DETERMINANTS OF PUBLIC EXPENDITURE GROWTH IN KENYA

BY:
ADAN GUYO KANANO
REG NO: C50/P/7361/03

SUPERVISORS

1. MR. URBANUS KIOKO

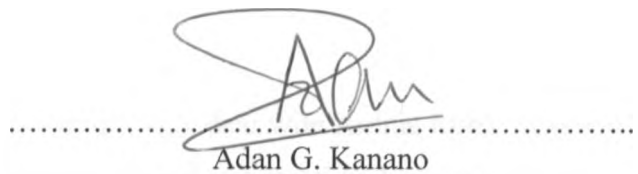
2. MR. MOSES MUREITHI

A PROJECT PAPER SUBMITTED TO ECONOMICS DEPARTMENT, UNIVERSITY OF NAIROBI IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS – ECONOMICS

AUGUST 2006

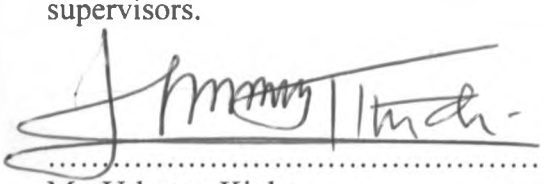
DECLARATION

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



Adan G. Kanano
Reg. No. C50/p/7361/03

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



Mr. Urbanus Kioko

6/11/2006
Date

Mr. Moses Mureithi

7/11/06
Date

ACKNOWLEDGEMENTS

My sincere thanks go to the supervisors: Mr. Urbanus Kioko and Mr. Moses Mureithi for their professional guidance, tolerance and cooperation. I am greatly indebted to Maurice Ombok, for his insights and guidance that made this work more manageable. I also thank Kenya Commercial Bank Ltd for making it possible to undertake the studies through partial funding.

Special thanks go to my family; my dear wife Amina Roba, my sons Mohammed, Abubakar and Musa for their moral and emotional support that enabled me to complete the work successfully.

DEDICATION

To my late mother Dertu Guyo for her everlasting inspiration in search of knowledge.

List of Abbreviations

CFS	Consolidated Fund Services
Fy	Financial Year
ECA	Economic Commission in Africa
GDP	Gross Domestic Product
GNP	Gross National Product
GOK	Government of Kenya
IEA	Institute of Economic Affairs
IMF	International Monetary Fund
MDGs	Milennium Development Goals
OLS	Ordinary Least Squares
SAPs	Structural Adjustment Programs
SSA	Sub-Saharan Africa

TABLE OF CONTENT **Page**

LIST OF TABLES.

LIST OF FIGURES

ABSTRACT

The study examines the determinants of public expenditure growth in Kenya. Time series data analysis technique is used for the period 1980 – 2004.The main objectives of the study are to analyze government budgetary resource composition and; examine the impact of the government budgetary resources on public expenditure growth. This study is important since public expenditure is on the rise yet the GDP is marginally increasing to sustain the public expenditure growth.

The determinants of public expenditure growth model are estimated by the OLS method. Study results show that public expenditure growth is explained by internal debt. The findings indicate that 10 Kenya pound increase in internal debt results in an increase in public expenditure by 1.63 Kenya pounds. With respect to external debt financing, the results show that 10 Kenya pounds increase in external debt leads to a decrease in public expenditure by 1.17 Kenya pounds, thus an indication of debt overhang hypothesis in Kenya. A strong positive relationship between government revenue and public expenditure was revealed. A 10 Kenya pound increase in government revenue results into 580 Kenya pound increase in government expenditure.

From the findings, it is important that the government avoids over reliance on internal borrowing for financing public expenditure as this has detrimental effect on economic growth due to crowding out of the private sector

CHAPTER ONE: INTRODUCTION

1.1 Background

Governments are set up to serve the citizens of a country. A major objective of the government is therefore to promote welfare of its citizens by means of appropriate economic policies and direct participation in economic activities (Livingston and Ord, 1980). These economic activities can be classified as: providing internal security, defense and general administration. Others are: providing production infrastructure and basic social services, participating directly in the production and marketing of goods through establishment of public enterprises, influencing or guiding the level and direction of private economic activities through various regulation by means of monetary and fiscal policies, and redistributing income and wealth by taxation and via public activities. These economic activities by governments result in expending of resources. One would therefore define public expenditure as the expenses a government incurs for its own maintenance, the society and the economy and helping other countries (Bhatia, 2004).

Reasons for the need and the effects of public expenditure have varied over the time. The earlier approach was closely linked with philosophy of *laissez-faire* according to which, the best government was the one that allowed almost all economic decisions to be guided by the invisible hand of the market forces of demand and supply. This philosophy requires limited government participation to activities such as providing defence, law and order, justice, administration and social overheads.

However, the fact that the market mechanism failed in many respects to bring about the desired results in the economy, forced an increasing intervention on the part of the state. The market forces cannot solve all economic problems, hence, bringing about inequitable distribution of income and wealth, failure to tackle problems of unemployment, inflation and economic growth. The market forces also cannot function effectively if there are externalities. This has led to a rapid growth in the government sector and public expenditure. The government sector has over the years become an important means of directing the working of the rest of the economy, thereby bringing about economic

growth, equitable distribution of resources, enhancing production and economic stabilization.

While the failure of market forces justify government participation in economic activities of a country, there are, however, inherent fiscal and economic problems which if not checked will bring about macroeconomic instability. These include: high government expenditure amid dwindling revenue base, persistent fiscal deficits, high public debts, low investments and savings and the subsequent retardation of economic growth.

Governments use taxation, public spending and borrowing power to maintain the desired level of economic activity and to manipulate the allocation of scarce resources to foster growth and equity objectives. At present the relationship between government expenditure and its budgetary resources are important economic issues, especially in developing countries due to poor fiscal performance in most of these economies.

Kenya, like many other governments in developing countries has experienced increasing government expenditures unmatched by revenues, resulting in fiscal and economic imbalances (see Table 1). A number of factors have contributed to the high public expenditure and budgetary deficits including high rate of population growth, government's commitments to meet demands for social services, public sector employment-where the government over the years has become the highest formal sector employer, thus, increasing the share of labour and related costs to 70 percent of total recurrent expenditure (Ndungu, 1993). Other factors include: interest payments on ever increasing domestic and foreign debt, corruption in the civil service, writing off of debts owed by state enterprises and pending bills on stalled public projects have all helped in escalating upwards public expenditure in Kenya. The leakage and wastage of public funds through corruption practices costs the country over 20 percent of annual national budget (Center for Governance and development, 2003).

1.2 Overview of the Government Budget

The Kenyan financial year start at the beginning of July and ends in June the following year. The annual budget outlines the broad economic policies of the government and estimate of revenues and expenditure, and is presented to parliament for consideration and approval in June each year. It involves three types of estimates; the estimates of revenue presented through the Finance Bill and approved in the Appropriation Act. All government ministries prepare these estimates in line with the ceilings for total central government expenditure (determined on the basis of revenue, foreign aid forecasts and deficit target) issued by the Treasury (Njeru, 2003). The Treasury further provides common guidelines for the allocation of available resources including the appropriation-in-aid, which embraces user charges not included in the estimates of revenue and project specific external financing.

If the planned expenditure for the financial year approved turns out to be higher than the expected revenues owing to unforeseen circumstances, the Treasury makes the decision to either cut the proposed expenditures or put in place new revenue measures, or a combination of both. This normally affects the implementation of the third and fourth quarters of the budget (Njeru, 2003).

1.3 THE FISCAL PROFILE IN KENYA

1.3.1 Public Expenditure Growth to GDP

A look at the fiscal operations of the government during the study period, as shown in Table 1, depicts that public expenditure have persistently exceeded the revenues and both have maintained consistent growth pattern.

Table 1: A comparison of budgetary revenues and expenditures in Kenya, 1980-2004 (in million Kenya pounds).

Year	1980/92	1993	1994	1995	1996	1997	1998	1999	2000	2001
Revenue	2732	5498	6759	7433	7564	8621	9256	9636	9964	1121
Expenditure	3363	6504	6595	7631	7804	9070	9017	10199	11280	1235
Overall Deficit	-631	-1007	164	-199	-229	-449	239	-563	-1316	-114
GDP	9581	16681	20036	23264	26331	31047	34948	37446	39446	4104
%Rev/GDP	29	33	34	32	29	30	26	26	25	27
%Exp/GDP	35	39	33	33	30	29	26	27	29	30
%Def/GDP	-7	-6	-1	-1	-1	-1	-1	-2	-3	-3

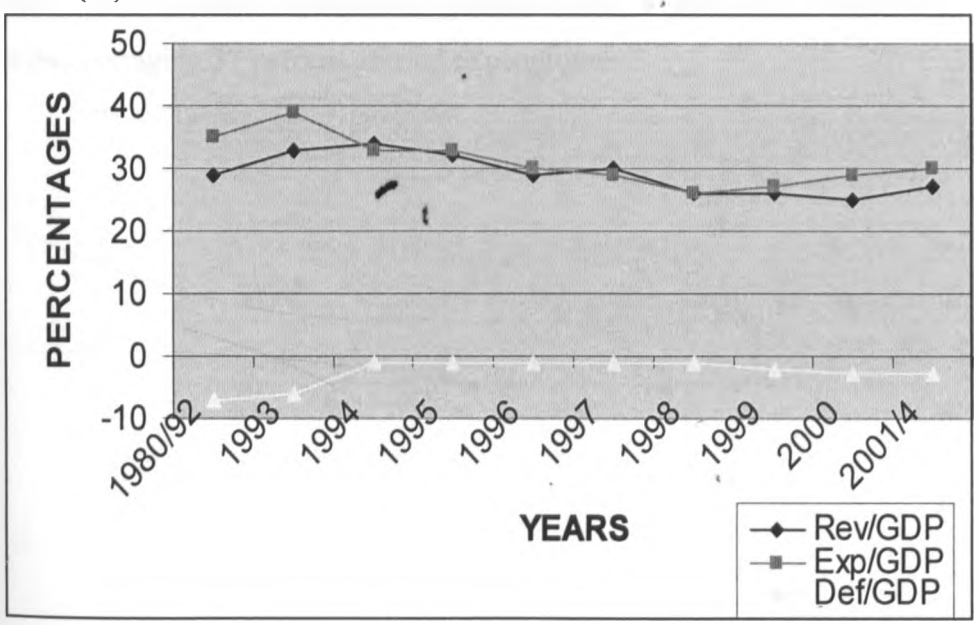
Source: Economic surveys (various issues).

This persistent increase in public expenditure is attributable to increased provision of basic social services by the government to cater for the increased demand due to population pressure. However the growth in public expenditure is most significant during the period 1991 to 1993 when total expenditure almost doubled. During this period the economy went through a state of instability following the clamour for political change in the country. In order to finance an impending multiparty election the government resorted to printing of money and heavy borrowing from the money market. The up short of this action by the government was a huge inflation, heavy budget deficit, and exchange rate

fluctuation. The government expenditure is still on the rise standing at 15.30 billion Kenya pounds as per budgetary estimates of Fy 2003/04. The huge expenditure increase in recent times arose from increased wage bills following review of civil servant salaries, provision of free primary education, interest payments and servicing of domestic and external debts, pending bills and financing of stalled projects.

Equally, revenues have tended to grow with time but at a lower rate than corresponding expenditures, giving rise to generally persistent fiscal deficits. Revenue grew significantly between 1980 and 1995, but a slow growth was experienced between 1995 and 2000. The growth in revenue is mainly attributable to increased taxation, especially in 1990s. Revenue collection also improved in recent times as evidenced by a huge revenue figure of 12 billion Kenya pounds in financial year 2003/04 (see figure 1 for trend). This improvement is as result of initiatives undertaken by Kenya revenue authority to enhance revenue collection through performance management framework and sealing of revenue leakages. The shortfall in revenue is mainly financed through external and internal borrowings.

Fig 1: Budgetary Revenues and Expenditure Trends in Kenya, 1980-2004



1.3.2 Government Expenditure Appropriation

Table 2 shows composition of government expenditures during the period 1980 to 2004, expressed as a percentage of total public expenditure. The budgetary expenditure comprises three main components: recurrent expenditures, development expenditures and payments for consolidated fund services (CFS) and the recurrent expenditures by the treasury. The recurrent expenditure contains primarily the current expenditures by the ministries covering day-to-day normal services by the ministry, wages and salaries, and operation and maintenance, while development expenditure comprises the total expenditures from development projects. Consolidated fund services on the other hand, are payments incurred by the treasury and include debt service (for both domestic and external payments of interest and principal amounts); pensions, salaries for certain constitutional offices; and subscriptions to international bodies.

A review of the composition of the past and current public expenditure reveals that recurrent and development expenditures have not changed much. The composition of recurrent expenditure averaged 49 percent while development expenditure averaged 11 percent during the study period. The composition of consolidated funds services on the other hand has seen tremendous growth from 23 percent in 1980/92 to 36 percent in 2004, averaging 37 percent of total expenditure.

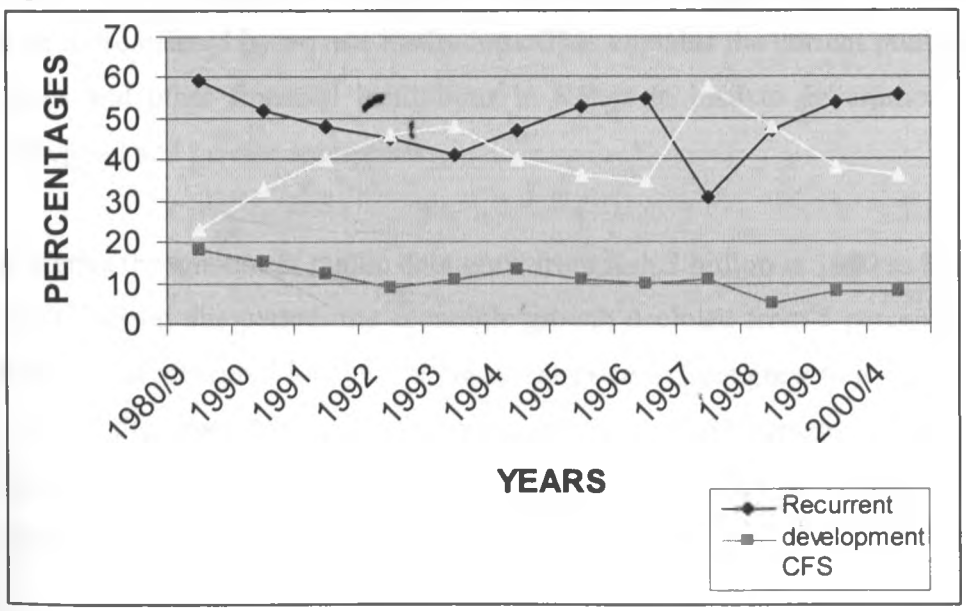
Table 2: Trend of Government expenditures, 1980-2004, (%)

	1980/9	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2001/04
rent nditure	59	52	48	45	41	47	53	55	31	47	54	56
lopment nditure	18	15	12	9	11	13	11	10	11	5	8	8
olidated s Services	23	33	40	46	48	40	36	35	58	48	38	36

Source: Economic Survey (various issues).

Much of the budgetary allocations is used to finance recurrent expenditure and CFS, which account on average 49 percent and 40 percent, respectively. Development expenditure accounts for 11 % over the period under consideration (see figure 2). This skewed allocation of budgetary resources in favour of recurrent expenditure and CFS will have great ramification on the future growth of the economy. The same will also make the burden of public debt less bearable in future as the available resources will then be used in servicing past debt as opposed to meeting current needs.

Fig 2: Trend of Government Expenditure Components in Kenya, 1980–2004(%)



Nagarajan, (1983) pointed out that declining trend of the government's gross fixed capital formation, if left unchecked would result in low productivity, a low rate of return to private capital and generally poor economic performance.

1.3.3 Impacts of Public Debt

A large public debt tends to compromise growth potential of the economy and reduces the range of economic choices available for economic planning. Due to repayments of interest and principal, the country has less money to use in financing public needs (e.g. the construction of schools, provisions of medical services and improvement of infrastructure etc). Secondly, through high taxes, the repayment of the debt burdens not only present, but also future generation of taxpayers.

It has also been noted that excessive borrowings by governments tend to "crowd out" the private sector in the financial markets. Thus, domestic borrowing by the government diminishes credit opportunities/loans for private sector organization from the local financial institutions. An excessive public debt destabilizes the domestic economy through possible increased inflation, and the rise in interest rates on loans to households and companies. Since public debt increases the cost of the investible funds in the economy, it reduces the growth capacity of the economy because government's borrowing instruments (Treasury bills and bonds) are generally considered more secure than those offered by private institutions. This explains the current preference among the banks and other financial institutions in Kenya to lend to government as opposed to individual and private enterprises.

In Kenya the amount of public debt grew from Ksh.2 billion in 1980 to Ksh.568 billion in 2000. During this period, the economic growth declined from 5 percent to –0.3 percent. Inflation as measured by Nairobi consumer price indices grew to a high of 46 percent in 1993, while gross domestic investment shrunk to 15.38 percent of GDP in 2000. Debt servicing cost (interest and principal payments) was 36 percent of total public expenditure in 2004.

In the sub-Saharan African countries, fiscal reforms in the 1980s were geared towards reducing public spending via economic adjustment programs. This was to be accomplished primarily through reduction in total government spending and internal borrowing to reduce deficit mainly due to SAPs and currency fluctuations amongst others. Although these measures are useful in the short-run, they do not address the fundamental issues of fiscal reform needed for sustainable reduction in public expenditure. This is partly because of lack of adequate institutional capacity, the fragility of financial systems and absence of viable alternatives to government involvement in several economic sectors (CIPE, 1999). In addition, the extremely fragile nature of fiscal balance itself exacerbates the problem. The pace of reform has been slow in a number of countries that are implementing adjustment programs. For the Sub-Saharan region as a whole, central government expenditures as a percentage of GDP have actually increased.

The high levels of government expenditures experienced in developing countries have led to growth and persistence of fiscal deficits. These fiscal deficits have been blamed for the economic crisis that beset these countries in the 1980s such as debt crisis, high inflation, poor investment performance and growth. Fiscal deficits financed through domestic borrowing pushes up interest rates, hence, crowding out the private sector from the funds market. If financed through printing of money they propel inflationary pressure within the economy. Experience has also shown that financing fiscal deficit by external borrowing leads to problem in debt servicing if the borrowed funds are used to finance recurrent expenditure.

The fiscal targets of the government have always been to achieve a balanced budget. However, budget deficits have persisted as actual expenditures almost always exceeded budgeted expenditures. Since 1993, with the introduction of the civil service reform program, expenditures have been reoriented with more resources being allocated to non-wage recurrent outlays and development expenditures.

The government through several budget speeches has continued to express commitment to the reduction of the share of government expenditure to the GDP ratio (whose average is over 30 percent, which is a high proportion given the low income levels), at the same time ensuring expenditure is targeted to national development and reduction of domestic debt. Progress in controlling expenditure has been slow, to say the least, with some ministries spending beyond authorized limits (GOK, 1996). Further, the burden of debt servicing has created a new problem for the government in controlling public expenditure. In the fiscal year 2003/2004 the government spent 36 percent of its budget on paying interest and public debt redemption. This phenomenon in government budget is creating a vicious circle for expenditure control efforts on one hand and a possible problem of future debt trap on the other hand.

1.4 Statement of the Problem

Public expenditure in Kenya has tremendously grown over the years despite the government efforts to rationalize expenditure through downsizing and other budgetary measures. Between 1980 and 2004, the government expenditure grew by more than eight times against the sluggish economic growth that limited the scope for additional significant tax revenue growth. Entwined, Kenya's budgetary process rely heavily on external sources of financing, for example, about 42 per cent of the budget for the year 2001 was financed using external related sources of funds in the form of loans and grants on a committal basis, budgetary support and savings from debt rescheduling.

Threatening the budget policy is that the disbursements of such funds are tied to the fulfillment of certain conditions on the part of Kenya government, failure to which may result in a total withdrawal of donor funds that is detrimental to government expenditure. For example, in the years 1982, 1992 and 1997, Kenya suffered a big blow on foreign aid freeze resulting into heavy domestic borrowing particularly in the year 1993; it was unable to neither increase the already high tax rate in the ailing economy nor cut it s expenditure to a bare minimum. Standing out, is the problem of high interest rates on private borrowings and the accumulated interests which are quite hefty for the country to service. Currently, for example, public debt stock stands over Ksh700 billion and interest cost and debt redemption take over 30 per cent of total national expenditure (IEA-Kenya, 2005). The huge stock of public debt has become a major national concern with the little resources necessary to develop the country channeled in debt servicing, further arising with the issue of lobbying for debt cancellation in Kenya.

Additionally, the expenditure pattern has not been most prudent either. A huge chunk of budgetary resources are used for financing recurrent and debt servicing at the expense of capital expenditure, thus, jeopardizing future economic growth.

Against these issues, questions arise as to whether a high and growing public expenditure is tenable in view of rigid budgetary resources. This study examines the impact of each budgetary resource on public expenditure growth in Kenya.

1.6 **Hypothesis Testing**

The study attempts to address the hypothetical research questions.

1. Are the factors used in the model affecting public expenditure growth?
2. Are there any other variables that have significant effect on public expenditure growth?

1.7 Objective of the study

The aim of this study is to examine the determinants of public expenditure growth in Kenya. The specific objectives are to:

1. Analyze government budgetary resource composition.

2. Examine the impact of the government budgetary resources on public expenditure growth.

3. Based on 1 and 2 above, recommend appropriate policy measures on public budgetary resource management.

1.8 Significance of the study

Kenya's public expenditure as a ratio of GDP has grown more rapidly than the ratio of tax revenues by 30 per cent to 27 per cent respectively. This has resulted in fiscal deficits, which stood at an average of 3 percent between 1980 and 2004. Such developments have been accompanied by more rapid growth in real public consumption than capital formation, high inflation and relatively low real interest rates. Such indicators do not augur well for private sector investment.

In order to meet the interest obligations on both domestic and external loans, the government relies on the regular flows of revenue raised through taxes. However since this source of government revenue is equally unpredictable and depends on the general level of economic activity, budget deficits tend to grow rather than reduce every year. In such circumstances further borrowing becomes inevitable. Whereas the concerted efforts

by the government to enhance compliance in Kenya have yielded remarkable tax collection during financial year 2004/05, estimated Ksh.221 billion as at end of march 2005 (GoK, 2005), there concerns that the shrinking levels of gross domestic investment could in the future limit the capacity of the government to mobilize higher tax revenue. The country's gross domestic investment has been declining from 15.38 percent in 2000 to 13.4 percent of GDP in 2003. The government is therefore faced with enormous fiscal challenges that stem from heavy public expenditure vis a vis a highly vulnerable resource base. In its economic recovery strategy document for wealth and employment creation for period 2003 to 2007, the government plans to reform budget and public expenditure practices. The government intends to tighten fiscal policy by undertaking reforms on both tax revenue and public expenditure. In the area of public expenditure, the government priorities are to reduce the huge budget deficit; refocus expenditure from recurrent to development, operations and maintenance as well as poverty programmes: importantly, reduce the wage related expenditures to 8.5 percent of GDP by fiscal year 2005/06. The government is also concerned about the high level of domestic debt and associated interest rates which has significantly contributed to the weak economy.

The results of this study may be useful to the Kenyan Government in its budgetary process and public expenditure reform efforts. The study will also be useful to scholars and researchers who might have an interest in developing the findings further or taking other related field in public debt and public expenditure; and as a source of reference. Finally, the study will be useful to the planners in the effective budgeting of revenue collected and its' control without factoring in public debt as a necessity for proper public resource management

CHAPTER TWO: LITERATURE REVIEW

2.1 Theoretical Literature

High public expenditure is essential in developing countries to enhance and sustain a steady rapid economic growth. In doing so this countries need to supplement their domestic revenue through external and internal financing as their economies cannot generate enough revenue to support these high expenditures.

Pfefferman, (2001), recommended that financial assistance inform of loans to developing countries should be directed to areas that will improve business environment, because such loans will invigorate their economies and provide more opportunities for people to escape from poverty. There is also broad agreement that policies aimed at improving basic education and healthcare can both increase economic growth and reduce poverty.

In agreement, Denison (1962) and Schultz (1961) advocated for more spending on education and health care. Though government has now been replaced by the market as the engine of growth, the old legacy still remains and has not been easy for sub Saharan African countries to drastically reduce government expenditures. It now costs more to run government than when the present industrial economies were developing. Today Nations need more public health specialists, well-equipped military sub-sector, more policemen, more extension workers, more primary school teachers etc. All these translate into an expanding public sector.

Tait and Heller (1982); Heller and Diamond (1990) demonstrated that demographic changes are positively associated with the government spending on health, education and social security. Equally, based on sources public expenditure growth in Nigeria (Ekpo, 1995) concludes that ideology, bureaucratic controls, demographic changes, income elasticity of demand of public goods, increasing cost of government production, foreign aid and foreign advice have significant factors in explaining the growth in public expenditure.

Kirori and Ali (1965) in their study on "macroeconomic implication in Kenya" revealed that demographic changes in real per capita income, relative price of public to private goods, external debts obligation and rate of urbanization influence growth of some of government expenditure category in Kenya.

Ndungu (1995) in his study "Government budget deficit and inflation in Kenya" identifies factors such as high population growth rate, public sector over employment, interest repayment on domestic and foreign debt and a narrow tax base as the cause of rising expenditure in Kenya.

Notwithstanding, Wessel, (1989), contends that achieving sustainable economic growth and escaping poverty trap objectives is a mere dream; as official creditors loan the money to further political and social goals rather than economic gains and thus much less importance to loan repayment. The impact is poor credit worthiness of this countries and high public expenditure in form of accumulated interest in debt repayment.

World Bank, (1994), acknowledged that interest payments had been weighing heavily on the budget in the recent years, averaging 24.4 percent of the budgetary expenditure in the fiscal year 1991-93. If annual debt redemption amounts are in included, total debt service accounted for 48 percent of budgetary expenditure in the FY 1990 and 1993. This compares unfavourably to 13 percent in the fiscal year 1980 to 1983. This heavy debt service had serious adverse implications on the allocation of government expenditure and the economic growth process. In terms of functional allocation, total government expenditure role by 88 percent in real term from fiscal years 1980-1982 to fiscal years 1991-1993. However, most of this was accounted for by the dramatic rise in payments for consolidated funds services (CFS) made up mainly of debt service increased by more than five folds. They further pointed out that expenditure on economic services fell below the needs for promoting rapid economic growth. A significant imbalance between personnel and non-wage operations and maintenance expenditure was pointed out with serious ramifications to efficiency and productivity in the economy.

ECA, (1989), posits that the weaknesses in Africas' productive base, the predominant subsistence and exchange nature of the economy, dominance of external sector and its openness have left it vulnerable to external dependence shocks. The outcome is falling terms of trade, dependence on primary products, declining demand for africas' export, instability in export earning tendencies, fluctuations in investment and growth, dependence on domestic and external finance, rising international interest rate and external indebtedness; above all the general increase in public expenditure.

On the same note, Adams, (2003), observes that SSA external debt stock which was $84.1 billion in 1980 had jumped to $164.9 billion in 1988 and to $223.3 billion in 1995. However, in 1997 it dropped to $211.2 billion. He noted the rapid increase in foreign debt in 1980s due to sharp growth in government expenditure.

Ajayi, (1991), further adds that the over ambitious development projects, fall in primary commodity prices, world trade, economic recession, oil price shocks, high international interest rate, low domestic savings, over-lending, currency over-valuation, borrowing from private sources amongst others have accelerated government expenditure.

2.2 Empirical Literature

Njeru, (2003) used a utility model to analyze the government response to aid flow fluctuations and aid freezes. He assumed that a recipient country aim to maximize the social welfare of its own citizen in the face of budgetary constraints and uses aid flows from overseas as an instrument in pursuit of the objective. He assumed that the government purchases some minimum quantity of two types of public goods; non-development (G_{nd}) and development (G_d) for the citizen. Thus specifying the multiplicative utility function; Maximize $U(Gnd, Gd) = Gnd^{\alpha} .Gd^{1-\alpha}$

The findings revealed a strong and significant positive relationship between total government expenditure and foreign aid using the ECM model. A shilling increase in ODA leads to 88cents increase in government expenditure. On the other hand, the positive and significant coefficient of domestic resources indicates a unit increase in

domestic resources result in government expenditure by 1.12 points. Finally, the dummy variable for aid freeze intensity was statistically significant and affected total government spending negatively. Depicting the intensity of foreign aid dependence in the budgetary process.

Adam, (2003) study on external debt, economic growth and poverty reduction in Sub-Saharan Africa assumed a neo-classical production function; using cointegration/ECM approach in testing the short-run dynamics and long-run equilibrium relationships of the variables. He used simultaneous model of analysis to capture the complex and indirect relation that existed between the variables. The model allowed for a two-way interaction between GDP growth and investment ratio; as well as debt overhang. In identification and computation of the equation, Econometric Views (E-views) was employed. The results depicted that both debt-income ratio and debt service ratio have a strong negative effect on GDP growth rates, implying that debt overhang hypothesis is substantial in SSA countries. The debt service ratio and lending rate comes out as the coefficients with the highest elasticities. The magnitude of debt service ratio coefficient is elastic with respect to social spending. Lastly, GDP growth has unexpected significant inverse relationship with public spending on social goods and services which are not enough to stimulate growth in SSA economies.

Busari and Obi, (2003) used a general equilibrium model (GEM) to determine the fiscal policy and income distribution on the various productive sectors and income groups in the economy. He assumed an economy with five production sectors, two factors of production and eight consumer groups; the government does not produce goods and services. Findings reveal that public expenditure on goods and services consumed by the poor greatly increased the income and consumption of the poor. He noted that 5.63 per cent of the rural workers crossed poverty line, while about 1 per cent of the urban low education crossed. However, about 4.09 percent of rural small landowners crossed the poverty line. In respect of low GDP in developing countries external and internal financing is needed to raise public expenditure to achieve a sustainable level of economic growth.

2.3 Overview of Literature

The study of (Njeru, 2003); laid more emphasis on government expenditure linkage to foreign aid. This greatly ignored the domestic borrowings significance in Kenya during the aid freeze period 1982, 1992 and 1997; which is an important factor in government expenditure. Notwithstanding, his work is crucial in understanding the portion of aid that is fungible and also the impact of aid freeze on government budgets given that the government always factor in donor funds into the annual budgets.

On the other hand, Adam, (2003) study was too broad as it dealt with external debt, economic growth and poverty reduction. Like (Njeru, 2003), he focused only on external debt completely leaving out internal debt; though having strong impact on economic growth and poverty reduction. Even having noted from the findings the magnitude of debt service ratio and lending rate comes out with the highest elasticities, Implying, that the debt service ratio if high leads to low public spending on social goods and service. Withstanding, he did not see the domestic debt to constitute part of the debt service ratio equally affecting public expenditure.

Busari and Obi, (2003) study was not specific on the issue of public expenditure and public debt. His work was more on fiscal policy effects on the various productive sectors and income groups in the economy. The study emphasized on public expenditure on goods and services for the consumption of the poor to be significant in elevating the poor above the poverty line. Despite the importance of external and internal financing in the developing economies; the study did not show the importance of these sources of finance in achieving this objective of poverty reduction. Nonetheless, the study is inline with (Adam, 2003) study that increased public spending is crucial in reducing poverty.

Finally, most studies concentrate on the impact of public expenditure on economic growth; and external debt on economic growth and poverty reduction. The study of (Njeru, 2003) is an enrichment to my study though concentrating on foreign aid and public expenditure. However, my study differs in the following aspects; one, tax and

domestic borrowing will not be treated as sum of government revenue; secondly, we will ignore foreign debt fungibility; thirdly, the study period will be 25 years beginning 1980-2004. During this period public expenditure in Kenya experienced tremendous growth in absolute terms from Kenya pounds 972 million in 1980 to Kenya pounds 23397 million (Economic Surveys – various issues).

CHAPTER THREE: METHODOLOGY

This section presents theoretical framework, specify the model for estimation and describe the data and its source. The methodology employed will trace the relation between public expenditure and various components of the expenditure, including expenditures on public debt.

3.1 Theoretical framework

In an attempt to establish the determinants of public expenditure growth, The Keynesian consumption function is assumed. The consumption function is of the form given below.

$C = \acute{c} + cY$.....(1)

Where C is consumption, $\acute{c}$ is autonomous consumption, cY is consumption dependent on income, Y is income.

Equation 1 states that consumption is determined by autonomous consumption and income level. Foreign borrowings allow a country to maintain domestic and economic growth at levels beyond those that could be financed through domestic savings. At the same time, it facilitates recurrent expenditure growth that may not be met by the current level of national income. Thus, public debt helps to finance the development of both the physical and human capital. Therefore, a debt augmented Keynesian consumption function could be put as:

$C = \acute{c} + cY + cD + cZ$ .....(2)

Where cD is consumption dependent on public debt stock and cZ represents other variables determining growth in public consumption.

Equation 2 establishes the relationship between public debt accumulation and consumption. If debt is spent wisely on viable and productive activities, it will enhance

growth and vice-versa. On the other hand, better or effective government spending will also influence output growth. In addition too much debt can be harmful as it creates debt servicing difficulties and unsustainable public expenditure. This is because the debt has to be serviced from a level of output that may not have recorded any substantial increase.

Lagged values of the variables are important explanatory variables in most economic relationships. Because economic behaviour in any one period is to a great extent determined by past experience and past patterns of behaviour (Koutsoyiannis, 1991). Thus, current level of consumption depends on past levels of consumption due to 'habit persistence', on current income and past levels of income and other factors. Hence the consumption function is restated as follows

$C_t = f(C_{t-1}, Y_t, Y_{t-1}, X_{1t})$.....(3)

Where C_t is current consumption level, C_{t-1} is previous consumption level, Y_t is current income, Y_{t-1} is previous income and X_{1t} is other factors in the previous year.

3.2 The Empirical Model

The model takes the lead from Adam (2003), Njeru, (2003), Ndekwu (1998); Ajayi and Iyoha (1998). The relationship between public expenditure growth on investment, social spending and public debt is given as follows:

$PEG = f(REV,EXD,IND)$ .....(4)

Where PEG is public expenditure growth, REV is revenue, EXD is external debt, IND is internal debt. Since the current public expenditure depends on the previous year expenditure, introduce time factor, t, and state equation 5 as:

$PEG_t = f(REV_t, EXD_t, IND_{t,})$ .....(5)

Where (t) is the current time period. Thus, our specific model is stated:

$PEG_t = a_0 REV_t^{a1} EXD_t^{a2} IND_t^{a3}$ ..... (6)

Log linear model is used to estimate the model. By introducing logs on both sides of equation 6, the empirical model to estimate is specified as follows:

$\ln PEG_t = a_0 + a_1 \ln REV_t + a_2 \ln EXD_t + a_3 \ln IND_t + \epsilon$.....(7)

Where a_i are the coefficients to be estimated and e is the error term. OLS is used to estimate the determinants of public expenditure after conducting normality, stationarity, cointegration, and diagnostic tests for the time series data. Detailed descriptions of the variables being estimated are as follows:

3.2.1 Definition of Variables

Dependent Variable

PEG is public expenditure annual growth in million Kenya pounds for 25 years, 1980 to 2004. Measured as a ratio of total of recurrent expenditure, development expenditure and consolidated fund services to the GDP.

Independent Variables

REV is the Government revenue (sum of tax and grants) in million Kenya pounds. Measured as a ratio of government revenue to GDP. It is assumed that if the government revenue increases, public expenditure increases i.e. a positive relationship.

EXD is the external debt financing in million Kenya pounds. Measured as a ratio of external debt to GDP. It is assumed that if external debt increases, public expenditure will increase i.e. a positive relationship.

IND is the internal debt financing in million Kenya pounds. Measured as a ratio of internal debt to GDP. It is expected that if internal debt increases, public expenditure will increase i.e. a positive relationship.

3.2.2 Lagged Independent Variables

Lagged Revenue (DREV-1)

Lagged External Debt (DEXD-1)

Lagged Internal Debt (DIND-1)

3.3 Data Types and Sources.

This study will make use of time series secondary data available in the already existing government publications for the period 1970-2004. These include: Statistical abstracts, Economic surveys and Budget Reports from the Central Bureau of Statistics of which Recurrent expenditure data, development expenditure data, revenue data, budget deficits data, debt interest rates data and consolidated fund services data. World Bank published reports and other International Aid Agencies Report will also be used to compare with the domestic data for the sake of data authentication. Great care will be exercised in ensuring that only relevant data will be used. This is in appreciation of the fact that secondary data has limitations that we may not verify their accuracy and the underlying assumptions for different data sets

3.4 Limitation of the study

The issues of foreign debt aid freeze periods and' averaging of domestic debt are the eminent problems that will affect the.findings of the study.

3.5 Study Hypothesis

After fitting the data on the above described model, hypothesis tests are to be carried out to assess the significance of the variables in question so as to get answers for the research questions. In order to carry out the test of significance on the estimated coefficients (a), the null and alternative hypothesis (H_o and H_1 respectively) are set as follows:

1. H0: $a_1 = 0$, Implying that government revenue, internal debt and external debt has no effect on public expenditure growth.

   H1: $a_1 \neq 0$, Implying that the variables have significant effect on public Expenditure growth.

The t-value is used to reject or accept the null hypothesis. Rejecting null hypothesis implies that the coefficient in question is significantly different from zero, hence statistically significant. Accepting null hypothesis implies that the coefficient in question is significantly equal to zero, hence statistically insignificant.

CHAPTER 4: RESULTS AND DISCUSSIONS

This section uses data from various economic surveys from the central bureau of statistics (CBS). The data covers 25 years beginning 1980 to 2004. E-views econometric computer package is used in the data analysis.

4.1 Descriptive Statistical Analysis

Data for 25 years on public expenditure was analysed. Descriptive statistics of these data are presented in Table 4.1 in their level form.

Table 4.1: Summary of descriptive Statistics

VARIABLE	MEAN	STANDARD DEVIATION	MINIMUM	MAXIMUM
Expenditure	6013.20	4177.40	972	12354
Revenue	5229.88	4097.99	702	11210
External debt	8330.08	6923.36	500	18283
Internal debt	3436.20	3975.15	357	10591

The mean (average) public expenditure per year is estimated at K£6013.20 million with a standard deviation of K£4177.40 million. The standard deviation, which measures variables dispersion from the mean is jointly small hence an indication of data reliability. Revenue, External debt and Internal debt whose individual mean records are K£5229.88, K£8330.08 and K£3436.20 have equally a low standard deviation of K£4097.99, K£6923.36 and K£3975.15 respectively. More descriptive analysis are shown in Appendix 6.

4.2 Normality Test

The data was tested if the variables were normally distributed. This is necessary for conducting the statistical tests of significance of the parameter estimates and for constructing confidence intervals. If this assumption is violated, the parameters statistical reliability cannot be assessed by the classical tests of significance (t, F, etc) because they are based on normal distribution. Jarque-Bere test indicated normal distribution in the data as it was higher than the probability as shown in Table 4.2. The test helps accept or reject the hypothesis i.e. if Jarque Bera test is greater than the computed probability, accept the hypothesis and; if Jarque Bera test is less than the computed probability reject the hypothesis.

Table 4.2: Jarque-Bera test

	Public Expenditure	Revenue	External debt	Internal debt
Jarque-Bera	2.320837	2.939488	2.787252	5.590961
Probability	0.313355	0.229984	0.248174	0.061086
Observation	25	25	25	25

Source: Computed

4.3 Stationarity Test

Augmented Dick-Fuller (ADF) test is used in determining stationarity state. This is conducted to determine if the variables behavior in any one period is to a great extent determined by past experience and past patterns of behaviour. The Dick-Fuller test accepts computed probability less or equal to 0.05 and rejects the computed probability more than 0.05. The individual variable data were tested for non-stationarity at their zero level.

Table 4.3 Unit Root test for Public Expenditure

ADF Test Statistic -2.560134	1% critical value –4.3942
	5% critical value –3.6118
	10% critical value –3.2418

Variable	Coefficients	t-values
PE (-1)	-0.31164	-2.560134
		(0.0182)
Constant	-98.31873	-0.396623
		(0.6956)
Trend (1980)	189.1349	2.713923
		(0.0130)
R-squared	0.26676	(0.038467)
F-statistic	3.820	-

Figures in the parenthesis are the probability values.

From Table 4.3, Public expenditure is non-stationary since the ADF test statistic is greater than the critical value at 1%, 5%, and 10% levels. The Public expenditure trend is of significance since the probability value is less than 0.05. This trend is also shown in Appendix 2.

Table 4.4 Unit Root Test for Revenue

ADF Test Statistic -2.0387	1% critical value –4.3942 5% critical value –3.6118 10% critical value –3.2418	
Variable	Coefficients	t-values
REV (-1)	-0.189	-2.0387
		(0.0543)
Constant	-103.1793	-0.3972
		(0.6952)
Trend (1980)	118.6024	2.2679
		(0.0340)
R-squared	0.2063	(0.08834)
F-statistic	2.7297	-

Figures in the parenthesis are the probability values. Ibidi-pg27

Table 4.5 Unit Root Test for External debt

ADF Test Statistic -2.8034	1% critical value –4.3942 5% critical value –3.6118 10% critical value –3.2418	
Variable	Coefficients	t-values
EXD (-1)	-0.495	-2.8033
	t	(0.0106)
Constant	-1233.75	-1.2749
		(0.2162)
Trend (1980)	471.45	2.7977
		(0.0108)
R-squared	0.277	(0.0331)
F-statistic	4.0239	-

Figures in the parenthesis are the probability values. Ibidi-pg27

Table 4.6 Unit Root Test for Internal debt

ADF Test Statistic -1.7248	1% critical value –4.3942 5% critical value –3.6118 10% critical value –3.2418	
Variable	Coefficients	t-values
IND (-1)	-0.2393	-1.7248 (0.0992)
Constant	-645.16	-0.9147 (0.3707)
Trend (1980)	145.82	1.9736 (0.0517)
R-squared	0.1586	(0.1630)
F-statistic	1.9794	-

Figures in the parenthesis are the probability values. Ibidi-pg27

Tables 4.4, 4.5 and 4.6 show the unit root tests for revenue, external debt and internal debt respectively. Their ADF test statistic is greater than the critical values at 1%, 5% and 10% critical value confirming that the variables are non-stationary. All the variables have a significant trend since the trend probability value is below 0.005. More on trend is shown in Appendix 3, 4 and 5 respectively.

4.3.1 Trend Elimination

To be able to regress the variables, they must be stationary to remove the trend. This can be done by differencing the individual variables. The results are shown in Appendix 8, 9, 10 and 11 respectively.

After differencing the individual variables in Appendix 8, 9, 10 and 11 respectively, the Augmented Dick-Fuller Test Statistic is less than the critical values at 1%, 5% and 10% levels respectively, implying the variables are stationary. Trend has been eliminated with the R-squared and individual variables probability values assuming a zero value.

4.4 Cointegration Test

To determine if variables are cointegrated, the residual value of public expenditure is generated. This will show if the variables tested for stationarity are cointegrated and more important give the error correction model (ect). The ect is favoured in error correction model .The result showed that the variables are cointegrated with the ADF less than critical values as indicated in Table 11.

Table 4.7: Cointegration Test for Public Expenditure, Residual

ADF Test Statistic -5.8742	1% critical value –4.4167 5% critical value –3.6219 10% critical value –3.2474	
Variable	Coefficients	t-values
RESDPE (-1)	-1.2779	-5.8724 (0.000)
Constant	-111.07	-0.5063 (0.6182)
Trend (1980)	9.4341	0.6248 (0.5391)
R-squared	0.6337	(0.000)
F-statistic	17.3047	-

Figures in the parenthesis are the probability values.

4.5 DIAGNOSTIC TESTS

To regress the model it is equally important to test for its stability. In determining this state, White Heteroscedasticity test and autocorrelation test is used to diagnose the model.

4.5.1 White Heteroscedasticity test

A model is said to be heteroscedastic if its error term probability distribution does not remain the same over all observations, and in particular that variance of each error term is not the same for all values of the explanatory variable. If this arises, the estimation will

not be reliable. For homoscedasticity of the variables, the joint probability (F-statistic) must be less than 0.5. The results in Table 4.8 indicate our model is not heteroscedastic hence reliable.

Table 4.8: Whites Heteroscedasticity test

F-Statistic	2.1900	Probability	0.09073
Observed R-Squared	12.9299	Probability	0.1142

4.5.2 Autocorrelation test

Durbin Watson test is not enough for testing for long-run model. The model depicts no serious problem of autocorrelation as shown in Appendix 7 in both the autocorrelation and partial correlation section.

4.6 Regression Results

The model met all the requirements for regression after conducting normality, stationarity, cointegration and diagnostic tests. The estimation results of the model are presented in Table 4.9. The table shows OLS structural regression results with public expenditure growth as dependant variable, while revenue, external debt and internal debt are treated as exogenous variables.

Table 4.9: Regression results on determinants of public expenditure growth

VARIABLE	COEFFICIENTS	t-values
Revenue (DREV)	0.582924	1.808164 (0.0938)**
Lagged Revenue (DREV-1)	0.176706	-0.600962 (0.5582)
External debt (DEXD)	-0.045290	-0.462246 (0.6515)
Lagged External Debt (DEXD-1)	-0.117513	-1.36246 (0.0678)**
Internal debt (DIND)	0.124030	1.011236 (0.3304)
Lagged Internal Debt (DIND-1)	0.163091	2.149273 (0.0500)*
Constant	397.0673	2.0902 (0.0568)
Error correction term (ect)	-0.065303	-0.1831 (0.8575)
R-SQUARED	0.5602	(0.3106)
F-statistic	1.3306	-

- Statistically significant at 5% level of significance

** Statistically significant at 10% level of significance

Figures in the parenthesis are the probability values

From the results, 56% of the variations in public expenditure growth are explained by the independent variables in the model as indicated by the R-squared. Thus, the model has a fair explanatory power. In addition, the variable parameters are jointly significant, (p-value –0.3106) with F-statistic of 1.33.

The estimates confirm expected positive effect of Internal debt on public expenditure growth. The effect is found to be significant at 5% and 10% level of significance. The results revealed that a K£1 increase in internal debt results in an increase in public expenditure by K£0.163. In other words K£10 rise in internal debt results in public expenditure growth by K£1.63. The strong positive relationship between internal debt on public expenditure growth may be explained by the fact that internal borrowing costs are low and it is easily sourced domestically, thus, indicating that the government rely heavily on internal borrowings to finance additional expenditure.

The findings on government revenue confirm the intuitive expected result of positive effect. The effect of government revenue is significant at 10% level. The results depict that a K£1 increase in government revenue results in K£58 increase in public expenditure. Alternatively, a K£10 increase in government revenue results into K£580 increase in government expenditure. This is consistent with the economic theory of demand.

On external debt financing, the expected positive relationship on public expenditure was negated. The effect of external debt is significant at 10% level. The results revealed a strong negative relationship on public expenditure, implying that debt overhang hypothesis is substantial in Kenya. This finding is in agreement with (Adam, 2003), whose debt service ratio had a strong negative effect on GDP and with coefficients of highest elasticities. The results indicate that a K£1 increase in external debt financing results into a K£0.117 decrease in public expenditure. In other words, a K£10 rise in external debt leads to a K£1.17 fall in public expenditure. This could be due to high debt

servicing cost where fresh borrowings are mainly used to service the existing huge external debt.

CHAPTER 5: CONCLUSIONS AND POLICY RECOMMENDATIONS

5.1 Conclusions

The main objective of the study was to examine the factors influencing public expenditure growth. The determinants subjected to this investigation were the government revenue, external debt and internal debt. In the process of pursuing the main objective, trends were eliminated.

From the study findings, it has been established that internal debt financing does affect public expenditure significantly, (i.e. at 5% and 10% level of significance). The fact that a K£10 increase in internal debt financing, increase public expenditure by K£1.63 is of critical concern.

5.2 Policy Recommendations

In order to address government revenue, external debt and internal debt, the following policy recommendations need to be explored:

1. The government avoids over reliance on internal borrowings for financing public expenditure as this has detrimental effect on economic development due to crowding out of private sector.
2. The government engages development partners in external debt write off efforts so that resources currently expended on debt servicing is freed for use on other economic development agenda. The finding of this study construes an existence of debt overhang.
3. Expenditure rationalization and minimization of wastage of public resources.
4. Adequate allocation of resources to capital expenditure to foster future economic growth.

5.3 Areas of further Research

Internal debt has been established to be more significant in this study. This is particularly striking as revenue was expected to be significant at both 5% and 10% levels as the main source of the budgetary resource. A further study needs to be carried out to establish all government revenues collected indeed go into financing public expenditure.

REFERENCES

Adam, A. J. (2001). "Simulation Analysis of the effects of debts on the Nigeria Economy". Journal of Economics and Allied Field, Vol. 1, No. 2. January.

Ajayi S and Iyoha M (1998). "Debt overhang and debt forgiveness: The case of the severely-indebted low income countries of Sub-Sahara Africa". Journal of Economic Management, Vol. 5, No 1 January.

Bhatia, H.L (2004). "Public Finance". Avon printers, Delhi.

Busari, D. T. and Obi, B. P. (2003). "Fiscal Policy and Income Distribution: Some Policy options for Nigeria". African Journal of Economic Policy. Vol. 10, No 1. June

Denison, E.F. (1962). "The sources of economic Growth in the united states". New York: Committee for economic development.

Devarajan, D. Swaroop, V. and Heng-fu Zou. (1993). "What Do Governments Buy? The Composition of public spending and economic Performance". *World Bank working papers,* wps 1082.

Diamond, J. (1989). "Government Expenditure and Economic Growth: An empirical investigation". *IMF working paper,* 89/45, may.

EKPO, H.A. (1995). "Public Expenditure and Economic Growth in Nigeria, 1960-1992". AERC Research paper, final report, Nairobi, Kenya.

Heller, P and J. Diamond. (1990). "The international composition of Countries, 1975-86". *IMF occasional paper Washington DC.* International Monetary Fund.

IEA-Kenya. "The budget focus". Issue No. 11 April, 2005.

Kirori, G.N. and J. Ali. (1995). "Macroeconomic implication of Demographic changes in Kenya". AERC Research paper, final report, Nairobi Kenya.

Koutsoyiannis, A. (1991). Theory of Econometrics, Mcmillan Education Ltd, Hampshire.

Livingston, I and H.W. Ord. (1980). "Economics for East Africa".. East African Educational Publishers, Nairobi.

Martin, R. and M. Fardmanesh. (1990). "Fiscal Variables and Growth: A cross-sectional Analysis". *Public choice,* vol.64, pp239-51.

Mueller, D.C. (1987). "The Growth of Government: A public choice perspectives". *IMF Staff papers 34*, No.1, march, pp 115-49.

Nagarajan, P. (1987). "Kenya's Fiscal Stance in the Course of Development, 1965-83". Paper presented to AERC, Nairobi, Kenya.

Ndungu, N. (1995). "Government Budget Deficit and inflation in Kenya: An Empirical Investigation". Journal of African development. Vol.2 No.2 December.

Njeru, N. (2004) The Impact of Foreign aid on Public Expenditure: The Case of Kenya. AERC.

Ram, R. 1986. "Government Size and Economic Growth. A new framework and some Evidence From Cross Section and Time Series Data". *American Economic review*, vol.76, No.1, March.

Republic of Kenya. *Economic Surveys*, Various issues, Kenya, Government printer.

Republic of Kenya. *Statistical Abstracts*, Various issues. Kenya, Government printer.

Peacock, A.T. and Wiseman, J. A (1961). " The Growth of public Expenditure in the United Kingdom 1890-1955". Priceton University Press for NBER, Priceton.

Pfefferman, G (2001). "Poverty reduction in developing countries: The role of private enterprises, finance and development". Vol 38. No 2, June

Saunders, P. and Klau, F. 1985. "The Role of The Public Sector: Causes and Consequences of The Growth of Government". OECD Economic studies 4, Spring, pp 5-239.

Wessel, R. H. (1989). "Towards an ultimate solution of Sub-saharan Africas' debt problem". African Review of Money, finance and Banking. Vol 1. pp. 109-118

World Bank (1991). "Adjustment, Lending and Mobilization of private and public Resources for Growth". Washington, DC.

World Bank (1994). "Kenya public Expenditure Review". World Bank, Kenya.

World Bank (1997). "Kenya public Expenditure Review". World Bank, Kenya.

World Bank (1989). "Kenya public Expenditure". Issue Report No. 7508-KE April.

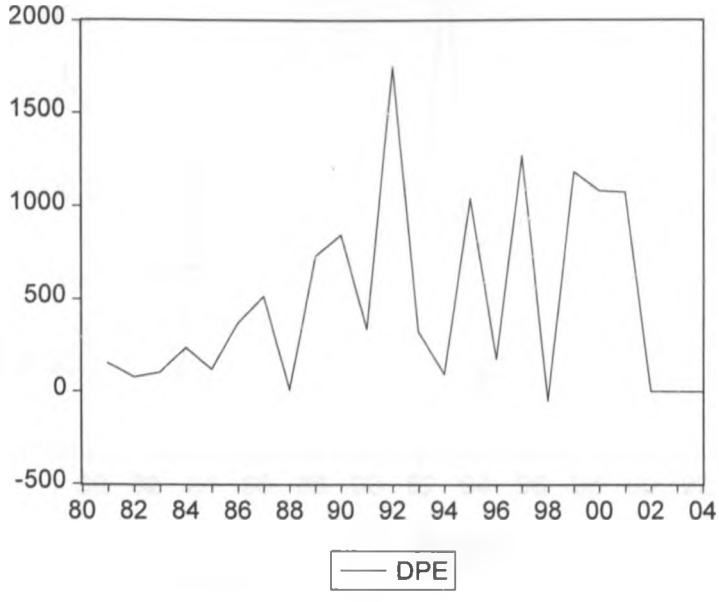
APPENDICES

Appendix 1: Public Expenditure Determinants (K£M)

Year	Public Expenditure	Revenue (Tax + Grants)	Internal Debt	External Debt
1980	972	702	357	500
1981	1122	763	438	648
1982	1197	823	458	859
1983	1296	924	468	1168
1984	1531	1020	678	1532
1985	1648	1210	691	1543
1986	2015	1409	723	2029
1987	2526	1609	717	2281
1988	2533	1890	979	2479
1989	3260	2056	1241	2676
1990	4099	2436	1339	3419
1991	4432	2854	1592	4459
1992	6183	3480	2234	6113
1993	6504	5498	1937	13578
1994	6595	6759	3957	10404
1995	7631	7433	2123	11981
1996	7804	7564	1593	11672
1997	9070	8621	1371	10905
9017	9017	9256	1365	11552
1999	10199	9636	17197	8534
2000	10450	9964	10303	18125
2001	16080	9625	10591	18283
2002	19585	9266	11798	16763
2003	17970	10501	12281	17648
2004	23397	11845	12732	22158

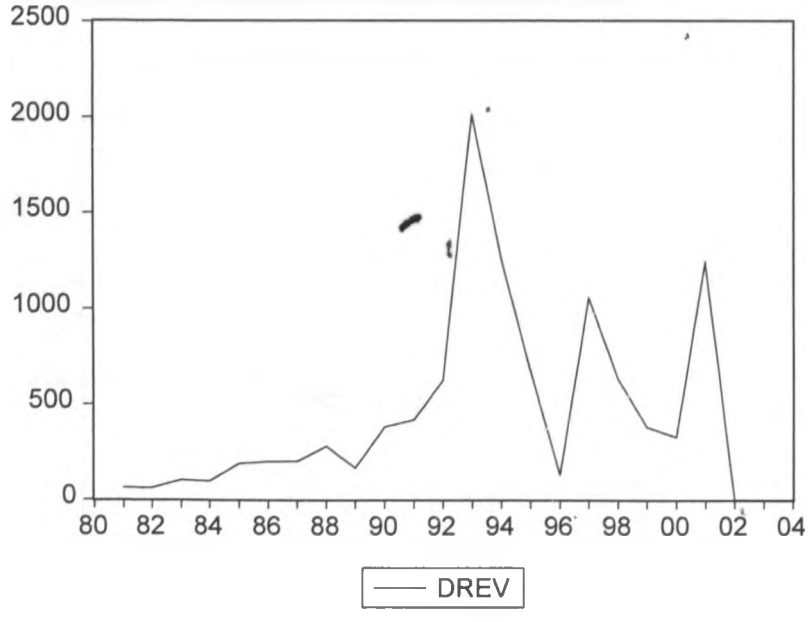
Source: Economic surveys (various issues)

Appendix 2: Unit Root Test for Public Expenditure



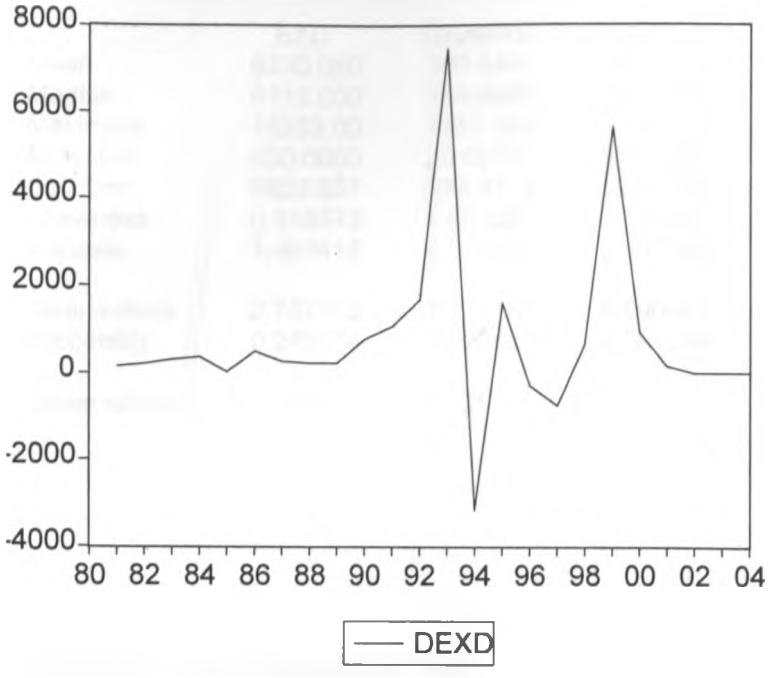
source: computation

Appendix 3: Unit Root Test for government Revenue



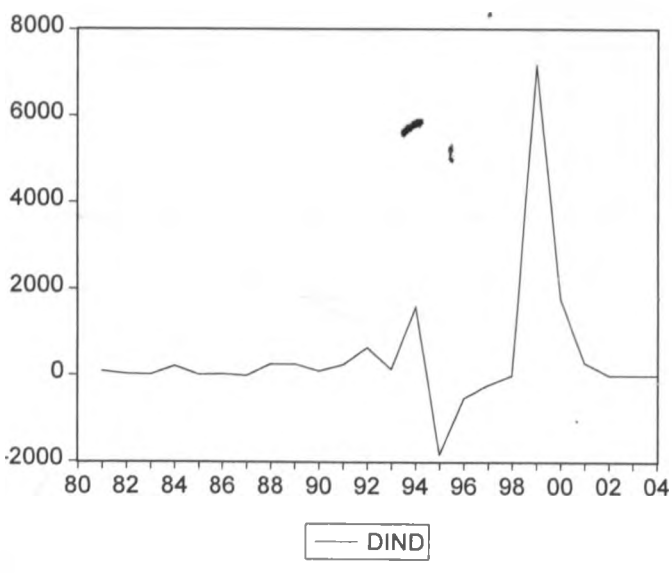
source: computation

Appendix 4: Unit Root Test for External Debt



source: computation

Appendix 5: Unit Root Test for Internal debt



source: computation

Appendix 6: Descriptive Statistics

	EXD	GRANTS	IND	PE	REV
Mean	8330.080	368.6400	3436.200	6013.200	5229.880
Median	6113.000	264.0000	1371.000	6183.000	3480.000
Maximum	18283.00	1317.000	10591.00	12354.00	11210.00
Minimum	500.0000	20.00000	357.0000	972.0000	702.0000
Std. Dev.	6923.357	333.4779	3975.148	4177.395	4097.986
Skewness	0.318573	1.203362	1.124981	0.285727	0.295581
Kurtosis	1.493413	4.074887	2.447740	1.621072	1.427602
Jarque-Bera	2.787252	7.237185	5.590961	2.320837	2.939488
Probability	0.248174	0.026820	0.061086	0.313355	0.229984
Observations	25	25	25	25	25

Appendix 7: Autocorrelation test

Sample: 1981 2004
Included observations: 24

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
.**| . |	.**| . |	1	-0.252	-0.252	1.7200	0.190
. *| . |	. *| . |	2	-0.104	-0.179	2.0255	0.363
. |* . |	. | . |	3	0.114	0.042	2.4133	0.491
.**| . |	.**| . |	4	-0.248	-0.245	4.3312	0.363
. |*** |	. |*** |	5	0.393	0.333	9.4067	0.094
. *| . |	. *| . |	6	-0.154	-0.081	10.224	0.116
.**| . |	.**| . |	7	-0.273	-0.232	12.958	0.073
. |* . |	. *| . |	8	0.125	-0.126	13.572	0.094
. | . |	. |* . |	9	0.000	0.123	13.572	0.138
. | . |	. | . |	10	0.065	-0.056	13.762	0.184
. | . |	. | . |	11	0.027	0.050	13.798	0.244
. *| . |	. |* . |	12	-0.100	0.080	14.322	0.281

Appendix 8: Unit Root Test for Public expenditure on Differencing

ADF Test Statistic -9.522 1% critical value –3.7667

5% critical value –3.0038

10% critical value –2.6417

Variable	Coefficients	t-values
D{DPE (-1)}	-1.6383	-9.522
		(0.000)
R-squared	0.8192	(0.000
F-statistic	90.669	-

Figures in the parenthesis are the probability values.

Appendix 9: Unit Root Test for Revenue on Differencing

ADF Test Statistic -6.0476 1% critical value –3.7667

5% critical value –3.0038

10% critical value –2.6417

Variable	Coefficients	t-values
D{DREV (-1)}	-1.2929	-6.0476
		(0.000)
R-squared	0.6464	(0.000
F-statistic	36.5745	-

Figures in the parenthesis are the probability values.

Appendix 10: Unit Root Test for External debt on Differencing

ADF Test Statistic -8.6811 1% critical value –3.7667

5% critical value –3.0038

10% critical value –2.6417

Variable	Coefficients	t-values
D{DEXD (-1)}	-1.5805	-8.6811
		(0.000)
R-squared	0.7902	(0.000
F-statistic	75.3627	-

Figures in the parenthesis are the probability values.

Appendix 11: Unit Root Test for Internal debt on Differencing

ADF Test Statistic -6.7584 1% critical value –3.7667

5% critical value –3.0038

10% critical value –2.6417

Variable	Coefficients	t-values
D{DIND (-1)}	-1.3909	-6.7584
		(0.000)
R-squared	0.6954	(0.000
F-statistic	45.6761	-

Figures in the parenthesis are the probability values.