by one period, debt service as a ratio of export earnings, lagged fiscal deficit to the GDP ratio, current real private investment as a ratio of GDP, public investment as a ratio of GDP, terms of trade, rate of inflation, interest rates were obtained from *Policy Timeline and Time Series Data for Kenya* (Ryan, T.C.I. 2004).

Before the regression was done, an analysis of the stationarity for all variables was done which revealed that though the variables such as real GDP growth rate, debt service as a ratio of exports and inflation were stationary at 5 percent level of significance, the rest were

stationary at the first difference.These were, stock of external debt to GDP, private investment as a ratio of GDP, public investment as a ratio of GDP, terms of trade and interest rates.

Estimation results showed that indeed debt servicing affects economic growth and thus increase in the debt servicing leads to a decrease in the GDP growth rate. The study also found out that both public and private investments have a great impact on the GDP growth rate.

ACRONYMS

GDP: Gross Domestic Product

GNP: Gross National Product

HIPC: Highly Indebted Poor Countries

IMF: International Monetary Fund

LDC: Least Developed Country

NPV: Net Present Value

OLS: Ordinary Least Squares

ToT: Terms of Trade

WB: World Bank

DEFINITION OF TERMS

Economic growth: refers to an increase in the volume of goods and services produced by an economy in calendar year.

Gross Domestic Product (GDP): The total market value of all final goods and services produced within the political boundaries of an economy during a given period of time, usually one year.

Real GDP: This is inflation-adjusted measure of GDP that reflects the value of all goods and services produced in a given year, expressed in base-year prices.

Total debt service payments: The sum of amortization and interest payments.

Arrears: Arrears in total debt service at the end of any period equals the arrears in total debt service at the end of the previous period plus the debt service scheduled to be paid, but minus debt service paid, in the period.

Creditworthiness: Refers to a country's acceptability for further credit by virtue of its record of repayment of past debts. It reflects the performance on external debt management. If it is positive, the creditworthiness rating of the country is high on the international capital market.

CHAPTER ONE

INTRODUCTION

1.1 Background

1.1.1 Debt crisis

Since the 1950s, young independent countries were encouraged by their former colonisers to borrow and create a conducive environment for foreign investments to boost their economic growth (Were 2001). In the process little attention was paid to the liabilities side of the current account deficit which increased the external indebtedness of these countries. Ever since, the issues of external debt and its servicing have assumed critical importance and hence introduced the debt crisis

During the commodity boom of 1970s, many countries opted for major expansionary fiscal policies acquiring external debt as spending increases outpaced the rise in tax receipts. These spending policies continued for sometime after the post 1980 collapse in commodity prices. A few countries used external borrowing to maintain consumption in the face of falling export earnings. The growing fiscal deficits reduced the ability of governments to make debt service payments as they led to declines in the growth of national income, inflation and overvaluation of exchange rates. Private savings, which would have been an alternative to foreign borrowing, were also discouraged by policies designed to keep domestic interest rates low (Greene and Mohsin, 1990).

There is no longer any disagreement or doubt that African countries generally and those in Sub-Saharan Africa in particular, face a serious and growing external debt problem (Greene and Mohsin, 1990). External debt as a ratio to gross domestic product or to exports of goods and services has risen more than three-fold since 1980. And in the case of Sub-Saharan Africa

now exceeds the comparable ratios for other developing countries with debt servicing problems, such as the heavily indebted countries in Latin America. During the period between 1985 – 1989 more than half the Sub-Saharan countries incurred arrears on debt-service obligations or sought debt rescheduling (Wijnbergen, 1991).

1.1.2 Impact of debt servicing on economic growth

A heavy debt burden can affect investment and growth through many ways. One way of a government financing debt burden is by tax increases. That increase in taxes means a lower after-tax return on capital and a reduced incentive to invest and low investments lead to slower growth. The amount of debt-servicing of the public debt can crowd out public investment expenditure, thus reducing total investment directly and indirectly by reducing complementary private expenditure, and thus possibly reducing the quality of investment. Reduced public investment expenditure can ultimately lead to lower growth rates through three possible avenues: a reduction in total investment since public investment is often a significant proportion of gross domestic investment; a reduction in private investment, because some private investment is complementary to public investment; a fall in the productivity of investment because of lost externalities from certain types of public investment such as physical infrastructure (Serieux and Samy, 2001).

A high debt burden generally means that a significant portion of government revenue should be devoted to debt servicing. A heavy external debt burden can also have an effect on growth through the external account. For countries with non-traded currencies, external debt-service payments require the purchase of foreign currency that can be earned from exports or through capital inflows, or for drawing down reserves. In the absence of substantial reserve coverage,

buoyant exports, or sizeable capital inflows, higher debt service payments means reduced import capacity.

Another potential route through which output growth can be reduced as a result of a heavy debt burden is through its effect on human capital development. The demands of debt service financing on the government budget may not only crowd out public investment, it may also crowd out social investment spending.

1.1.3 Impact of debt on economic growth

The crux of Sub-Saharan debt problem is the excessive debt overhang, which has led many countries in the region to be classified essentially as insolvent (Elbadawi and Ndungu, 1996). In contrast to the past when liquidity concerns were dominant, debt- stock related solvency problems are now more pronounced (Elbadawi and Ndungu, 1996). Debt overhang refers to the existence of a large debt that has adverse consequences for investment and growth because investors expect that current and future taxes will be increased to effect the transfers abroad. The definition brings to bear three important concerns: impact on fiscal adjustment, current and future resources to enhance economic growth, and current and future resources and resource flows to enhance private and public investments (Elbadawi and Ndungu, 1996)

The debt situation in Sub – Saharan Africa has acquired significant proportions and attention. Many of the world's poorest countries are to be found in Sub-Saharan Africa. Of the thirty two developing countries currently classified as Highly Indebted Poor Countries (HIPCs), twenty six are in Sub-Saharan Africa (Basu and Boote , 2003). It is the only region where on average the stock of external debt now exceeds gross national product (Basu and Boote , 2003). Debt servicing in 1994 on average took up 18.6 percent of the total exports. Furthermore; debt

servicing in this countries on average consumes more than 21 percent of government revenue collected each year (Mbanga, 1996). For the twenty six HIPCs in the region, the situation is much more grave, with the debt ratios standing typically at more than a third above the averages of sub-Saharan Africa and nearly threefold above developing countries averages. (Elbadawi and Ndungu, 1996)

The debt distress of Sub-Saharan Africa is indicated more directly by rising arrears of servicing obligations. In spite of positive net inflows and revolving relief schemes including refinancing, Sub-Saharan Africa in the past six years on average could only service a third of its obligations (Dijkstra and Hermes, 2001) .Consequently, the growth momentum of the debt stock has been dominated by accrual of arrears and this is the essence of the problem of debt overhang.

The consequences of the debt overhang problem for the region's future are indeed very grave and more so for HIPCs in the region. Indeed, rising debt servicing requirements along with stagnant exports has meant either defaulting on payment or parting with scarce foreign exchange badly needed for imports required for production and investment. Real outward resource transfers are effected when servicing requirements are met in the context of rapidly depreciating local currencies.

The severity of the debt burden is measured by four key ratios: total external debt/GNP ratio, total external debt/exports of goods and services ratio, interest payment on debt/exports of goods and services ratio, debt service/exports of goods and services ratio .The ratios have critical levels which when exceeded, then the respective economy is not generating enough income for sustenance. The levels are: 50 percent for total external debt/GNP ratio, 275 percent for total external debt/exports of goods and services ratio, 20 percent for interest payment on

debt/exports of goods and services ratio and 30 percent for debt service/exports of goods and services ratio (World Bank, 1999)

Increasing total external debt/exports of goods and services ratio means that export earnings are growing at a slower rate than debt and hence are insufficient to service the debt. An interest payment on debt/exports of goods and services ratio above the critical level means that export earnings are not sufficient to service interest due. A debt service/exports of goods and services ratio above the critical level implies that export earnings are insufficient for debt service payments. As for Kenya, the external debt/GNP ratio has been above the critical level since 1985 and reached a high of 103.0 percent in 1993, it declined a bit and in 1995 it was 97.7 percent and 62 percent in 2000. Between 1998 and 2000 the external debt service to exports ratio was 17 percent (World Bank, 1997, 2002 and 2003). This statistics serve to illustrate the country's critical state as a result of the negative impact of public debt. The graph below provides more evidence on the severity of Kenya's debt position seen against the gross domestic product growth rate (See table A5 in appendix V).

Figure 1: Kenya's debt growth rate vs GDP growth rate
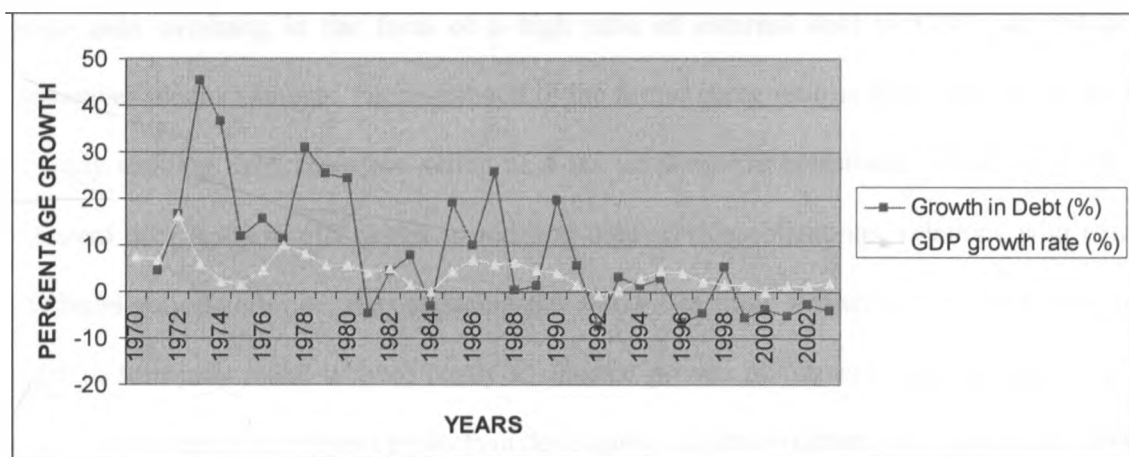
In the above graph, as Kenya's debt grew, the GDP growth rate decreased as can be seen between 1972 and 1977 and between 1977 and 1981 an evidence of debt overhang effect. But from 1994 to 2003 as the debt levels decreased the GDP growth rate improved, this is because the debt overhang effect was lower due to lower debt levels.

The current debt flows into a country stimulate investment while past debt flows deter investment. Variations in debt service ratio adversely affect investment in Kenya which confirm the crowding-out effect of debt service on investment. Due to the inflationary pressure induced by increased inflows, the previous level of inflation discourages current private investment. This implies that economic analysists expect the previous high level of inflation to persist in the current period thus adversely affecting current private savings. The extent of the negative effect of debt overhang on private investments depends on how the respective government is to raise fiscal revenue necessary to finance external debt-service obligations.

In summary, Greene and Villanueva (1991) suggested that the external debt burdens are a factor reducing investments activity in three ways. First, the higher debt service payments associated with a large external debt reduce the funds available for investments. Second, the existence of a large debt overhang in the form of a high ratio of external debt to GDP can reduce the incentives for investments, because much of the forthcoming returns from investment are used to pay existing debt, therefore acting as a tax on domestic investment. Third, if substantial external debt leads to difficulties in meeting debt-service obligations, relations with external creditors may deteriorate, thus reducing the amount of trade financing a country can obtain. This in turn may make it more costly to finance private investment because imports play a major role in most investment projects in developing countries (Greene and Villanueva, 1991).

1.1.4 Kenya's debt situation

Kenya's external debt can be classified on the basis of maturity structure, that is, short term and long term. The main lenders of multilateral aid have been; the World Bank group, the International Monetary Fund (IMF), European Union and the Africa Development Bank. Specifically, the World Bank group has been concerned with project lending while the IMF lending has been concerned with budget support. In the early 1980s USA, Germany, Britain and France were the main bilateral lenders (see table A6 in appendix VI)

Kenya being one of the HIPCs has not benefited from the debt forgiveness programme. Eligibility has been based on a good track record of reforms, pursuance of sound policies and ability to translate the resources into better prospects for the poor. By the end of July 2005, twenty countries, twenty three of them in Africa, had benefited from the initiative providing $32 billion (net present value terms) in debt service relief over time.

According to the World Bank (2004), Kenya is not among the severely indebted low income countries but rather among the moderately indebted low income countries and thus not among the most needy countries that need debt forgiveness most. Debt servicing pressure in Kenya has had significant adverse effects on the growth process of the country.

A debt sustainability analysis by IMF (2003) shows that debt rescheduling could constitute an appropriate exit strategy for Kenya, as debt- service payments would remain, over the medium term at levels where they could be financed without unduly compressing essential social and economics outlays. However, in the years 2001, 2002 and 2003, Kenya spent US$ millions 486, 535 and 574 respectively on debt servicing (Basu and Boote, 2003). These amounts overburdened the country. If the country is forgiven its debts then the money being used for

debt servicing now can be used in economic development, thus helping Kenya realize its target of industrialization by 2020.

On the other hand, interest on domestic debt has been on the rise too, as occasioned by the government's intensive borrowing from the domestic market to meet its obligations. Table A7 in appendix VII shows the interest paid to service both domestic and foreign debts. The table depicts that domestic interest is greater than foreign interest, hence the government spends more on servicing local debts than external debts.

1. 2 Statement of the problem

Kenya has been receiving aid from donor community for over three decades now. Surprisingly, instead of high growth rates being achieved, the debt levels have sky rocketed and debt servicing has overburdened the economy. The need to service a large amount of external debt has led to "crowding–out" of investment besides reducing the country's credit worthiness internationally (World Bank, 2004). Increasing debt-servicing payments are consuming a big share of government revenue that would have facilitated development projects and created employment (Were, 2001). With a lot of money being spent on debt servicing, the Kenyan economy has plunged into a deficit and recession and has thus affected investment growth negatively. The Kenya government has hence had no other options but to borrow domestically to finance its budget deficit. This has increased the total public debt and resulted in low levels of investment leading to low economic growth in the recent past (see table A 5 in the appendix V). Past empirical studies on debt in Kenya have not addressed the issue of debt servicing specifically and usually tend to deal with effects of debt in general (for example Elbadawi and Ndungu, 1996 and Were, 2001). This study therefore aimed at answering the following research questions:

i. What is the magnitude, size and structure of Kenya's external debt?

ii. What is the effect of external debt servicing on investment?

iii. What is the effect of external debt service on economic growth?

1. 3 Objectives of the study

The general objective of the study was to assess the effects of external public debt servicing on economic growth in Kenya: 1970 - 2003

The specific objectives were to:

i. Establish the magnitude, size and structure of Kenya's external debt.

ii. Establish the effects of external debt servicing on investment.

iii. Establish the effect of external debt servicing on growth.

iv. Draw policy implications based on the findings of the study.

1. 4 Justification of the study

This study found out useful insights of the effects of debt servicing on economic growth and examined whether Kenya might qualify for the HIPCs initiative relief or indeed an improved growth rate could ease the debt servicing burden. This study is of help in advising policy makers on debt servicing schedules, depending on how it impacts on economic growth i.e. policy makers can use this study to request for debt servicing defers.

1. 5 Scope of the study

This study covered the period 1970 – 2003 using time series data to study the effects of external public debt servicing on economic growth. The study determined the magnitude, size and structure of Kenya's external debt, assessed the effects of external debt service on economic growth, established the effect of external debt servicing on investment and its implications on economic growth. Policy implications were drawn based on the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter provides a review of literature on debt; debt servicing and economic growth and attempts to relate this study to available literature. It traces the theoretical developments in the economic analysis of the effects of external debt on economic growth in LDCs. It starts with the theoretical literature then empirical literature followed by an overview of available literature.

2.2 Theoretical literature review

Capital formation is the way through which growth manifests via the investments function. The origin of economic theory of capital can be traced as far back as the classical school, where it was included as an essential argument in the production function. Beginning in the 1960s, the role of physical capital was downplayed in favour of human capital and has helped to shift the focus from the former to the latter. But whatever form it may take, the crucial role of capital in the production process is solidly established (Harcourt, 1972).

Cherney and Bruno (1962) in their two-gap theory suggest that growth is limited by two constraints. First, the savings gap constrains the country's ability to save and invest. Second, the foreign exchange gap accruing from limited export revenues and the targeted growth rate of the economy causes imports to exceed the economy's ability to finance them. To explain the theory, the Harrod growth equation of the type below was used

$$g=sk$$

where g is the real growth rate of national income, s is the ratio of savings to national income and k is the incremental capital output ratio. Kenya, like most of the other HIPCs is

characterized by negative gross savings in the last two decades. When gross domestic investment is taken into consideration, the savings gap is seen to be extremely large. This has in most cases been accompanied by positive real growth rates and suggests that growth has been driven by aid. Therefore,

$$g=(s+a)k$$

where a is the ratio of aid to national income. If g^* is the targeted growth rate and k is the assumed constant over time, the rate of capital accumulation necessary to achieve the target growth rate is denoted by

$$g^*/k=s+a$$

let $s+a$ and $a=c-s$. Hence $c-s$ represents the savings gap.

This analogy implies that aid inflows should have the following potential effects: supplementing domestic savings, hence capital accumulation and increasing the proportion of income saved.If this is the case then aid increases the capacity for economic growth and should be able to lead the country to self-sustaining levels that subsequently reduce the amount of aid contracted. The assumption is that the increase in aid is greater than the increase in consumption.

On the foreign exchange gap, the assumption made by Cherney and Bruno (1962) is that the value and volume of exports is given an exogenous ($X=X_0$), while the demand for imports largely depends on the targeted rate of economic growth. Imports of capital goods depend on the level of investment, and intermediate goods are a derived demand of capacity utilization rate. Since domestic inputs are an imperfect substitute for imported internet goods, the latter increase/decrease with and increase/decrease in production. The cost of financing such imports in most cases has exceeded the earnings of foreign exchange by exports. A foreign

exchange gap arises, which if not closed by aid resources reduces the targeted economic growth.

Given that M=mY where m is the marginal propensity to import and Y is national income, the size of the foreign gap is then denoted by $mY - X_0$ and is denoted in terms of aid, a as:

$A = M - (X_0/Y)$

The implication of the foreign exchange gap is that the potential domestic savings are being frustrated because the required capital goods necessary to undertake the desired investment can neither be produced locally nor be acquired externally. Additional foreign exchange when availed would raise the level of investment and subsequently the rate of economic growth. This would imply that aid not only raised the level of investment but also permits an increase in domestic savings.

In Keynes' view, the economy was chronically unstable and subject to fluctuations, and supply and demand could well balance out at an equilibrium that did not deliver full employment. Thus the solution to this was to replace the missing private investment with public investment, financed by deliberate deficits (Keynes, 1936). The government would borrow money to spend on such things as public works; and that deficit spending, in turn, would create jobs and increase purchasing power, increase demand for commodities, increase commodity production and this would eventually lead to economic growth.

According to Borensztein (1989), a debtor country would benefit more from access to more lending than from a reduction in existing obligations in terms of the impact on the investment to GDP ratio. This suggests that in order to maximise the impact on productivity investment, debt reduction plan need to be accompanied by additional foreign lending.

Government actions, in particular the accumulation of external debt for development projects is the main origin of the Sub-Sahara Africa debt problem. (Greene,1989) .According to Greene's study many of these development projects have been designed to improve domestic industry and infrastructure rather than to boost export production directly, so that to enhance reception of foreign exchange needed to service the maturing debt obligation. The assumption was that national economies would grow overtime and that commensurate increase in export production and reasonable trends in export prices would allow the debt service obligations arising from those projects to be met. But these assumptions became unrealistic in the eyes of the two oil prices shocks during 1974-74 and 1979-80 and the subsequent depression in non-oil commodities market during the 1980. These shocks distabilised the economies of SSA countries and precious borrowing was supplemented with new loans to maintain expenditure levels hence debt burden became heavier. The study concludes that poor application of funds led to the deterioration of economic conditions in Sub-Sahara Africa (SSA) countries.

According to a study done by Cohen (1993), by estimating an investment equation for a sample of 81 LDCs over three sub periods: 1965-73, 1974-81, 1982-87 found that the level of stock of debt does not appear to have much power to explain the slowdown of investment. It's the actual flow of net transfers that mattered. It came out clearly that the actual service of debt, "crowded out" investment. The study concluded that countries which rescheduled their debt servicing exhibited a significant co-efficient of crowding out investments compared to non-rescheduling countries.

According to Montiel (1993), the fiscal phenomenon has indeed played a key role in determining the timing, breadth and macroeconomic implications of the debt crisis.

Moreover, fiscal adjustment has a more fundamental role to play in resolving the macroeconomic problems. The study concluded that the solutions to the debt crisis and removal of its harmful macroeconomic effects had to involve some combination of writing down the face value of the debt and increasing prospective public sector debt service at minimum distortionary cost to the domestic economy.

Current debt inflows stimulate growth, while past debt accumulation impacts negatively on growth. These were the findings of a study by Elbadawi (1996). The study found out that debt burden faced by African HIPCs has very strongly and negatively affected economic growth since the second half of the 1980s, threatened the sustainability of reforms, and prevented the development of capable and financial state, due to the fiscal crisis that ensued. The study concluded that the multilateral debt initiative remains the most serious and comprehensive effort so far to address this critical type of indebtedness for SSA.

According to Ndoh (1996), in order to reduce the amount of foreign debt to be inherited by Africa with time, African countries should increase their internal rate of savings to narrow the investments savings gap, and the industrialised countries who are their trading partners should increase the export prices of their basic commodities such as coffee, cocoa, oil and timber in order to reduce the import gap.

Njuguna, (1999) argued that the best way for African countries to get out of the debt problem was debt relief via the HIPC debt initiative where debt stocks are reduced. This is because the moment the critical threshold of debt accumulation is surpassed, economic agents develop an adverse response and investment pause sets in. The pause affects the potential of future growth and erodes ability to pay in the future. And if the situation is not reversed, then the

accumulated effects of debt overhangs more to the critical threshold in relation to growth and a country slowly sinks into a vicious circle.

According to Dijkstra and Hermes (2001), HIPCs tend to have unstable payment patterns. This instability may come from several sources. First, most HIPCs are regularly negotiating with bilateral and multilateral donors about the terms of debt service repayments. The outcomes of these negotiations are usually difficult to predict, contributing to the uncertainty about the annual debt service payments due. Second, the uncertainty about debt payments is also at least partly explained by the way the debt servicing system is organized. In most cases, these countries only pay part of the debt service due; the rest is postponed. A substantial part of the debt service payments actually made is paid for by new loans, mostly on concessional terms from the International Development Association of the World Bank, (IDA) and grants from bilateral donors. Yet, for governments of HIPCs it remains highly uncertain how much is exactly available to pay debt service from own and external sources. Again, this involves lengthy negotiations between donors and recipient country governments. The article concluded that debt relief may contribute to regaining growth by reducing uncertainty with respect to the debt service payments, which in turn may increase the effectiveness of government policies and consequently provide the private sector with positive signals about the future profitability of their investment.

2. 3 Empirical literature review

According to Ededokun (1993) African countries need to use aid in projects that improve export value so as to bring in the much needed foreign exchange to service the debts. Debt rescheduling will only help if at present the aid received is being put into productive use so as

to make money for meeting future debt obligations. The study found out that rising interest rate on the debt tends to make it difficult for the countries to meet the servicing obligations.

In a study by Mjema (1993) on the impact of foreign debt on Tanzania's economy, the stock of total debt, the average interest on loans and the export growth are all and have a significant and positive impact on the debt service ratio. The study departs from other studies that have dealt with this subject in that the analytical model used is a simultaneous equation model which takes into account most variables affecting real economic growth performance and whose source is foreign borrowing. The study found out that one of the conditions essential for external loans to have a positive growth impact on the country's economy is to ensure that the marginal productivity of each foreign loan is, at least, greater than the cost of the principal and interest repayment. A simultaneous model was used to capture the feedback effects of debt servicing on the economic growth. The model has three indigenous equations and five predetermined variables as follows:

$$DY_t = a10 + a11DA_1 + a_{12}DX_t + a_{13}P_t + U_f \dots\dots\dots 2.3.1$$

$$P_t = a_{20} + a_{21}TDS_t + a_{22}R_t + a_{23}DX_t + U_2 \dots\dots\dots 2.3.2$$

$$TDS_t = a_{30} + a_{31}P_t + a_{33}DS_t + U_3 \dots\dots\dots 2.3.3$$

Where indigenous variables are;

Dyt = rate of growth of real GDP in period t

Pt = debt service ration in period t

TDS_t = total debt service in period t

And the predetermined variables are:

DA_t = rate of growth of real domestic absorption as defined earlier.

DX_t = rate of growth of exports of goods and services in period t.

DS_t = rate of growth of real earnings in period t.

R_t = interest rate (average on foreign debt in period t)

FC_t = foreign capital inflow in period t.

U_2, U_3 and U_4 are stochastic terms, which satisfy the classical assumption of error terms.

The study concludes that Tanzania needs to improve the performance of the export sector with a view to use its potentials to reduce the debt and also that over reliance on foreign debt be reduced and more focus be put on domestic savings for development

According to Elbadawi and Ndungu (1996), there are three channels in which the indebtedness in sub-Sahara Africa works against economic growth: current debt flows as a ratio of GDP, which stimulate growth while past debt accumulation (debt overhang) impacts negatively on growth. These two channels produce a laffer curve showing a limit at which debt accumulation stimulates growth, beyond which further debt accumulation impacts negatively on growth reflecting thus debt overhang problem. The third direct channel is through a liquidity constraint where debt service payment obligations reduce export earnings and thus impacts negatively on growth. The final indirect channel works through the impact of the above two channels on public sector expenditures, which affect growth negatively. The model used is specified below:

GDPCAP = f (EDTGDP, EDTGDPL2, DSX, DEFGDP, DEFGDPL, GINV, INFL,

CVTOT, RPOF, LRGDP, RERMIS, LSCHOOL, REVOLS)......2.3.4

Where

GDPCAP = per capita GDP growth.

EDTGDP = stock of debt to GDP

EDTGDPL2=past debt accumulation (reflects the debt overhang)

DSX= The debt service as a ratio of export earnings

PEFGDP=current fiscal deficit to the GDP ratio

DEFGDPL= lagged fiscal deficit to the GDP ratio

GINV=gross investments as a ratio of GDP

INFL=rate of inflation

RERMIS=real exchange rate misalignment

CVTOT=coefficient of variation in terms of trade

REVOLS=a dummy reflecting internal shocks

RPOF=population growth

LSCHOOL=human capital development

LRGDP=initial incomes (captures the convergence effects).

The model was estimated in steps, starting with EDTGDP and EDTGDPL2 as the explanatory variables.

The investment model that was estimated is specified below:

IPY = f (EDTGDPL, GDPCAP, DSX, DEFGDP, DEFGDPL, PUINV, INFL, TOTSHK, RPOF, LRGDP, RERMIS, REVOLS)………………………..2.3.5

DEFGDP (fiscal policy) and PUINV (public investment) are included to capture the effect of crowding out private sector investment while public investments supplement private investment.

TOTSHK = Terms of trade shocks.

IPY = private investment to GDP ratio.

The rest of the variables are as earlier defined. Beginning with per capita growth and debt stock to GDP ratio as the only explanatory variables, the results showed that the debt stock to GDP is not significant, implying that the debt overhang is working through growth to affect private investment. The study finds that the debt overhang works indirectly to affect other policy

variables and reduces the economies' flexibility in absorbing or adjusting to internal and external shocks.

In a study by Fosu (1996) debt can additionally influence economic growth via effect on the productivity of investment and even if debt service payments do not reduce savings and investments significantly, they could still decrease output growth directly by diminishing productivity as a result of the adverse change in investment mix. The study concludes that the impact of external indebtedness and its servicing, therefore simultaneously affects investment and economic growth

According to Serieux and Samy (2001), crowding out effect affects the quality of investment more than it affects the rate of investment. This was revealed in a research that was out to determine the nature of the relationship between debt and growth. The results of the analysis provided limited support for a broad interpretation of the debt overhang effect for the countries but one that acts through the external account (fear of exchange and trade related crises) rather than through the government budget. The strongest evidence was for an import compression effect, both in terms of its effect on the rate of investment and on output directly. There was clear support for a human development effect acting through the government budget but it was found at the higher end (secondary education) and not at the lower end (primary education). The support for an investment response to human capital development was mixed.

In a study done by Were (2001), the findings were that Kenya's external debt is mainly official, of which a bigger proportion is from multilateral sources. The study that aimed at assessing the impact of external debt on economic growth and private investments in Kenya used a model that was developed by Elbadawi et al (1996), though the model consisted of

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two equations one being a growth equation while the other an investment equation, but they were solved separately. Below is the model's specification

Growth Equation:

The regression equation is specified as:

$$GDPGR = (EDTGDP, EDTGDP_{t-1}, DSR, FDGDP, FDGDP_{t-1}, PINV, PINV_{t-1},$$
$$TOT, RER, HCD, INFL, GPUIV, GPUIV_{t-1}) \dots\dots\dots\dots 2.3.6$$

Where GDPGR = Real GDP growth rate.

EDTGDP   = Stock of external debt to GDP ratio.

$EDTGDP_{t-1}$ = Stock of external debt to GDP ratio lagged by one period (reflect

debt accumulation).

DSR   = The debt service as a ratio of export earnings (reflect the

'crowding out' effect).

FDGDP   = Fiscal deficit to GDP ratio.

PINV   = Current real private investment as a ratio of GDP (captures the

accelerator principle).

$PINV_{t-1}$ = Lagged private investment as a ratio of GDP.

TOT   = Terms of trade (captures external shocks).

HCD   = Human capital development.

INFL   = Rate of inflation (reflects macro- economic stability).

RER   = Movements in real exchange rate (reflects incredibility of policies)

GPUIV   = Real public investment as a ratio of GDP.

$GPUIV_{t-1}$ = Lagged public investment as a ratio of GDP

Private investment was included in the model to capture the accelerator principle.

Investment Equation

Interest rate as a variable is included in the investment equation to capture its effect on private investment. The investment equation was specified as:

$PINV = f(EDTGDP_{t-1}, EDTGDP, GDPGR, DSR, FDGDP, FDGDP_{t-1}, TOT, HCD,$

$GPUIV, INT_r INFL, RER)$ 2.3.7

where INT_r = Interest Rate (Treasury bill rate). The other variables are as defined before. According to the study, the empirical results indicated that external debt accumulation has a negative impact on economic growth and private investment. This confirmed the existence of a debt overhang problem in Kenya. However the results also indicate that current debt inflows stimulate private investment. The study concluded that, debt servicing did not appear to affect growth adversely but has some crowding effects on private investment.

2.4 Overview of the Literature

The literature reviewed supports the hypothesis that there is a negative relationship between the amount of money used to service debts and rate of economic growth (see Elbadawi and Ndungu 1996).In a study done using Kenyan data by Were (2001) empirical results indicated that a positive relationship between debt servicing and economic growth and the co-efficients were highly significant. This however seems to contradict economic theory.

Some of the studies reviewed are cross-sectional in nature (see Cohen 1993, Elbadawi 1996 and Elbadawi and Ndungu 1996). While findings are quite revealing, there is need for the case-by-case studies in view of each country's unique characteristics. This is particularly important given the stringent conditionalities for the debt relief initiatives given to countries.

CHAPTER THREE

THEORETICAL FRAMEWORK AND METHODOLOGY

3. 1 Introduction

This chapter provides the theoretical and methodological framework used to analyse the data and provide direction in terms of attempting to meet the set objectives. It gives an outline of the empirical models used and various tests performed to ascertain the validity of data and robustness of the models including; stationarity, cointegration, correlation analysis and diagnostic tests.

3. 2 The model

Large public debt requires the government to borrow from the domestic market. According to the crowding-out theory, by the government borrowing from the domestic market it leads to a reduction in the amount that private investors can borrow, with less money in the hands of lenders, economic theory states that interest rates are bound to rise. This risen cost of capital will thus lead to crowding out of private investment. It is with this low investment levels that the economy's growth has been stunted.

Harrod and Domar (1939) assigned a key role to investment in the process of economic growth. But they lay emphasis on the dual character of investment. First, it creates income, and second, it augments the productive capacity of the economy by increasing its capital stock. The former may be regarded as the '*demand effect*' and the latter the '*supply effect*' of investment (Jhingan, 1999). Hence, so long as net investment is taking place, real income and output will continue to expand. However, for maintaining a full employment equilibrium level of income from year to year, it is necessary that both real income and output should expand at the same rate at which the productive capacity of the capital stock is expanding.

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Otherwise, any divergence between the two will lead to excess or idle capacity, thus forcing entrepreneurs to curtail their investment expenditures. Ultimately, it will adversely affect the economy by lowering incomes and employment in the subsequent periods and moving the economy off the equilibrium path of steady growth. Thus, if full employment is to be maintained in the long run, net investment should expand continuously.

In this study a growth equation was solved, which has GDP growth as the dependent variable. The growth equation captures the effects of external public debt service on economic growth. The equation used is adopted from Elbadawi and Ndungu (1996) but with a few adjustments to suit the Kenyan case.

3.3 Model specification

Elbadawi and Ndungu (1996) and Were (2001) in their studies identified the channels through which the debt servicing affects growth as: past debt accumulation, which impact negatively on growth due to the debt overhang effect and the debt-service ratio, which captures the crowding out effect. The studies also found out that as the stock of debt and cost of external debt servicing rise, there is little left to finance public development projects and social services. This leads to severely compressed budgets and/or fiscal deficits. These fiscal deficits aggravate further external borrowing as a source of financing the deficits. Its based on this that the Elbadawi and Ndungu (1996) model specification was adopted to assess the impact of debt servicing on economic growth. Besides these variables, the model also incorporates other policy, fundamental and shock variables.

3.4 Empirical model

The growth equation takes the following form: equation 3.4.1

$GDPGR = f(EDTGDP_{t-1}, DSX, FDGDP_{t-1}, PINV, PUINV, PUINV_{t-1}, TOT, INFL, INTR)$

Where: GDPGR= Real GDP growth rate.

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EDTGDP$_{t-1}$=Stock of external debt to GDP lagged by one period

DSX= Debt service as a ratio of export earnings.

FDGDP$_{t-1}$=Lagged fiscal deficit to the GDP ratio

PINV = Current real private investment as a ratio of GDP.

PUINV=Public investment as a ratio of GDP.

TOT= Terms of Trade.

INFL= Rate of inflation.

INTR= Interest rates (Treasury bill rate)

3.5 Stationarity of data

The test is to identify stationarity in variables used. Non-stationarity of time series data has often been regarded as a problem in empirical analysis. Working with non-stationary variables lead to spurious regression results from which further influence is meaningless. Stationarity is the quality of a process in which the statistical parameters, mean and standard deviation of the process do not change with time (Engle and Granger, 1987). It is therefore important to test whether the data used is stationary or not before any data is comprehensively analysed. Both graphical test and the unit root test may be used to determine stationarity. In testing for unit root two options were used: ADF and PP. The ADF test took care of the intercept and the possibility of having residuals that were autocorrelated. Philip Perron (PP) test was necessary to test for the presence of structural breaks in the variables.Both tests were used concurrently.

3.6 Cointegration analysis

Cointegration of the variable implies that there must be an adjustment process to prevent the deviations from long run equivalent relationship from becoming larger and larger. In the event of the non-stationarity of the series, a test of cointegration is conducted by applying ADF and PP tests to the residuals of the statistics cointegration (long run) regression rather

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than the levels of the series. Cointegration implies that deviations from the data series are stationary even though they themselves have infinite variance.The existence of cointegration is important because failure to find cointegration between variables will be a manifestation of the existence of spurious regression in which case the valid influence will not be realized.

3.7 Correlation test

This is a test for serial correlation of the residuals because the Durbin Watson (DW) test is not efficient when higher lagged order of the dependent variable is included as explanatory variable (Engle and Granger, 1987). This study used Langragian Multiplier (LM) method to test for serial correlation/autocorrelation of the residuals. Unlike the Durbin-Watson statistic for AR(1) errors, the LM test may be used to test for higher order ARMA errors, and is applicable whether or not there are lagged dependent variables. The serial correlation LM test is available for residuals from Ordinary Least Squares or Two-Stage Least Squares. The original regression included AR and MA terms, in which case the test regression was modified to take account of the ARMA.

The null hypothesis of the LM test is that there is no serial correlation up to lag order x, where x is a pre-specified integer. Rejecting the null hypothesis would mean that the series is stationary and vice versa. Accepting the null hypothesis implies that the variable has a unit root or is a random walk variable and hence is non-stationary.

3.8 Error Correction model

ECM was used for correcting disequilibrium and testing for long and short-run causality among cointegrated variables. In this study the ECM used was specified as follows:

Where ECM= cEDTGDP-cINTR+cPINV+cPUINV+cTOT...................3.8.1

3.9 Definitions and measurement of variables

GDP deflator

Its a measure of the change in prices of all new, domestically produced, final goods and services in an economy. The data for GDP is given as a series with GDP deflated and the base year is 1982. GDP (DEF)=100(1982).

Real GDP growth rate

This is inflation-adjusted measure of GDP growth rate that reflects the rate of growth of all goods and services produced in a given year, expressed in base-year prices.

Stock of external debt to GDP

This was the ratio of the total external debt to the gross domestic product. Its measurement was done in ratios.

The debt service as a ratio of value of exports

This ratio was got by dividing debt servicing amounts with exports. Its measurement was done in ratios.

Lagged fiscal deficit to the GDP ratio

This is the fiscal deficit divided by the gross domestic product but lagged by one year. Its measurement was done in ratios.

Public investment as a ratio of GDP

This was got by dividing the amount of public investment with the gross domestic product. Its measurement was in ratios.

Private investment as a ratio of GDP

This was got by dividing the amount of public investment with the gross domestic product. Its measurement was done in ratios.

Terms of trade

It is the ratio of the price of a country's exports to the price of its imports. Its measurement was done in ratios.

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Interest rates

The rate that lenders charge their borrowers for borrowing money. It's measurement was in percentage.

Rate of inflation

It indicates the average percentage rate of increase of the price of money, weighted and stated in annual terms. Its measurement was as a percentage.

3.10 Data

The data (as shown in Table A1 in Appendix I) used for the analysis was time series that covers the period from 1970 to 2003. The data were obtained from the Policy Timeline and Time Series Data for Kenya, 2004 and expressed in terms of percentages. The data were normally distributed as can be shown in A2 in appendix II and also apart from the fiscal deficit data which had a probability value greater than the Jarque-Bera value, the rest of the variables had a Jarque-Bera value greater than the probability figure implying that there is normality.

As an initial test, a check for the correlation between debt and growth was done. An investigation into the relationship between debt and growth for the degree of association and the level to which this relationship was significant was done too. An evaluation of the bivariate correlation of growth to the control variables was done. A Check was done using multivariate regression analysis using the traditional determinants of growth (investment, income, policy variables) as controls, whether there existed a debt service -growth relationship or where the debt service-growth correlation is robust. The analysis method used also checked for nonlinearity of the debt service -growth relationship as suggested by theory. The model that was estimated therefore had growth rate as the dependent variable, and on the right-hand side included, as control variables, stock of external debt to GDP, debt accumulation, the debt service as a ratio of export earnings, the fiscal deficit to the GDP ratio, public investment as a ratio of GDP, terms of trade and rate of inflation .This specification was estimated using simple OLS.

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Using multiple regression analysis, an estimation of the impact of debt servicing on economic growth in the Kenya was done controlling for other influencing variables. In the initial regression of the model, the first and second lags of the explanatory variables were included. Re-estimation of the model dropping non-significant variables continued until adjusted R^2 has been maximized (Gujarati, 1980).

CHAPTER FOUR

ESTIMATION RESULTS

4.1 Introduction

In this chapter, the econometric methods were applied to achieve the objectives as stated in chapter one. By using econometric techniques related to cointegration of economic time series and dynamic specifications associated with ECM, the problem associated with non-stationary variables that affected some variables were tackled. This chapter starts with testing for normality followed by stationarity and then cointegration. The results of the data analysis and estimation were obtained using the **Eviews 3.1** package.

4.2 The magnitude, size and structure of Kenya's external debt

The total nominal debt stock for Kenya rose from US $ 477.5 million in 1970 to US $ 7412.4 million in 1995 while total debt service payments rose from US $ 50 million to US $ 901.4 million in the same period. However, the stock of debt and debt service payments have now declined to US $ 6561.5 million and US $ 716.0 million, respectively in 1999. As seen from Table A4 in appendix III, the growth in debt stock show some in decline in 1990s.Table A4 shows that a significant rise in Kenya's external indebtedness corresponds to the periods 1973-74, 1978-1980, 1985-1987 and 1990 in which increased borrowing was made.

The first and second periods coincided with the first and second oil crises respectively. These periods also registered a significant growth in debt service payments. The third period coincided with the funding of structural adjustment programmes. Between 1986 and 1991, the World Bank approved 6 Sectoral Adjustment Loans (SECALs), while IMF disbursed US $ 360 million of SAF and ESAF (O'Brien and Ryan, 1999).

The decline in growth of external debt in 1988 (0.4 percent and 1989 (1.4 percent) is partly due to debt write-offs and a decline in bilateral and private debt. In 1989, Kenya was forgiven her external debt amounting to US $ 463 million. The decline in the 1990s can be attributed partly to the negative net-repayments and aid embargos resulting in no new external debt contracts. For instance, the two-year `aid freeze' in official capital inflow in 1991 and 1992 resulted to an increase in Kenya's external payment arrears. In addition, there was a heavy reliance on domestic borrowing in relation to external borrowing in the 1990s. A relatively tight fiscal stance was also witnessed during the period (Were, 2001) Despite the magnitude of external debt in the 1980s, Kenya was able to service its debts without rescheduling. This is also reflected by the fact that there was zero or negligible accumulation of arrears in 1970s and a better part of 1980s (see table A4).

However, by early 1990s, the debt burden became so acute that Kenya had to reschedule its debt in 1994 for the first time. Table1.1 shows that there was a significant accumulation of arrears in the early and late 1990s.Although there was a dramatic build up in nominal aid flows during the 1980s, external financial support has been slackening in the 1990s. Consequently, the level of external indebtedness has been falling. Although Kenya may not be as heavily indebted as other HIPCs, its present poor economic performance and inability to meet its debt obligations has serious implications on development and debt sustainable objectives.

A greater proportion of Kenya's external debt consists of official debts (multilateral and bilateral). A decomposition of official debt shows that in 1970s, official debt was mainly from bilateral sources. From early 1980s onwards, however, multilateral debt constitutes a major proportion of total debt stock. In 1989, this was 37 percent of the total debt compared

to bilateral debt, which was only 18 percent. The share of multilateral debt increased moderately in 1980s mainly as a result of large disbursements of adjustment lending from the World Bank (O'Brien and Ryan, 1999). The multilateral aid is predominantly in the form of concessional loans. Since the early 1990s, the proportion of concessional debt has been rising. The proportion of concessional debt rose from 20 percent in 1979 to 34 percent in 1989 and to 63 percent in 1999, respectively (see Table A4 and A5 in the appendix). This has given Kenya the advantage of contracting loans on soft terms.

This also explains why the interest to exports and interest to GNP ratios have remained relatively low. The main lenders have been 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 (O'Brien and Ryan, 1999) Other major multilateral creditors are the International Monetary Fund (IMF), European Investment Bank (EIB), the African Development Bank (ADB) 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). In the bilateral category, Japan has in recent years become the lead creditor overtaking previous major creditors like USA, Germany and France who have written off substantial amounts owed to them. There has been a notable decline in the share of U.K. in 1990s. Private debt has remained relatively low over the years. The highest percentage of private debt as a proportion of total debt within the period is 25 percent, incurred during the early 1980s. Such loans are normally obtained on hard terms and conditions implying high debt service payments (Were, 2001).

Long-term debt constitutes a major proportion of total debt outstanding. Long term debt can further be broken down into public and publicly guaranteed and private non-guaranteed debt.

A greater proportion of long-term debt outstanding is contracted by the public sector. This has profound implications for economic growth since it reflects the significant role the public sector is expected to play in the socio-economic development of the country. Between 1980 and 1987, the public sector long-term debt grew by 109 percent from US $ 2062 million to US $ 4312 million, respectively. The main debtors are Central Government (GOK), the Central Bank of Kenya and Parastatals (Government printer, 1994). Private non-guaranteed debt has not only been low, but has also been rising relatively slowly over the years. Short-term debt has also remained relatively low over the years.

4.3 Stationarity of data

This test is to identify stationarity in variables used. Stationarity is defined as a quality of a process in which the statistical parameters (mean and standard deviation) of the process do not change with time (Engle and Granger, 1987). The analysis of time series data sets is not complete unless stationary data is used. If the non-stationary time series data is used, it may lead to conclusion whose validity is questionable. It is therefore important to test whether the data used is stationary or not before any data is comprehensively analysed. Table A3 in appendix III shows the results of ADF and PP Unit Root Test results. The tests show that the variables real GDP growth rate , debt service as a ratio of exports, fiscal deficit to the GDP ratio and inflation are stationary (integrated of order zero) at 5 percent level of significance. The rest of the variables were found to be stationary after differencing them once .These variables were therefore integrated of order one.

4.4 Cointegration analysis

The next step after finding out the order of integration was to establish whether the nonstationary variables are cointegrated. Differencing of variables to achieve stationarity leads to loss of long-run properties. The concept of cointegration implies that if there is a

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long-run relationship between two or more non-stationary variables, deviations from this long-run path are stationary. To establish this, the Engel-Granger (1987) two step procedure was used. This was done by generating residuals from the long-run equation of the non-stationary variables, which were then tested for stationarity using the ADF tests. The residuals were found to be stationary at 5 percent level of significance.

The growth equation was re-specified to include the error correction term.

$$GDPGR = a_0 + a_1 DEDTGDP + a_2 DSX + a_3 FDGDP + a_4 DPINV + a_5 DPUINV + a_6 DPUINV_{t-1}$$
$$+ a_7 DTOT + a_8 INFL + a_9 DINTR + + a_{10} ECT_{t-1} + e_1 t \dots\dots\dots\dots\dots 4.5.1$$

Table 4.1 Correlation results

	Real GDP growth rate	Private investment as a ratio of GDP	Stock of external debt to GDP	Debt service as a ratio of exports	Fiscal deficit to the GDP ratio	Terms of trade	Inflation	Interest rate	Public investment as a ratio of GDP
Real GDP growth rate	1.000	0.59	-0.473	-0.57	0.36	0.61	-0.11	-0.43	0.59
Private investment as a ratio of GDP		1.00	-0.717	-0.62	0.29	0.84	-0.19	-0.686	0.81

Table 4.1 above shows that there was negative correlation between economic growth and external debt and between private investment and external debt. There was negative correlation between private investment, interest rate and inflation. The relationship between private investment and economic growth is relatively high and positive. Terms of trade had positive relationship with both growth and investment. The above outcomes were as expected.

4.5 Residual tests

Following are diagnostic tests for the residuals of the estimated model.

(a) Histogram Normality Tests results

This test displays a histogram and descriptive statistics of the residuals, including the Jarque-Bera statistic for testing normality. If the residuals are normally distributed, the histogram should be bell-shaped and the Jarque-Bera statistic should not be significant at 5 percent level of significance.

Figure 2: Histogram diagram

Series: RESID GDPGR	
Sample 1970 2003	
Observations 32	
Mean	-3.47E-16
Median	0.000675
Maximum	2.684929
Minimum	-3.353549
Std. Dev.	1.589551
Skewness	-0.303886
Kurtosis	2.334945
Jarque-Bera	1.082248
Probability	0.582094
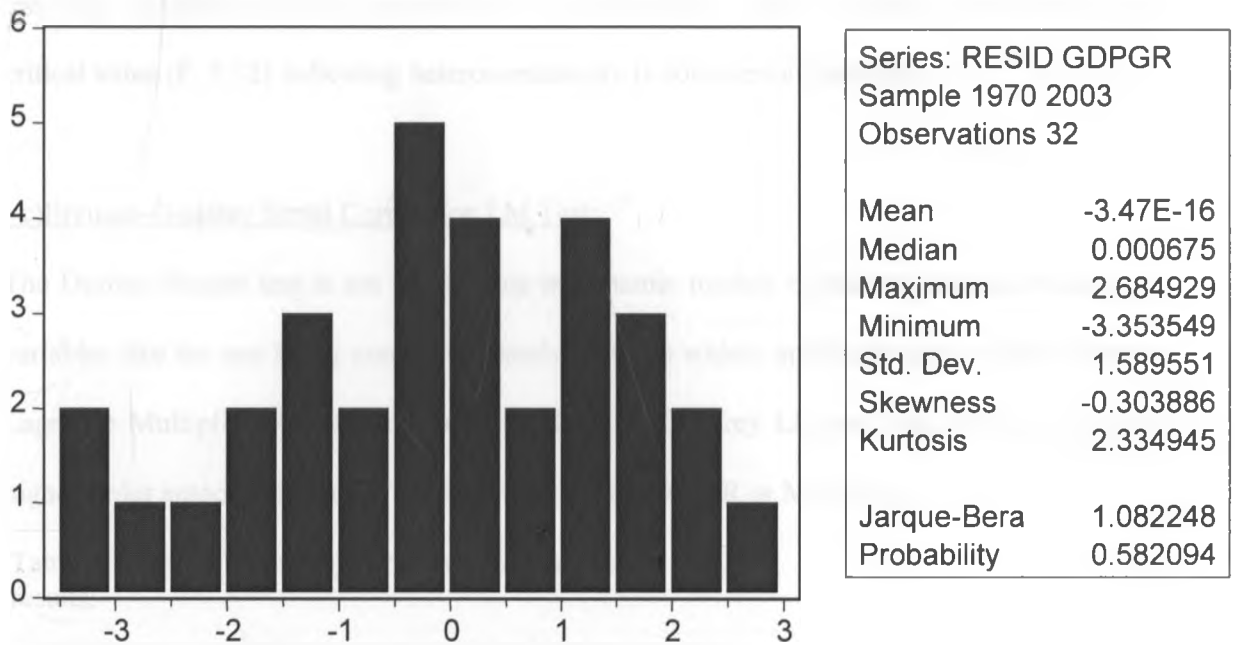
The above diagram is bell shaped, considering the Jarque-Bera test where the probability-value is less that the Jarque-Bera value the null hypothesis was rejected and thus there is normality $0.58 > 0.05$.

(b) Whites Heteroscedasticity test

White's test identifies specification errors other than heteroscedasticity (Thursby 1982). Thus White's test is significant when the errors are homoscedastic but the model is mis-specified in other ways. This test was performed to address the problem encountered when using ECM to

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choose the correct lag structure of the variables in the model. The results on the heteroscedasticity test are shown below.

Table 4.2 White heteroscedasticity test tesults:

| F-statistic | 0.694 | Probability | 0.766 |
| Obs*R-squared | 18.021 | Probability | 0.586 |

Since the probability values of the residual for the economic growth is greater that 0.05 implying insignificance at 5 percent level of significance .The F- statistic is less than the critical value (F, 3.32) indicating heteroscedasticity is not a serious problem.

(c)Breusch-Godfrey Serial Correlation LM Test:

The Durbin-Watson test is not appropriate in dynamic models containing lagged dependent variables like the one being used in this study. A more widely applicable test is based on the Lagrange Multiplier principle the resulting Breusch-Godfrey LM test, the test can test for higher-order autocorrelation (of order p) which can be of AR or MA form;

Table 4.3 Breusch-Godfrey serial correlation LM test
results:

| F-statistic | 0.657 | Probability | 0.530 |
| Obs*R-squared | 2.111 | Probability | 0.348 |

From the Breusch-Godfrey LM test result above, the probability values of F-statistic is not significant at 5 percent significant level and therefore there is no serial correlation. The calculated F-statistic (0.6575) is less than the critical F- statistic (3.32), hence accept non-serial correlation.

4.6 Stability tests

(a) Ramsey RESET test

The Ramsey Test is a general model (mis-)specification test for the Linear Regression model. More specifically it tests whether non-linear combinations of the estimated values help explain the exogenous variable. The intuition behind the test is that, if non-linear combinations of the explanatory variables have any power in explaining the exogenous variable, then the model is mis-specified.

Table 4.4 Ramsey RESET test results

F-statistic	2.082	Probability	0.165
Log likelihood ratio	3.223	Probability	0.073

From the above analysis the F-statistic(2.0815) is less than the F-critical (3.32) at the 5 percent level of significance. The decision is to reject the null hypothesis of non-stability and accept the alternative of stability. Thus the model is correctly specified.

(b) The CUSUM test

The CUSUM test finds parameter instability if the cumulative sum goes outside the area between the two critical lines. Any movement outside the critical lines is suggestive of coefficient instability. Figure 3: CUSUM test
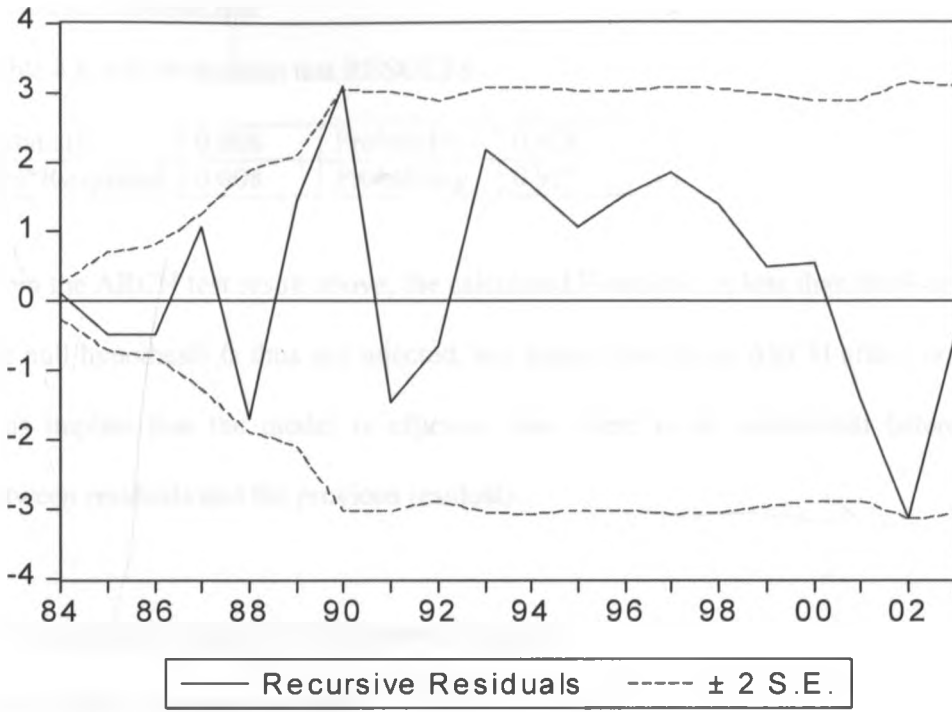
The CUSUM test found the parameters stable since the cumulative sum did not go outside the area between the two critical lines. Therefore, it is suggestive of coefficient stability for model being estimated.

(c) Chow forecast test

Table 4.5 Chow Forecast Test: Forecast from 2000 to 2003

| F-statistic | 1.391 | Probability | 0.281 |
| Log likelihood ratio | 9.254 | Probability | 0.055 |

From the above analysis the F-statistic (1.3914) is less than the F-critical (3.32) at the 5 percent level of significance. The decision is to reject the null hypothesis of non-stability and accept the alternative of stability.

(d) ARCH residual test

Table 4.6 ARCH residual test RESULTS

F-statistic	0.008	Probability	0.928
Obs*R-squared	0.008	Probability	0.925

From the ARCH test result above, the calculated F-statistic is less than the F-critical of 3.32, the null hypothesis is thus not rejected, and hence there is no ARCH effect in the residuals. This implies that the model is efficient since there is no conditional heteroscedascticity between residuals and the previous residuals.

4.7 Estimation results for the growth equation

4.7.1 Initial regression results

In the first regression (see appendix IV) more than half of the variables had expected co-efficient signs. Debt service as a ratio of export earnings has a negative co-efficient which means that as debt service as a ratio of export earnings increases GDP growth rate decreases. The lagged fiscal deficit to the GDP ratio has a positive co-efficient, this was unexpected since as deficit (lagged) increases the GDP growth rate should be decreasing. A negative co-efficient for the inflation and a positive one for terms of trade were expected. Public investment as a ratio of GDP has a high positive co-efficient, this was expected too and it means that an increase in the public investment will lead to a very high increase in GDP growth rate and hence the government should do more public investment. A negative co-efficient for Stock of external debt to GDP lagged by two periods stock of external debt to GDP lagged by one period was expected since this means that debt overhang negatively affects economic growth (Elbadawi and Ndungu 1996).Except for the debt service as a ratio of export earnings, the rest of the variables had very high probabilities which were thus unfavourable.The results of the initial regression didn't pass the statistical tests and thus there was need for further analysis.

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Using the general to specific estimation procedure, the preferred model that was arrived at after the cointegration analysis, for the growth equation is reported in table 4.8 that follows.

Table 4.7 Estimation results

Independent variable	Coefficient	t-statistic	Probability
Stock of external debt to GDP, lagged by two years	-6.005	-1.841	0.080
Debt service as a ratio of exports, lagged by one year.	-2.318	-3.366	0.003
Fiscal deficit to the GDP ratio	30.037	1.709	0.103
Private investment as a ratio of GDP	43.184	1.960	0.064
Public investment as a ratio of GDP	145.149	3.639	0.002
Public investment as a ratio of GDP, lagged by one year	108.149	3.278	0.004
Terms of trade	-0.033	-1.280	0.215
Inflation	-7.134	-1.663	0.112
Interest rates	0.139	1.985	0.061
ECM (-1)	-2.525	-0.560	0.581
Constant	5.488	5.861	0.000

Adjusted R-squared= 0.75, DW = 1.71, F-statistic = 6.05, Probability (F-statistic) = 0.0003
S.E. of regression = 1.24, DF = 24

4.8 Findings

The coefficient of past debt accumulation lagged twice was negative as expected. These results confirm the existence of debt overhang problem as earlier postulated. In that, past debt burden of Kenya have affected the rate of economic growth negatively over the years. The results tally with the findings of similar studies (see Elbadawi and Ndungu, 1996 and Were 2001). However, the magnitude of the coefficient is quite small compared to the positive coefficients of variables like public and private investment.

The negative effect of debt service ratio on economic growth was expected. The coefficient is highly statistically significant at the 5 percent level. This implies that as debt service ratio

decreases the GDP growth rate increases. In a study by Were (2001) similar results were obtained but the coefficient was smaller. In that study too it was found out that debt servicing ratio had a crowding out effect on investment.

A rise in current private investment as a ratio of GDP has positive effect on growth as would be expected. According to the accelerator principle, growth in investment facilitates faster economic growth. The results of estimation for this variable showed a high positive coefficient implying that an increase in investment will lead to a much high growth in economic growth of Kenya. According to Serieux and Samy (2001) governments should provide a conducive environment for private investment for accelerated economic growth. Similarly, current public investment promotes economic growth and its worth noting that current public investment promotes growth by the highest magnitude. Also lagged public investment promotes economic growth i.e. previous public investments have a major impact on economic growth.

According to Elbadawi and Ndungu (1996), inflation may stimulate growth at low and containable levels but can impact negatively on growth at high levels. The results of this study show that as inflation rate falls economic growth rate increases. The positive sign of the fiscal deficit to GDP ratio was unexpected, by the sign being positive it means that as the economy goes deeper into deficit crisis the GDP growth rate keeps improving, this can't be true because it contradicts economic theory.

The study also found out that a greater proportion of Kenya's external debt consists of official debts mainly from multilateral sources mainly in the form of concessional loans (see section in 4.2).

The lagged error correction term included in the model to capture the long-run dynamics between the cointegrating series was correctly signed (negative).

CHAPTER FIVE

CONCLUSION AND POLICY IMPLICATIONs

5.1 Introduction

This section presents the summary of the study. Areas with probable policy suggestions are identified and explained as indicated in the objectives of the study section. It also shows the areas for further research.

5.2 Summary

The central focus of this study was to establish the impact of Kenya's external debt servicing on economic performance, specifically on economic growth. The study also examined the structure and magnitude of Kenya's external debt (see appendix V).The model used to meet the objectives of the study was adopted from Elbadawi and Ndungu (1996). Prior to the application of the model, testing for stationarity, cointegration analysis, correlation analysis and diagnostic tests were carried out.

Using an error correction formulation, the estimation results showed a debt overhang problem in the growth equation, These results tally with results from similar studies (such as Elbadawi and Ndungu,1996). The estimation results for the growth equation showed that both private and public investments are key determinants of economic growth.

5.3 Conclusion

The estimation results from the regression indicated that indeed debt servicing has an effect on the rate of economic growth, and as per this study the effect is negative. A variable like debt over hang had a bigger negative impact on the rate of economic growth than debt servicing implying that debt overhang is a much bigger problem in Kenya than debt

servicing. The positive coefficients of private and public investments help mitigate the negative impact of debt servicing and debt overhang on economic growth.

5.4 Policy implications

In terms of policy, considering that the study found out that indeed debt overhang is a problem to Kenya's economic growth, the government should re-apply to the World bank and IMF requesting for debt forgiveness because of the adverse effects of accumulated debt on economic growth. Alternatively the government can request its creditors for debt re-scheduling.

Since debt servicing obligations have to be honoured whenever they mature, except when there is a prior arrangement for a later payment, this study recommends that the strategy of export promotion be adopted since with a high export income the country will be able to meet its debt servicing obligations and also promote local investment.

In the estimation results, both private and public investment had the largest positive coefficients and helped mitigate the effects of the negative variables that affected the rate of growth adversely. This implies that the Kenyan government should provide a better investment environment since investment contributes more to economic growth than any other variable.

5.5 Limitations of the study and areas for further research

Due to problems of data coverage and reliability, the range and the variety of debts to be serviced, for example, it was not possible to determine whether payments due were met in full, which debts were serviced and in what proportions. Accurate figures on debt service payments were not possible to obtain and this was a limitation in the analysis. Another

limitation related to the data was that different sources of data had different figures for the same variables and the same period.

For further research, there is need to do a debt sustainability analysis for Kenya so as to establish whether the debts are sustainable or not. This will help Kenya put a strong case for debt forgiveness. Another area of study could be the effects of debt servicing on investments. This is very important because policy makers will know whether it's appropriate to re-schedule debt and use the resources for investment or not.

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APPENDICES
APPENDIX I   Data

A1: Raw Data

Year	GDPGR	EDTGDP	DSX	FDGDPL	PINV	PUINV	PUINVL	TOT	INFL	INTR
1970	7.90	0.18	0.01	0.03	0.22	0.08	0.20	135.00	0.02	2.49
1971	6.05	0.18	0.01	0.03	0.21	0.13	0.08	138.00	0.07	1.68
1972	3.16	0.15	0.01	0.03	0.20	0.12	0.13	135.00	0.04	3.43
1973	6.04	0.15	0.01	0.05	0.17	0.13	0.12	133.00	0.14	1.95
1974	4.70	0.15	0.00	0.05	0.15	0.11	0.13	116.00	0.15	4.35
1975	2.25	0.13	0.01	0.03	0.15	0.10	0.11	107.00	0.17	6.04
1976	4.90	0.14	0.01	0.04	0.14	0.10	0.10	125.00	0.07	5.50
1977	7.80	0.14	0.01	0.05	0.16	0.11	0.10	164.00	0.18	2.18
1978	9.26	0.12	0.01	0.02	0.18	0.11	0.11	141.00	0.12	4.00
1979	4.96	0.12	0.03	0.02	0.14	0.12	0.11	133.00	0.10	5.99
1980	6.28	0.21	0.03	0.06	0.14	0.11	0.12	122.00	0.13	5.21
1981	5.36	0.19	0.06	0.02	0.14	0.11	0.11	105.00	0.21	7.49
1982	2.24	0.21	0.12	0.08	0.10	0.09	0.11	100.00	0.15	12.35
1983	2.48	0.24	0.18	0.07	0.10	0.06	0.09	94.00	0.10	14.04
1984	0.79	0.29	0.23	0.00	0.10	0.07	0.06	110.00	0.11	13.28
1985	4.03	0.34	0.26	0.03	0.10	0.06	0.07	92.00	0.11	13.76
1986	6.35	0.31	0.31	0.03	0.10	0.07	0.06	103.00	0.05	13.18
1987	6.04	0.35	0.42	0.04	0.10	0.06	0.07	85.00	0.07	12.84
1988	3.59	0.36	0.43	0.06	0.10	0.07	0.06	88.00	0.11	13.45
1989	5.03	0.36	0.43	0.02	0.09	0.07	0.07	79.00	0.11	13.89
1990	6.84	0.31	0.36	0.03	0.08	0.08	0.07	71.00	0.18	14.72
1991	2.32	0.35	0.65	0.03	0.08	0.07	0.08	82.00	0.13	16.42
1992	-0.84	0.40	0.85	0.05	0.08	0.07	0.07	79.00	0.32	16.59
1993	1.64	0.46	0.58	-0.01	0.08	0.06	0.07	90.00	0.53	39.30
1994	3.85	0.82	1.57	0.05	0.07	0.08	0.06	101.00	0.05	18.70
1995	4.50	0.52	1.38	0.03	0.10	0.06	0.08	96.00	0.06	21.67
1996	2.87	0.53	1.17	-0.02	0.10	0.06	0.06	93.00	0.09	21.51
1997	1.28	0.45	1.10	-0.01	0.10	0.07	0.06	102.00	0.09	26.37
1998	2.65	0.35	1.52	0.01	0.10	0.06	0.07	100.00	0.01	12.57
1999	1.44	0.37	1.77	0.00	0.09	0.06	0.06	86.00	0.09	19.98
2000	-0.29	0.46	1.75	0.00	0.09	0.06	0.06	84.00	0.10	12.90
2001	0.23	0.46	0.72	-0.01	0.09	0.06	0.06	79.00	0.00	11.01
2002	0.24	0.42	1.17	0.00	0.09	0.05	0.06	78.00	0.04	8.38
2003	1.10	0.37	1.06	0.02	0.09	0.05	0.05	81.00	0.08	1.46

A 1: Refined data

obs	DEDTGDP	DINTR	DPINV	DPINVL	DPUINV	DSX	DTOT	ECT	FDGDPL	INFL	GDPGR
1970	NA	NA	NA	NA	NA	0.008	NA	0.06	0.034	0.017	7.9
1971	-0.001	-0.808	-0.007	0.033	0.043	0.008	3.000	0.062	0.028	0.072	6.047
1972	-0.029	1.752	-0.008	-0.007	-0.007	0.010	-3.000	0.019	0.029	0.036	3.163
1973	-0.002	-1.478	-0.034	-0.008	0.011	0.011	-2.000	0.001	0.052	0.142	6.043
1974	0.005	2.399	-0.023	-0.034	-0.024	0.004	-17.000	-0.024	0.055	0.155	4.698
1975	-0.017	1.692	0.007	-0.023	-0.006	0.006	-9.000	-0.045	0.029	0.170	2.253
1976	0.003	-0.547	-0.012	0.007	-0.003	0.006	18.000	-0.047	0.041	0.070	4.897
1977	0.004	-3.315	0.015	-0.012	0.014	0.006	39.000	-0.011	0.049	0.183	7.803
1978	-0.021	1.821	0.024	0.015	-0.002	0.014	-23.000	-0.028	0.018	0.118	9.262
1979	-0.005	1.985	-0.040	0.024	0.005	0.030	-8.000	-0.073	0.021	0.096	4.959
1980	0.095	-0.778	-0.004	-0.040	-0.006	0.031	11.000	-0.022	0.063	0.126	6.284
1981	-0.025	2.284	0.000	-0.004	0.000	0.063	-17.000	-0.020	0.024	0.209	5.356
1982	0.022	4.852	-0.033	0.000	-0.024	0.120	-5.000	-0.055	0.079	0.153	2.236
1983	0.037	1.695	-0.008	-0.033	-0.022	0.179	-6.000	-0.043	0.069	0.098	2.480
1984	0.049	-0.762	-0.001	-0.008	0.005	0.232	16.000	0.003	-0.001	0.108	0.789
1985	0.050	0.486	0.001	-0.001	-0.006	0.255	-18.000	0.046	0.027	0.106	4.029
1986	-0.037	-0.588	0.000	0.001	0.008	0.313	11.000	0.005	0.030	0.045	6.345
1987	0.040	-0.335	0.008	0.000	-0.008	0.423	-18.000	0.033	0.037	0.073	6.039
1988	0.011	0.610	-0.004	0.008	0.011	0.434	3.000	0.039	0.061	0.111	3.595
1989	0.006	0.438	-0.008	-0.004	-0.002	0.426	-9.000	0.037	0.018	0.113	5.030
1990	-0.049	0.828	-0.013	-0.008	0.008	0.358	-8.000	-0.015	0.030	0.177	6.842
1991	0.034	1.698	-0.002	-0.013	-0.007	0.654	11.000	-0.033	0.032	0.125	2.322
1992	0.050	0.176	-0.002	-0.002	-0.006	0.846	-3.000	-0.015	0.048	0.315	-0.839
1993	0.065	22.709	0.000	-0.002	-0.005	0.577	11.000	0.018	-0.007	0.528	1.643
1994	0.353	-20.60	-0.003	0.000	0.016	1.571	11.000	0.287	0.048	0.054	3.850
1995	-0.296	2.970	0.031	-0.003	-0.015	1.382	-5.000	0.024	0.032	0.061	4.497
1996	0.009	-0.160	-0.002	0.031	0.000	1.174	-3.000	0.063	-0.016	0.094	2.867
1997	-0.079	4.860	-0.003	-0.002	0.004	1.101	9.000	-0.029	-0.010	0.088	1.276
1998	-0.095	13.805	0.000	-0.003	-0.005	1.517	-2.000	-0.121	0.012	0.009	2.653
1999	0.014	7.410	-0.006	0.000	-0.004	1.766	-14.000	-0.185	0.001	0.095	1.442
2000	0.096	-7.074	-0.004	-0.006	0.001	1.752	-2.000	-0.055	-0.003	0.096	-0.288
2001	-0.007	-1.889	0.002	-0.004	-0.001	0.720	-5.000	0.100	-0.008	0.004	0.233
2002	-0.041	-2.635	-0.002	0.002	-0.003	1.169	-1.000	0.003	0.001	0.038	0.237
2003	-0.044	-6.919	0.003	-0.002	0.001	1.062	3.000	0.010	0.016	0.078	1.096

A2: Group statistics

The table below summarises the number of observations, minimum and maximum values, mean and standard deviation of all variables. This gives a statistical overview of the data. We have thirty three observations spanning 1970 to 2003 and have ten variables used in each of the regressions carried out.

	GDPGR	DSX	EDTGDP	FDGDPL	INFL	INTR	PINV	PUINVL	PUINV	TOT
Mean	3.70	0.55	0.31	0.02	0.11	11.9	0.11	0.08	0.08	103.36
Median	3.59	0.35	0.34	0.02	0.09	12.8	0.09	0.07	0.07	100.00
Maximum	9.26	1.76	0.81	0.07	0.52	39.3	0.21	0.19	0.13	164.00
Minimum	-0.83	0.00	0.11	-0.01	0.00	1.45	0.07	0.05	0.05	71.000
Std. Dev.	2.58	0.58	0.15	0.02	0.09	8.19	0.04	0.03	0.02	23.178
Skewness	0.17	0.79	0.89	0.13	2.59	1.10	1.15	1.77	0.76	0.7824
Kurtosis	2.17	2.27	4.35	2.40	11.4	4.96	3.19	7.02	2.13	2.7189
Jarque-Bera	1.12	4.20	6.95	0.57	134.50	11.9	7.32	39.5	4.22	3.4756
Probability	0.57	0.12	0.03	0.74	0.00	0.00	0.02	0.00	0.12	0.1759
Observations	33	33	33	33	33	33	33	33	33	33

A3: ADF and PP Unit Root Test results

Variable	Test	Form		Test Statistic	5 % Critical value	Decision
Real GDP growth rate	ADF	C	Level	-3.002	-2.950	Stationary
		C & T	1st difference	-6.625	-2.953	Stationary
	PP	C	Level	-2.991	-2.950	Stationary
		C & T	1st difference	-6.135	-2.953	Stationary
Stock of external debt to GDP	ADF	C	Level	-1.416	-2.950	Non-Stationary
		C & T	1st difference	-4.417	-2.953	Stationary
	PP	C	Level	-1.692	-2.950	Non-Stationary
		C & T	1st difference	-7.455	-2.953	Stationary
Debt service as a ratio of exports	ADF	C	Level	-3.253	-2.950	Stationary
		C & T	1st difference	-5.409	-2.953	Stationary
	PP	C	Level	-2.955	-2.950	Stationary
		C & T	1st difference	-8.484	-2.953	Stationary
Fiscal deficit to the GDP ratio	ADF	C	Level	-2.961	-2.950	Stationary
		C & T	1st difference	-7.931	-2.953	Stationary
	PP	C	Level	-4.185	-2.950	Stationary
		C & T	1st difference	-11.458	-2.953	Stationary
Private investment as a ratio of GDP	ADF	C	Level	-2.777	-2.950	Non-Stationary
		C & T	1st difference	-4.225	-2.953	Stationary
	PP	C	Level	-2.771	-2.950	Non-

						Stationary
		C & T	1st difference	-5.486	-2.953	Stationary
Public investment as a ratio of GDP	ADF	C	Level	-1.424	-2.950	Non-Stationary
		C & T	1st difference	-3.881	-2.953	Stationary
	PP	C	Level	-1.245	-2.950	Non-Stationary
		C & T	1st difference	-8.665	-2.953	Stationary
Terms of trade	ADF	C	Level	-1.769	-2.950	Non-Stationary
		C & T	1st difference	-4.259	-2.953	Stationary
	PP	C	Level	-1.666	-2.950	Non-Stationary
		C & T	1st difference	-6.194	-2.953	Stationary
Inflation	ADF	C	Level	-3.543	-2.950	Stationary
		C & T	1st difference	-6.404	-2.953	Stationary
	PP	C	Level	-4.044	-2.950	Stationary
		C & T	1st difference	-8,317	-2.953	Stationary
Interest rates	ADF	C	Level	-1.549	-2.950	Non-Stationary
		C & T	1st difference	-4.957	-2.953	Stationary
	PP	C	Level	-2.275	-2.950	Non-Stationary
		C & T	1st difference	-9.787	-2.953	Stationary

Where C = constant

C & T = constant and trend

A4: Results of initial regression

Independent variable	Coefficient	t-statistic	Probability
Stock of external debt to GDP, lagged by two years	2.532	0.627	0.536
Debt service as a ratio of exports, lagged by one year.	-2.094	-1.903	0.069
Fiscal deficit to the GDP ratio	25.36	1.216	0.236
Private investment as a ratio of GDP	10.871	0.310	0.758
Public investment as a ratio of GDP	83.689	1.620	0.118
Public investment as a ratio of GDP, lagged by one year	-70.341	-1.462	0.157
Terms of trade	0.010	0.308	0.760
Inflation	-5.157	-0.950	0.351
Interest rates	0.057	0.684	0.500

Adjusted R-squared= 0.34, DW = 2.71, F-statistic = 3.03, Probability (F-statistic) = 0.017

S.E. of regression = 2.01, DF = 24

A5: The below table shows the severity of Kenya's debt position seen against the gross domestic product growth rate.

Year	External debt (millions US $)	Debt service (millions US $)	Growth in Debt (%)	GDP growth rate (%)
1970	477.5	50.0		7.4
1971	497.9	52.4	4.3	6.9
1972	581.2	48.3	16.7	16.1
1973	844.7	65.2	45.3	5.9
1974	1152.7	97.6	36.5	2.1
1975	1290.2	151.0	11.9	1.5
1976	1493.3	169.3	15.7	4.6
1977	1658.9	326.0	11.1	10.1
1978	2173.7	215.7	31.0	8
1979	2721.0	299.3	25.2	5.5
1980	3386.8	433.5	24.5	5.6
1981	3228.2	485.0	-4.7	4.1
1982	3367.8	496.9	4.3	5.1
1983	3628.0	515.0	7.7	1.7
1984	3511.5	578.7	-3.2	0
1985	4181.3	621.2	19.1	4.4
1986	4603.6	677.3	10.1	7
1987	5783.7	691.4	25.6	5.9
1988	5809.7	737.6	0.4	6.1
1989	5890.1	708.8	1.4	4.7
1990	7058.1	790.9	19.8	4
1991	7452.9	719.4	5.6	1.5
1992	6898.1	669.9	-7.4	-0.7
1993	7111.3	631.5	3.1	0.4
1994	7202.3	880.8	1.3	2.7
1995	7412.4	901.4	2.9	4.4
1996	6931.0	844.4	-6.5	4.2
1997	6602.0	669.1	-4.7	2.1
1998	6943.3	611.7	5.2	1.6
1999	6561.5	716.0	-5.5	1.3
2000	6302.7	595.3	-3.9	-0.1
2001	5953.1	486.6	-5.4	1.2
2002	5787.0	535.8	-2.7	1.2
2003	5546.2	574.0	-4.1	1.8

Source: Global Development Finance (CD) 2004

APPENDIX VI

A6: Kenya Structure of Central Government, Government Guaranteed, and Central Bank External Debt, Including Arrears, End-2002

	In millions of U.S Dollars	As a percentage of total
Central government	4,772	**92**
Multilateral	2,970	57.3
Bilateral	1,361	26.2
Paris Club	1,295	25
Pre-cutoff date	1,062	20.5
Official development assistance (ODA)	879	16.9
Non-ODA	184	3.5
Post-cutoff date	233	4.5
Non-Paris Club	66	1.3
Pre-cutoff date	14	0.3
ODA	10	0.2
Non-ODA	3	0.1
Post-cutoff date	52	0.1
Commercial	441	8.5
Government guaranteed	328	**6.3**
Multilateral	13	0.2
Bilateral	315	6.1
Of which: Paris Club, non-ODA	315	6.1
Central Bank (to the IMF)	88	**1.7**
Total	5,187	**100**
Memorandum items:		
Central government and government guaranteed		
Multilateral	2,982	57.5
Bilateral	1,676	32.3
Pre-cutoff date	1,076	20.7
ODA	889	17.1
Paris Club	1,610	31

A7: Table 1.3 compares interest paid for domestic and foreign debts from 2003 to 2005

Month	Domestic interest(K.shs millions	Foreign interest due (K.shs millions	Month	Domestic interest(K.shs million	Foreign interest due (K.shs millions)
2003/2004			2004/2005		
July	2,125	910	July	1734	1108
August	4,263	1310	August	3661	1536
September	6,504	1832	September	5228	2184
October	8768	2526	October	6643	2796
November	10684	2635	November	8144	3100
December	12701	3382	December	9777	4121
January	14301	4092	January	11984	5190
February	16410	4498	February	13855	5612
March	18710	4974	March	16368	6196
April	20309	5608	April	18406	6724
May	21857	5662	May	20500	7011
June	23281	6419	June	22246	8009

Source: Central Bank of Kenya, Statistical Bulletin, June 2005 page 68