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The Impact of External Debt on Economic Growth in Kenya

An Empirical Assessment

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Abstract

A group of low-income countries classified as HIPCs have continued to experience difficulties in managing and servicing their huge stocks of external debt. Most of these countries including Kenya are in Sub-Saharan Africa. The relatively high level of Kenya's external indebtedness and rising debt burden has serious implications on the country's development and debt sustainability initiatives. While the economic performance continue to deteriorate, there has been significant net outflow of resources to meet the debt obligations in the 1990s. This paper examines the structure of Kenya's external debt and its implications on economic growth.

The findings of the study indicate that Kenya's external debt is mainly official, of which a bigger proportion is from multilateral sources. External debt accumulation has been rising over the years with debt burden indicators increasing steadily in the early 1990s. Using time series data for the period 1970-95, the empirical results indicated that external debt accumulation has a negative impact on economic growth and private investment. This confirms the existence of a debt overhang problem in Kenya. However, the results also indicated that current debt inflows stimulate private investment. Debt servicing does not appear to affect growth adversely but has some crowding-out effects on private investment.

Several policy implications emerge from the study. The simultaneous attainment of sustainable levels of economic growth and external debt appear difficult at the moment and could remain elusive if aggressive

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measures are not undertaken. In view of the current economic recession and the negative net outflows, the results obtained from this study support the need for Kenya to be considered for comprehensive debt relief measures. There are prospects that availability of these resource flows can stimulate private investments if used productively. A key challenge to the government remains that of ensuring efficiency in delivery of services and increased productivity of public investments. In addition, creating credibility including commitment and political will to reform implementation is required to spur investor confidence for both local and foreign investments.

Abbreviations

BOP	balance of payments
ECT	error correction term
EDT/GNP	total external debt as a ratio of GNP
EDT/XGS	total external debt as a ratio of exports of goods and services
GDP	gross domestic product
GNP	gross national product
HIPC	heavily indebted poor countries
IMF	International Monetary Fund
INT/GNP	interest payments a ratio of GNP
INT/XGS	interest payments on debt as a ratio of export of goods and services
LDCs	less developed countries
SSA	Sub-Saharan Africa
TDS/XGS	total debt service payments as a ratio of exports of goods and services
TOT	terms of trade

1   Introduction

During the three decades beginning in the 1950s, deficits in the current account were considered normal. Countries were encouraged to borrow abroad and create an environment conducive to foreign investment to boost their economic growth. In the process, little attention was paid to the liabilities side of the current account deficit which increased the external indebtedness of these countries, until when Mexico, despite being an oil exporter, declared in August 1982, that it could not service its debts. Ever since, the issue of external debt and its servicing has assumed critical importance and introduced the 'debt crisis' debate.

External indebtedness is not harmful *per se*. Nor does heavy external debt automatically imply that growth must necessarily be low. What is detrimental for many African countries is their inability to meet current debt obligations—compounded by the lack of information on the nature, structure and magnitude of the external debt. A country may be able to export enough to generate the foreign exchange needed to buy the increasing imports associated with rapid growth and still service a high level of debt. Or it may be able to generate the necessary foreign exchange by borrowing more. But the concept of solvency implies that this is a process that cannot go on forever (Williamson 1996). Most of the countries classified as heavily-indebted poor countries (HIPCs) not only face solvency problems, but also face liquidity problems.

It has become widely accepted that the heavily-indebted countries, particularly in Sub-Saharan Africa (SSA), require debt relief initiatives beyond mere rescheduling to have a turn-around in their economic performance and fight against poverty. In the late 1990s, this understanding appears to have stirred the international community to consider 'deeper, broader and faster' external debt relief—the HIPC debt initiative. Eligibility has been based on a good track record of reforms, pursuance of sound policies and ability to translate the resources into better prospects for the poor (IMF 2001a and IMF 2001b). By the end of June 2001, 23 countries, 19 of them in Africa, had benefited from debt service relief amounting to some US$ 34 billion (IMF 2001b). That notwithstanding, doubts are still being cast about the ability of the initiative to solve Africa's immense debt problems.

Despite the relatively high level of Kenya's external indebtedness, the country has not been included in the list of beneficiaries. Although it is stated that Kenya is expected to reach sustainable levels of debt without special help from the initiative (IMF 2001a), this is unlikely to happen, given the country's current economic situation. While the country is grappling with high poverty levels (with 56 per cent of the population living below the poverty line), economic performance continues to deteriorate. For the first time since independence, the country recorded a negative growth of –0.3 per cent in gross domestic product (GDP) in 2000. In fact, the exclusion of Kenya from the HIPC debt initiative is likely to have been partly based on its poor record of reforms and economic performance rather than its ability to attain sustainable levels of external debt. Kenya's external debt indicators—debt-to-GDP ratio and debt-to-exports ratio—have risen from an average of 38.5 per cent and 121.1 per cent for the 1970-80 period to 89.2 per cent and 268.2 per cent for 1991-99 period, respectively. Meanwhile, there have been significant net outflows since 1991 to service the debt obligations. This implies that

Kenya has been paying out more funds than it receives, thereby reducing domestic resources available for development. At the same time, there are very limited options for government to co-finance development activities through domestic debt. Although domestic debt constitutes less than a third of the total formal debt, it is almost ten times as expensive as external debt (GoK 1997). In view of the current economic situation and progress in relief initiatives, this paper examines the structure of Kenya's external indebtedness and its implications on economic growth.

The paper is organized as follows. Section 2 provides the background information on Kenya's economic structure and performance since independence. Section 2.1 analyses the debt profile and the magnitude of external debt in Kenya. Section 2.2 examines the structure and composition of external debt, while Section 2.3 describes the determinants of the debt. Section 3 provides a synthesis of the theoretical and empirical literature on external debt and growth. Model specification and time series properties of the data used are presented in section 4. This is followed by the empirical results in section 5. Section 6 provides the conclusions and policy implications of the findings.

2   Background information

The period from independence (1963) to 1973 is a period when Kenya's economic growth was most rapid. GDP grew at an average of 6.5 per cent and per capita income remained positive despite high population growth rates. An examination of the commonly used debt burden indicators in Table 1 shows that the debt servicing ratio (debt service payments as a ratio of total export of goods and services) in the early 1970s was too low to cause concern when compared with that of African countries as a whole which was over 10 per cent in 1972. However the oil crisis of 1973/74 created severe balance of payments (BOP) problems and changed the picture. To meet the BOP crisis, the government resorted to heavy external borrowing. The external debt stock grew by 45.3 per cent in 1973 from the previous year (see Table 2). The growth rate decelerated to less than 4 per cent, being only 2.9 per cent in 1975 (see Table 1).

The 'coffee boom' of 1977 led to an abrupt increase in export earnings and therefore a temporary drop in the debt-servicing ratio in 1978. The coffee boom was, however, followed by the second oil crisis and a sharp deterioration in world commodity markets. As Kenya's export earnings almost stagnated, the debt-servicing ratio began to explode. This was accompanied by rising debt to GNP ratio as seen from Table 1. Drought conditions in the 1980s led to food imports, made possible by the availability of external loan finance. Increased interest rates on international loans raised the debt service charges substantially. This led to a decrease in net transfers on debt, being negative in 1981, 1984, and 1986 and have remained negative since 1991 (see Table 2). This transfer of capital to foreign creditors poses serious implications on the economy.

Table 1
Kenya's debt burden indicators and real GDP growth rate (per cent)

Year	EDT/XGS	EDT/GNP	TDS/XGS	INT/XGS	INT/GNP	GDP growth rate
1970	63	31	5	2	1	6.2
1971	94	29	10	3	1	4.9
1972	100	28	8	4	1	6.4
1973	120	35	9	4	1	4.0
1974	119	40	10	4	1	3.1
1975	128	41	15	5	2	2.9
1976	131	45	15	4	2	4.4
1977	104	39	21	4	1	8.1
1978	141	43	14	5	2	7.7
1979	167	45	18	7	2	4.9
1980	165	48	21	11	3	3.9
1981	180	49	27	13	4	6.0
1982	207	55	31	14	4	3.4
1983	238	63	34	14	4	3.0
1984	211	59	35	14	4	0.4
1985	260	71	39	15	4	5.1
1986	242	66	36	14	4	5.5
1987	333	76	40	17	4	4.9
1988	307	71	39	17	4	5.2
1989	305	74	37	15	4	5.1
1990	316	87	35	15	4	4.2
1991	338	98	33	15	4	2.1
1992	321	91	31	12	3	0.5
1993	305	156	27	11	6	0.3
1994	269	107	33	12	5	3.0
1995	249	85	30	10	3	4.9
1996	228	77	28	9	3	4.6
1997	220	64	22	7	2	2.4
1998	240	62	21	7	2	1.8
1999	244	63	27	7	2	1.4

Source: World Bank (*Global Development Finance* [CD] 2001) and series of economic surveys.

Table 1 also shows that three of the four key indicators—debt-to-GNP ratio (50 per cent), debt-to-exports ratio (275 per cent), debt service ratio (30 per cent) and interest-to-export ratio (20 per cent)—have been above the critical levels (the numbers in brackets)[1] since early 1980s. The debt service and the debt-to-GNP ratios have been above the critical levels since 1982, except in the late 1990s where the debt service ratio showed a slight decline. The debt-to-

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[1] See World Bank (*World Debt Tables*, 1989-90, vol.1).

exports ratio has remained above the critical level from 1987 to 1994. These indicators show that the external debt problem began to rise faster in the early 1980s. The GDP growth rate remained below 5 per cent in the early 1980s.

Similarly, the significant rise in the debt burden indicators (debt-to-exports and debt-to-GNP ratios) in the first half of the 1990s also coincides with a deterioration in GDP growth rates during that period. The highest debt-to-exports and debt-to-GNP ratios of 338 per cent and 156 per cent were attained in 1991 and 1993, respectively. Concurrently, the GDP growth rate declined from 4.2 per cent in 1990 to 2.1 per cent in 1991, before declining further to 0.5 per cent and 0.3 per cent in 1992 and 1993, respectively. The growth performance has remained depressed to the new millennium. The relationship between GDP growth rate and external debt as a percentage of GDP over time is illustrated in Figure 1. The figure shows that while GDP growth rate (GRATE) depicts a consistently declining (linear) trend, external debt (EDGDP) trend has been rising over time. Moreover, the latter has remained above the trend of GDP growth rate since the mid-1980s. Based on this background, the severity of Kenya's external debt crisis cannot be underestimated.

Although the debt burden indicators show a declining trend in the late 1990s, the huge transfers are alarming. The resources that could have been allocated to consumption and investment are instead being channelled abroad. This may act as a strong disincentive not only to invest but also to partake in any adjustment programmes aimed at increasing growth.

Figure 1
Trends of GDP growth rate and external debt as a percentage of GDP
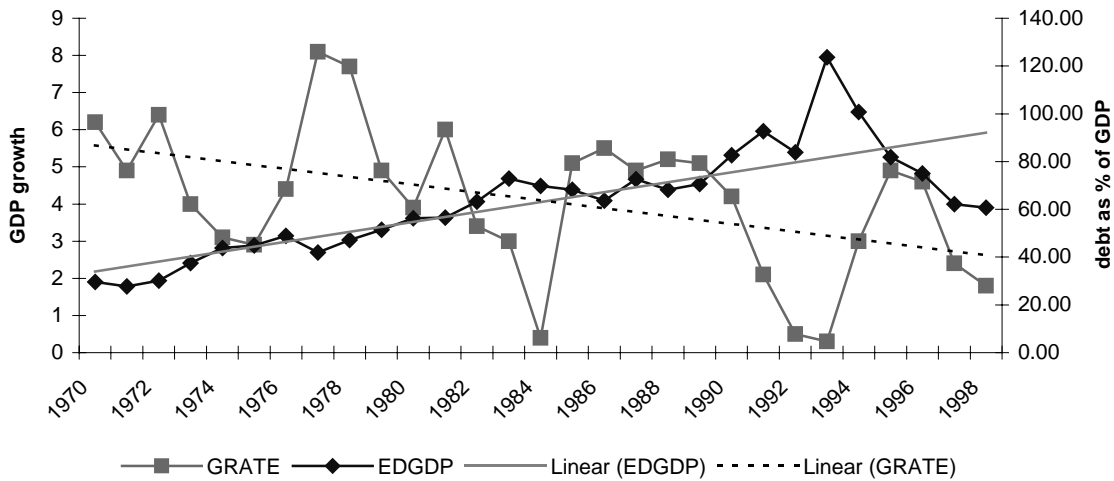
2.1 Size and magnitude of external debt in Kenya

Table 2 shows the size of Kenya's stock of external debt and debt service payments for the period 1970-99. The total nominal debt stock rose from US$ 477.5 million in 1970 to US$ 7,412.4 million in 1995 while total debt service payments rose from US$ 50 million to US$ 901.4 million in the same period. However, the stock of debt and debt service payments have now declined to US$ 6,561.5 million and US$ 716.0 million, respectively in 1999. As seen from Table 2, the growth in debt stock shows a slight decline in 1990s.

Table 2
Kenya's external debt stock, debt service and net transfers on debt (million US $)

Year	External debt	Debt service	Net transfers on debt	Principal arrears on long-term debt	Growth in debt	Concessional debt/total debt
	(in million US$)				(in %)	
1970	477.5	50.0	97.1	0.3		35.6
1971	497.9	52.4	16.5	0	4.3	36.1
1972	581.2	48.3	78.5	0	16.7	34.5
1973	844.7	65.2	194.1	0	45.3	31.4
1974	1,152.7	97.6	271.5	0	36.5	27.7
1975	1,290.2	151.0	138.5	0	11.9	25.5
1976	1,493.3	169.3	198.6	0.6	15.7	25.0
1977	1,658.9	326.0	85.1	1.1	11.1	25.1
1978	2,173.7	215.7	469.3	1.7	31.0	19.9
1979	2,721.0	299.3	403.9	2.3	25.2	20.1
1980	3,386.8	433.5	489.2	3.3	24.5	20.2
1981	3,228.2	485.0	-214.4	3.8	-4.7	23.6
1982	3,367.8	496.9	11.7	4	4.3	27.4
1983	3,628.3	515.0	194.3	4	7.7	26.4
1984	3,511.5	578.7	-92.1	4	-3.2	30.6
1985	4,181.3	621.2	41.4	4.1	19.1	30.3
1986	4,603.6	677.3	-252.1	6.2	10.1	33.6
1987	5,783.7	691.4	176.8	12.6	25.6	32.4
1988	5,809.7	737.6	95	25.6	0.4	35.0
1989	5,890.1	708.8	287.4	49.4	1.4	33.7
1990	7,058.1	790.9	281.2	71.8	19.8	33.7
1991	7,452.9	719.4	-40.4	155	5.6	36.4
1992	6,898.1	669.9	-146.5	263.2	-7.4	40.4
1993	7,111.3	631.5	-111.4	409.8	3.1	43.4
1994	7,202.3	880.8	-651.4	9.3	1.3	47.1
1995	7,412.4	901.4	-197.5	6.1	2.9	52.3
1996	6,931.0	844.4	-462	29.3	-6.5	56.8
1997	6,602.8	669.1	-199.1	76.1	-4.7	57.0
1998	6,943.3	611.7	-373.7	174.3	5.2	59.4
1999	6,561.5	716.0	-500.9	237.6	-5.5	63.1

Source: World Bank (*Global Development Finance* [CD] 2001).

Table 2 shows that a significant rise in Kenya's external indebtedness corresponds to the periods 1973-74, 1978-80, 1985-87 and 1990 in which increased borrowing was made. The first and second periods coincided with the first and second oil crises, respectively. These periods also registered a significant growth in debt service payments. The third period coincided with the funding of structural adjustment programmes by International Monetary Fund (IMF) and World Bank.

The decline in growth of external debt in 1988 and 1989 is partly due to debt write-offs and a decline in bilateral and private debt. In 1989, Kenya was forgiven its external debt amounting to US$ 463 million. The decline in the 1990s can be attributed partly to the negative net-repayments and aid embargos resulting in no new external debt contracts. For instance, the two-year 'aid freeze' in official capital inflow in 1991 and 1992 resulted in an increase in Kenya's external payment arrears. In addition, there was a heavy reliance on domestic borrowing in relation to external borrowing in the 1990s. A relatively tight fiscal stance was also witnessed during the period.

Despite the magnitude of external debt in the 1980s, Kenya was able to service its debts without rescheduling. This is also reflected by the fact that there was zero or negligible accumulation of arrears in 1970s and a better part of 1980s (see Table 2). However, by early 1990s, the debt burden became so acute that Kenya had to reschedule its debt in 1994 for the first time. With the curtailment of donor funding, the government began to accumulate arrears on official debt. Table 2 shows that there was a significant accumulation of arrears in the early and late 1990s.

Although there was a dramatic build-up in nominal aid flows during the 1980s, external financial support has been slackening in the 1990s. Consequently, the level of external indebtedness has been falling. Although Kenya may not be as heavily indebted as other HIPCs, its present poor economic performance and inability to meet its debt obligations have serious implications on development and debt sustainable objectives.

2.2 Structure, type and composition of external debt

Like most low-income SSA countries, a greater proportion of Kenya's external debt consists of official debts. A decomposition of official debt shows that in 1970s, official debt was mainly from bilateral sources. From early 1980s onwards, however, multilateral debt constitutes a major proportion of total debt stock. The share of multilateral debt increased moderately in 1980s mainly as a result of large disbursements of adjustment lending from the World Bank (O'Brien and Ryan 1999). Since the early 1990s, the proportion of concessional debt has been rising. The proportion of concessional debt rose from 20 per cent in 1979 to 34 per cent in 1989 and to 63 per cent in 1999, respectively (see Table 2). This has given Kenya the advantage of contracting loans on soft terms. This also explains why the interest to exports and interest to GNP ratios have remained relatively low. Private debt has remained relatively low over the years. Such loans are normally obtained on hard terms and conditions implying high debt service payments.

Long-term debt constitutes a major proportion of total debt outstanding. A greater proportion of long-term debt outstanding is contracted by the public sector. Private non-guaranteed debt has not only been low, but has also been rising relatively slowly over the years. Short-term debt has also remained relatively low over the years.

2.3 Determinants of external debt

The debt crisis has evolved from a complex combination of factors, some of which are external while others are the direct result of economic policies pursued. However, Ajayi (1991) has argued that the division of the factors into external and domestic is not correct because external factors impinge crucially on what happens domestically and vice versa. That notwithstanding, determinants of Kenya's external debts can be attributed to both internal and external factors.

The major external factors include the following. The 1973/74 oil price increases led to a deterioration in terms of trade leading to BOP deficits. The oil shock also contributed to a tremendous increase in the availability of international credit at very low interest rates and encouraged oil-importing developing countries (including Kenya) to borrow (Sachs and Larrain 1995). Many creditors overstated the potential capabilities of the debtor countries to meaningfully absorb and pay for debts (Ajayi 1991). Similarly, the second oil crisis, which also coincided with the 1979/80 drought, led to increased borrowing. In the early 1980s the world interest rates increased sharply as a consequence of anti-inflationary programmes in the industrialized countries. At the same time, the terms of trade deteriorated for the debtor world as raw material prices fell. Kenya's growth of export earnings declined tremendously from 26 per cent in 1980 to about –13 per cent in 1981. The external balance continuously deteriorated in the early 1980s and was further worsened by the drought of 1983/84 and the early 1990s. Increased protectionism policies by developed countries have tended to discriminate against less developed countries' (LDCs) exports (including Kenya), thus lowering their earnings.

Besides external factors, Kenya's external indebtedness can be partly attributed to internal factors. These mainly refer to the overly expansionary fiscal policies and highly distorted trade policies, especially policies that created a heavy bias against exports. Public sector deficits have been a major problem since late 1970s. Following the 1977 coffee boom, the initial response was to expand public expenditure and, since revenue from taxation did not rise as fast, the government resorted to foreign borrowing. When commodity prices later fell, expenditures were not reduced accordingly and previous borrowing was supplemented with new borrowing to maintain expenditure levels. By early 1980s, the public sector was overextended. The over-extension of the public sector showed up in economic inefficiency.

Other factors were an overvalued exchange rate,[2] negative real interest rates as well as an import-substituting industrial strategy, which was characterized by overprotection. The greater pervasiveness of the import licensing system and regulations on business activities created enormous opportunities for rent-seeking and for executive discretion.

3   Debt and economic performance

3.1   Theoretical perspectives

The question that needs to be answered is whether the large debt burden in HIPCs is one of the factors contributing to the weak economic performance and the uneven pace of economic reform in these countries, particularly in SSA. There are two competing hypotheses: the 'debt overhang hypothesis' and the 'liquidity constraint hypothesis.' The debt overhang theory

> … is based on the premise that if debt will exceed the country's repayment ability with some probability in the future, expected debt service is likely to be an increasing function of the country's output level. Thus some of the returns from investing in the domestic economy are effectively 'taxed' away by existing foreign creditors and investment by domestic and new foreign investors is discouraged (Claessens *et al*. 1996: 17).

Under such circumstances, the debtor country shares only partially in any increase in output and exports because a fraction of that increase will be used to service the external debt. The theory implies that debt reduction will lead to increased investment and repayment capacity and, as a result, the portion of the debt outstanding becomes more likely to be repaid. When this effect is strong, the debtor is said to be on the 'wrong side' side of the debt Laffer curve. In this case, the debt Laffer curve refers to the relationship between the amount of debt repayment and the size of debt.[3] However, the idea of debt Laffer curve also implies that there is a limit at which debt accumulation stimulates growth (Elbadawi *et al*. 1996). In reference to an aid Laffer curve, Lensink and White (1999) argue that there is a threshold at which more aid is detrimental to growth.

The liquidity constraint is captured as a 'crowding out' effect, by which the requirement to service debt reduces funds available for investment and growth. A reduction in the current debt service should, therefore, lead to an increase in current investment for any given level of future indebtedness (Cohen 1993). Other channels through which the need to service a large amount of external obligations can affect economic performance include lack of access to international

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[2]   An overvalued currency reduces the price of imports and thus worsens the BOP, leading to higher capital inflows. It can also raise expectations for devaluation, leading to capital flight. Currency depreciation can raise the stock of external debt.

[3]   For detailed information about debt overhang and debt laffer curve, see Claessens (1990), Cohen (1989) and (1993).

financial markets and the effects of the stock of debt on the general level of uncertainty in the economy (Claessens *et al*. 1996).

The scope of debt overhang is much wider in that the effects of debt do not only affect investment in physical capital but any activity that involves incurring costs up-front for the sake of increased output in the future. Such activities include investment in human capital (in terms of education and health) and in technology acquisition whose effects on growth may be even stronger over time.

3.2 An overview of empirical studies

There have been some limited attempts to empirically assess the debt overhang and crowding-out effects. Most of the empirical studies include a fairly standard set of domestic, debt, policy and other exogenous explanatory variables. The majority find one or more debt variables to be significantly and negatively correlated with investment or growth (depending on the focus of the study). For instance, Borensztein (1990) found that debt overhang had an adverse effect on private investment in Philippines. Iyoha (1996) found similar results for SSA countries. He concluded that heavy debt burden acts to reduce investment through both the debt overhang and the 'crowding out' effect. However, Cohen's (1993) results on the correlation between developing countries (LDCs) debt and investment in the 1980s showed that the level of stock of debt does not appear to have much power to explain the slowdown of investment in developing countries during the 1980s. It is the actual flows of net transfers that matter. He found that the actual service of debt 'crowded out' investment.

Elbadawi *et al.* (1996) also confirmed a debt overhang effect on economic growth using cross-section regression for 99 developing countries spanning SSA, Latin America, Asia and Middle East. They identified three direct channels in which indebtedness in SSA works against growth: current debt inflows as a ratio of GDP (which should stimulate growth), past debt accumulation (capturing debt overhang) and debt service ratio. The fourth indirect channel works through the impacts of the above channels on public sector expenditures. They found that debt accumulation deters growth while debt stock spurs growth. Using data for Cameroon, Mbanga and Sikod (2001) found that there exist a debt overhang and crowding-out effects on private and public investments, respectively. Other studies that have found a negative effect of external debt on growth include Degefe (1992). Some studies simply use simulation analysis to show the impact of the debt burden indicators on economic growth under different scenarios (e.g. Ajayi 1991; Osei 1995 and Mbire and Atingi 1997).

Generally, most studies tend to confirm debt overhang/crowding-out effects. Nonetheless, the empirical literature is mainly focused on evaluating the impact of external debt on investments rather than on economic growth *per se*. Moreover, these studies are mainly based on data across countries in disregard to each country's uniqueness. While the findings are quite revealing, there is need for case-by-case studies in view of each country's unique characteristics. This is particularly important given the stringent conditionalities for debt relief initiatives. In addition, most empirical studies suffer from methodological limitations in the sense that there is a

tendency to ignore the non-stationarity of time series data. This is despite the fact that working with non-stationary variables lead to spurious regression results (Charemza and Deadman 1992). That notwithstanding, very few empirical studies on Kenya's external debt exist and, even then, they do not focus on the analysis of external debt and economic growth (for example: Ochieng 1991; Manundu 1984; Gulamhussein 1987; and Ng'eno 1991). This paper is motivated on the basis of these factors. The paper follows the approach used by similar studies (specifically Elbadawi *et al.* 1996), but adopts an error correction formulation in assessing the debt overhang and crowding-out effects in Kenya.

4 Model specification

It has been argued that expansion of investment facilitates economic growth, depending on the quality of investment. Consequently, it is important to evaluate the impact of external indebtedness on investment. However, as argued by Fosu (1996, 1999) debt can also affect economic growth directly through its effects on the productivity of investment. The existence of a debt overhang would influence the nature of investment mix, with a bias towards short-term investment projects with faster returns that are less productive. In other words, external debt may still affect output growth even if investment levels remain unaffected (*ibid*.). Therefore, estimating only the investment equation would underestimate the effect of external indebtedness on economic growth.

From the literature, the channels through which the indebtedness affects growth have been identified as: stock of external debt as a ratio of GDP which should stimulate growth; past debt accumulation (lagged debt-GDP ratio) which impacts negatively on growth; the debt-service ratio, which captures the crowding out effect. The final indirect channel incorporated in this paper is net foreign financing as a proportion of the total deficit. As the stock of debt and cost of external debt servicing rise, there is little left to finance public development projects and social services. This leads to severely compressed budgets and/or fiscal deficits. These fiscal deficits aggravate further external borrowing as a source of financing the deficits. Besides these variables, the model also incorporates other policy, fundamental and shock variables. The model adopted is based on Elbadawi's *et al.* (1996) model. Like in similar studies, the debt burden indicators enter the production function directly.

4.1 Growth equation

GRATE = (EDGDP, EDGDP$_{t-1}$, DSR, FFDC, PINV, TOT, RER, SER, INFL, GPUIV$_{t-1}$) (1)

Where GRATE   =   real GDP growth rate;

       EDGDP   =   stock of external debt to GDP ratio (-);

       EDGDPt-1   =   stock of external debt to GDP ratio lagged by one period (reflect debt accumulation) (-);

DSR $\quad=\quad$ the debt service as a ratio of export earnings (reflect the 'crowding-out' effect) (-);

FFDC $\quad=\quad$ net foreign financing as a proportion of total deficit (-);

PINV $\quad=\quad$ private investment as a ratio of GDP (captures the accelerator principle) (+);

TOT $\quad=\quad$ terms of trade (captures external shocks) (- or +);

SER $\quad=\quad$ primary school enrolment rate as a proxy for human capital development (+);

INFL $\quad=\quad$ rate of inflation (reflects macro- economic stability) (- or +);

RER $\quad=\quad$ movements in real exchange rate (reflects incredibility of policies) (-);

GPUIV $\quad=\quad$ Public investment as a ratio of GDP (+).

Private and government investments are included separately in the model. The former captures the accelerator principle. In other studies, total investment (with the two combined) is used. The shock variable is captured by terms of trade. The macroeconomic policy variables are captured by inflation rate and by real exchange rate. These variables show the extent of vulnerability of the economy to external factors and consequently to reliance on foreign resource financing. They also show the extent of credibility of policies and their effect on economic growth. In contrast to Elbadawi *et al.* (1996), the current study assumes that the role of human capital development is more important in explaining growth than just population growth. This is captured by primary school enrolment rate.

4.2 Investment equation

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

PINV = f(EDGDP$_{t-1}$, EDGDP, GRATE, DSR, FFDC, TOT, SER, GPUIV, INT,INFL, RER) (2)

where INT = Interest rate (treasury bill rate). The other variables are as defined before.

Before estimating the above equations, a test for simultaneity between investment and growth equations was carried out to ascertain whether simultaneous equation-bias exists. The test showed that only weak simultaneity exists. This was handled by normalizing the variables through the error correction process. Therefore the two equations are estimated independently, each incorporating an error correction term.

5   Data, time series properties and empirical results

The time series data used in the estimation covers 1970-95. For consistency and ease of comparison, all the data (except GDP growth rates, investment and school enrolment rate) were drawn from international publications—the *Global Development Finance* and *International Finance Statistics*.[4] Data from government publications were drawn from *Statistical Abstracts* and *Economic Surveys*. The results of data analysis and estimation were obtained using the Generalized Instrumental Variables Estimators econometrics computer package (PCGIVE, version 8.0).

5.1 Time series properties

Non-stationarity of time series data has often been regarded as a problem in empirical analysis. Working with non-stationary variables leads to spurious regression results from which further inference is meaningless. The conventional Dickey-Fuller (DF) and Augmented Dickey-Fuller (ADF) tests were used to test for stationarity of the series. The results of the test for the variables in levels are presented in Table 3.

The tests show that the variables SER, GRATE, INFL, FFDC and PINV are stationary (integrated of order zero) at 5 per cent level of significance. A graphical analysis of GPUIV showed stationarity. The rest of the variables were found to be stationary after differencing them once. These variables are therefore integrated of order one (I ~I(1)).

The next step was to establish whether the non-stationary variables are cointegrated. Differencing of variables to achieve stationarity leads to loss of long-run properties. The concept of cointegration implies that if there is a long-run relationship between two or more non-stationary variables, deviations from this long-run path are stationary. To establish this, the Engel-Granger two-step procedure was used. This was done by generating residuals from the long-run equation of the non-stationary variables, which were then tested for stationarity using the DF and ADF tests. The residuals were found to be stationary at 5 per cent level of significance for both tests. Consequently, an error correction formulation was adopted.

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4   There is substantial variation between data (on external debt and debt-related figures) from international and locally available publications.

Table 3
Unit root tests (variables in levels)

Variable	DF	ADF (2)*	Order of integration
GRATE	-2.816	-3.631	I (0)
EDGDP	-1.419	-1.133	I (1)
TOT	-2.471	-2.319	I (1)
DSR	-1.809	-0.3838	I (1)
INT	-2.461	-1.795	I (1)
GPUIV	-2.270	-2.030	I (1)
PINV	-3.485	-2.030	I (0)
RER	0.6729	0.4319	I (1)
SER	-4.332	-4.364	I (0)
FFDC	-2.06	-4.249	I (0)
INFL	-2.604	-3.433	I (0)
Critical values at 5 per cent	-2.985	-3.622	

Note: *The number in parenthesis refers to number of lags

Both the investment and growth equations were re-specified to include the error correction term as follows:

$$GRATE = a_0 + a_1 DEDGDP + a_2 DDSR + a_3 FFDC + a_4\ PINV + a_5 DTOT + a_6 SER + a_7 INFL$$
$$+ a_8 GPUIV + a_9 DRER + a_{10} ECT_{t-1} + e_{1t} \quad\quad (3)$$

Where $ECT = EDT - c_o - c_1 DSR + c_2 TOT - c_3 RER.$

$$PINV = b_o + b_1 DEDGDP + b_2 DDSR + b_3 FFDC + b_4 DTOT + b_5 DINT + b_6 SER + b_7 DRER$$
$$+ b_8 INFL + b_9 GRATE + b_{10} GPUIV + b_{11} ECT_{t-1} + e_{2t} \quad\quad (4)$$

ECT is the error correction term. This term captures the long-run relationship. It reflects attempts to correct deviations from the long-run equilibrium path and its coefficient can be interpreted as the speed of adjustment or the amount of disequilibrium transmitted each period to economic growth. The c's can be interpreted as parameters of equilibrium relationship about which economic theory is informative (Ndung'u 1993).

5.2 Empirical results

Equations 3 and 4 with their associated lags were estimated using OLS. Before running the regressions, a simple correlation analysis between the dependent and the explanatory variables was carried out. The results are reported in Table 4.

5.2.1 Correlation results

Table 4 shows that there is relatively high negative correlation between economic growth (GRATE) and external debt (EDGDP) and between private investment (PINV) and external

debt. There is negative correlation between private investment, interest rate (INT) and real exchange rate (RER). The relationship between private investment and economic growth is relatively high and positive as would be expected. Terms of trade (TOT) have positive relationship with both growth and investment.

Table 4
Correlation matrix of variables in levels

	GRATE	PINV	EDGDP	DSR	TOT	INFL	INT	GPUIV	RER
GRATE	1.000	0.613	-0.560	-0.293	0.518	-0.592	-0.585	0.328	-0.49
PINV		1.000	-0.556	-0.271	0.421	-0.380	-0.514	0.318	-0.60

5.2.2 Estimation results for the growth equation

Using the general to specific estimation procedure, the preferred model for the growth equation is reported in Table 5. An impulse dummy for 1984 was added after critical analysis of residuals, which showed a shock to the system during that year.

The diagnostic test outcomes are satisfactory—that is, AR for autocorrelated residuals, the ARCH for heteroscedastic errors, normality test for the distribution of the residuals and the RESET test for the regression specification.

Most of the variables considered in the determination of economic growth have their hypothesized signs. The coefficient of current debt flows (DEDGDP) was expected to be positive but it is negative. A rise in current debt flows as a ratio of GDP leads to a decline in economic growth. This implies that even current debt flows deter economic growth in the short run. On the other hand, the coefficient of past debt accumulation (debt lagged twice) is negative as expected. These results confirm the existence of debt overhang problem as earlier postulated. The results tally with the findings of similar studies (e.g. Elbadawi *et al*. 1996).

The positive effect of debt service ratio on economic growth was unexpected. However, it has been argued that actual debt service payments are inadequate indicators of the debt burden (Fosu 1999). Nevertheless, the debt service ratio for Kenya has not been overly high compared with other low-income countries.

The impact of the other variables is as follows. Net foreign financing of deficit as a ratio of fiscal deficit (lagged once) has a negative impact on economic growth as postulated. Private investment as a ratio of GDP as well as investment in human capital development, proxied by primary school enrolment rate, positively influence growth. However, the coefficient of the latter is negligible when compared with the impact of private investment on growth. Similarly, current public investment promotes economic growth but unexpectedly, past public investment ($GPUIV_{t-1}$) was found to have a negative impact on economic growth. Current inflation rate deters economic growth while past inflation rate ($INFL_{t-1}$) stimulates economic growth. The impact of real exchange rate on growth was found to be highly statistically insignificant and the

variable was thus dropped from the model. A dummy to capture shocks in 1984 was found to have had a negative impact on growth. This is due to the severe drought that occurred during that year, leading to massive food imports.

Table 5
Regression results for the growth equation

Variable	Coefficient	Std. error	t-value
Constant	-3.996	0.9018	-4.433
INFL	-0.053	0.013	-4.093
$INFL_{t-1}$	0.101	0.016	6.285
GPUIV	0.727	0.100	7.283
$GPUIV_{t-1}$	-0.514	0.107	-4.809
PINV	0.303	0.036	8.417
$PINV_{t-1}$	0.285	0.032	8.866
$FFDC_{t-1}$	-0.045	0.007	-6.465
SER	0.039	0.008	4.881
DEDGDP	-0.055	0.014	-3.805
$DEDGDP_{t-2}$	-0.064	-0.011	-5.790
DDSR	0.090	0.026	3.399
$DDSR_{t-1}$	0.085	0.028	3.056
DTOT	0.035	0.004	8.563
$DTOT_{t-1}$	0.049	0.004	11.757
ECT_{t-1}	-0.308	0.050	-6.158
D1984	-2.966	0.407	-7.284

Note: 'D' before the variable symbol implies first difference of the variable.

R^2 = 0.996 F[16,6] = 88.748[0.000] σ = 0.2514 n =23 DW = 2.45
AR 1 -2F(2,4)   = 2.5724[0.1913]
ARCH 1 F(1,4) = 0.17225[0.6985]
Normality chi^2(2) = 2.3681[0.3060]
RESET F(1,5) = 0.29745[0.6089]

The lagged error correction term (ECT_{t-1}) included in the model to capture the long-run dynamics between the cointegrating series is correctly signed (negative) and statistically significant. The coefficient indicates a speed of adjustment of 31 per cent from actual growth in the previous year to equilibrium rate of economic growth. The relatively low speed of adjustment implies that all errors/deviations are not corrected within one year and most of the time the economy is operating out of equilibrium. A further discussion of what ECT entails is worthwhile as it reveals long-run relationships of the non-stationary variables. ECT is specified as:

$$ECT = EDGDP - 42.960 - 0.386DSR + 0.095TOT - 1.73RER.$$

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It can be seen that although debt service ratio had unexpected positive sign, it enters the error correction term with the expected sign. Debt service rises with growth in external debt. Unfavourable terms of trade prompt increased external borrowing.

Estimation results for the investment equation

Table 6
Regression results for the investment equation

Variable	Coefficient	Std. error	t-value
Constant	11.139	3.696	3.014
$INFL_{t-1}$	-0.278	0.074	-3.737
DEDGDP	0.361	0.093	3.871
$DEDGDP_{t-1}$	-0.203	0.066	-3.068
SER	0.060	0.044	1.351
DINT	-0.492	0.144	-3.421
$FFDC_{t-1}$	0.057	0.032	1.811
DDSR	-0.245	0.150	-1.632
$DDSR_{t-1}$	0.366	0.158	2.320
DRER	0.521	0.372	1.401
ECT_{t-1}	0.936	0.220	4.264
GPUIV	0.335	0.426	0.786

$R^2 = 0.849$ F(11,12) = 6.1471[0.0020] σ = 1.8098 n=24
AR 1 -2F(2,10) = 1.5035[0.2686]
ARCH 1 F(1,10) = 0.49461[0.4979]
Normality Chi^2(2) = 3.4464[0.1785]
RESET F(1,11) = 0.93786[0.3536]

The results in Table 6 indicate that current debt flows (DEDGDP) stimulate private investment while past debt flows ($DEDGPD_{t-1}$) deter investment. These results are as expected. Foreign borrowing can help relieve resource shortages and if used productively will stimulate investments and therefore promote growth in the short run.

A rise in current debt service ratio negatively affects private investment. This confirms the 'crowding-out' effect of debt service on private investment. Contrarily, variation in past debt service ratio ($DDSR_{t-1}$) has a positive effect on private investment.

The impact of other variables on private investment is as follows. Past inflation ($INFL_{t-1}$) discourages current private investment. This could imply that economic agents expect the previous year's high level of inflation rate to persist in the current period, thus discouraging current private investment. Similarly, high interest rates (DINTr) discourage private investment. Both public investment and human capital development proxied by primary school enrolment rate have positive but highly statistically insignificant coefficients. Similarly, the impact of a change in the real exchange rate (depreciation) on private investment is not significant. Unlike

in the growth equation, net foreign financing of the deficit as a ratio of total fiscal deficit has a positive and statistically significant effect on private investment.

Unlike in the growth equation, the error correction term lagged once (ECT_{t-1}) has a positive sign. This coincides with the hypothesis that current stock of debt is likely to stimulate private investment. The model reports a speed of adjustment of around 94 per cent, which is relatively high. This implies that the deviations/errors from the long-run equilibrium path are almost corrected in one period. Investors react fairly fast to changes in external resource inflows.

6   Conclusion and policy implications

The central focus of this study was to establish the impact of Kenya's external indebtedness on economic growth. The paper also examined the structure, magnitude, composition and determinants of Kenya's external debt. A greater proportion of Kenya's external debt consists of official debts mainly from multilateral sources—mainly in the form of concessional loans. This has enabled the country to borrow on fairly soft terms.

The causes of external debt in Kenya can be traced to both internal and external factors. Internal factors are mainly overly expansionary fiscal policies and highly distorted trade policies, especially policies that created a heavy bias against exports. The external factors include deterioration of terms of trade leading to BOP deficits, high world interest rates and increased protectionism by developed countries, which tended to discriminate against LDCs exports. In addition to these factors, drought conditions have also contributed to the external debt burden.

Using an error correction formulation, the estimation results showed a possibility of a debt overhang problem in both the growth and investment equations. Not only does past debt accumulation deter growth, but so do current debt flows in the short run. In the private investment equation, it was however found that current debt flows stimulate investment while debt accumulation deters investment. In general, the results seem to support the argument that external debt still affect growth directly even if investment is not adversely affected.

The investment model also showed that there was some 'crowding out' of current investment as a result of servicing relatively large amounts of external debt. In contrast, debt servicing does not appear to have a direct negative impact on economic growth. Arguably, the debt service ratios for Kenya have been considered to be relatively lower compared to other low-income HIPCs.

As indicated earlier, past attempts to resolve SSA's external debt crisis have not borne much fruit. The only hope now lies in the current HIPC debt Initiative, which is expected to relieve the HIPCs of their debt burdens, with positive implications on poverty. In as much as external debt burden is a reality in Kenya, it is also true that the country cannot achieve its goal of becoming an industrialized nation by the year 2020 without external financial assistance. In view of the current economic recession and the negative net outflows, the results obtained from

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this study support the need for Kenya to be considered for comprehensive debt relief measures. The simultaneous attainment of sustainable economic growth and external debts appear difficult at the moment and could remain elusive if aggressive measures are not undertaken. The government could play an important role in stimulating the economy if the resources obtained from the debt relief initiatives are targeted at productive public investments with the resultant crowding-in effects on private investment, and social spending for the poor.

Being the key source of indebtedness, the challenge to the government remains that of ensuring efficiency in delivery of services and increased productivity of public investments. Efforts are already being directed towards this direction through privatization of parastatals and down-sizing of the civil service, but more has to be done to revamp the economy to a higher, sustainable growth path. In the long run, foreign savings should supplement but not replace domestic savings.

Proper macroeconomic management of the economy as a whole is important since it also determines the volume and servicing of external debt, as well as the credit rating. Availability of external finance should be consistent with a policy framework that is credibly maintained (fiscal stance, exchange rate policy, interest rate policy, pricing policy, etc.). It is important to create credibility including political will in order to spur investor confidence for both local and foreign investments. Commitment to re-building credibility is a key challenge for Kenya.

Development activities could also be financed through increased export earnings spearheaded by an export-led growth strategy. As part of broader strategy to assist the HIPCs out the debt crisis, the international community should provide a conducive environment for exports from the low-income countries including Kenya. Kenya still has a chance of overcoming its external debt problems by cultivating the right policies, but will need considerable support through debt relief/reduction initiatives.

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