THE STRUCTURE, TREND AND IMPACT OF DOMESTIC DEBT ON ECONOMIC GROWTH: KENYA'S EXPERIENCE (1990-2001)

BY:

CHIRONGA C.J.O

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SUPERVISORS:

Dr. MOSES KIPTUI

Mr. PATRICK MACHYO

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DECLARATION

This research paper is my original work and has not been presented for a degree in any other university or institution of higher learning.

20/08/2003
DATE

CHIRONGA C.J.O

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

4/9/2003
DATE

DR. MOSES KIPTUI

19.8.2003.
DATE

MR. PATRICK MACHYO

DEDICATION

To my parents, Teresah and Joseph; and my wife, Mary and son Ryan.

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ABSTRACT

This study seeks to examine the structure, magnitude, level, and determinants of public domestic debt in Kenya for the period 1990-2001. It further examines the trend and impact of domestic debt directly on the economic growth, and indirectly on capital formation and private cum public sector investment.

The study employs use of time series data for the period 1990 to 2001. The statistics show that a major proportion of Kenya' s outstanding stock of public domestic debt of Kshs 222.0 billion (or 36.6% of the total stock of debt) as at the end of December 2001 is short-term. Thus it is in the form of Treasury bills whose tenor is below one year. This makes repayment very expensive and detriment to the economy.

History of domestic debt problem in Kenya can be traced back to 1992/1993. Thus domestic debt crisis is a 1990s phenomenon. The increment in public domestic debt over the period under study can be attributed to a number of factors. These include; diminishing inflow of external grants and concessional loans, use of government securities to mop up excess money supply following the excessive liquidity released in the economy in 1992 and 1993, frequent net repayments of external debt, budgetary support to inefficient parastatals, loose fiscal policy, and the need to sterilize large short-term capital inflows attracted by the high interest rates.

Theoretical literature shows that prudent borrowing to finance a budget deficit is not a problem. However, servicing of huge accumulated domestic debt channels resources away from essential government operations, especially development projects. For instance, interest cost on debt raises Government recurrent expenditure (currently stands at 12% of the total government expenditure), which worsens the budget deficit.

Although the current domestic debt servicing 'crowds-out' private sector investment, the effect is not significant as at now. But the trend at which it is accumulating is a major issue of concern. In the current government recurrent expenditure estimates, about 38% of the total estimates will be spend on debt servicing. This research proposes various policy recommendations to manage Kenya's domestic debt before it reaches detrimental levels.

TABLE OF CONTENTS

PAGE

CHAPTER 5: SUMMARY, POLICY RECOMMENDATIONS AND CONCLUSIONS

APPENDICES

Statistical Tables:

1.0 INTRODUCTION

1.1 BACKGROUND

"No nation ought to be without debt. A national debt is a national blessing". Thomas Paine-1776.

To what extend is this statement of Thomas Paine true to Africa (or developing countries) and Kenya in particular? The period starting 1980s has been described as the "lost decade" for the developing countries. This is when these countries, and Africa in particular, experienced overall economic downturn, rapidly growing populations, political instability, and rising indebtedness. On the other hand, 1950s and 1960s are characterized as the "golden years" not only because the rate of growth of these developing economies was high, but also because this growth was homegrown. In this period, developing nations experienced expanded investment with minimum dependence on external borrowing and negligible domestic borrowing.

Even though 1970s has been described as a period of "debt-induced" growth, in that, these countries persistently borrowed both domestically and externally to finance their budget deficits, the positive returns on the investments neutralized the negative effects of domestic debt. Thus, the overall economic growth was good. Africa as a whole and Kenya in particular, paid little attention to the rising public debt, and especially domestic debt, (Were, 1997).

Public debt consists of domestic and external indebtedness a country owes to local and foreign residents, other countries, multilateral organizations, and commercial banks. It is also called the National debt. The government borrows to finance its recurrent expenses, development projects, and settle its maturing international and/or domestic obligations. Given this background therefore, public debt refers to the borrowing by the government either domestically or from abroad to meet on-the budget and off-the budget expenses. External debt refers to the external resources that are owed by the government to bi-lateral donor countries as well as multi-lateral financial institutions such as World Bank, IMF, African Development Bank among others. External debt accrues through external financing, which include grants and loans. Generally, the grants and loans are either project specific or applied to general budgetary support.

Domestic (also called internal) debt refers to what the government owes to its economy. It is the government's indebtedness to its citizens (general public), commercial banks, non-banks, and even foreigners. The government mainly borrows domestically to finance its budget deficits. Government borrowing is not a problem. In fact, Andrew Mellon (a renowned debt analyst) once observed that, "...a nation is not in danger of financial disaster merely because it owes itself money".

There are various instruments or facilities through which the government borrows from the Central Bank of Kenya and domestic (money) market. These instruments or facilities reflect the stock of existing domestic debt. Below is a table showing the outstanding stock of domestic debt by borrowing instruments holdings as at December 2001.

Table 1: Stock of domestic Debt Holdings as at December 31st 2001

DEBT INSTRUMENT	AMOUNT (KSHS M)	% Holding
Treasury Bills	123,803	55.2
Fixed Rate T-Bonds	26,358	11.8
Floating Rate T-Bonds	46,655	20.8
Special Bonds	7,315	3.3
Long-term Stocks	1,468	0.7
Frozen Gov. A/Cs	9,917	4.4
Gov. Overdraft	0	0
T.RC	68	0.03
Items in Transit	3,968	1.8
IMF funds on lent to Gov.	1,968	0.9
Others	2,578	1.2
Total	**224,098**	**100.0**

Source: Central Bank of Kenya and Treasury publications

From the table above, the greatest proportion of Kenya's outstanding stock of total domestic debt is in the form of short-term debt instruments (Treasury bills), which account for 55.2% of the total stock. Floating Rate treasury bonds account for 20.8%, while Fixed Rate treasury bonds- 11.8%. Kenya's stock of domestic debt is highly short-term and this makes it quite expensive to service. It also

encourages speculative investment that heats up the economy, which is not conducive to stability and growth.

The issue of domestic debt crisis was nowhere in the picture as at the period ending 1989. As a result, the government did not foresee and therefore concerned with possible domestic debt crisis. This lack of concern was attributed to good economic performance, large amounts of external resources inflows due to cold war, generally good economic and political stability. Kenya in particular, experienced good economic management, moderately good returns from its principal exports, and good economic growth of about 5% annually that ensured adequate tax revenues to finance the budgetary estimates. However, statistics show that the stock of Kenya's domestic debt was growing at an average level of close to Kshs 2.5billion annually up to 1989(see Table 2 below).

Kenya's stock of public debt (sum total of domestic and foreign debt) has been on the increase over time since independence. Nevertheless, this increment did not raise concern due to its magnitude. Before the period starting 1990s, the economy maintained a real GDP growth rate of about 4.7%. This implies that the economy generated enough revenues to cover budget estimates. Hence, the stock of domestic debt remained manageable and stable throughout the two decades starting 1970 (see table 2 below). Total debt remained below Kshs 100 billions while the highest domestic debt was Kshs 42.8bn. This situation however did not last long.

Table 2: Stock of Kenya's Total Debt as at end of F/Y[1] for the Period 1975-1989 (Kshs bn)

YEAR	External	Domestic	Total	Change	% Change
1975	3.4	3.4	6.8	0	0
1976	4.2	4.8	9	2.2	32.4
1977	4.6	5.8	10.4	1.4	15.6
1978	4.9	6.8	11.7	1.3	12.5
1979	9.8	8.7	18.5	6.8	58.1
1980	10.0	8.6	18.6	0.1	0.5
1981	13.0	10.7	23.7	5.1	27.4
1982	17.2	14.5	31.7	8	33.8
1983	23.4	17.9	41.3	9.6	30.3
1984	30.6	20.0	50.6	9.3	22.5
1985	30.9	22.8	53.7	3.1	6.1
1986	40.6	27.3	67.9	14.2	26.4
1987	45.6	35.1	80.7	12.8	18.9
1988	54.3	39.2	93.5	12.8	15.9
1989	54.3	42.8	97.1	3.6	3.9

Source: Central Bank of Kenya and CBS statistics

The period beginning 1990 saw a drastic change in the level of domestic debt accumulation (see table 3 below). This made the stock of total domestic debt peak to Kshs 164.2 bn in the year 2001 from Kshs 45.5 bn in 1990.Total debt stood at Kshs 558.2 bn in 2001 from Kshs 114 bn in 1990.

Table 3: Stock of Kenya's Total Debt as at end of F/Y for the Period 1990 – 2001 (Kshs bn)

YEAR/ DEBT	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
External	68.4	89.2	122.3	273.1	208.1	246	359	325.5	336.3	413.8	395.7	394
Internal	53.1	56.1	63.0	103.6	103.2	111.4	110.5	130.8	145.5	150.5	163.4	164.8
Total Debt	**114**	**145**	**185.3**	**376.7**	**311.3**	**357.4**	**469.4**	**456.2**	**481.9**	**564.3**	**559.1**	**558.2**

Source: Central Bank of Kenya and CBS.

[1]F/Y refers to Financial Year. It starts in July and ends in June.

The history of domestic debt problem in Kenya can be traced back to the 1992/1993 fiscal year. The period 1990 to 2001 saw the domestic debt develop into a crisis and now forms a larger part of the public debt problem. This debt escalated rapidly between 1990 and 1994, when the total stock of debt (including pending bills) rose from Kshs.53.1 bn to Kshs 165 bn, an increase of 310.7%. During the same period, total public expenditures increased by almost similar margin, from Kshs 57.1 bn (31.0% of GDP) to Kshs 178 bn (or 48.4% of GDP), an increase of 311.7%. The rapid increase in government expenditures outweighed increased revenues, leading to more domestic borrowing. Thus in 1990, the total domestic debt was only 23.9% higher than revenues but by 1994, the gap had widened to 59.8%. This period was characterized by increases in budget deficits, excluding grants, which increased from 6.7% of GDP in 1990 to 8.9% in 1994. As the situation stands, Kenya is likely to continue having trouble with domestic debt for several reasons.

First, economic performance has significantly deteriorated, especially in the late 1990s and early 2000. While the average real GDP growth rate remained positive, peaking at 4.8% in1995, it declined slightly in 1996 to stand at 4.6% before persistently declining to the lowest levels in the history of Kenya's economic performance, where the real GDP growth rate was –0.3% in 2000.However, it improved slightly to 0.8% in 2001. This has significantly reduced tax revenues leading to more budget deficits. This in turn forced the government to borrow more from the domestic market.

Even more problematic is the number of very many stalled projects, which are not legally terminated or cancelled. These projects continue to accumulate liabilities and will in turn lead to increased domestic borrowing as these obligations are securitised and converted into normal debt. Other similar costs that increase the domestic debt indirectly is the purchase of non-existent government equipment through flawed tenders.

The third reason why domestic debt situation is worsening is due to lack of external inflows. Since 1991, Kenya has had cold relationship with both bilateral and multilateral donors. As at 30th June 2000, about 33.3% of the total stock of domestic debt can be directly attributed to external outflows that occurred between 1995 and 2000. This ratio rose to 37.9% by June 2001. At the present, there are no indications of solving this stalemate in order to increase funding from multilateral sources and hence our budget estimates did not factor in foreign resources.

Finally, the scope and structure of the local money and capital markets has also contributed to the problem of domestic debt crisis. They are shallow and narrow. Except Nairobi Stock Exchange (NSE), commercial banks and Non-bank financial institutions, there are no more financial markets. For instance, in June 2000, total NSE capitalization was Kshs. 101,421.5million or 13.3% of GDP compared to the stock of Treasury bills, which stood at Kshs. 131,029.0 million, or 15.1% of GDP. This means that the entire NSE is reserved for Treasury bills and all it dealt with is the government securities. Still it could not accommodate all of them. Commercial banks on the other hand, are selective in their lending behaviour and charge exorbitant interest rates.

The main limitation to this study is the fact that there exists no accurate and reliable data to show the actual liabilities relating to the amount already accumulated, accruing interest/penalties and expected costs of terminating these projects. Kenya lacks adequate supportive institutional arrangement or a national debt management team in the Treasury. As a result, there is no financial discipline in government departments and ministries.

Domestic debt on its own is not a problem. In fact if utilized well, it acts as a source of capital mobilization. It is the debt overhang, excessive interest payment, and crowding out effect that leads to the domestic debt problem. The domestic debt problem has further been worsened by its short-term maturity structure, where more than 50% of the debt is in the form of 91-day treasury bills. Overall, debt servicing account currently for 36% of total government tax revenue or 10% of Kenya's GDP. This high proportion of public resources being used to service the debt could be channeled in revamping the already collapsed social sectors such as; education, health, infrastructure, clean water provision, and rural electrification.

This research explores extensively the structure and magnitude of internal debt and the implications of Kenya's indebtedness on economic growth using econometric time series analysis. The accelerator principle observes that growth in investment accelerates economic growth, and the opposite is true. If borrowed funds (whether domestically or externally) are professionally and productively invested, economic growth will be an automatic goal. Thus, debt overhang and crowding out effect on investment do affect economic growth. The study intends to capture the effects of domestic debt on sustained economic growth through investment by specifying two equations simultaneously.

The mechanisms through which indebtedness undermines growth have been sighted as: Stock of domestic debt as a ratio of GDP (which may stimulate growth); past debt accumulation that slows growth; domestic debt service ratio that reduces total resources; interest payment to total expenditure ratio; competition for domestic borrowing that raises cost of borrowing thus reducing investment; and indirectly through impacts of the above channels on public expenditure.

1.2 Debt Scenario in Kenya

The severity of Kenya's domestic debt crisis cannot be ignored. The debt burden is persistently on the increase, and the capacity to service this debt is becoming more worrying. This leads to short-term speculative portfolio investment that heats up the economy. The impact is the increased cost of borrowing by more productive sectors hence reduced investment and consequently, output.

Domestic debt crisis channels resources away from key sectors of the economy. The latest statistics [2] show that the government allocates 12% of its total expenditure for debt servicing through interest payment on monthly basis compared to 7% allocated to the ministry of health, and even less to other key sectors of the economy. This constrains necessary resources for provision of basic services and development activities. In particular, the quality of basic socio-economic services such as transport system, agriculture, health, and education has deteriorated considerably due to inefficiency and inadequate financing. See the table below:

[2] Central Bank of Kenya statistics. These include Monthly Economic reviews and Annual economic reports

Table 4: Government's net recurrent expenditure for F/Y 2002/2003:

MINISTRY/DEPARTMENT	Estimates (Kshs)
Ministry of Health	13,607,292,000
Ministry of Roads & Pub. Works	2,112,980,900
Ministry of Agric. & Rural Dev.	6,631,514,970
Ministry of Trade & Industry	1,762,358,280
Ministry of Education, Sc.& Tec.	54,538,210,000
Ministry of Energy	71,047,220
Department of Defense	14,293,309,000
Sub-Total	**93,016,712,370**
Public Debt Servicing	97,545,623,954
GRAND TOTAL*	**259,227,058,560**
Public Debt-Recurrent. Exp. (%)	37.63

Source: Government Recurrent Expenditure Estimates for F/Y 2002/2003

*Refers to the total government financial estimates for the whole financial year 2002/2003

Public debt servicing accounts for 37.63%, compared to Ministry of health-5.25%, Education-21.04%, Agriculture-2.56% of the total government recurrent expenditure for this fiscal year. The net effect has been the continuous decline in economic growth over time to an annual average rate of less than 2%, much less than population growth rate (of about 2.3%). This has led to a marked fall in per capita income and low savings.

The need to service huge amounts of domestic obligations also leads to 'crowding out' of existing investment besides reducing the country's present and future creditworthiness, both locally and internationally. Rising debt service payments erodes significantly the facilities and resources much needed to create employment and accelerate economic growth and development. It further limits a country's ability to import intermediate raw materials needed for industrial growth and expansion.

Finally, Kenya's economy faces stagnation, rising pending bills, and the persistent fiscal deficits. Economic decline has led to a fall in total revenues. The country is now faced with a constrained capacity to provide basic services. It is in this context that the government needs to address the problem of escalating domestic debt. Reducing domestic debt will stop the crowding out effect of the private sector. This in turn lubricates economic growth and thus reduces poverty levels.

It is important to note that fiscal cuts should not affect provision of basic services, as this may undermine efforts to revive economic growth. Failure to manage expenditures would raise inflation, interest rates, and undermine private sector investments and growth. It is also important for the government to seek external financing to tackle the pains associated with fiscal adjustment.

1.3 STATEMENT OF THE PROBLEM

Heavy domestic borrowing puts upward pressure on interest rates and consequently investment. This in turn raises commercial banks lending rates, thus making the cost of borrowing quite expensive. The net effect of this high cost of borrowing is, reduced private sector investment leading to slow economic expansion, (Osei, 1995 pg.28). This situation in Kenya became worse that, one Member of Parliament introduced Interest Rates Bill (Central Bank of Kenya Amendment Act, 2000) that sought to regulate commercial banks' lending rates.

The Accelerator Principle suggests that growth in investment accelerates economic growth, and the opposite is true, (Were, 1997). If borrowed funds (whether domestically or externally) are invested productively, economic growth will be a sustained goal. Over the last ten years or so, Kenya's experience with domestic debt shows that it adversely affects interest rates thus raising the cost of credit to the private sector investment, (Kirira, 2000).

Domestic debt service (interest and principle payments) may lead to debt overhang in which some of the returns from investing in domestic economy are 'taxed away' by creditors. It also channels resources away from productive sectors of the economy hence, crowding out private investment and consequently a decline in growth, (Claessens, et al 1996). Increased domestic debt also reduces the country's credit- worthiness hence scaring potential investors and foreign lenders.

Statistics in appendix 2, indicate that whereas, domestic debt has been rising substantially, economic growth has been declining sharply over the years. This is quite a gloomy situation because, as Fischer and Easterly (1990) pointed out, a country must ensure sustainable fiscal policy that depends on how fast an economy is growing.

The mechanisms through which indebtedness undermine economic growth have been identified as: Current domestic debt flow as a ratio of GDP (which may stimulate growth); past stock of debt accumulation that slows growth; domestic debt service that reduces total resources; interest payment to total government expenditure ratio; and government-private sectors' competition for domestic borrowing that raises the cost of investment.

1.4 Objectives

The overall objective of this study is to examine the structure or nature, magnitude and size of Kenya's domestic debt and establish the impact of the country's internal indebtedness on economic performance. Specifically, the study will:

1. Empirically establish the impact of stock of domestic debt on economic growth through; Capital formation, export earnings, Public sector investment, Private sector credit and investment, and Interest rates.
2. Use the research findings to draw policy implications of the study and give appropriate recommendations for further research.

1.5 Significance of the Study

This research deals exclusively with stock of Kenya's domestic debt for the period 1990-2001. This does not mean that external debt is not a problem. It is the magnitude and the composition of domestic debt that has made this study to be carried out. Large sums of money used in domestic debt- servicing, and the rigidly high interest rates (due to the competition from the government against the private sector borrowing from domestic money market) greatly undermine economic growth.

Prudent government spending and appropriate management strategies need to be devised and implemented to arrest this debt situation.

While extensive literature is available on Sub- Saharan Africa debt crisis, each country has its own unique pattern of debt and debt problems. Most studies done focused on the Kenya's external debt and its impact on the economic growth. This study seeks to increase knowledge on this subject, with keen attention on domestic debt. It aims at opening critical thinking and research in economic costs of domestic debt. Unless a country grows faster enough to sustain its maturing debt obligations and maintain conducive environment for domestic investment, indefinite internal indebtedness may have serious detrimental effects on the economy's performance and on the welfare of its population. A deeper understanding of Kenya's debt problems and how they affect the economic growth is a pre-requisite for adequate and effective debt management measures. This will ensure fiscal discipline and prudent borrowing.

2.0 LITERATURE REVIEW

2.1 Theoretical Literature Review

Savings mobilization and capital accumulation play a key role in production process and therefore development of any country. From economic theory, capital accumulation is build up through savings by both individuals and firms. This calls for foregoing present consumption for future consumption. Employment of capital in the most efficient and profitable way requires that the marginal efficiency of capital (MEC) is higher than the cost of capital. It is not prudent and economical to invest resources (borrowed or own funds) in any activities unless the cost of capital is less than the rate of return on investment.

Harrod-Domar growth model has been the reference point by many economists (both Classical and Keynesians) in the study of economic growth and development in any society. Several empirical studies including Kaldor and Mirlees (1962), Uzawa (1965), Shell (1966), Inada (1969), Roemer (1986), and Lucas (1988), provide models of growth in which the long-run growth rate is endogenous.

Many economists have suggested that insufficient capital stock has contributed to low incomes in most developing economies. Ragner Nurkse, a development economist, observes that increasing savings can break a vicious circle of poverty. Arthur Lewis (1954) and Rostow (1985) further emphasized on the role of increased savings in facilitating capital accumulation. It was noted that the level of savings in developing countries was too low due to low incomes. As a result, there was need for external resources to compliment domestic resources. This shifted the focus from whether foreign resources are useful to developing countries, to how adequate were they to assist them realize their growth potential (Degefe, 1992).

The two-gap approach[3] developed by Hollis B. Chenery (1979) and others underlines the need for foreign resources in developing countries. Degefe (1992), observed that these economists identified three constraints that faced developing countries: the supply of skills and organizational ability; supply

[3] See Hughes (1979), for a detailed story on growth of foreign capital

of imported commodities and services; and supply of domestic savings. They conclude that in "the short-run, effectiveness of external resources depends on their use to relieve their skills, savings and imported commodities" while the long run fate of the nations depend on "the use that is made of the initial increase in the output". Models developed by McKinnon (1964) and Venex (1967) also support the two-gap approach.[4] The World Bank model differs from the two- gap models in that the model concentrates on the foreign exchange gap only. In the World Bank model the country is expected to mobilize domestic resources by means of appropriate policies to overcome the savings constraint, while the foreign resources supplied by it are meant to cover external shortcomings. Kenya faces external resources crunch. As a result, the government is experiencing huge budget deficits, leading to heavy domestic borrowing. This translates into rapidly piling domestic debt and skyrocketing cost of borrowing that has raised a lot of concern in the economy, hence the origin of 'Donde Bill'.[5]

2.2 The Theory of Debt and Economic Performance

Since mid 1990s, Kenya's economic performance has assumed a downward trend reaching a low negative in the year 2000. Conversely, the debt volume has been rising persistently. The question that emerges is whether large debt burden is one of the factors leading to weak economic performance and the uneven pace of economic reforms in Kenya and many other Highly-Indebted Poor Countries (HIPCs).

High levels of domestic debt leading to high interest rates have far-reaching negative effects on the economy. The debt overhang theory is based on the argument that "if debt level exceeds a country's repayment ability with some probability in future, the expected debt service is likely to be an increasing function of output. This implies that some proportion of the proceeds from investment in the domestic economy are taxed away by creditors, hence becoming a disincentive to both local and foreign investors"(Claessens et al, 1996; p.17). In effect, this theory implies that debt reduction encourages

[4] Degefe (1992): P.8
[5] Donde Bill refers to the Central Bank of Kenya Amendment Act 2000 that seeks to regulate commercial banks' lending and deposit rates. The bill was introduced in Parliament by Mr. Joe Donde (MP).

expansion of investment and reduces debt level. In case debt -overhang effect is very strong, the debtor is said to be on the wrong side of the Laffer curve[6].

The scope of debt overhang is much wider in that the effects of debt not only affect investment in physical capital, but also any activity that involves incurring costs up-front for the sake of increased output in the future. Such activities include investment in human capital (education and health), and in communication and technology, whose effects on growth may be even stronger overtime especially in HIPCs. It inhibits implementation of some of the structural adjustment policies whose positive returns can only be realized in the future. How debt over-hang deters private investment depends on how the government is expected to raise its fiscal revenue necessary to finance debt service and whether private and public investment are complementary.

Use of domestic resources to service large amounts of external obligations can affect economic performance through 'crowding-out' effect, lack of access to international financial markets and the effect of stock of debt on the general level of uncertainty in the economy (Claessens et al, 1996). Elbadawi, Ndulu and Ndung'u, 1996 observed that 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 credibility and sustainability of announced reforms. High and fixed debt service obligations increase countries' leverage and raise uncertainty. In such circumstance, investors wait until returns are high enough to cover their risk.

2.3 EMPIRICAL LITERATURE

Many economists have carried out extensive research and written a lot of literature on determinants of economic growth and investment in developing countries. These however, were mainly based on cross-sectional data[7]. Most economic studies include a standard set of domestic, external, policy and explanatory variables. Most of the studies find one or more debt variables to be significantly and

[6] For detailed information on debt- overhang and debt Laffer curve, see Claessens 1990), Cohen (1998), Cohen (1993), and Roe A.R &Currey J (1992).

negatively correlated with investment or growth (depending on the focus of the study). Some however, leave open the relative importance of debt vis-à-vis other factors and channels of great impact of debt.

Although different studies have focused on different countries, which experience different economic environment, the results clearly indicate the negative impact of debt on economic growth.

The need for Kenya to pursue accelerated economic growth in order to reduce its debt problems and, more essentially, to liberate itself out of low income yoke makes it necessary to investigate how far internal indebtedness would affect future growth. Using Growth-cum-debt[8] models to address issues relating to debt sustainability, our focus is how and how far debt affects growth prospects of debtor countries.

Cohen (1993) analyzed the correlation between developing countries' (also called LDCs) debt and investment in the 1980s. He started by estimating an investment equation for a sub-sample of 81 LDCs over three sub-periods: 1965-1973, 1974-1981 and 1982-1987 to capture the change of regimes, which occurred between these periods. The independent variables in the investment equation included human capital, per capita income, share of exports in GDP, inflation, population growth, and time and regional dummies. All variables were significant except population growth and Africa (as a region) dummy. The time dummies showed that investment was above average in the 1970s and below average in the 1980s (the period when debt became a serious crisis). In order to link the stock of debt to slowdown of investment in 1980s, he added debt to export ratio multiplied by a dummy for the years 1982-1987 as another explanatory variable. Further analysis showed that the level of stock of debt does not appear to have much power to explain the slowdown of investment. It is the actual flows of net transfers that matter. He also analyzed whether the ' surprise' increase in the debt service was significantly correlated to the 'surprise' decline in the investment in the 1980s. He discovered that the actual debt service 'crowded-out' investment.

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[7] This section mainly focuses on the literature review that is concerned with analysing the impact of domestic debt on investment and/ or economic growth.

[8] See AERC Research paper No.33 p.28 of March 1995, by Barfour Osei

Borensztein (1990) empirically tested the debt overhang effect using data for the Philippines. He found that debt overhang had an adverse effect on private investment. The effect was strongest when private debt rather than total debt was used as a measure of the debt overhang.

Iyoha (1996) carried out econometrics study on external debt and economic growth in Sub-Saharan African countries. He used a small macroeconomic simulation model with four equations of which two were stochastic (output equation and investment demand equation) while the remaining two were identities (capital accumulation and debt accumulation identity). The traditional neoclassical production function was adopted for the output equation, where output is assumed to depend positively on labour and capital inputs. For estimation purposes, a Cobb-Douglas production function in logarithmic form was used. Using the ordinary least squares (OLS) regression technique and data for 1970-1993, Iyowa found that the two explanatory variables (labor and capital) explain over 93% of the changes in output. However, the capital variable failed the significance test at 5% level.

In an effort to estimate the debt overhang effect, he adopts Borensztein (1990) approach in specifying the investment function. The equation estimated was specified as:

$$PCI_{inv} = b_0 + b_1 r_1 + b_2 MPK_t + b_3 GDPGR + b_4 (DOD/Y) + b_5 (TDS/Y) + u_t$$

Where;

r = Interest rate (average commercial lending rate)

MPK = Marginal productivity of capital

DOD/Y = Debt/GDP ratio (a measure of debt overhang)

TDS/Y = Debt service to GDP ratio (a measure of "crowding out" effect)

$GDPGR$ = Output growth rate (captures the accelerator principle)

PIC_{inv} = Investment per head

The variables explained 89% of the changes in the investment per capita. The interest rate variable is insignificant. Debt variables were correctly assigned and were not significant from zero at 5%level, but were highly significant when the experiment was repeated with one variable at a time. He concluded

that debt burden undermines investment through both debt overhang and the "crowding out" effect. This conclusion was also arrived at by use of two-stage least squares (TSLS) method. Both historical and policy simulation was carried out. The policy simulation showed that a 50% decline in debt stock and this would reduce debt service.

Elbadawi, Ndulu and Ndung'u (1996) investigated the effect of debt overhang on economic growth using cross-sectional regression for 99 developing countries covering Sub-Saharan Africa, Latin America, Asia and the Middle East. They identified three mechanisms through which indebtedness in SSA works against growth; current debt flows as a ratio of GDP, which stimulate growth while past debt accumulation (debt overhang) impacts negatively on growth. These two mechanisms produce a Laffer curve showing the limit at which debt accumulation stimulates growth, beyond which further debt accumulation inhibits growth. The third direct channel is through a liquidity constraint where debt service obligations reduce export earnings. The final indirect channel works through the impact of the above mechanisms on public expenditures that affect growth negatively. Policy, fundamental and shock variables are also included in the model, which is specified as follows:

GDPCAP=f (EDTGDP, EDTGDPL2, DSX, DEFGDP, DEFGDPL, GINV, INFL, CVTOT, RPOF, LRGDP, RERMIS, LSCHOOL, REVOLS)

Where;

GDPCAP = per capita GDP growth.

EDTGDP = stock of debt to GDP

EDTGDPL2 = past debt accumulation (reflects the debt overhang)

DSX = debt service as a ratio of export earnings

DEFGDP = current fiscal deficit to the GDP ratio

DEFGDPL = lagged fiscal deficit to the GDP ratio

GINV = gross investment as a ratio of GDP

INFL = inflation rate

RERMIS = real exchange misalignment

CVTOT = coefficient of variation in terms of trade
REVOLS = a dummy reflecting internal shocks

RPOF = population growth rate

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 results for both fixed and random effects models were obtained. They showed that there is a laffer curve reflecting the debt overhang problem. Debt accumulation inhibits growth while debt flows spurs growth. Addition of variables showed that debt service obligations and public deficits retard growth. External shocks (CVTOT), real exchange rate misalignment (RERMIS) and internal shocks (REVOLS) retard growth.

The investment model that was estimated is specified as:

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

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

TOTSHK = terms of trade shocks

IP/Y = private investment to GDP ratio.

The results showed that debt stock to GDP is not significant. This implies that debt overhang is working through growth to affect private investment. Inclusion of other variables, showed that public sector deficit to GDP lagged one-step retard private investment and thus debt service obligations reduce credit available, hence reduces investment. Debt service obligations also reduce export proceeds, thus impacting negatively on growth per capita incomes and private investment levels. The study confirmed that debt overhang works indirectly to affect other policy variables and undermines the economies' flexibility to absorb or adjust to domestic and external shocks.

Debt repayment inevitably imposes constraints on a debtor country's economic growth prospects since it involves the transfer of resources to the creditors. To appreciate the problem of indebtedness we relate the total debt and its repayment to some key macroeconomic aggregates. This in turn assesses the debt burden of a country. The following ratios are quite useful:

- total debt outstanding to GDP
- total debt service to GDP
- interest payment to GDP
- total debt to total exports
- interest payment to total government expenditure

The higher the debt –service ratio, the greater the debt burden a country faces. The debt-export ratio and the debt-GDP ratio determine a country's ability to generate higher growth in exports and general income. It is common to use the debt-service ratio and the debt-GNP/GDP ratio as the indices of liquidity and solvency, respectively[9]. A liquidity problem is the inability of a country to service its debts now in the amount initially contracted. This is when a country lacks adequate cash on hand to pay its current obligations (Eaton and Taylor, 1986). The solvency issue relates to whether the value of a country's liabilities exceeds its ability to pay at any time; a country is insolvent when it is incapable of servicing its debt in the long-run (Ajayi, 1991). This erodes a country's credit worthiness and discourages capital inflows. Capital flight may be another effect.
Excess domestic borrowing is associated with high real interest rates. This in turn raises the cost of borrowing, hence discouraging private investment. Here, the government is forced to repay its own domestic debt at higher interest rates.

The country faced with huge domestic debt acts as a disincentive to the foreign capital inflows, and domestic savings mobilization. It further undermines the efforts to import key raw materials, necessary for industrial development. In his paper with Strout, Chenery identified three constraints faced by developing countries;

" (1) the supply of skills and organizational ability;

(2) the supply of domestic savings; and

[9] Liquidity and solvency may also be determined in several other ways. A simple rule for solvency is that the export growth rate be greater than the interest rate on debt (Eaton and Taylor, 1986;Cohen, 1985). And, the difference between net debt service (total indebtedness minus foreign reserves) and export earnings may also be used as an indicator of liquidity problem (Ajay,1991).

(3) the supply of imported commodities and services." (Chenery and Strout, p.683-85[10]

The first two constraints describe a country's situation, as "Investment limited growth" while the last constraint is the "trade limited growth". It is important to note that a strong increase in debt makes households and enterprises more vulnerable to a rise in interest rates or a drop in income. When interest rates rise or the economic situation changes, a high debt burden may amplify an economic downturn, and at worst trigger a financial crisis[11]. A high debt burden may also prompt enterprises to take on great risk than is desirable because owners with limited liability have less to lose on a high risk project, but a great deal to gain if the project succeeds.

2.4 Overview of the Literature

Most of the available literature seems to concentrate on the external debt and/or total public debt. The literature however suggests that there are various channels through which skyrocketing public debt affect economic growth. Osei and Ajay's studies mainly concentrated on the simulation models. They demonstrate the severity of the debt burden indicators under different scenarios and their effect on economic growth. All studies support the existence of negative effect of domestic debt on investment and economic growth.

This implies that while domestic debt is important in fiscal policy, excess of cumulated debt negatively affects growth. This is through competing private sector on local resources, hence raising borrowing costs and the overall production costs. It drains away domestic credit, thus causing crowding out effect. This study intends to utilize appropriate econometric tools to analyze the effect of domestic debt on Kenya's economic growth. The models based on time series data seek to capture the existence and effect of debt overhang and crowding out effect in both investment and growth models.

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[10] AERC Research paper No.13 of November 1992 on " Growth and Foreign Debt: The Ethiopian Experience (1964-86) by Befekadu Degefe

[11] *Debt, financial fragility and systemic risk* by Davis, E.P (1995)

3.0 THEORETICAL FRAMEWORK AND METHODOLOGY

3.1 Theoretical Framework

The analysis reviewed in the past sections show that debt variables are negatively correlated with investment and economic growth. The impact of domestic indebtedness affects investment and economic growth simultaneously. Thus estimating only the growth equation may underestimate the impact of internal indebtedness on sustained economic growth since investment affects growth. Hence, the impact of indebtedness on private investment is also estimated in this paper.

The channels through which domestic indebtedness in Kenya work against growth are identified as: stock of internal debt as a ratio of GDP, which should stimulate growth; past debt accumulation (lagged debt-GDP ratio), which impact negatively on growth; debt- service ratio that reduces the export earnings; and monthly interest payment to total government expenditure, and the rising interest rates. All these retard growth.

Domestic debt also affects growth through fiscal deficit to GDP ratio. As the stock of debt and cost of servicing it rise, credit market is left dry and very little funds are available to finance physical infrastructure, public development projects and social services. The end results are highly compressed government budgets especially on key sectors of the economy and/ or huge and persistent fiscal deficits. Increased fiscal deficits mean more borrowing (domestically and externally) or raise taxes to cover these deficits. Hence, the fiscal deficit to GDP ratio is negatively correlated to growth.

3.2.0 MODEL SPECIFICATION

3.2.1 Growth Equation

The regression equation is specified as:

$GDPGR=f(TDGDP,TDGDP_{t-1},DER,FSGDP,FSGDP_{t-1},PINV,PINV_{t-1},TOT,HCD,INFLR,PuINV,PuINV_{t-1})$

Where;

GDPGR = Gross Domestic Product Growth Rate

TDGDP = Stock of internal debt to GDP ratio

TDGDPt-1 = Stock of internal debt to GDP ratio lagged by one period (indicates debt accumulation)

DDER = Debt service Export Earnings ratio (reflects the crowding-out effect)

FSGDP = Fiscal deficit to GDP ratio

FSGDPt-1 = Lagged fiscal deficit to GDP ratio

PINV = Current private sector investment to GDP ratio

PINVt-1 = Lagged private sector investment to GDP ratio

TOT = Terms of trade (captures the external shocks)

HCD = Human capital development

INFLR = Inflation rate (reflects macro-economic stability)

PuINV = Public sector investment

PuINVt-1 = Lagged public sector investment

Private investment in the model captures the accelerator principle. The shock variable is captured by the terms of trade. The policy variables are captured by the inflation rate. These variables show how vulnerable the economy is to the external shocks. They also reveal the strength and consistency of our policies and their effect on economic growth. This paper has considered the role of human capital development as a very important factor in economic growth than just the population growth. In fact, this concept has gained a lot of concern among the modern development economists and World Bank in particular.

Postulates:

TDGDP coefficient should be positive. Thus the current stock (flow) of domestic debt should contribute positively to growth; the coefficient of the past debt accumulation (TDGDPt-1) should be negative; the coefficient of the debt service ratio (DER) should be negative; both current and past private sector investment to GDP (PINV and PINVt-1) ratio should contribute positively to economic

growth; and both current and lagged fiscal deficits (FSGDP and FSGDPt-1) should have a negative effect on GDP growth. Improved terms of trade (TOT) should stimulate growth[12]. Human capital development (HCD) has a positive impact on growth. The inflation level reflects macroeconomic sustainability and stability. This may stimulate economic growth at low levels, but can influence negatively on growth at persistently high levels. Public investment can promote or inhibit growth.

3.2.2 Investment Equation

The private sector investment to GDP is estimated in order to fully capture the accelerator principle. This is important in indirectly showing the effects of public debt through internal debt on sustained economic growth by its impact on private investment, through accelerator principle. Private sector investment is affected by interest rate, which is included in the investment model. Below is the investment model specification:

PINV=f(TDGDPt-1, TDGDP, DDER, FSGDP, FSGDPt-1,GDPGR, TOT, HCD, PuINV, INTR, INFLR)

Where;

INTR = Interest Rate (Average Treasury bill rate is taken as a benchmark rate)

Other variables remain as before.

Postulates:

- TDGDPt-1 coefficient is negative
- TDGDP coefficient is positive
- DER coefficient is negative
- FSGDP and FSDGDPt-1 coefficients are negative
- HCD, which reflects the impact of human capital development, is positive
- Improved terms of trade (TOT) encourages investment

[12] It may also impact negatively on economic growth and investment expansion if poorly managed

- Public Sector investment (PuINV) may crowd in or out private sector investment.
- Low inflation rate (INFLR) coefficient should be positive, but high inflation discourages growth.

3.2.3 Estimation Technique

This study mainly uses least square methods. It first tests for the simultaneity between the two structural equations to establish the existence of simultaneous-bias. In case of high presence of simultaneity, Two- Stage Least Squares estimation technique is used to estimate the reduced model. Otherwise, the two equations are first estimated independently.

Ordinary Least Square (OLS) method is used to estimate the structural equations. Given that the period of study is only twelve years, the data does not report the results of long run analyses, as they were not quite significant.

Before estimation, the data is subjected to rigorous econometric tests to deal with the problem of the existence of stationarity and spurious correlation. The main software used for these analyses is E-views. However, PcGive was also used to carry out tests for long run analysis.

3.2.4 Data Type and Source

This study makes use of Secondary data for the period ranging from 1990 to 2001. Main sources of these data include: Central Bank of Kenya statistics and publications, Government of Kenya *Statistical Abstracts* and *Economic Surveys*, Central Bureau of Statistics publications, World Bank debt publications, IMF country reports, OECD publications, African Economic Research Consortium research papers, various Economic Journals, unpublished papers, and the Internet websites. Monthly data were collected on variables such as: interest rates on 91-days Treasury bill, interest payment on both domestic and external debt, debt service stock, value of exports, government deficit, GDP and/or GDP growth rates, credit to the public sector and to private sector, volume of net investment, average inflation rate, and government expenditure.

Annual data will be adjusted to assume monthly statistics. To do this, we use indices that go along with variables under study. For instance, investment will use credit advanced to the private sector, while GDP will assume Import proxy. This is to capture any significant but short-term shocks or changes that may affect the overall results. Annual data sometimes do not reflect the true position of short-term changes during the period under study. Monthly data analysis will also make debt forecasting possible and more accurate.

3.2.5 Scope of the study

The study focuses specifically on the Kenya's public domestic debt for the period running from 1990 to 2001. This is when the domestic debt problem developed into a crisis. It is also the period when our economy experienced sharp and continuous decline in growth.

Factors critical to this study for close examination are the impact of domestic debt on; interest rates, private sector credit, national income, public sector expenditure, inflation, capital formation, and overall economic growth.

3.2.6 Limitations of the Study

The main shortcoming of this study is lack of clearly analyzed literature specific to Kenya's domestic debt. Most studies published have focused on external and/or general debt position. This affects the depth of literature review on this subject.

Another limitation of this study is where some of the data such as GDP, human capital development (HCD) are only available annually. However, the study uses interpolation formula to convert annual data into monthly data. Finally, the available data and literature do not allow a more comprehensive research within a short time on domestic debt in Kenya.

4.0 RESEARCH FINDINGS AND DATA ANALYSES

The chapter starts by discussing the results of the table given in the appendix. The first part of this chapter concentrates on the general objective of this study while the second section dwells on the second objective. The final section uses the results obtained to explain the final objective.

4.1 Size. Magnitude and Trend of Domestic Debt in Kenya

Table A.1 in the appendix shows monthly data used in the research for the period 1990-2001. Charts A.1, A.2 and A.3 in the appendix describes the actual and fitted Gross Domestic Product Growth Rate, Total Stock of Public Debt and GDP Growth Rate against Private Sector Investment respectively. Total nominal stock of internal debt grew from Kshs.53.1 bn in 1990 to 224.0 bn by end of 2001. Total debt service as a ratio of GDP rose from 7.90% to 10.21% in 2000 before declining to 4.15% in 2001.

The trend of domestic debt growth in Kenya for the period under study can be categorized into three distinct periods:

- 1990-1994: the period of rapid escalation
- 1995-1997: the period of attempted reduction
- 1998-2001: the period of growth with efforts to control the debt

On the year-to-year basis, domestic debt rose by 21.6%, 12.4%, 57.3% and 44.5% in the years 19991, 1992, 1993 and 1994 respectively. This means a 310.7% increase in debt or simply the debt level tripled in four years. This was attributed to expansionary fiscal policy with no matched revenues. On the contrary, GDP Growth rate declined drastically from 4.21% in 1990, to 1.44% in 1991 and finally to a lower negative of 0.74% before recovering slightly to 0.35% in 1993, 2.73% in 1994 and then reaching the peak of the decade 4.9% in 1995.

4.2 Results of the Data Analysis

Monthly data on the impact of domestic debt on economic growth for the period 1990:1 to 2001:12 was used. Average yearly data of real Gross Domestic Product, Terms of Trade, and Human Capital Development, were converted into monthly values by interpolation method. To do this, the following formula[13] was used:

$$IV = CV\left(1+\frac{r}{100}\right)^{\frac{n}{12}}$$

Where,

IV = Interpolated (monthly) value

CV = Value of the current period

r = rate of growth

n = month

Interpolated GDP growth rates (GDPGR) were regressed on the exogenous variables; Terms Of Trade (TOT), Domestic Debt Export Earnings Ratio (DER), Interest Rate (TBR) which is measured by monthly average 91-day treasury bill rate as a benchmark, Inflation Rate (INFLR), Fiscal Deficit GDP ratio (FSGDP), Private Sector Investment (PINV), Human Capital Development (HCD), and Public Sector Investment which is measured by credit to the public sector (PSC). Before estimation of the models, various econometric tests are conducted to establish stationarity. The results of the stationary tests carried out are presented in the tables 4.1 and 4.2 respectively as shown below:

[13] Interpolation formula used in research department, Central Bank of Kenya

4.3 Stationary Tests -Results

The results of the Augmented Dickey Fuller (ADF) test are presented in the tables 4.1 and 4.2 below respectively:

Table 4.1:
Unit-Root Tests: 1990(3) to 2001(12)
Variables in Levels
Critical Values: 5%= -2.882, 1%= -3.477 Included constant

Variable	t-adf	Beta-Y	Lag	t-prob
TBR	-3.0631*	0.9363	1	0.0000
GDPGR	-2.1165	0.9478	1	0.0003
HCD	-4.4729	0.9251	0	0.7394
TOT	-2.0326	0.9493	1	0.5362
PINV	0.6532	1.0456	1	0.0105
DER	-4.3673*	0.8299	0	0.0003
PuINV	-2.6522	0.9933	1	0.3159
FSGDP	-1.6245	0.9783	1	0.1584
TDGDP	-1.1011	0.9450	1	0.1611

The regression equations for the ADF test included a constant. The results in table 4.1 indicate that only Human Capacity Development (HCD) and the ratio of domestic debt to export earnings (DER) are stationary (integrated of order zero) at both 5%and 1% level of significance. Except for the two variables, all others were non-stationary at all levels of significance. This implies we accept hypothesis of the existence of unit roots in the two models.

To ascertain the order of integration of these variables, unit root tests were conducted on their First Differences. The results shown in the table 4.2 below indicate that the First Differences of these variables except inflation are stationary (integrated of order zero) at both 5% and 1% level of significance. However, to make inflation stationary, unit root tests were conducted on their second differeces. Therefore, the ADF test statistic rejected the hypothesis of the presence of a unit root in the entire model, confirming that all the variables are stationary. Except inflation, which is differenced twice, the model will be specified in both levels and first differences. Given that the model has weak simultaneous relationship, the two equations will be estimated independently.

Table 4.2:
Unit-Root Tests: 1990(4) to 2001(12)
On First Differences
Critical Values: 5%= -2.882, 1%= -3.478 Constant Included

Variable	t-adf	Beta-Y	Lag	t-prob
TBR_{t-1}	-6.5011	0.4586	1	0.16798
TBR	-6.6629	0.5154	0	
$GDPGR_{t-1}$	-11.716	-0.0891	1	0.0000
GDPGR	-8.8744	0.2714	0	
TOT_{t-1}	-8.0015	0.0514	1	0.5362
TOT	-11.455	0.0290	0	
$PuINV_{t-1}$	-3.5278	-3.1578	1	0.6865
PuINV	-3.6148	-2.8022	0	
$DDER_{t-1}$	-14.249	-0.8654	1	0.0000
DDER	-17.433	-0.3664	0	
$PuINV_{t-1}$	-10.306	-0.3581	1	0.1665
PuINV	-14.672	-0.2152	0	
$FSGDP_{t-1}$	-10.279	-0.2937	1	0.7589
FSGDP	-13.307	-0.1201	0	
$TDGDP_{t-1}$	-9.4499	-0.2167	1	0.4776
TDGDP	-13.6245	-0.1473	0	
$INLR_{t-2}$	-9.0355	0.9811	2	0.5852
INLR	-10.9749	0.9824	0	

4.4.0 Discussion of the Results

Before interpretation and discussion of the results, the models were subjected to diagnostic tests. The results are reported beneath each model. To check the mis-specification of the models, diagnostic tests on the residuals for a range of null hypothesis of interest were conducted. These included Autocorrelation (AR), Autoregressive Conditional Heteroscedasticity (ARCH), the Jarque-Bera normality of the distribution of the residuals and the functional form of mis-specification (Ramsey's RESET test).

The models tests for all the models (Growth – GDPGR and Private Sector Investment – PINV) are insignificant, starting from AR, ARCH for heteroscedastic errors, and normality Chi^2 test for the distribution of the residuals and the RESET test for regression specification at both 1% and 5%. The

null hypothesis is accepted in all cases. The test outcomes are satisfactory, consistent with the estimated equations. The normality of the error is necessary for the efficiency and consistency of the OLS estimates to hold. The RESET test shows the model was correctly specified as linear. The ARCH test indicate the absence of Heteroscedasticity, thus it does accept the null hypothesis that the conditional variance of the estimated model is not related to the size of the past errors.

4.4.1 Growth Model

The results of the regressed economic growth model were presented in the table 4.3 below. Fiscal deficit is captured by the rate of average 91-day Treasury bill rate. This reflects the cost of borrowing by the government. To find out the impact of fiscal deficit of economic growth, net credit to government on a monthly basis has been expressed as a ratio of GDP. The stock of accumulated budget deficits as a ratio of economic growth, GDPGR (FSGDPGR_2) impact negatively on economic performance. This variable was lagged twice to accurately capture the effects of persistent fiscal deficits to economic growth. The coefficient is statistically significant form zero, implying that resources, which would have been used to boost economic sectors for growth, are used to service the outstanding domestic debt.

Table 4.3: Estimation of the Growth Model

Dependent Variable: **GDPGR**
Method: Least Squares
Sample: 1990:2 2001:12
Included observations: 143

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.34500	0.16110	2.14153	0.0000
DPINV	0.19440	0.07182	2.70677	0.0000
$DTBR_{-1}$	-0.13701	0.02444	-5.60556	0.0741
DFSGDPGR_2	-0.35610	0.06441	-5.52795	0.1073
DHCD	0.00012	0.00147	0.08163	0.4764
$DPSC_{-1}$	-0.11453	0.21790	-0.52547	0.0000
$INFLR_{-2}$	-0.06901	0.00963	-7.16511	0.0000
DTOT	0.85250	0.17351	4.91354	0.0000
DDER	-0.20603	0.19311	-1.06680	0.0616

R-squared	0.910637	Akaike info criterion	2.620970
Adjusted R-squared	0.896032	Schwarz criterion	2.827207
S.E. of regression	0.086769	F-statistic	26.85810
Sum squared resid	13.68847	Prob(F-statistic)	0.000000
Durbin-Watson stat	2.203192		

Model

AR 1 – 7 F (7,127) = 0.09865 (0.13210)
ARCH 7 F (7,120) = 0.21879 (0.30199)
Normality Chi^2 (2) = 0.8303 (0.9157)
RESET F (1,133) = 1.5596 (0.2139)

RSS = 13.68847 for 9 variables and 143 observations

From table 4.3 above, the explanatory variables account for 91% of the changes in the endogenous variable (economic growth). The model is well specified as reflected by low standard error of the regression of 0.09 and DW of 2.20. The model is well fitted as shown by high level of adjusted R^2 = 0.90. Inflation is quite significant in the model. This is attributed to the high inflation levels experienced in early 1990s due to the aftermath effects of excess liquidity from money printed to finance general elections in 1992. Its negative effects really undermined economic performance.

The Treasury bill rate coefficient is negative. This implies that interest rates on short-term government securities have negative impact on economic performance in the short run. High interest rates on treasury bills attract short-term speculative foreign capital, which helps the government finance its current expenditure. Though this reduces pressure on domestic resources, it heats up the economy in the short run. Any significant decline in interest rates will lead to foreign capital flight. The net effect in the long run is high commercial banks' lending rates as the government resorts to domestic resources.

Private sector investment (PINV) is measured by capital formation defined by asset type and industry. Its coefficient is positive and statistically significant at both 95% and 99% confidence interval as postulated. This implies that private sector enhancement is crucial to economic growth. While private sector investment is positive as expected, public sector investment (PuINV) measured by public sector credit turned out to be negative. This can be attributed by the use of national resources to fund non-performing parastatals and government institutions that persistently report losses. In addition, the public resources spend on projects that turn out to be unviable or even not completed finally account for the negative effects.

Debt service ratio (DER) where export earnings are used to service debt is negative as postulated. The debt service is measured by the ratio of domestic debt to export earnings. The constant in the model is

positive and significant. This implies that there are other significant external factors not captured in the model that explain the changes in economic growth. These may include conducive weather changes that improve agricultural productivity, lower crude oil prices that reduce cost of production, and improved export earnings from our major exports in the global markets. Favorable terms of trade (TOT) encourage economic growth. An unfavorable term of trade Kenya has experienced over the last decade has contributed to negative impact on economic growth. This may be attributed to reduced foreign direct investment, collapsed tourism sector, acute decline in our major export prices, high crude oil prices and importation of cheap finished goods.

Only two out of the total eight explanatory variables estimated were insignificant at both 95% and 99% confidence interval of 1.645 and 2.326 respectively. These are human capacity development (HCD), and debt service (DER). The role of human capacity development has not been fully realized as many educated labour force continue to remain unemployed or underemployed, hence its contribution in the economic expansion is not significant.

4.4.2 Investment Model

Estimation of this model included 14 variables and 143 observations to obtain good results. The constant in the model is positive and not significant at both 95% and 99% confidence interval. This implies that there are other external factors not captured in the model that explain the changes in the private sector investment. These may be due to political uncertainties that scares away potential investors and raises the risk of investment, adverse weather changes that reduces agricultural productivity, global economic recession, insecurity, and among others.

Table 2: Estimation of the Private Sector Investment Model

Dependent Variable: **PINV**
Method: Least Squares
Sample: 1990:(2) 2001:(12)
Included observations: 143

Variable	Coefficient	Std. Error	t-Statistic	t -Prob.
C	0.8947	0.8225	1.0878	0.0000
TBR	0.2492	0.03726	6.1514	0.0000
$DFSGDP_{-1}$	0.2576	0.01717	15.0029	0.0000
DTDGDP	0.4454	0.03005	14.8220	0.0004
$DTDGDP_{-2}$	-0.1511	0.02500	-6.0440	0.0000
HCD	8.24E-05	1.24E-05	0.6640	0.5639
PuINV	0.7896	0.14023	5.6307	0.0000
INFLR	-0.003774	0.003749	-1.0072	0.0036
TOT	-0.7074	0.1370	-5.1635	0.0035
DER	-0.2345	0.05305	-4.4204	0.0063

R-squared	0.993038	Akaike info criterion	1.932105
Adjusted R-squared	0.976809	Schwarz criterion	0.378828
S.E. of regression	0.236273	F-statistic	144.91
Sum squared resid	7.880823	Prob(F-statistic)	0.000000
Durbin-Watson stat	2.066200		

Model Tests

AR 1 – 7 F (7,126) = 0.3749 (0.6000)
ARCH 7 F (7,119) = 0.1019 (0.3497)
Normality Chi^2 (2) = 0.6991 (0.8035)
RESET F (1, 132) = 0.15558 (0.6939)

RSS = 7.209897

From table 4.4 above, the explanatory variables account for 99% of the changes in the endogenous variable (Private sector investment). The model is well specified as reflected by low standard error of the regression of 0.24 and DW of 2.066. The model is well fitted as shown by high level of adjusted $R^2 = 0.98$.

Positive Treasury bill coefficient reflects increased portfolio investment attracted by high return on these securities. This is only appropriate if investment is defined in terms of equities and government securities. However, this research has defined investment in terms of productive sectors. As a result, these high rates push commercial banks' lending rates upwards, thus increasing the cost of borrowing. High interest rates on short -term government securities also heats up the economy and increases

financial speculation by money holders. This in turn leads to capital flight. Further, high interest rates shifts resources from productive sectors of the economy to less productive sectors. This raises the cost of borrowing by private sectors hence reduced level of investment.

Human capital development contributes positively to private sector growth. However, its insignificant coefficient implies that this factor has not had major influence on private sector investment in Kenya.

The results in the table above indicate that domestic debt in the current period has a positive effect on private sector investment. This is possibly due to the fact that domestic borrowing to finance economic programmes, would effectively stimulate private sector growth and expansion. However, any past domestic debt stock accumulated over time, which is reflected by (the ratio of total domestic debt to gross domestic debt was lagged by two periods/ months) $TDGDP_{-2}$, impacts negatively on investment. The larger the size of domestic debt accumulated, the higher the level of resources needed to service it. This is reflected by the negative coefficient of Domestic debt-export earnings ratio (DER).

Unfavorable terms of trade captured in the model by TOT, impacts negatively on the private sector growth. More resources are used to import key raw materials for manufacturing. Any price increase in the strategic raw materials and intermediate capital such as crude oil affects investment negatively. A global decline in prices of our main exports and reduced number of tourists undermines export earnings hence deterring further investment. Cheap Imports of sugar, toiletries, and agricultural commodities also compete unfavorably with domestically produced commodities, hence reducing incentives for domestic investment. It crowds out private sector from domestic resources through unfair competition. However, favorable terms of trade stimulate investment.

Public sector investment (PuINV.), measured by credit to public sector (PSC) is very important in influencing the behavior of private sector growth, hence the economy as a whole. This consists of investing in physical infrastructure, ensuring high level of security, and efficient public institutions that are conducive to investment. Apparently in Kenya, this has been the main obstacle to revamping the economic growth due to the low quality and quantity of this sector.

5.0 SUMMARY, POLICY RECOMMENDATIONS AND CONLUSION

5.1 SUMMARY OF THE FINDINGS

The research was undertaken to establish the impact of Kenya's domestic indebtedness on economic performance, particularly on growth and private sector investment. It looked at the structure, size, type, composition and determinants of the country's domestic debt.

Kenya's domestic debt stood at Kshs. 165 billion by June 2001. It rose to 224 billions by December the same year. It has now grown almost two folds to stand at Kshs. 237 billion, including Kshs.33 billion worth of repurchasing agreements (repo) bills. A larger proportion of Kenya's domestic debt is short term (in treasury bills), which accounts for 55.2% of total domestic debt. This is followed by 20.8% worth of floating rate bonds. The two groups, which are short-term securities (in the case of floating rate bonds, interest rate depends on movements in the 91-day Treasury bill rates), account for 78% of the total domestic debt. Though this gives the government money to meet its recurrent expenditure, it is very disastrous to the economy as it negatively affects both private sector investment and economic growth.

Domestic debt affects economic growth indirectly through reducing the volume of investment. From the investment model above, there exist negative relationship between private sector investment and the domestic debt service (DER). Servicing of the domestic debt undermines resources needed to stimulate investment. The government competes private sector for credit demand in the domestic financial markets to raise funds needed for its maturing debt obligations. It also uses export earnings to pay interest and redeem the maturing debt instruments. The past stock of domestic debt (measured by TDGDP_1) also impacts negatively on investment. This can be thought of as increasing risks to potential investors. Such risks include credit risk, inflation risk, rollover risk and liquidity risk. The effect is financial instability and capital flight.

It is a fact that overall debt is rising. Domestic debt stands at Kshs. 237 billions as at September 2002. With low economic growth leading to lower tax revenue and no external budget support funding,

domestic debt is likely to rise further. The pace at which Kenya's economy is growing, is too low to support this debt. This means that the country experiencing unsustainable domestic debt level.

Terms of trade (TOT) play a significant role in economic growth. Its statistically significant coefficients in both growth and investment equations explains this. Unfavourable terms of trade undermine economic growth. This implies that Kenya's terms of trade over the period under study were Unfavourable and thus affected economic growth negatively. This relationship however requires more analysis over a long period of time to ascertain the impact and magnitude of terms of trade.

These analyses also reveal that there exists significant positive relationship between public sector investment measured by credit to public sector (PSC) and private sector investment. Public sector investment in this case involves; developing modern infrastructure, guaranteeing security to both property and life, and provision of modern social amenities necessary labour productivity. All these act as a stimulant to private sector growth. However, given its current state, its persistent deterioration has negatively affected economic growth.

The main cause of escalating domestic debt is large fiscal deficit. Monthly short-term borrowing of close to Kshs. 30 billions from domestic market reflects lack of fiscal discipline in the Kenyan government. This has ended up diverting all the necessary credit crucial to private sector growth to fund recurrent expenditure and thus impacting negatively on private sector investment and eventually economic growth.

Suspension of foreign funding, and particularly for budgetary support also played a key role in the current state of domestic debt. The government through Central Bank of Kenya' s continues to borrow heavily from domestic market and thus further increasing the level of indebtedness. The Monetary Policy measures put in place to mop up the excess liquidity resulting from printed money in 1992 for general elections campaigns moreso catapulted the short-term debt witnessed for the period 1991-1994.

5.2 POLICY RECOMMENDATIONS

The government needs to address its fiscal discipline to ensure manageable budget deficits. This is to address the issue of its large percentage of domestic debt being short term. Any financial misappropriations and unnecessary expenditures must be restrained. It is important to shift domestic debt from short term to long term. Short-term debt heats up the economy. This will help the government have enough time to utilize in development projects before repayment. It also reduces interest rates associated with short-term borrowing.

Kenya as a country cannot achieve strong economic base without support from the international community. It needs to cultivate good relations with international financiers to restore aid. This will not only restore foreign funding but will also restore confidence of foreign investors, as Kenya's rating as a safe place for investment will improve. In line with this, there is need to ensure political certainty and stability for improved growth.

There is need to develop and deepen our capital markets to ensure savings mobilization needed for private sector credit and growth. Stable and liquid Capital markets provides cheap capital to various productive sectors of the economy. This is possible by establishing a more dynamic stock market, characterized by horizontal repo market. This will reduce commercial banks lending rates, as there are alternative sources of funding.

The government needs to encourage savings and discourage excess and unnecessary consumption through ensuring stable commercial banking industry and co-operatives. This can be done by ensuring that the security of the public's deposits and attractive return to these deposits are guaranteed. It is also important for the government to put in place policy measures to prevent rapid growth in non-performing loans that significantly contribute huge losses and collapse of commercial banks. High savings levels will create large resource pool that is crucial to meeting private sector credit demand for investment.

The government needs to restructure its institutional arrangements so as to have only necessary ministries and government departments. This will cut costs in the annual budget. In line with this, the

government should divest from non-core functions such as manufacturing, agriculture and mining or construction. This will minimize corruption and inefficiency.

The country also needs to increase its exports earnings so as to reduce its debt service ratio, but at the same time cutting on its unnecessary expenditure. Diversifying its exports and exporting more where we have comparative advantage can be a major trade and fiscal policy options that would ensure these goals to be attained. This is a good effort towards containing debt escalation and thus reversing the trend.

The government can also widen its tax base so as to raise revenues to meet the major proportion of its budget deficit. There has been an argument that very few eligible taxpayers actually pay tax. The majorities evade tax payment hence raising tax burden to those who pay. Efficient tax collection would effectively reduce over-reliance on borrowing from domestic market through floating government securities. Large proportion of revenues realized need to be utilized in expansion of public sector that is key to accelerating private sector investment. This will enhance economic growth.

5.3 Conclusion

Domestic debt is a very important aspect of any government. Sustainable domestic debt helps governments source funds to run their affairs. From, the analyses carried out, Kenya's domestic debt is becoming unsustainable. This impacts negatively to the economy. This paper provokes more extensive research in this area to reverse this trend.

While the government strives to achieve industrial growth by the year 2020, the above recommendations are quite important to ensure achievement of this target. However, key of all these factors is effective budgetary control. The public sector must ensure strict financial discipline.

It is also necessary to have credible government system in place to ensure that only qualified and people with high integrity are appointed in key sectors of the economy. Security of tenure of these key economic managers must be assured to minimize corruption and ensure continuity.

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APPENDIX:

Table A.1: Monthly Data as absolute figures for 1990 to 2001

DATE	TBILLS	RGDP	CummRGDP	GDPGR	GDD	NCG	HCD	PSC	INFLR	TOT	PINV rate	PSI
990-1	14.00	7243.00	81354.44	5.01	52536.00	45315.00	897.00	61658.88	14.20	70.29	8.51	956.19
990-2	14.00	7162.54	81643.63	4.93	54069.00	46886.00	931.29	62359.65	11.53	69.59	8.71	920.72
990-3	14.00	7139.51	81931.89	4.85	54123.00	46315.00	947.29	61647.85	14.10	68.90	8.63	894.50
990-4	14.00	7018.68	82215.27	4.78	50001.00	45464.00	963.56	64492.47	14.57	68.22	9.19	876.68
990-5	14.67	6889.26	82493.42	4.71	53287.00	46674.00	980.11	65150.92	13.75	67.54	9.46	866.43
990-6	14.89	6854.01	82770.15	4.63	52521.00	45537.00	996.94	65668.81	14.60	66.87	9.58	862.93
990-7	14.89	6856.37	83046.98	4.56	55153.00	48756.00	1014.06	66387.23	13.89	66.20	9.68	865.35
990-8	14.95	6957.17	83327.88	4.49	56765.00	50924.00	1031.48	66712.81	14.46	65.54	9.59	872.84
990-9	14.95	6773.32	83601.35	4.42	59660.00	52719.00	1049.19	67284.99	16.17	64.89	9.93	884.59
990-10	14.96	6794.46	83875.68	4.35	60006.00	52140.00	1067.21	68790.02	17.10	64.25	10.12	899.77
990-11	15.20	7267.63	84169.11	4.28	62175.00	55902.00	1085.54	69391.67	19.83	63.61	9.55	917.53
990-12	16.03	7516.66	84472.60	4.21	60631.00	54120.00	1104.18	70886.35	19.99	62.98	9.43	937.05
991-1	16.37	7393.69	84623.29	4.02	61904.00	55656.00	342.00	71585.34	18.75	82.86	9.68	957.50
991-2	17.03	7311.55	84772.30	3.83	62377.00	55562.00	343.75	72299.19	24.10	83.74	9.89	978.05
991-3	16.86	7288.04	84920.83	3.65	66611.00	55688.00	345.52	73466.77	20.91	84.62	10.08	997.86
991-4	15.66	7164.70	85066.85	3.47	64938.00	57508.00	347.30	75024.11	19.50	85.51	10.47	1016.11
991-5	15.83	7032.59	85210.18	3.29	65597.00	58327.00	349.08	75696.95	21.99	86.41	10.76	1031.97
991-6	16.46	6996.60	85352.77	3.12	63597.00	56139.00	350.88	77580.58	20.78	87.32	11.09	1044.60
991-7	16.45	6999.02	85495.41	2.95	65838.00	59170.00	352.68	78981.55	22.16	88.24	11.28	1053.17
991-8	16.04	7101.91	85640.15	2.77	67817.00	60487.00	354.49	80557.74	21.36	89.17	11.34	1056.85
991-9	16.48	6914.24	85781.07	2.61	70226.00	61333.00	356.32	81247.53	20.80	90.11	11.75	1054.82
991-10	16.04	6935.81	85922.42	2.44	70187.00	62852.00	358.15	82072.10	18.76	91.06	11.83	1046.23
991-11	16.27	7418.83	86073.62	2.26	71985.00	63236.00	359.99	84180.26	15.96	92.02	11.35	1030.27
991-12	16.60	7673.04	86230.00	2.08	67866.00	60439.00	361.84	85030.00	14.47	92.99	11.08	1006.09
992-1	16.69	7429.22	86265.53	1.94	72756.00	64970.00	-408.48	85100.68	16.46	78.75	11.45	972.87
992-2	15.84	7346.69	86300.67	1.80	78122.00	68220.00	-406.12	85369.61	14.55	78.49	11.62	930.73
992-3	16.44	7323.06	86335.69	1.67	71221.00	61319.00	-403.77	86493.98	22.25	78.24	11.81	883.63
992-4	15.57	7199.13	86370.13	1.53	71018.00	63192.00	-399.12	87412.30	23.19	77.99	12.14	836.47
992-5	16.79	7066.38	86403.92	1.40	72063.00	64095.00	-396.82	88466.84	23.95	77.73	12.52	794.16
992-6	17.16	7030.22	86437.55	1.27	70809.00	63037.00	-394.53	89972.02	35.48	77.48	12.80	761.61
992-7	16.25	7032.65	86471.18	1.14	71614.00	63927.00	-392.25	92575.55	32.25	77.23	13.16	743.73
992-8	16.32	7136.04	86505.31	1.01	72562.00	64894.00	-389.98	93984.23	32.33	76.99	13.17	745.43
992-9	16.89	6947.46	86538.54	.88	74771.00	65142.00	-387.73	95080.43	31.11	76.74	13.69	771.61
992-10	16.95	6969.14	86571.87	.76	73542.00	64658.00	-385.49	95555.61	29.35	76.49	13.71	827.19
992-11	16.53	7454.48	86607.53	.62	71273.00	62707.00	-383.27	97519.50	30.64	76.24	13.08	917.07
992-12	16.64	7709.92	86644.40	.48	73609.00	64831.00	133.18	99975.25	33.67	76.00	12.97	1046.15
993-1	17.12	7447.35	86662.53	.46	74761.00	65944.00	133.45	99588.62	32.10	90.87	13.37	1219.36
993-2	17.11	7364.61	86680.45	.44	74657.00	65623.00	133.72	100756.37	41.37	91.74	13.68	1437.81
993-3	23.50	7340.93	86698.32	.42	83847.00	75355.00	133.99	104915.94	34.14	92.63	14.29	1687.45
993-4	38.69	7216.69	86715.88	.40	104547.00	92149.00	134.26	103760.94	42.11	93.52	14.38	1950.48
993-5	58.42	7083.63	86733.12	.38	112820.00	102298.00	134.53	100830.77	42.60	94.42	14.23	2209.06
993-6	70.09	7047.38	86750.28	.36	112295.00	103620.00	134.80	100925.90	39.12	95.33	14.32	2445.38
993-7	70.34	7049.81	86767.44	.34	118734.00	109538.00	135.07	98636.50	43.33	96.25	13.99	2641.60
993-8	66.73	7153.45	86784.85	.32	122457.00	113650.00	135.34	100660.27	47.67	97.18	14.07	2779.90
993-9	64.00	6964.41	86801.80	.30	138401.00	115428.00	135.62	100393.87	53.89	98.12	14.42	2842.47
993-10	60.36	6986.15	86818.80	.29	132846.00	121188.00	135.89	101878.73	57.40	99.06	14.58	2811.46
993-11	48.71	7472.67	86836.99	.26	140394.00	121233.00	136.16	100640.67	56.64	100.02	13.47	2669.07

993-12	39.34	7728.73	86855.80	.24	157056.00	146565.00	211.89	103410.81	54.70	100.98	13.38	2397.47
994-1	31.00	7673.35	87081.80	.48	186553.00	175832.00	212.56	101836.80	61.54	101.87	13.27	1978.83
994-2	22.55	7588.11	87305.30	.72	155154.00	99495.00	213.22	102513.42	54.34	102.76	13.51	1408.54
994-3	25.86	7563.70	87528.07	.96	161246.00	102302.00	213.89	105963.97	53.69	103.65	14.01	734.86
994-4	27.58	7435.70	87747.07	1.19	155437.00	100932.00	214.56	108049.57	47.75	104.54	14.53	19.24
994-5	29.10	7298.59	87962.04	1.42	162462.00	105028.00	215.23	111728.22	41.12	105.45	15.31	676.85
994-6	30.00	7261.24	88175.91	1.64	162843.00	103153.00	215.91	115002.76	28.74	106.36	15.84	1291.95
994-7	27.80	7263.75	88389.85	1.87	114231.00	104902.00	216.58	116039.99	27.35	107.28	15.98	1764.60
994-8	22.30	7370.53	88606.93	2.10	120775.00	112177.00	217.26	116767.12	21.48	108.21	15.84	2033.33
994-9	22.10	7175.76	88818.28	2.32	120855.00	111911.00	217.94	118430.87	12.87	109.15	16.50	2036.69
994-10	16.10	7198.15	89030.29	2.55	124208.00	114916.00	218.63	120821.37	12.28	110.09	16.79	1713.20
994-11	15.00	7699.44	89257.06	2.79	125647.00	115953.00	219.31	127172.08	8.40	111.05	16.52	1001.40
994-12	17.80	7963.27	89491.60	3.03	125323.00	115489.00	-214.74	128070.29	6.61	112.01	16.08	160.16
995-1	17.27	8042.99	89861.24	3.19	126985.00	117358.00	-214.09	130228.19	3.27	94.49	16.19	1832.95
995-2	16.85	7953.64	90226.78	3.35	125617.00	115970.00	-213.43	132527.47	1.23	93.95	16.66	4052.67
995-3	16.17	7928.06	90591.14	3.50	123681.00	114188.00	-212.78	135428.25	-.65	93.47	17.08	6751.97
995-4	14.68	7793.89	90949.33	3.65	126706.00	117040.00	-212.13	137581.52	-3.61	92.96	17.65	9837.73
995-5	14.40	7650.18	91300.92	3.80	122802.00	112985.00	-211.48	142574.67	-1.84	92.46	18.64	13216.82
995-6	15.75	7611.03	91650.71	3.94	119445.00	111406.00	-210.83	148979.19	.15	91.96	19.57	16796.15
995-7	17.07	7613.66	92000.62	4.09	123946.00	115135.00	-210.19	153394.16	-.54	91.46	20.15	20482.57
995-8	18.90	7725.59	92355.67	4.23	123962.00	115755.00	-209.54	157331.58	1.34	90.97	20.37	24182.99
995-9	20.01	7521.43	92701.34	4.37	121111.00	112337.00	-208.90	159551.04	4.01	90.47	21.21	27804.28
995-10	22.53	7544.90	93048.09	4.51	128115.00	119254.00	-208.26	164728.64	3.30	89.99	21.83	31253.32
995-11	24.00	8070.34	93418.99	4.66	131947.00	122013.00	-207.63	167439.39	5.56	89.50	20.75	34437.00
995-12	20.43	8346.88	93802.60	4.82	129043.00	118576.00	-198.94	166281.23	6.88	89.02	19.92	37262.20
996-1	20.23	8415.91	94175.52	4.80	123830.00	113600.00	-198.35	170955.10	6.39	92.83	20.31	39635.80
996-2	24.38	8322.42	94544.29	4.79	126980.00	117095.00	-197.77	172230.56	5.67	92.66	20.69	41489.49
996-3	25.02	8295.65	94911.88	4.77	126390.00	116343.00	-197.19	173457.06	6.49	92.48	20.91	42854.17
996-4	22.79	8155.26	95273.25	4.75	128924.00	119681.00	-196.61	174974.87	7.27	92.31	21.46	43785.56
996-5	20.82	8004.88	95627.95	4.74	129196.00	119279.00	-196.03	177619.12	7.15	92.14	22.19	44339.36
996-6	20.69	7963.92	95980.84	4.72	120356.00	110547.00	-195.45	181217.79	9.76	91.97	22.75	44571.28
996-7	20.64	7966.67	96333.85	4.71	130140.00	119879.00	-194.88	183590.76	11.22	91.80	23.04	44537.03
996-8	20.53	8083.79	96692.05	4.70	130380.00	120392.00	-194.30	184284.70	11.02	91.63	22.80	44292.31
996-9	22.64	7870.17	97040.79	4.68	131569.00	122460.00	-193.73	186233.61	10.41	91.46	23.66	43892.85
996-10	24.08	7894.73	97390.61	4.67	129596.00	120340.00	-193.16	186623.96	10.83	91.29	23.64	43394.34
996-11	22.09	8444.53	97764.79	4.65	130486.00	121717.00	-192.60	190972.63	11.38	91.12	22.61	42852.49
996-12	21.53	8733.88	98151.80	4.64	127176.00	118221.00	-539.06	200119.02	10.84	90.95	22.91	42323.03
997-1	21.61	8614.92	98350.81	4.43	131511.00	122275.00	-534.61	196669.74	10.85	102.72	22.83	41861.64
997-2	21.44	8519.22	98547.61	4.23	133182.00	123725.00	-530.20	197926.28	11.90	103.44	23.23	41512.35
997-3	21.42	8491.82	98743.78	4.04	135539.00	126060.00	-525.82	199962.50	15.66	104.17	23.55	41272.41
997-4	21.02	8348.10	98936.63	3.85	138147.00	128843.00	-521.48	200094.45	16.11	104.91	23.97	41127.35
997-5	20.35	8194.18	99125.92	3.66	137140.00	128115.00	-517.18	203196.91	17.22	105.65	24.80	41062.72
997-6	19.44	8152.24	99314.24	3.47	159077.00	124440.00	-512.91	206530.64	12.78	106.39	25.33	41064.07
997-7	18.45	8155.06	99502.63	3.29	156998.00	127928.00	-508.68	208284.88	8.87	107.14	25.54	41116.96
997-8	19.70	8274.94	99693.79	3.10	157457.00	128580.00	-504.48	211906.48	7.73	107.90	25.61	41206.92
997-9	26.20	8056.27	99879.89	2.93	162782.00	128181.00	-500.31	217779.06	8.84	108.66	27.03	41319.50
997-10	27.15	8081.41	100066.58	2.75	167733.00	133567.00	-496.18	218455.15	8.74	109.43	27.03	41440.25
997-11	26.78	8644.22	100266.27	2.56	162427.00	130068.00	-492.09	221623.50	8.17	110.20	25.64	41554.72
997-12	26.37	8940.41	100472.80	2.36	166830.00	137029.00	251.77	236874.95	8.34	110.98	26.49	41648.45
998-1	26.28	8767.53	100625.42	2.31	175899.00	140544.00	252.84	237813.90	11.27	99.83	27.12	41707.00
998-2	26.33	8670.14	100776.34	2.26	175899.00	141515.00	253.92	240262.21	12.32	99.66	27.71	41719.80
998-3	26.74	8642.25	100926.77	2.21	172563.00	150218.00	255.00	240823.97	8.14	99.50	27.87	41691.90

998-4	26.98	8495.99	101074.66	2.16	181260.00	146558.00	256.08	243718.84	6.95	99.33	28.69	41632.21
998-5	26.38	8339.34	101219.82	2.11	178455.00	145638.00	257.18	250534.61	4.61	99.16	30.04	41549.69
998-6	25.48	8296.66	101364.24	2.06	171731.00	136881.00	258.27	251700.89	7.40	98.99	30.34	41453.25
998-7	24.67	8299.53	101508.71	2.02	172879.00	142028.00	259.37	250969.57	11.68	98.83	30.24	41351.83
998-8	23.74	8421.54	101655.30	1.97	177974.00	143627.00	260.47	250978.02	5.19	98.66	29.80	41254.37
998-9	22.47	8198.99	101798.02	1.92	179757.00	144620.00	261.58	250673.31	3.99	98.50	30.57	41169.79
998-10	21.34	8224.58	101941.18	1.87	178192.00	144458.00	262.70	251708.27	3.30	98.63	30.60	41107.03
998-11	17.66	8797.35	102094.32	1.82	177263.00	145362.00	263.82	251120.64	2.96	98.33	28.55	41075.02
998-12	12.56	9098.79	102252.70	1.77	183026.00	144202.00	1099.23	254301.44	2.96	98.17	27.95	41082.69
999-1	10.70	8891.76	102376.93	1.74	180202.00	143816.00	1118.65	255517.20	-1.10	98.00	28.74	41138.98
999-2	8.95	8792.98	102499.77	1.71	179420.00	145005.00	1138.41	255217.48	-.54	84.73	29.03	41250.08
999-3	8.84	8764.70	102622.22	1.68	176512.00	147808.00	1158.52	255675.11	1.16	83.49	29.17	41411.26
999-4	9.03	8616.37	102742.60	1.65	176360.00	143646.00	1178.99	256170.63	1.41	82.26	29.73	41615.04
999-5	9.63	8457.50	102860.76	1.62	178512.00	145144.00	1199.82	263008.78	2.05	81.05	31.10	41853.95
999-6	11.44	8414.22	102978.31	1.59	174305.00	148075.00	1221.01	270522.07	1.76	79.85	32.15	42120.52
999-7	14.47	8417.12	103095.91	1.56	175769.00	150538.00	1242.59	273735.66	-.56	78.68	32.52	42407.27
999-8	14.84	8540.86	103215.23	1.53	182362.00	152931.00	1264.54	275382.73	6.85	77.52	32.24	42706.74
999-9	15.78	8315.16	103331.40	1.51	183417.00	148647.00	1286.88	280948.79	7.24	76.38	33.79	43011.46
999-10	17.63	8341.11	103447.93	1.48	185354.00	150718.00	1309.61	280138.49	8.16	75.26	33.59	43313.94
999-11	18.14	8922.00	103572.58	1.45	187595.00	151575.00	1332.75	283553.20	8.27	74.15	31.78	43606.73
999-12	19.97	9227.71	103701.50	1.42	190300.00	152825.00	144.33	277406.88	7.98	73.06	30.06	43882.34
000-1	20.30	8870.69	103680.43	1.27	197680.00	152481.00	144.60	276677.07	8.67	71.98	31.19	44133.30
000-2	14.84	8772.15	103659.60	1.13	194422.00	151857.00	144.87	277823.73	5.69	83.83	31.67	44353.67
000-3	11.28	8743.94	103638.83	.99	201462.00	158825.00	145.15	279306.60	3.41	83.66	31.94	44543.55
000-4	12.44	8595.96	103618.42	.85	197364.00	158768.00	145.42	281231.32	4.13	83.49	32.72	44704.59
000-5	11.22	8437.46	103598.38	.72	199664.00	158799.00	145.69	282746.07	5.17	83.32	33.51	44838.42
000-6	10.47	8394.28	103578.44	.58	206127.00	159951.00	145.97	282732.02	5.99	83.15	33.68	44946.68
000-7	9.90	8397.18	103558.50	.45	202362.65	166998.78	146.24	283311.16	6.68	82.99	33.74	45031.00
000-8	9.25	8520.62	103538.27	.31	196583.89	163790.49	145.52	283900.49	5.91	82.82	33.32	45093.03
000-9	10.36	8295.46	103518.56	.18	195520.46	154479.47	146.79	284742.40	7.08	82.65	34.33	45134.39
000-10	10.65	8321.35	103498.80	.05	195563.51	156555.42	147.07	289613.51	6.55	82.48	34.80	45156.73
000-11	11.17	8900.86	103477.66	-.09	195906.32	156560.99	147.34	291779.28	7.72	82.32	32.78	45161.68
000-12	12.41	9205.85	103455.80	-.24	194692.73	151905.77	144.36	289477.74	7.46	82.15	31.44	45150.88
001-1	14.76	8977.13	103562.23	-.11	195360.90	153862.45	144.63	290611.75	6.04	81.98	32.37	45125.96
001-2	15.30	8877.40	103667.49	.01	201565.67	156100.40	144.90	291643.94	5.22	79.57	32.85	45088.56
001-3	14.97	8848.85	103772.40	.13	202650.58	158536.74	145.16	291177.18	3.92	78.15	32.91	45040.32
001-4	12.90	8699.09	103875.54	.25	212610.03	165420.43	145.43	291160.79	3.65	77.73	33.47	44982.87
001-5	10.52	8538.69	103976.77	.37	204909.52	159262.79	145.70	294663.92	2.11	77.31	34.51	44917.85
001-6	12.07	8495.00	104077.49	.48	213782.08	160567.15	145.96	293582.96	.22	76.89	34.56	44846.90
001-7	12.87	8497.93	104178.24	.60	206979.56	166368.73	146.13	294858.28	.16	76.47	34.70	44771.65
001-8	12.84	8622.86	104280.47	.72	216777.93	170216.99	146.23	277668.94	-.26	76.05	32.20	44693.74
001-9	12.39	8394.99	104380.01	.83	221176.61	170636.32	146.50	279910.35	-2.18	75.65	33.34	44614.81
001-10	11.63	8421.19	104479.85	.95	228032.91	177074.28	146.77	277361.92	-2.38	75.24	32.94	44536.49
001-11	11.50	9007.65	104586.64	1.07	219605.17	179402.11	147.04	276118.50	-2.85	74.83	30.65	44460.41
001-12	11.01	9316.31	104697.10	1.20	224098.00	182821.37	147.31	271786.47	-3.08	74.43	29.17	44388.23

Definitions of terms used in the Table:

TBILLS = Average 91-day Treasury bills rate
RGDP = Real Gross Domestic Product (based on the 1982 CPI)
CumRGDP = Cumulative Gross Domestic Product
INFLR = Inflation Rate
HCD = Human Capital Development
GDD = Gross Domestic Debt
TOT = Terms of Trade
NCG = Net Credit to Government
PSC = Credit to Public Sector
PSI = Credit to the Private Sector
PINV Rate = Private Sector Investment rate
GDPGR = Gross Domestic Debt Growth Rate

Table A.2: Monthly Data in terms of Ratios

DATE	GDPGR	TDGDP	FSDGDP	DER
1990-1	5.006	7.253	6.256	7.532
1990-2	4.929	7.549	6.546	9.578
1990-3	4.853	7.581	6.487	7.402
1990-4	4.778	7.124	6.478	6.171
1990-5	4.706	7.735	6.775	9.391
1990-6	4.635	7.663	6.644	7.183
1990-7	4.564	8.044	7.111	8.735
1990-8	4.492	8.159	7.320	9.339
1990-9	4.423	8.808	7.783	10.073
1990-10	4.355	8.832	7.674	9.786
1990-11	4.282	8.555	7.692	9.126
1990-12	4.207	8.066	7.200	10.242
1991-1	4.018	8.373	7.528	7.684
1991-2	3.832	8.531	7.599	7.896
1991-3	3.648	9.140	7.641	10.866
1991-4	3.468	9.064	8.027	15.804
1991-5	3.293	9.328	8.294	11.424
1991-6	3.120	9.090	8.024	11.238
1991-7	2.948	9.407	8.454	11.901
1991-8	2.775	9.549	8.517	8.26
1991-9	2.607	10.157	8.871	9.604
1991-10	2.440	10.120	9.062	10.734
1991-11	2.263	9.703	8.524	12.102
1991-12	2.080	8.845	7.877	13.859
1992-1	1.941	9.793	8.745	10.782
1992-2	1.803	10.634	9.286	12.047
1992-3	1.666	9.726	8.373	10.077
1992-4	1.532	9.865	8.778	9.908
1992-5	1.401	10.198	9.070	11.014
1992-6	1.271	10.072	8.967	16.111
1992-7	1.141	10.183	9.090	10.359
1992-8	1.010	10.168	9.094	12.455
1992-9	0.883	10.762	9.376	16.683

1992-10	0.756	10.553	9.278	14.72
1992-11	0.620	9.561	8.412	11.297
1992-12	0.481	9.547	8.409	17.464
1993-1	0.460	10.039	8.855	12.665
1993-2	0.440	10.137	8.911	13.298
1993-3	0.420	11.422	10.265	11.312
1993-4	0.400	14.487	12.769	16.464
1993-5	0.381	15.927	14.441	18.185
1993-6	0.362	15.934	14.703	16.531
1993-7	0.343	16.842	15.538	15.637
1993-8	0.323	17.119	15.887	16.306
1993-9	0.304	19.873	16.574	26.133
1993-10	0.285	19.016	17.347	20.444
1993-11	0.265	18.788	16.224	19.456
1993-12	0.244	20.321	18.964	25.189
1994-1	0.484	24.312	22.915	28.382
1994-2	0.721	20.447	13.112	20.857
1994-3	0.957	21.318	13.525	21.743
1994-4	1.189	20.904	13.574	15.062
1994-5	1.417	22.259	14.390	23.282
1994-6	1.643	22.426	14.206	27.827
1994-7	1.870	15.726	14.442	17.857
1994-8	2.100	16.386	15.220	22.992
1994-9	2.323	16.842	15.596	19.211
1994-10	2.547	17.256	15.965	18.231
1994-11	2.787	16.319	15.060	17.752
1994-12	3.035	15.738	14.503	21.933
1995-1	3.192	15.788	14.591	16.724
1995-2	3.346	15.794	14.581	16.28
1995-3	3.500	15.600	14.403	10.779
1995-4	3.649	16.257	15.017	14.489
1995-5	3.796	16.052	14.769	16.137
1995-6	3.941	15.694	14.637	12.693
1995-7	4.085	16.279	15.122	12.307
1995-8	4.231	16.046	14.983	14.529

1995-9	4.372	16.102	14.936	14.034
1995-10	4.513	16.980	15.806	15.393
1995-11	4.663	16.350	15.119	15.369
1995-12	4.817	15.460	14.206	13.913
1996-1	4.801	14.714	13.498	11.533
1996-2	4.785	15.258	14.070	13.431
1996-3	4.769	15.236	14.025	12.193
1996-4	4.754	15.809	14.675	13.327
1996-5	4.739	16.140	14.901	13.354
1996-6	4.725	15.113	13.881	12.549
1996-7	4.710	16.336	15.048	14.021
1996-8	4.695	16.129	14.893	14.802
1996-9	4.681	16.717	15.560	14.046
1996-10	4.667	16.416	15.243	14.168
1996-11	4.652	15.452	14.414	13.466
1996-12	4.637	14.561	13.536	12.057
1997-1	4.434	15.265	14.193	13.126
1997-2	4.234	15.633	14.523	13.524
1997-3	4.037	15.961	14.845	14.431
1997-4	3.845	16.548	15.434	12.593
1997-5	3.658	16.736	15.635	12.631
1997-6	3.473	19.513	15.265	15.825
1997-7	3.289	19.252	15.687	15.494
1997-8	3.104	19.028	15.538	16.634
1997-9	2.926	20.206	15.911	17.273
1997-10	2.748	20.755	16.528	17.310
1997-11	2.559	18.790	15.047	15.452
1997-12	2.365	18.660	15.327	15.200
1998-1	2.313	20.063	16.030	15.933
1998-2	2.262	20.288	16.322	15.115
1998-3	2.211	19.967	17.382	16.767
1998-4	2.161	21.335	17.250	19.812
1998-5	2.112	21.399	17.464	18.097
1998-6	2.064	20.699	16.498	17.375
1998-7	2.016	20.830	17.113	19.021

1998-8	1.968	21.133	17.055	18.545
1998-9	1.920	21.924	17.639	19.922
1998-10	1.873	21.666	17.564	16.763
1998-11	1.823	20.150	16.523	14.924
1998-12	1.772	20.115	15.848	18.027
1999-1	1.741	20.266	16.174	18.296
1999-2	1.710	20.405	16.491	14.954
1999-3	1.680	20.139	16.864	16.985
1999-4	1.650	20.468	16.671	18.66
1999-5	1.621	21.107	17.162	17.603
1999-6	1.592	20.716	17.598	18.161
1999-7	1.564	20.882	17.885	17.837
1999-8	1.535	21.352	17.906	18.953
1999-9	1.506	22.058	17.877	20.103
1999-10	1.478	22.222	18.069	17.302
1999-11	1.448	21.026	16.989	15.782
1999-12	1.417	20.623	16.562	20.140
2000-1	1.273	22.285	17.189	15.597
2000-2	1.132	22.164	17.311	16.206
2000-3	0.991	23.040	18.164	18.466
2000-4	0.852	22.960	18.470	16.836
2000-5	0.717	23.664	18.821	19.602
2000-6	0.583	24.556	19.055	17.268
2000-7	0.449	24.099	19.887	15.548
2000-8	0.313	23.072	19.223	18.014
2000-9	0.181	23.570	18.622	14.443
2000-10	0.049	23.501	18.814	13.842
2000-11	-0.092	22.010	17.589	13.826
2000-12	-0.237	21.149	16.501	13.797
2001-1	-0.114	21.762	17.139	14.514
2001-2	0.008	22.705	17.584	15.584
2001-3	0.129	22.901	17.916	13.647
2001-4	0.248	24.440	19.016	16.925
2001-5	0.365	23.998	18.652	19.605
2001-6	0.482	25.166	18.901	18.316

2001-7	0.598	24.356	19.578	16.424
2001-8	0.717	25.140	19.740	19.747
2001-9	0.832	26.346	20.326	15.299
2001-10	0.948	27.078	21.027	17.096
2001-11	1.072	24.380	19.917	16.992
2001-12	1.200	24.054	19.624	15.269

Computations

FSGDP = Net Credit to Government (NCG)
Gross Domestic Product (GDP)

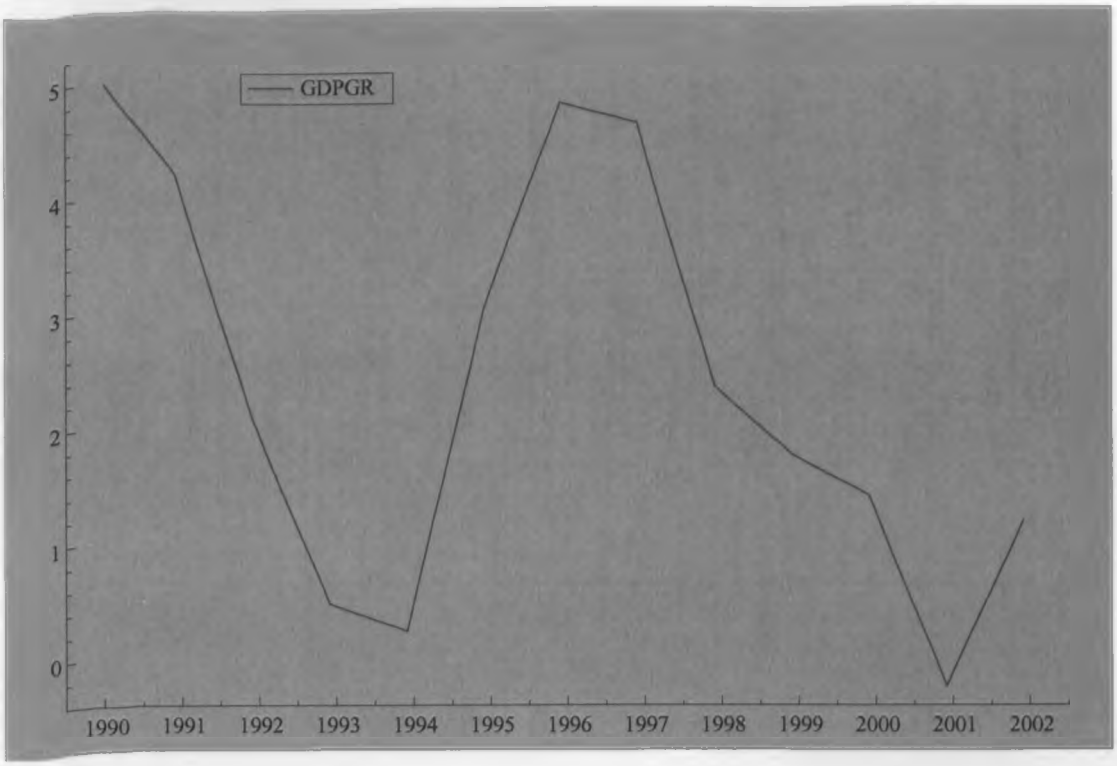
TDGDP = Gross Domestic Debt (GDD)
Gross Domestic Product (GDP)

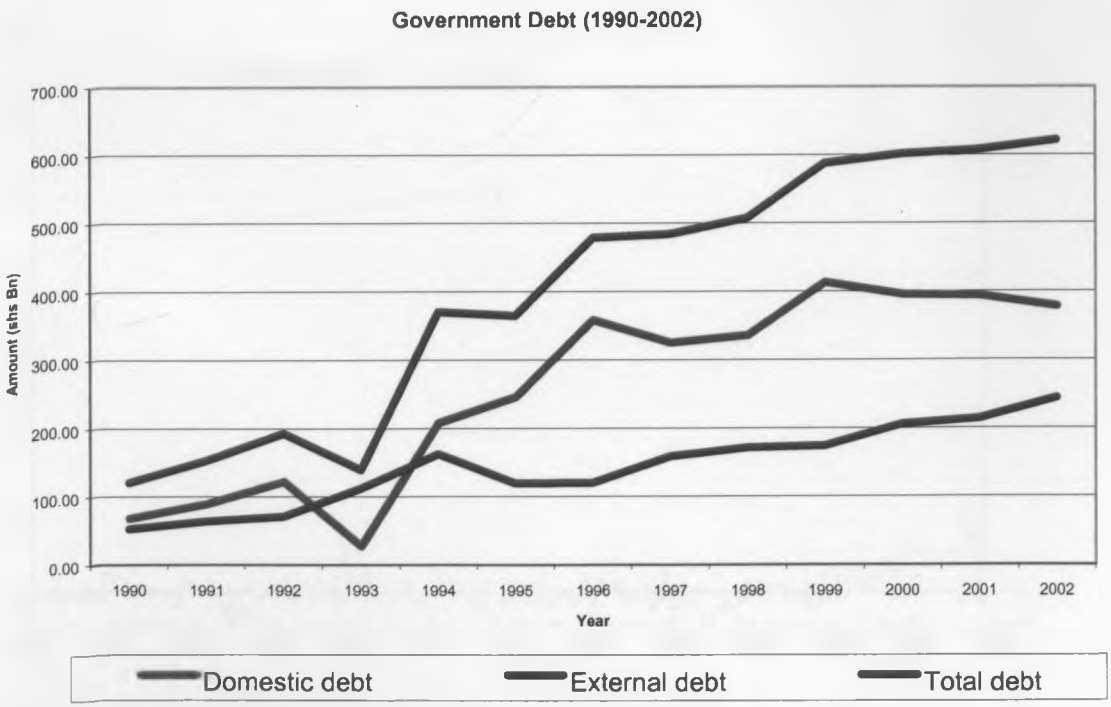
DER = Gross Domestic Debt
Export Earnings

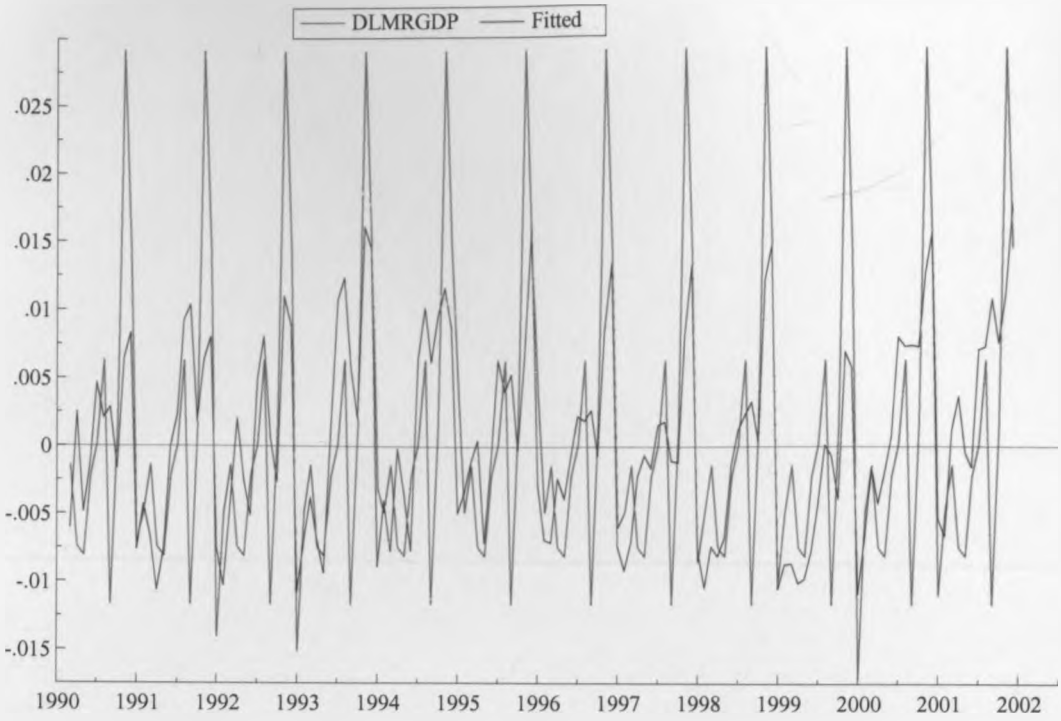
GDPGR Remains as above

Sources:

1. Statistical Abstract for the period 1990-2001
2. Monthly Economic Reviews
3. The Government Recurrent Expenditure Estimates
4. Economic Surveys for the Period 1990-2001
5. Central Bank of Kenya Statistics
6. International Financial Statistics
7. Central Bureau of Statistics on Exports
8. World Bank Statistics


GDPGR
5
4
3
2
1
0
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002


Government Debt (1990-2002)
Amount (shs Bn)
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
Year
Domestic debt
External debt
Total debt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Fitted
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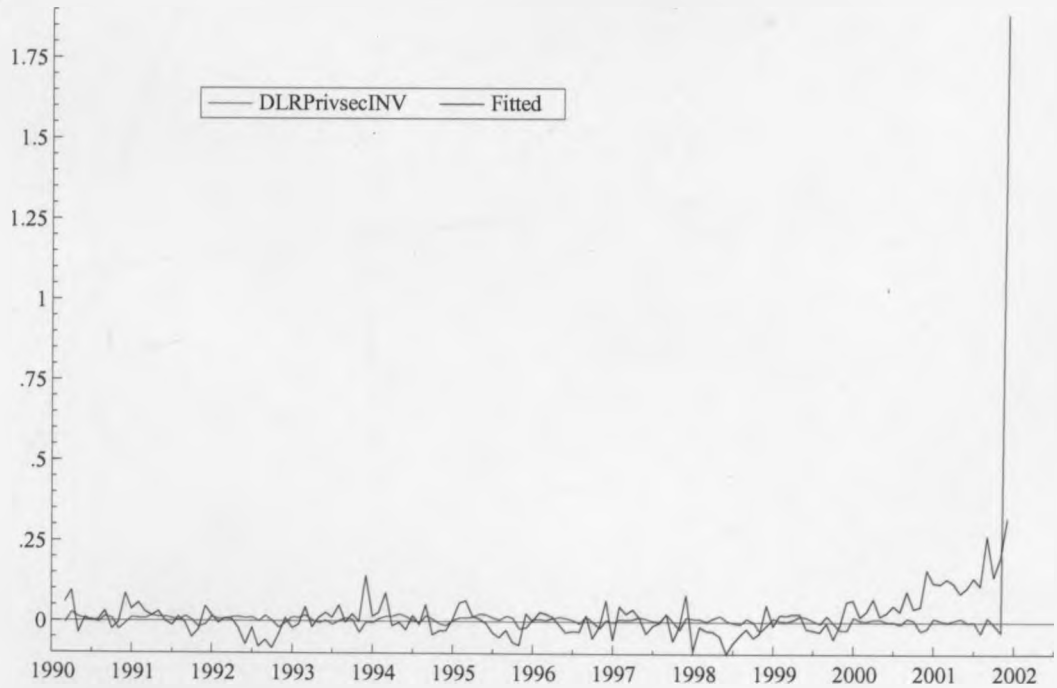
.02
.015
.01
.005
0
-.005
-.01
-.015
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002


DLRPrivsecINV
Fitted
1.75
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1990
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