



Graduate School of Development Studies

**MACROECONOMIC DETERMINANTS OF
ACCUMULATION OF PUBLIC EXTERNAL DEBT:
THE CASE OF TANZANIA**

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This document represents part of the author's study programme while at the Institute of Social Studies. The views stated therein are those of the author and not necessarily those of the Institute.

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Dedication

In living memory: to my beloved late mother; my strength and hope.

With love: to my dearest wife Cornelia Peter (the love and key to my heart) and our beloved children; Jerome, Valentine and Dominick (the gift from God, spring and stream of my future life).

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To all of you I say "God bless you now and ever".

List of Acronyms

ADB	African Development Bank
ADF	Augmented Dickey-Fuller Test
AfDF	African Development Fund
BOP	Balance of Payments
BOT	Bank of Tanzania
DBS	Debt Buy-back Scheme
DCP	Debt Conversion Programme
DGR	Debt to GDP Ratio
DOD	Disbursed Outstanding Debt
DSA	Debt Sustainability Analysis
ECM	Error Correction Model
EAC	East African Community
ESAF	Enhanced Structural Adjustment Facility
FDIs	Foreign Direct Investments
GDF	Global Development Finance
GDP	Gross Domestic Product
HIV	Human Immunodeficiency Virus
HIPCs	Highly Indebted Poor Countries
IBRD	International Bank for Reconciliation and Development
IFS	International Financial Statistics
IDA	International Development Association
IMF	International Monetary Fund
LDCs	Least Developed Countries
MDRI	Multilateral Debt Relief Initiative
MOFEA	Ministry of Finance and Economic Affairs
NBS	National Bureau of Statistics
NPV	Net Present Value
ODA	Official Development Assistance
OLS	Ordinary Least Squares
RER	Real Exchange Rates
SAPs	Structural Adjustment Programmes
SMEs	Small and Medium Enterprises
TZS	Tanzanian Shilling
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
URT	United Republic of Tanzania

Abstract

This paper analyses the role of some macroeconomic variables in determining debt accumulation in Tanzania from 1975-2008. It establishes a quantitative relationship between public external debt to GDP ratio and some major internal factors (domestic savings and budget deficit) and external factors (trade deficit, interest payments and real exchange rate). The results suggest that, while the external factors are also significant, internal factors seems to play greater part in explaining variations in debt to GDP ratio; implying that the domestic authorities could apply both fiscal and monetary policy tools to control debt accumulation and reduce too much dependence on debt relief and other forms of foreign aid.

Relevance to Development Studies

External debt has been a major global concern regarding poor countries for number of decades. It is a big issue in many LDCs and generally a concern of global finance and world economy at large. This research paper contributes to the discussion on debt literature by analysing factors for debt distress in Tanzania as a typical developing country, from which other LDCs can draw lessons. Therefore, the policy relevance is tackling debt problem from the source and its implications for debt sustainability.

Keywords

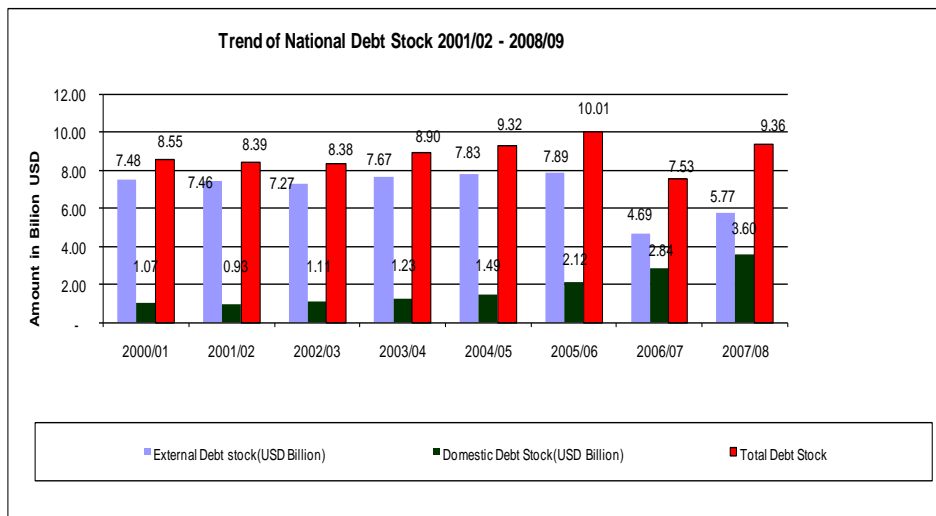
External debt, Public external debt, Debt accumulation/debt burden, Debt sustainability, Tanzania

CHAPTER ONE: INTRODUCTION

1.1 Background

External debt has been a major global concern regarding poor countries for number of decades. Debt burden in terms of export and GDP is the current concern on debt sustainability. This study makes analysis on Debt/GDP ratio over time to discuss factors that are responsible for accumulation of public external debt in Tanzania. Literature covers wide variety of factors, but this study concentrates on testing the relative contribution of few factors; namely budget deficit, domestic savings, trade deficit, interest payments and real exchange rate on debt distress in Tanzania from 1975 to 2008. Statistics indicate that Tanzania has large share of external debt compared to domestic debt in the total debt stock. This is attributed to low level of income and domestic savings, together with high cost of domestic borrowing and weak private sector, weak financial sector and so forth. Figure 1 gives recent status and historical trends are given in chapter 3.

Figure 1: Recent trends in total public national debt stock.



Source: Ministry of Finance and Economic Affairs (DSA, 2008).

Tanzania like other developing countries, has been borrowing foreign funds in order to increase capital stock and fasten its economic growth. Public external debt began to be a problem in most LDCs and in Tanzania in particular in 1970s. The external debt problem which resulted from oil price shocks, rising interest rates on external debt, poor export performance, added to other

factors such as inappropriate policies, drought, political instability such as 1978/1979 Tanzania-Uganda war (Iddi Amin War¹) contributed to the country's overall poor economic performance. In turn, the poor economic performance is also thought to have aggravated the growth of public external debt due to more borrowing and inability of loan repayment, hence accumulation of external debt arrears (Mbelle, 2001).

The problem of external debt is not only Tanzanian, but a big issue in many LDCs and generally a concern of global finance and world economy at large. Economies of developing countries are vulnerable to both external and internal shocks. External shocks include deterioration in terms of trade (i.e. fall in export prices and rise in import prices), fluctuations in global interest rates, contagion, cyclical fluctuations in capital flow² and variation in real exchange rates.

Internal shocks and problems may comprise policy failures that undermine growth of GDP, exports, domestic savings and revenue. In addition, overvaluation of exchange rate contributes to debt problems in LDCs. If inflation is not corrected by a depreciation of nominal exchange rate, the real exchange rate will appreciate and export performance will suffer. In many cases, high level of external debt has made governments reluctant to devalue their currencies. After devaluation, the debt burden in local currency becomes higher. Furthermore, politics are not free from debt problems. Excessive borrowing is often seen an easy option than painful, long term but fruitful economic adjustment. A fiscal measure may be very beneficial in the long run but so long as it may affect the current political affairs, politicians may be tempted to opt for borrowing as a short-term solution.

Ultimately, such shocks and policy failures may lead to problems such as fiscal deficit, trade deficit, low savings and exchange rate fluctuation; necessitating countries to borrow from abroad. If external loans are not directed to productive investments, the debt repayment capacity is constrained and finally debt accumulates. It then becomes a sort of poverty cycle.

A large external debt may have adverse effects in a country. There are a lot of studies which shows that external debt has negative impact on economic growth. Examples are Degefe, (1992) and Mjema, (1996). However, as Degefe (1992) indicated, external borrowing itself has no harm, but rather how funds are spent matters. At some reasonable levels of debt, further borrowing would still be expected to have positive effects on economic growth (Pattillo et al, 2002). The real concern is whether borrowing is consistent with public finance principle which requires that borrowing should mainly be for real productive investment, so that the returns on those investments generate the funds to ser-

¹ *Tanzania fought a boundary war in Kagera region when the then Ugandan Leader Dictator Iddi Amin invaded the region in 1978.*

² *If for example China's economy is booming, investment funds will be going there, and when it is in recession, investors will try to find opportunities elsewhere. The availability of capital for a country may thus fluctuate for reasons beyond domestic influence.*

vice the debt. If borrowing is not for directly productive investments, it would imply that a government will have to increase taxes to repay loans. This is likely to discourage investors and affect investment efficiency and ultimately affect economic growth.

Moreover, even without increasing taxes, larger debt stocks are associated with lower probabilities of repayment and this can lead to worries of debt default and financial crisis (Pattillo et al., 2002). Such a situation is more likely to discourage new investors and lead to capital flight outside a country through what is known as contagion³. Debt problem in a country may cause distress in its financial system, its neighbours and ultimately affect the entire global economy. Examples are the Mexican debt problem of 1982 which spread to the rest of the Latin American countries and later to other regions in the world; Asian financial crisis of 1997/98 and recent debt problems in Greece, Turkey and Spain. But we also know that the long-time indebtedness of HIPCs is still a global concern.

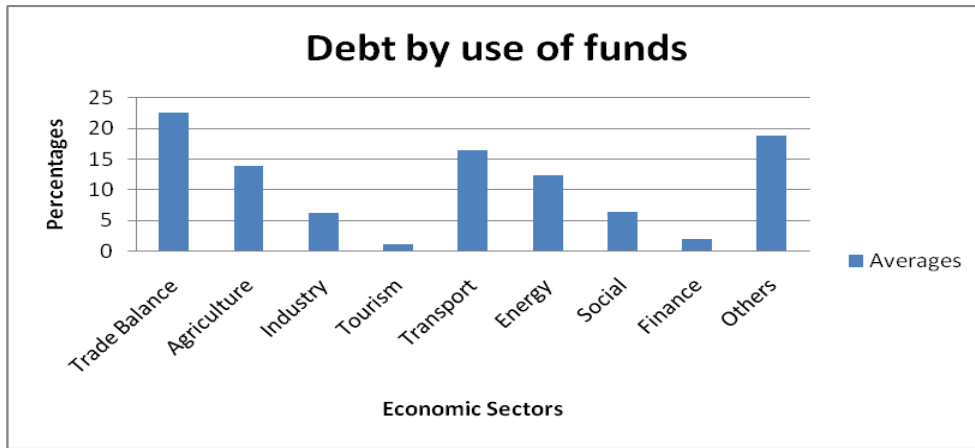
In Tanzania, the external debt problem is more pronounced because the means of servicing the debt, mainly through exports earnings are significantly constrained. The external debt stock has grown steadily, outpacing the growth in export earnings, which are essential for its servicing. By 2008, Tanzanian external debt stock stood at USD 5,938 million. This is equivalent to Tanzanian shillings 8.1 trillion, higher than the total government annual budget for the 2008/09 which was 7.2 trillion. The budget was not even realized by at least 90%. Comparing the ratios, external debt stock to Gross National Income was 29.9%, while the ratio of external debt stock to export was 111.3%. Debt service ratio to export was 1.2%. These ratios are at "sustainable" level according to literature, but not because of improvement in economic performance and increased debt service, but a result of debt relief. Such statistics may be encouraging when one looks at the enhanced 1999 HIPC sustainability ratios. But the realism of such thresholds is questionable because they are not based on empirical economic foundation and they are "one fit for all strategy" while debt burdens are country specific.

The major worry about Tanzania's debt is that it is largely made up of borrowing by the government, which provides public services and not business which could allow for self-generating profits to pay debts. Although some of the loans are for financing infrastructure, there is also a considerable portion going to social sectors, while large share goes to support trade balance (see figure 2). The returns from these sectors take long time and as loan repayment delays, debt accumulates. In 1970s, Tanzanian external debt was only 16.8% of GDP and only 58.6% of exports; better than the current situation. Appendix A provides external debt overview for the period 1990 to 2008. See also Figure 3

³ *Contagion is a situation in which currency, debt or financial crises in a given country spreads quickly to other countries through rumour, expectations, worries resulting from imperfect information (Masson P, 1998 and Kaminsky & Reinhart, 1999).*

for the trends in growth rates of GDP and public external debt from 1975 to 2008 and figure 2 for use of debt funds in major economic sectors.

Figure 2: Public External Debt by use of funds in economic sectors (% of Total DOD) 1994-2008

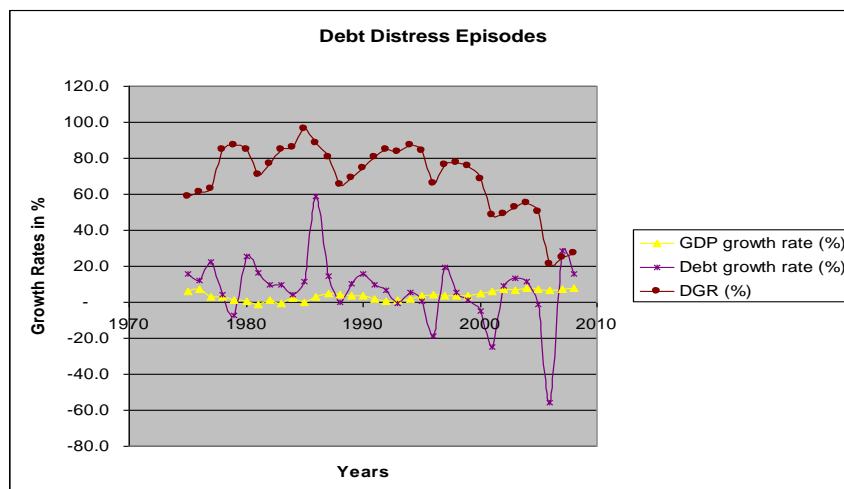


Source: Author's computation based on Ministry of Finance's debt data, (Debt Database-CSDRMS).

1.2 Statement of the Problem

The apparent problem is that Tanzania is still highly aid dependant despite receiving foreign capital through loans and grants for a long time since its independence in 1961. The ratio of public external debt to real GDP is back to increasing trend despite significant debt relief in 2006. Figure 3 provides recent and historical trends in debt distress episodes. The periods of shocks; Ugandan war and oil shocks in 1978, droughts in 1984/85 had significant negative effects while from 2000 -2006 there was significant improvement in the debt to GDP ratios mainly attributed to HIPC&MDRI initiatives as well as general improvement in economic development.

Figure 3: Growth of GDP and Public external Debt to GDP Ratio (DGR)



Source: Own construction from BOT annual data

From figure 3, it can be deduced that the fluctuations in debt are more frequent and higher as compared to GDP growth rate. This means that the distress in the debt to GDP ratio is mainly due to fluctuations in debt stock. In general, changes in debt to GDP ratio are due to changes in debt stock, changes in GDP and changes in exchange rate. Further analysis of trends in debt related variables, budget deficit, trade deficit, domestic savings; growth of exports and imports, interest payments and real exchange rates is done in chapter 3.

From the public finance literature, a country need foreign capital to achieve a targeted growth rate when its income is too low to generate required savings and exports are not sufficient to generate foreign exchange required for boosting growth. This in turn will lead to increase in savings and exports and hence ability to repay debts and keep debt to GDP at sustainable level; and ultimately reduce dependence on foreign capital. However, this has not happened in Tanzania after many decades of borrowing from abroad. The government is still unable to collect enough revenue to finance necessarily expenditure and therefore has to borrow from abroad or ask for more grants from donors.

There is no obvious evidence that expenditure financed with the loans does generate enough growth in GDP and exports to keep the debt to GDP sustainable. Figure 3 shows that there is inherent tendency for debt ratios to rise, while debt sustainability requires such ratios to be consistently stable. Figure 2 shows allocation of loans expenditure. Major productive sectors such as industry and tourism which would generate strong revenue base receives smallest share. Agriculture is rainfall dependent and therefore, there have been losses of resources invested in it due to variability of weather. Transport and energy sectors are not clearly linked to productive areas, and there is enough evidence that investment in those sectors is mainly for service delivery and political interests. Large portion of debt fund goes to import expenditure and other non-productive areas rather than export promotion. The result is that the country has significant debt service obligations and high dependence on foreign aid in form of grants and loans.

High debt service payments may result to crowding out of important government spending such as development projects, health, education and water (Lora & Olivera, 2007). There is already a concern that debt service is crowding out government spending on important services. Prontzos, (2004) indicated that in 1999, Tanzania's debt payment was 4 times country's spending on primary education and 9 times country's spending on health services. Although net transfer on public external debt (see table 3.4.1) has been positive throughout the period 1975 to 2008, suggesting that debt service doesn't constrain spending in other sectors, the contribution of foreign borrowing in economic growth is not certain because the country is still highly aid dependent(see figure 6 and table 3.6.2.4).

For a long time, the world has been introducing several measures to deal with the debt problem. Some of the global initiatives include the Baker Plan (1985) of debt rescheduling, the Brady Plan (1989) of debt cancellation, Bilateral debt relief initiatives, Paris Club debt rescheduling & cancellation, HIPC's in 1996 and MDRI in 2006. Tanzania's domestic initiatives include Debt Con-

version Programme (DCP) and Debt Buy-back Scheme (DBS). Despite such measures, the stock of public external debt is still increasing in Tanzania even after big debt relief in 2006. It can be noted that, there are concerns from the donor or development partners that debt problem is due to weak institutions and policies in LDCs, claiming that LDCs have everything at their disposal to solve debt and other developmental problems. On the other hand, other schools of thought especially activists in LDCs are claiming that foreign borrowing is externally influenced.

This study analyses factors that are responsible for accumulation of external public debt to complement debt reduction initiatives and make the responsible parties to consider such factors in implementing such initiatives. Literature covers wide range of both domestic and external factors to explain foreign debt accumulation in different periods and countries. They include external shocks, floating exchange rates, interest payments, balance of payment problems, low domestic savings, governance indicators such as corruption and bureaucratic quality and inefficient policies (see Maxwell 1989, Khosrow 1990, Ajayi 1991, Mbelle 2001, Samson 2002, Anoruo et al., 2006 and Menbere, 2004, more explanation in sections 2.4 and 3.7). Since debt problems and other economic characteristics are country specific, a study on the same is required for the case of Tanzania.

1.3 Objective of the Study

This study investigates factors that affect the public external debt to GDP ratio and their implication on debt sustainability in Tanzania. The research paper attempts to answer the following questions:

- What are the significant factors in explaining distress in public external debt to GDP in Tanzania?
- Are the external factors more significant than the internal factors, and what policy implications for Tanzania can be drawn from this analysis in relation to debt sustainability?

1.4 Significance of the Study/Policy relevance.

The motivation behind this study is the persistent problem of large external debts of LDCs since 1970's to date, despite several global and domestic initiatives to address it. The study is aimed to contribute to the existing knowledge on external debt and how best the country can ensure sustainability of external debt and reduce its adverse effects on economic growth and provision of social services. The simplest test of debt sustainability is that, over the medium term, the rate of return on investment exceeds the opportunity cost of borrowed funds (Loser, 2004). It may be very difficult to ensure debt sustainability if factors responsible for the growth of the debt are not well addressed.

Most of the existing literature has mainly focused on impacts of external debt to economic growth, with little attention to mechanisms or factors which leads to growth of the debt itself. Clear understanding and analysis of factors behind growth of external debt would shed lights on how to deal with the debt problem and minimize such impacts on economic growth and provision of

social services. This research paper contributes to this knowledge by analysing sources of debt distress in Tanzania. So, the policy relevance is tackling debt problem from the source.

1.5 Scope and Limitations of the study

This study is limited to the period 1975 to 2008. The major limitation envisaged in this study is empirically attributing the problem of public external debt to some explanatory variables, while in the literature and real world there are so many variables that are linked with debt accumulation. This study focuses only on relationship between external debt and selected variables in Tanzania over time. The major variables of interest are budget deficit, trade deficit, domestic savings, interest payments on external debt and real exchange rates (see sections 2.5 and 4.3 for justification of this choice). The second limitation is the use of secondary data. In Tanzania like in most LDCs, availability, quality and reliability of secondary data is a problem, adding to the issue of missing values for some variables in some years. These problems are highly recognized and great care has been taken to avoid misleading results and interpretation.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter addresses review of theoretical and empirical literature relevant for this study. It is divided into five sections. Section one introduces and section two addresses literature on why countries borrow from overseas. Section three tackles concerns about public external debts (especially debt sustainability and problems related with debt relief). Section four gives theoretical and empirical explanation of factors that are responsible for accumulation of external debt; and section five provides approaches to debt accumulation.

2.2 Theoretical Literature on what motivates overseas borrowing.

It has been argued that economies of most LDCs are constrained by among other factors, shortage of capital (Chenery and Strout, 1966). The Two-Gap Models provide reasons for foreign resource requirements. First, the Savings-Investment Gap states that, the foreign resource requirements of a country to sustain a targeted rate of growth, measured by the difference between domestic savings rate and the rate of investment necessitated by the growth-goal of the society (Quibria, 1980). Therefore, foreign resources are required to compensate for the shortage of domestic savings to finance investment. The Savings gap is normally associated with poverty. That is, poor countries are poor because they have low savings for investments, and they have low savings because they are poor (Menbere, 2004). This is the phenomenon known as vicious circle of poverty, and provides justification for overseas borrowing which results from the rising gap between national savings and domestic investment. If the foreign resources are available, a country may obtain resources to invest although at the expense of running a current account imbalance. In Tanzania, investment in infrastructure and social services is mainly done by central government and its entities.

It is in this case some authors (Singer 1990, Nigel 1995, Root 1990, all in Menbere, 2004) have argued that the major development obstacle of developing countries is the vicious circles of the savings and investment. Productivity is low because investment is low, investment is low because savings are low, savings are low because income is low, and income is low because productivity is low. Thus, according to Menbere (2004), the poor nations are poor because they are poor. The low savings therefore reflects the inability of poor countries to save sufficient amount of resources to finance the desired level of investment necessary for self-sustained growth. Foreign borrowing allows poor countries to generate resources that domestic sources cannot. As it is evident from many poor nations, fiscal deficit is to larger extent a development deficit that is inevitable if countries were to achieve long-run positive economic growth. However, such a deficit creates the problem of foreign debt, which must be repaid in the future. Due to high population growth and increasing

demand for social services, infrastructure and cost of urbanization, overseas borrowing has been inevitable in many LDCs including Tanzania.

Secondly, the Export-Import (Foreign Exchange) gap focuses on foreign exchange earnings as the principal constraint on domestic investment and growth. It requires that, the foreign resources fill the gap between the required import expenditures and the actual export earnings. Export earnings are also required for investment to boost economic growth. It is therefore argued that, even assuming that there is no capital deficiency from savings; the growth rate of developing countries may still be hindered by foreign exchange requirements. This suggests that domestic savings is a necessary but not a sufficient condition for raising investment in developing countries to a desired level. This is again linked to the import structure of developing countries where imports of capital goods are vital for the further expansion of the tradable sector. The importance of foreign exchange arises from import requirements; and also from the fact that most LDCs currencies are not fully and freely convertible in most of the international transactions. In LDCs, foreign exchange generated through exports is inadequate to finance imports of raw materials and capital goods essential in production process. Loans and grants therefore allow the savings in richer countries to be transferred to investments in poor countries; and supplement foreign exchange requirements.

However, discussion in the literature about the Two-Gap models of economic growth in 1980s has led to the introduction of Three-Gap⁴ models in 1990s. On top of Savings and foreign exchange deficiency, the Two-Gap model extends to include fiscal gap. Fiscal constraint is seen to be among the major limitations of growth prospects of the highly indebted group of developing countries. The idea behind the fiscal gap is that even if there is fairly enough domestic savings and foreign exchange, the fiscal deficit may still highly necessitate foreign borrowing. This may come from some structural limitations that may prevent private sector to undertake some important investments that should start simultaneously for profitability through a multiplier effect. The theory of "Big Push" put forward the idea that, in developing countries private investment depends on government investment, i.e. there is central role for government investment in infrastructure and basic industries, which sets an upper limit for profitable private investment to occur⁵.

The fiscal deficit can arise if we split capital formation between government investment in public goods and private investment. Therefore, government budget deficit is a limitation to capital formation and hence affects growth. The fiscal gap therefore necessitates government to borrow from abroad if there are constraints in selling government bonds or printing money

⁴ For derivations and more details of Two-Gap Models, see Quibria (1980), Chenery and Strout (1966), and for Three-Gap Models see Bacha, E.L.(1990), Chisari, O.O & Fanelli, J.M (1990).

⁵ This is the crowding-in hypothesis that many analysts have shown in European history, and also with empirical support in the successful post-WW-II industrialization of countries such as Brazil, Israel, India, Mexico, Turkey and the recently emerged East Asian miracles. See Blejer and Khan (1984), Barro, R (1989) and Bacha, E.L (1990).

as is always the case for poor countries. Bacha (1990) indicated that, as debt crisis lingers on, there has been an increasing feeling that for many highly indebted low and middle-income countries, the main source of growth and inflation difficulties derives from government budget limitations rather than from foreign exchange constraints or an overall savings restriction.

The “return argument” is another reason for foreign borrowing; and is often related to supply side story of external debt. It is of note that Neoclassical minded International Financial and Economic Institutions such as IMF and World Bank have been advocating or making funds available for LDCs borrowing so as to finance budget deficits, while in most cases advanced countries have been printing money to finance their budget deficits. The fundamental logic behind this argument is that because LDCs have acute shortage of financial resources and technology, while rich countries have enough savings, capital should move from the rich to the poor countries (Menbere, 2004). While LDCs demand for foreign loans seems inevitable and of course it makes positive contribution to financial flows, the reality that interest on loans are sources of income to creditors such as IMF, and also a means of strengthening ties for other relations such as FDIs cannot be refuted. This argument is also consistent with the beliefs that sometimes LDCs governments borrow due to influence of external agencies or donors. This argument can be supported by the evidence of conditionality attached to most foreign concessional loans, where things like project materials, consultants and contractors should come from the creditor country⁶.

Moreover, even when a country has no persistent foreign exchange, fiscal and or savings constraints, external factors or aggregate shocks often force a country to borrow from abroad. Of course these shocks may ultimately lead to balance of payments difficulties, fiscal deficits, savings constraints, and general economic problems which can drive a country into viscous cycle of poverty.

2.3 Some concerns on Public External Debts (Debt Sustainability)

Despite the importance of foreign borrowing for development purposes, sustainability of public external debt is an issue of great concern in recent policy discourse. However, the concept of debt sustainability seems vague because there is no universally agreed definition. It may be defined as a situation in which a borrower is expected to continue servicing debts without an unrealistically large future correction to balance of income and expenditure. Conversely, debt becomes unsustainable when it accumulates at a faster rate than the borrower’s capacity to service it out of own generated income (Daseking, 2002).

⁶ *There are problems associated with such type of loans; Debtor is responsible for payment of principal and interest, at the same time debtor is price taker, i.e. cannot go to the market to look for cheaper sources of those materials and contractors/consultants. Capacity of domestic engineers for example and local industries in the related areas is compromised. Ultimately, debt service capacity is also affected. This is currently an issue of concern in Tanzania.*

Berensmann (2004), considered sustainable level of debt as the one which allows a debtor country to meet its current and future obligations of debt service in full, without resorting to further debt relief, rescheduling, accumulation of arrears; while allowing an acceptable level of economic growth. Analysis of external debt sustainability is generally conducted in the context of medium term scenarios.

However, debt sustainability may be difficult to achieve since factors for debt accumulation are both internal and external; and external factors can hardly be influenced by domestic policies. Using domestic policies, government budget deficit which is a major source of debt accumulation can be influenced to some extent. First, governments need where possible to avoid running budget deficits persistently. Persistent deficit leads to large debt which must be serviced in the future. For both domestic and foreign borrowing, the most destabilising variable is interest rate on debt. De Grauwe (1994) argued that, if the interest rate on government debt exceeds the growth rate of the economy, a debt dynamic is set into motion which leads to an ever-increasing debt to GDP ratio, and so debt becomes unsustainable unless corrective action is taken. According to De Grauwe, the dynamics of debt accumulation can only be stopped if the primary budget balance as % of GDP turns into surplus. The conclusion from De Grauwe is that if a country has accumulated sizeable deficits in the past, it will have to run corresponding large surplus to prevent debt/GDP ratio from increasing automatically. To some level this will require a country to reduce spending and or increase taxes. His economic formulations and conclusions are similar to approaches to debt accumulation identified in section 2.5.

There are several set of debt sustainability indicators. First, there are debt burden indicators. These include the ratios of debt/GDP, debt/export, debt/current fiscal revenue, the structure of outstanding debt (such as share of foreign debt, share of short term debt, and share of concessional debt in the total debt stock). The maturity structure of debt is very important because if a large part of debt is short-term, risks are greater as loans can be recalled at short notice or interest rates adjusted at short notice. Secondly, there is a set of liquidity monitoring indicators. These look at ratios such as debt service/GDP, foreign debt service/exports and foreign debt service/current fiscal revenue. The third set is about forward looking indicators. An example of this type is the ratio of average interest rate on outstanding debt to the growth rate of GDP. Over a period, the direction of such indicators may provide a picture on either sustainability or vulnerability of external debt.

The debt indicators are also supported by macroeconomic indicators to shed lights on the problem. The behaviour of macroeconomic variables such as net international reserves, real effective exchange rates, inflation, output growth, export-import trends, terms of trade, monetary indicators, interest

rates, fiscal deficit and credit to the private sector normally shed lights on external debt of a country (Loser, 2004)⁷.

However, the current debt sustainability ratios are not based on clear economic foundations. For example, European Union has set a debt sustainability ratio of total government debt (domestic and foreign) to GDP at the level of less than 60% (De Grauwe, 1994). The HIPC sustainability ratios are: NPV of debt to export ratio greater than 150%, NPV of debt to current government revenue greater than 250% and debt service ratio should be greater than 20-25% (Berensmann, 2004, Hjertholm, 2003, Nwachukwu, 2008).

2.4 Empirical literature on factors for accumulation of Public External Debt.

Ensuring debt sustainability requires better understanding of what factors make the accumulation of the debt in a particular country and addressing such factors both at country and international debt reduction strategies. Several studies have identified and empirically tested factors that cause accumulation of public external debt in different countries and in different time periods (examples are Maxwell 1989, Khosrow 1990, Ajayi 1991, Mbelle 2001, Samson 2002, Anoruo et al., 2006 and Menbere, 2004).

Samson, (2002) analysed the public external debt problem in Morocco and Nigeria between 1980 and 2001 and identified factors such as fiscal policy inefficiency (e.g. over-ambition to speed up development process in the absence of adequate domestic funds) and low level of domestic savings. External factors include oil price shocks, deterioration in terms of trade, rising interest rate in the international capital market, and collapse in commodity prices in world market. He found both domestic and external factors to have significant influence on the accumulation of foreign debt, but relative contribution of domestic factors (mainly growth of fiscal expenditure and domestic savings) was higher compared to those of external factors (mainly balance of payment and interest payments).

Anoruo, et al. (2006) also analysed external debt of 29 HIPC countries in Sub-Saharan Africa from 1984 to 2000. By applying panel data regression analysis, they found that there is strong relationship between growth of external debt to GDP and factors such as real exchange rate, economic slowdown, interest payments, non-interest current account balance, governance indicators such as corruption, bureaucratic quality, government stability and internal conflicts. They found that all the variables were statistically significant, although at different levels. However, they didn't classify those factors into domestic and external categories.

Ajayi (1991) used macroeconomic analysis to study the causes of external debt accumulation in Nigeria from 1970 to 1988. His major variables in

⁷ *This is a UN discussion paper, and it provide details on indicators of external debt sustainability and other debt related guidelines for low and middle income countries.*

the regression analysis were fiscal deficit, real exchange rate, and real interest rate, growth of income in industrialized countries and terms of trade against debt to GDP ratio as dependent variable. His analysis indicates that the most significant variables in debt distress were real exchange rate, fiscal performance and terms of trade. This study classified terms of trade, real interest rate and oil shocks as external factors; while fiscal deficit and exchange rates (generally overvaluation of domestic currency) and economic mismanagement were categorized as domestic factors. However, the study was inconclusive in terms of what side contributes much to debt accumulation, instead it concluded that, "linkages exists between domestic and external factors and there is very thin line between some of the variables".

In the Tanzanian case, Mbelle (2001) highlighted domestic factors such as ineffective fiscal policies (e.g. fast growing government administration expenditure), lack of prudent debt management policy, and weak financial accountability. The combination of external factors involved lending policies of creditors (for instance short repayment periods), oil price shocks, balance of payment problems, general decline in foreign aid, fluctuations in real exchange rates, and accumulation of interest arrears due to delayed repayment for concessional debt. However, the study by Mbelle was mainly descriptive, i.e. didn't apply empirical approach. Most empirical studies in Tanzania concentrated on the effects of external debt accumulation on economic growth. My study focuses on testing significance and relative contribution of selected variables in debt distress.

In many cases in the literature, the most common factors for growth of external debt are export performance, economic slowdown, exchange rate fluctuations, global interest rate, balance of payments, budget deficit, low domestic savings, misuse or misallocation of external capital, ineffective policies and weak institutions. This study assumes and believes that the interrelated effects of those factors can be largely addressed by including domestic savings, budget deficit, trade deficit, interest payments and real exchange rate as major variables in analysing accumulation of external debt.

2.5 Approaches to debt accumulation

As it has been addressed in section 2.2, one or more of the issues that necessitates countries to borrow from abroad can lead to debt accumulation. Several authors such as Martone (1987), De Grauwe (1994), Murshed (1997), Bilquees (2003), Rangarajan & Srivastava (2003) and Perez 2007) have developed logical flow of identifying factors for debt accumulation. The flow can be expressed as follows:

$$D_t - D_{t-1} = M_t + \delta D_{t-1} - X_t \text{ or writing in another way;}$$

$$D_t = M_t - X_t + (1+\delta)D_{t-1} \tag{1}$$

$$D_t = \text{Debt accumulation}$$

$$M_t = \text{Imports}$$

$$X_t = \text{Exports}$$

$$\delta = \text{Interest rate}$$

The expression in equation (1) states that the accumulation of debt mainly results from the export earnings (X) that fall short of payments for imports (M) and debt service (δD_{t-1}). Other elements of the balance of payments are ignored for simplicity. This model pertains to the current account component of the balance of payments. A country's credit position will rise with current account surplus, and conversely, current account deficit leads to accumulation of external debt (Murshed, 1997)⁸.

Expressing equation (1) as proportion of exports (X) gives:

$$\frac{D_t}{X_t} = \frac{M_t - X_t}{X_t} + (1+\delta)\frac{D_{t-1}}{X_t}; \text{ But notice that exports can be expressed as:}$$

$$X_t = (1+g_x)X_{t-1} \text{ and if we write } \frac{D_t}{X_t} \text{ in small letter as } d_t; \text{ then we have:}$$

$$d_t = \frac{M_t - X_t}{X_t} + \frac{1+\delta}{1+g_x} d_{t-1} \quad (2)$$

Where, g_x is the growth rate of exports. The Debt/Export ratio will be growing as long as imports exceed exports and as long as the coefficient of lagged debt (d_{t-1}) in equation (2) is greater than one, i.e. if $(1+\delta) > (1+g_x)$ or $\delta > g_x$. When exports earnings are equal to payment for imports, the condition for growth of d_t ($d_t > d_{t-1}$) is that $\delta > g_x$. Equation (2) also tells us that the growth of the debt burden can be dampened by policies that would reduce imports, increase export growth, or lower the interest rate. The interest rate in equations (1) and (2) is, of course, the international interest rate, on which local policies may be assumed to have little influence. In addition, interest rate applicable to Tanzanian public external debt is mainly concessional.

Alternatively, the debt burden can be represented by the Debt/GDP ratio. Starting from equation (1), but using the national accounting identity: $M - X = I - S$; to replace the current account balance with the internal resource gap. This gives:

$$D_t = I_t - S_t + (1+\delta)D_{t-1}; \text{ expressing as proportion of GDP and writing } \frac{D_t}{Y_t} \text{ as } d_t, \text{ we have}$$

$$d_t = \frac{I_t}{Y_t} - \frac{S_t}{Y_t} + \frac{1+\delta}{1+g_y} d_{t-1} \quad (3)$$

Where; I_t denotes investment, S_t is for savings and g_y is the GDP growth rate. Equation (3) tells us that the Debt/GDP ratio will be increasing the higher the interest rate, the lower the GDP growth rate, and the higher in-

⁸ Murshed (1997), Chapter 5, page 60-63 provides details and analysis of debt servicing and the current account using the Mundell-Fleming Model. His short and long-run analysis indicates that persistent increase in the current account deficit leads to debt accumulation.

vestment relative to savings. If investment is equal to savings, the ratio will be rising if $\delta > g_y$. Policies to reduce the growth of the Debt/GDP ratio should focus on (i) increasing savings, (ii) reducing investment, but not a good option especially for LDCs, (iii) increasing GDP growth, or (iv) reducing the interest rate.

In countries where the external debt is mainly owed by the government, it is also appropriate to link the debt to government revenue. In this case, interest and repayment of principle is financed by government revenue. If government revenue is limited, and if a significant share is required for debt service, government capacity to finance other essential activities is constrained. If all external debt is held by the government and if the government only uses external debt to finance its deficits, the situation can be expressed as:

$$\Delta D_t = G_t + \delta D_{t-1} - T_t, \text{ expressing as ratio of } T, \text{ and writing } \frac{D_t}{T_t} \text{ as } d_t, \text{ we have:}$$

$$d_t = \frac{G_t - T_t}{T_t} + \frac{1+\delta}{1+g_t} d_{t-1} \quad (4)$$

Where, G is government expenditure, T is revenue and g_t is the growth rate of government revenue. From equation (4), the change in debt is determined by the primary fiscal balance (G-T) and the debt service payments (δD_{t-1}). This is the government budget equation. Debt increases as long as the government runs a primary deficit and if $\delta > g_t$.

From equations (1) to (4), main factors for debt accumulation can be listed as fiscal deficit, trade deficit, domestic savings and interest payments as part of debt service. The review of these factors is done in chapter 3 before empirical analysis. Since this study uses debt/GDP as dependent variable; most of those explanatory variables affect either debt or GDP directly or indirectly. They therefore cause a distress in the debt/GDP ratio. Although there can be other factors, this study concentrates only on those variables to see their significance in determining variations in debt to GDP ratio. Other factors such as shocks are put in the error term.

Under normal situation, one could argue that public debt may not be directly expressed in terms of equations 1, 2 and 3 but the fact that governments have central role in driving economies and overall development in LDCs justifies use those equations. Tanzanian government has been receiving loans from IMF for BOP support when the export earnings decline and exchange rate appreciates, leading to more demand for foreign exchange. The government in turn pays debt to IMF. The government has also a considerable size of import especially vehicles, building and construction materials. This justifies use of trade deficit as one of the determinants of debt accumulation. Furthermore, the government revenue generation capacity is constrained by low level of domestic savings and large informal sector. On the other hand, low domestic savings increases government expenditure because in many cases the government has been supporting SMEs and many other social services at both household and firm level. The loan of over 40 billion shillings received every year from World Bank's IDA for the support of Tanzania Social Action Fund (TASAF) is one of the many examples of government expenditure to savings constrained

communities. There is also a significant share of subsidies in government expenditure. All these explain why public and publicly guaranteed is over 90% of total external debt.

Further justification is based on the other studies done using the same approach of analysing determinants of external debt accumulation. Examples are Maxwell 1989, Khosrow 1990, Ajayi 1991, Mbelle 2001, Samson 2002, Anoruo et al., 2006 and Menbere, 2004(see section 2.4). In all these studies, although done in different countries and years, and although they differed in explanatory variables but same debt/GDP as dependent variable, fiscal deficit, trade deficit, domestic savings, interest payments and real exchange rate were common (see section 4.3 for choice of variables). The literature review and explanation at the end of this chapter provides a way forward to chapter three to review trends on those determinants and explore possible reasons behind such trends, before proceeding to other chapters on empirical analysis.

CHAPTER THREE:

A REVIEW OF MACROECONOMIC PERFORMANCE AND PUBLIC EXTERNAL DEBT DEVELOPMENTS IN TANZANIA

3.1 Introduction

This chapter gives an overview of performance in some macroeconomic variables that have relation with external debt and the debt developments from 1970s to 2008. It covers briefly on review of macroeconomic performance, the evolution of fiscal deficit and external debt, the magnitude, structure and composition of external debt, debt relief initiatives and a brief explanation on debt versus independent variables that are used in this study.

3.2 Review of Tanzania's Macroeconomic Performance

Tanzania became independent from British in 1961. The country under the founder Mwalimu Nyerere adopted socialist, centrally planned and controlled economy. In literature, from 1960s-1984, Tanzania could be classified in the group of small developing countries, open economies with weak domestic financial markets, subject to a variety of government controls and liable to periodic temporary shocks in their terms of trade. This motivated Bevan et al. (1990) to classify such economies as "Controlled Open Economies". It may be argued that the control regime did not establish a strong foundation for sustainable economic growth in terms of policies and strong private sector as an engine of growth. The government introduced a wide array of controls on the behaviour of private agents, including foreign exchange controls, imports subject to quotas, having specific agencies responsible for fixing commodity prices. Such controls may have affected private sector development. For example, foreign exchange controls restrain the acquisition of foreign financial assets; import quotas may restrict the volume of imports or alter their composition; interest rate ceilings may alter the volume and composition of investment within a country, Bevan et al. (1990).

It is believed that the excessive controls led to the existence of large black market and underground economy and monetary overhang; all of which are difficult to eliminate. Moreover, lack of strong economic foundation from the beginning and single political party regime from 1961 to 1992 made the country dormant in overall development process. The economy seems shaky even with minor shocks, lacking a persistent growth trend in most of the major macroeconomic variables. This is similar to what economists like Murshed

⁹ *The book focuses on two African nations, Kenya and Tanzania; comparing control regimes and how the two governments approached the coffee boom windfall from 1976-9.*

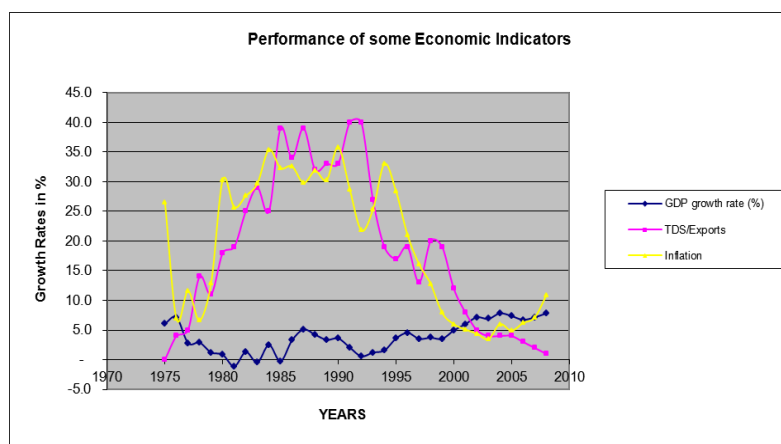
(1997) defined as hysteresis. That is, the future path of certain variables is governed by a historical starting point in time. Unfortunately transition from socialism to capitalism didn't come from within transformation of social structure but rather enforced from outside through implementation of SAPs from 1985 onwards when the control regime stepped out of power and came in liberal government.

In terms of economic development, from late 1960s to 1970s, the country had encouraging economic growth. GDP was growing at an average rate of around 4.5% per annum and income per capita remained positive despite high growth rate of population which was around 3 percent per annum. The external debt service (debt service as percentage of export of goods and services) in the early 1970s was at low levels (4% on average) compared to the African average of over 10% in 1976 (World Bank, 2002). However, the oil crises of 1973/74 and 1978/79 plus the 1978/79 Kagera war which was fought between Tanzania and the then Ugandan Dictator Iddi Amin brought Tanzanian economy into severe crisis.

Generally, from late 1970s to 1990s, most macroeconomic indicators deteriorated. For instance, inflation rose from the average of 7.8% in 1970-80 to 28% in 1980-90. In the same periods, GDP growth rate declined from the average of 4.5% to 2.6%. External debt service ratio as percentage of export of goods and services rose from average of 6% in early 1970s to 20%-39% between 1980 and 1992. The trend in external debt reversed after introduction of HIPC in 1996 where debt service ratio declined from 18% in 1996 to only 2% of exports in 2008 (See figure 4).

The period from 1990s recorded some encouraging trends in most macroeconomic indicators. The period was marked by many economic reforms including privatization of most public enterprises and massive inflow of Foreign Direct Investments (FDIs). Inflation fell down to a single digit and GDP grew by an average of 4 percent. Fiscal deficit also improved after introduction of Tanzania Revenue Authority in 1997 although balance of trade deteriorated; largely due to external factors such as drought in 1997 and El Nino rains in 1998.

Figure 4: Trends in GDP, Inflation and Debt Service as % of exports



Source: Own construction from BOT annual data

3.3 The evolution of Fiscal Deficit and External Debt in Tanzania

The same periods with economic problems in the world marked the history of external debt accumulation in Tanzania. ***The first and second oil price shocks of 1973/74 and 1978/79*** largely contributed to huge budget and balance of payment problems that necessitated Tanzania to borrow heavily from domestic and external financial institutions. Expansionary government spending that necessitated borrowing contributed to worsening debt situation (URT, 1999). The debt problem intensified as a result of large fiscal deficits which forced the country to reduce fuel consumption. This in turn affected industrial and other production and distribution systems, a situation which further affected agricultural production and hence the continued balance of payment problems.

The collapse of the former East African Community (EAC) in 1977 added to more problems of external and domestic debt. It ended the country's legitimate trade with its partners. This situation forced the country to initiate substantial investments such as new structures for civil aviation, telecommunication and transportation systems and other services that were formerly provided by the EAC. The large capital investment requirements and operational costs associated with the establishment of Tanzania Railways Corporation, Tanzania Harbours Authority, Tanzania Telecommunications Company Limited, and Air Tanzania Corporation were mainly financed through external borrowing.

The Tanzania – Uganda war of 1978/79 is another main reason for external and domestic debt problem. The war had adverse effects on government expenditure, economic activities and other services. Fuel consumption was very high, at the same time there was oil price crisis in the world. The two events forced Tanzania to heavily borrow from both external and domestic sources. There was direct fuel borrowing and other war materials from Kuwait, Angola, Libya, Iran, Algeria, Iraq, Egypt and Zambia. The debts of these countries to Tanzania are still pending by end of 2009 and for some countries, debt relief negotiations¹⁰ are underway.

Another reason was the ***high cost of domestic borrowing*** where interest rate on Treasury bills was 9% on average throughout 1966 to 1987, but rose to 22% on average from 1988 to 1993. It further shot up to 65.9% per annum in 1994, before a slight drop to 41.9% per annum in 1995. The high Treasury bills rate was believed to have triggered inflation which averaged about 29% between 1993 and 1995. The high cost of domestic borrowing necessitated government to sometimes opt for foreign borrowing on concessional loans (BOT, 2000).

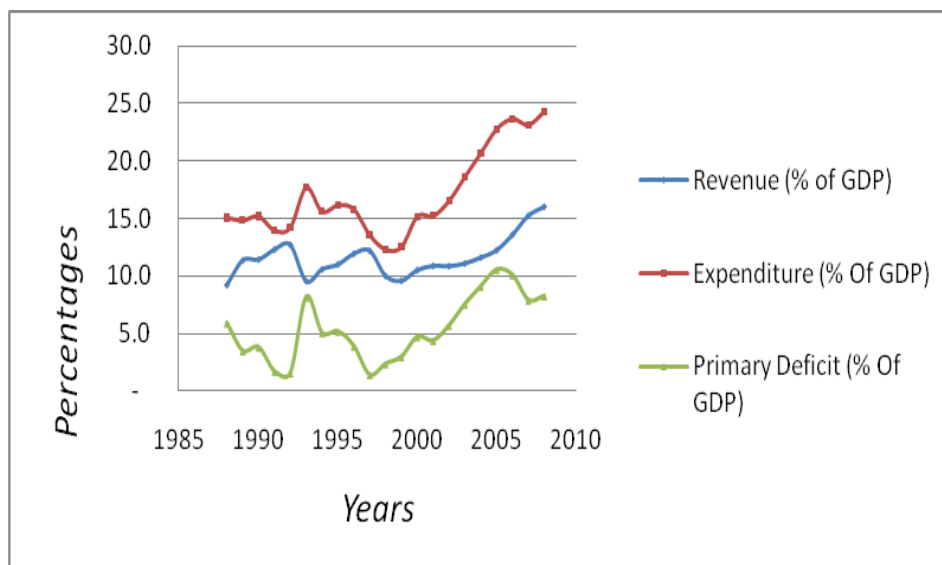
The financial pressure in the public sector was also a result of high government expenditures on account of ***large subsidies which were provided to parastatal companies*** during 1970s and 1980s. The subsidies were

¹⁰ See *Tanzanian Quarterly Public Debt Report produced in September 2009, available in www.mof.go.tz.*

provided as a form of working capital for those companies as government efforts to generate more revenue and improve public service delivery. Between 1967 and 1997, the government provided TZS 125,223 million in the form of subsidies to parastatal organizations. However, due to mismanagement and corrupt practices, most of those companies did not perform as expected and become burden to central government for running costs, leave alone the expected profits. This necessitated the government to privatize most of the companies between 1998 and 2005; followed by many other reforms in the financial and other sectors.

The cost of urbanization, infrastructure, social services such as education especially Universal Primary Education (UPE), health and water as a result of rapid population increase was another reason for fiscal deficit in Tanzania. Recurrent expenditure has been tremendously growing, out spacing growth rate of GDP and capital expenditure. Droughts in some years, population increase, tropical diseases such as malaria and others such as HIV have cost the government for a long time. Government operational costs- large size of bureaucrats, political bodies such as parliament and corruption also have significant share in the expansion of recurrent expenditure. See table 3.3 and figures 5 and 7 for trend of government fiscal operations. The trends indicate that expenditure has been growing over and above revenue, suggesting that fiscal deficit has been driven mainly by excessive expenditure rather than revenue performance. This implies that policies to reduce fiscal deficit and address public external debt distress could focus more on expenditure control, given structural limitations in increasing the tax base in Tanzania.

Figure 5: Trends in Fiscal Performance from 1988-2008



Source: Authors computation from NBS annual figures

3.4 Size and Magnitude of External Debt

The period from 1970 to 2000 has been dominated by large and positive trends in growth rates of public external debt and imports while growth rate of exports has been negative on average; although GDP growth rate was positive but small throughout the period¹¹.

From 1990 to 2005, the trend of total external debt stock has been increasing despite introduction of HIPC initiative in 1999. However, debt stock decreased from USD 8,335 million in 2005 to USD 4,028 million in 2006 before going up again to USD 5,938 million in 2008. The decline in 2006 is attributed to MDRI program which started in 2006 and implementation of the HIPC commitments that were initiated in 1999. See table 3.4.1 and appendix A for details. It should be noted that table 3.4.1 contains only public and publicly guaranteed external debt; while appendix A includes private external debt in the total debt stock. Figure 1 in chapter 1 also provides the overall magnitude of total public debt in Tanzania.

3.5 Structure, Type and Composition of External Debt

For a long time since 1970s, the Tanzanian external debt has been public and dominated by official component (Multilateral and Bilateral institutions as official lenders). In the early years, the share of bilateral debt dominated. For instance, by the year 1986, the share of multilateral debt consisted only 27% of the total debt stock but reached 56% in 2001 while the share of bilateral debt has been declining, reaching only about 36 percent in the same period. During this period the major bilateral creditors were Japan, Russia, United Kingdom, and Italy (World Bank 2002).

It is worth noting that the gradual increase in the share of multilateral debt relative to bilateral was due to increased assistance of IMF and World Bank to governments of LDCs, low levels of new loans approved by bilateral creditors and exercise of cancellation of some bilateral debts under the commitments made in Paris Club initiatives. The multilateral loans are predominantly concessional and its share in the total multilateral debt has been increasing over time. The concessional rates have granted Tanzania a benefit of contracting soft loans on subsidized and fixed interest rates.

Tanzania receives concessional loans mainly from International Bank for Reconciliation and Development (IBRD), The International Monetary Fund (IMF), African Development Bank (ADB), African Development Fund (ADF) as main multilateral lenders. The IBRD gives most of its loans in the form of project lending while IMF largely provides policy based and budget support lending. In terms of debt service, multilateral share as percentage of public and publicly guaranteed debt service has been increasing over time. For instance, the period average share was 32.4% in 1970s, 46.2 % in 1980s, and 55.1% in

¹¹ *The whole trend in growth rates of External Debt, Exports and Imports from 1970 to 2000 is indicated in table 3.4.2*

1990s and jumped to 68.6% average between the years 2000-2008. In fact, multilateral share as percentage of public and publicly guaranteed debt service was 100% in 2008 (World Bank External Debt Database, 2008)¹².

From the analysis about the size and composition of Tanzanian external debt service presented in the table 3.5.1, one could interpret that reserve requirements constitute almost 50% of total external debt in recent years. The short term debt took largest share of reserves in crises years in 1970s in a very volatile manner until in 2000s when it stabilized but over 40% on average. The worst case was in 1985 and the reason behind may be attributed to 1984 drought that significantly hit the country.

The type, structure and composition of public external debt have weighty repercussion on the country's public sector role in economic activities. If the external debt is mainly private, it means that more borrowing is done by private sector and its role on economic activities is expected to be crucial. For the case of Tanzania, the external debt is mainly public and publicly guaranteed. This reflects the significant role the public sector is expected to play in the socio-economic development.

Another aspect to consider in debt sustainability and country's capacity to service debt is the share of short term debt as percentage of total debt stock. In poor countries like Tanzania where there are a lot of resource requirements for social services and infrastructure, short term debt is a burden in both debt service and economic growth through its effects on investment. The share of short term debt has been high from 1970s to 1985, before reaching an encouraging situation from 1986 to 2005 but it again started increasing from 2006 to 2008 (see column E in Table 3.5.1).

External debt by use of funds is another component that highlights the nature of public debt. Indeed, it may provide an indication whether the borrowing is for productive sectors that could in turn develop the country's capacity to service its debt in the long run. The Tanzanian situation shows that on average, balance of payment takes a large share of use of external debt funds in economic sectors (see figure 2 in chapter 1).

3.6 Debt Relief Initiatives

3.6.1 Traditional Debt Relief Initiatives

The history on external debt in the world indicates that there were pre-HIPC and MDRI initiatives for a long time since mid-1970s. For a long time, the world has been introducing several measures to deal with the debt problem, Tanzania being among the targeted beneficiaries. Some of the global initiatives include the Baker Plan (1985) of debt rescheduling, the Brady Plan (1989) of debt cancellation, Bilateral Debt relief initiatives which helped to cancel Tan-

¹² *The World Bank Database and Global Development Finance have online data available in World Debt tables (see Appendix A for Tanzanian debt details from 1990-2008).*

zaniaan external debt worth US\$ 1,044 million between 1978 and 1997, Paris Club debt relief of rescheduling & cancellation which helped to cancel debt worth US\$ 594.9 million and rescheduled debt worth US\$ 2.105 billion. Both Baker and Brady plans had no tangible achievements that are found in Tanzanian records (Mbelle, 2001 and BOT, 2000).

Tanzania's domestic initiatives include Debt Conversion Programme (DCP)¹³ adopted in 1990 and Debt Buy-back Scheme (DBS)¹⁴. By 1993 debt worth US\$ 182 million has been converted and proceeds reinvested. However, due to high inflation during that period, the DCP programme was terminated. The DCP was replaced by DBS. Upon restoration of IMF Enhanced Structural Adjustment Facility (ESAF) in November 1996 (after deferment between 1994/5 and 1995/6), debt worth US\$ 253 million were subjected to this programme, BOT (2000) and Mbelle (2001).

Although such traditional debt relief mechanisms have helped to reduce debt burden in some LDCs, they were not fully successful to provide a durable solution for the debt problem in many countries. Further effort on debt relief was the HIPC program designed by IMF and World Bank in 1996 to provide special assistance for heavily indebted poor countries that pursue the IMF and World Bank supported adjustment and reform programs in particular, and their policies in general.

3.6.2 HIPC and MDRI Initiatives

Although the HIPC program started in 1996, there were several conditions and processes the HIPCs had to fulfil before formerly receiving actual debt relief. So, in 1996, most countries were under "decision point¹⁵" followed by "completion point¹⁶". The HIPC 1996 was followed by the "Enhance HIPC Initia-

¹³ *Debt Conversion Programme takes several forms, e.g. debt-equity swaps, i.e. through privatization where sometimes Creditor Company takes some shares of the local privatized company instead of debtor nation paying for external debt. Another form of DCP is converting a debt denominated in foreign currency into local currency and then the respective amount that is excess due to difference in foreign exchange is cancelled (IMF, 2003).*

¹⁴ *DBS is the repurchase by a debtor of its own debt, usually at a substantial discount. The debtor's obligations are reduced while the creditor receives a once and for all payment (IMF, 2003).*

¹⁵ *To be considered for HIPC assistance, a country must: (1) be eligible to borrow from World Bank and IMF, (2) Face an unsustainable debt burden that cannot be addressed through traditional debt relief mechanisms, (3) have established a track record of reform and sound policies through IMF & World Bank supported programs and (4) have developed a PRSP (IMF, 2010).*

¹⁶ *In order to receive full and irrevocable reduction in debt available under the HIPC Initiative, a country must: (1) Establish a further track record of good performance under programs supported by loans from the IMF and the World Bank, (2) Implement satisfactorily key reforms agreed at the decision point and (3) Adopt and implement its PRSP for at least one year (IMF, 2010).*

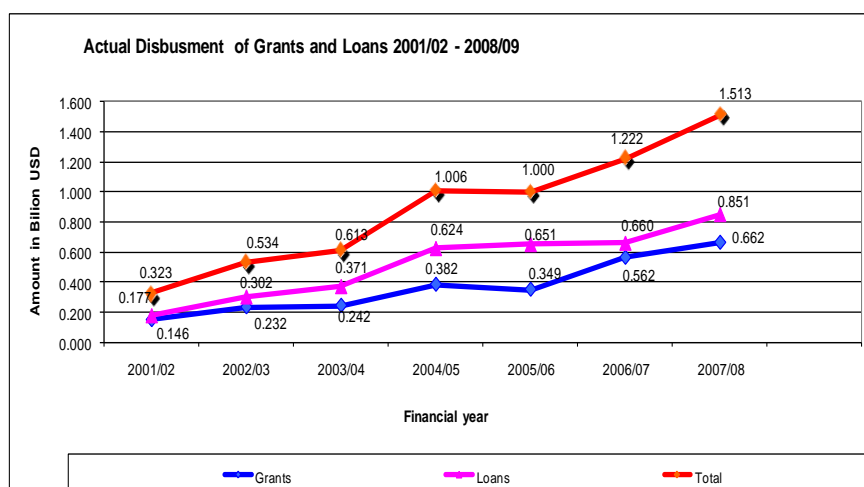
tive” (HIPC II) in 1999. This was expected to benefit around 40 low income countries, 22 of which had reached their completion point. Tanzania reached decision point under the HIPC II on 4th April 2000 when IMF and World Bank Boards endorsed its request, where the country expected debt relief of about US\$ 3.0 billion in nominal terms. The relief was also expected to reduce debt service payments almost half in three fiscal years (2000/01- 2002/03) and reduce amounts due to creditors by 1/3 of what was to be paid thereafter (BOT, 2000).

From April 2000 to 2005, Tanzania continued to receive debt relief from its major creditors both multilateral and bilateral. Nine (9) Paris Club creditors; Canada, France, Germany, Italy, Norway, UK, USA, Belgium and Japan had cancelled 100% of their outstanding debts (URT, 2005). Other members had cancelled their debt at different sizes. Russia had cancelled its debt by 82%, consolidated 17.84% and converted around 40 million USD into domestic debt. Most Non- Paris Club creditors have not done well like Paris Club members. Only Kuwait and India had cancelled their debts to Tanzania, while Bulgaria and China have been providing debt relief outside the HIPC framework.

In the context of debt relief, an important landmark was the introduction of Multilateral Debt Relief Initiative (MDRI) in 2006 to complement HIPC. By the end of 2009/10, Tanzania has received total debt relief to the tune of **USD 6,671.18 million**; of which **USD 2,655.57 million** was from HIPC framework, **USD 3,911.07 million** from MDRI and about **USD 104.54 million** from non HIPC framework. Most creditors participated in debt relief initiatives when Tanzania reached the completion point in November 2001, URT (2005 and 2008).

Although HIPC and MDRI have largely brought Tanzanian external debt to “sustainable level”, debt stock is back to increasing trend after the big debt relief in 2006 which reduced the stock by USD 4,327 million in one year, that is, from USD 8,355 million in 2005 to USD 4,028 million in 2006. The increasing trend in debt stock after MDRI would imply that the debt relief measures are short term solutions, and HIPC and MDRI may not meet intended impacts and expectations. In Tanzania, statistics shows that debt relief is not followed by less new aid inflows (see figure 6 and table 3.6.2.4). This takes us back to points made by Easterly (2001) about problems associated with debt relief; such as moral hazards, new borrowing, laxity in risk assessment and HIPCs becoming permanent servants of multilateral institutions- IMF and World Bank in particular and other creditors.

Figure 6: Recent trends in new Aid inflows (Loans and Grants)



Source: Ministry of Finance and Economic Affairs (DSA, 2008)

Figure 6 and table 3.6.2.4 indicates that Tanzania is still much dependent on foreign aid in bridging the gaps in fiscal and foreign exchange reserves requirements. It should be noted that the drop in budget dependency in 2008 and 2009 is mainly attributed to decline of debt relief component in the total foreign aid and grant element due to global financial crisis; and not improvement in domestic fiscal performance.

Table 3.6.2.4: Budget dependency and foreign exchange reserve position.

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
% of Budget dependency on foreign aid	37	45	45	41	41	46	42	33	33	37
Reserves Import cover (Months)	6.7	8.8	9.3	7.7	6	5	4.8	4.3	5.6	4.9
Total foreign reserves (mil USD)	1226	1577	2066	2209	2115	2150	2479	3074	3536	3622

Source: Bank of Tanzania (BOP and Central government reports, respective years)

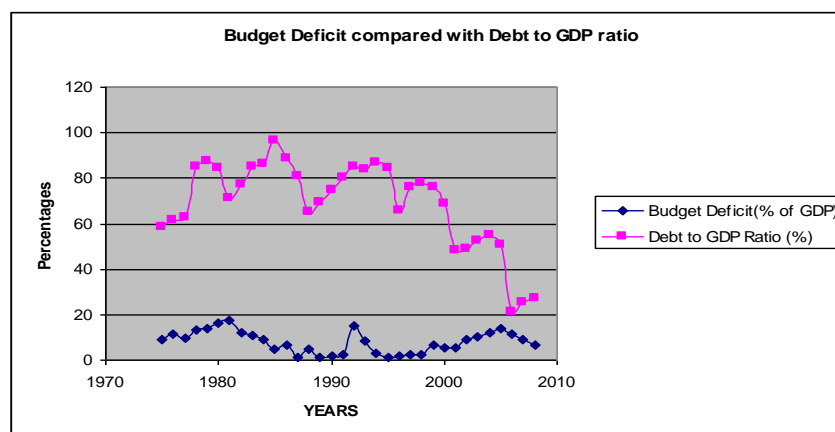
3.7 A brief review of selected (major) explanatory variables

3.7.1 Fiscal Deficit

In this study, I use the so called conventional fiscal deficit as defined by several authors such as Agenor and Montiel (2008, 1999, 1996), Tanzi (1987), World Bank (1988) and Blejer and Cheasty (1992). They give a standard definition of conventional fiscal deficit as the one which measures the difference between total government outlays and receipts, excluding changes in debt. That is, the difference between government's total expenditure and revenue. In the literature, the focus is often made to the link between budget deficits and public

external debt. Tanzanian budget balance (taking revenue minus expenditure) has been negative in the entire period 1975-2008 except for very few years. See the trend of fiscal performance in table 3.3 and figures 5 and 7.

Figure 7: Comparison between Budget Deficit and Debt to GDP ratio



Source: Own construction from BOT annual data

From figure 7, it may be deduced that in some years, debt to GDP ratio increases with increase in budget deficit (late 1970s and early 1990s) and trend is inconsistent in some years (late 1980s and after 2005). This could imply that budget deficit is not the only factor, but rather an interplay of factors works together in determination of debt to GDP ratio; necessitating an empirical test of several factors. Moreover, as it was indicated earlier, Tanzania is still highly aid dependent in financing government budget. The share of foreign aid (loans, grants and debt relief) in the total government budget has been over 40% on average since 2001 to 2010 (see table 3.6.2.4). This indicates that fiscal deficit is a problem in Tanzania.

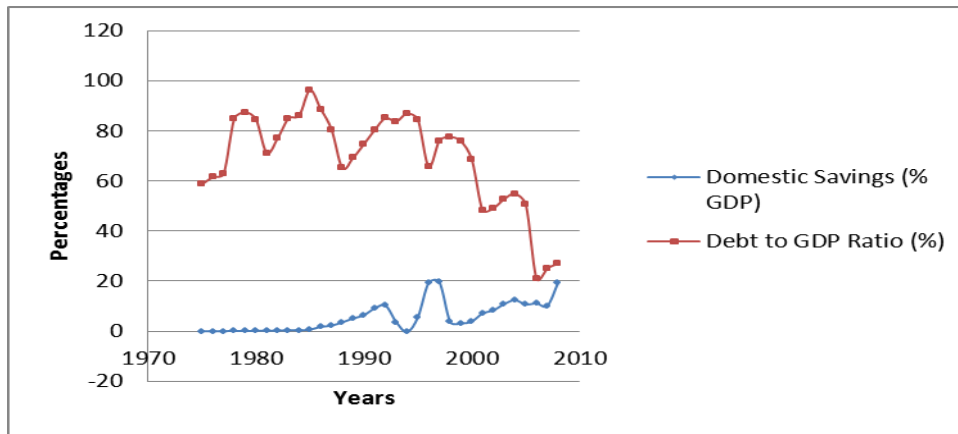
3.7.2 Domestic Savings

Low domestic savings has been one of the reasons for investment, low revenue base and source of increase in government expenditure through social support and subsidies. Economic theory suggests that an increasing level of domestic savings, *ceteris paribus*, would reduce external borrowing by providing more investible funds through the financial sector of the domestic economy, Samson (2002). By analogue, a decreasing level of domestic savings would mean a country to borrow more to complement low savings. However, increasing level of domestic savings may also increase borrowing in a situation where a country becomes ambitious of growth prospects, hence more borrowing. In such case therefore, domestic savings will be directly related to external debt. This is a common phenomenon for most poor nations like Tanzania. It should be noted that Sub-Saharan Africa has the lowest savings rate in the world. While figures vary from country to country, gross domestic savings in the region averaged about 18 percent of GDP in 2008, compared to 26 percent in South Asia and

nearly 43 percent in East Asian countries and Pacific countries, according to World Bank estimates.

For the case of Tanzania, domestic savings has been low, leading to a tight credit market, which in turn created a strong impetus for external borrowing. One of the reasons for low level of domestic savings is low income (hand to mouth) due to poverty, since about 80% of Tanzanians live in rural areas and depend on subsistence agriculture. Another reason is very low level of interest rates on bank deposits (around 3% on average since 1990s to date), compared to bank lending interest rates (over 20% on average). The interest rate problem is highly attributed to weak financial sector and very large informal sector which makes it difficult to tap potential savings into productive investment (UNCTAD, 2007)¹⁷. In Tanzania, domestic savings as a percentage of GDP has been less than 10% on average since 1988 to 2008 (See figure 8). Figure 8 indicates that domestic savings was low in 1970s and slightly increased from 1985 after starting economic reforms before a drop in 1994 due to drought, and a drop in 1997/8 due to elnino rains and floods.

Figure 8: Trends in domestic savings as % of GDP



Source: Own construction from NBS annual data

3.7.3 Trade Deficit

Trade balance is the difference between a country's export earnings and import payments to the rest of the world. It is deficit when imports exceed exports. It is the largest part of the current account component of Balance of payments (BOP)¹⁸. The BOP is a national account identity which shows all business and

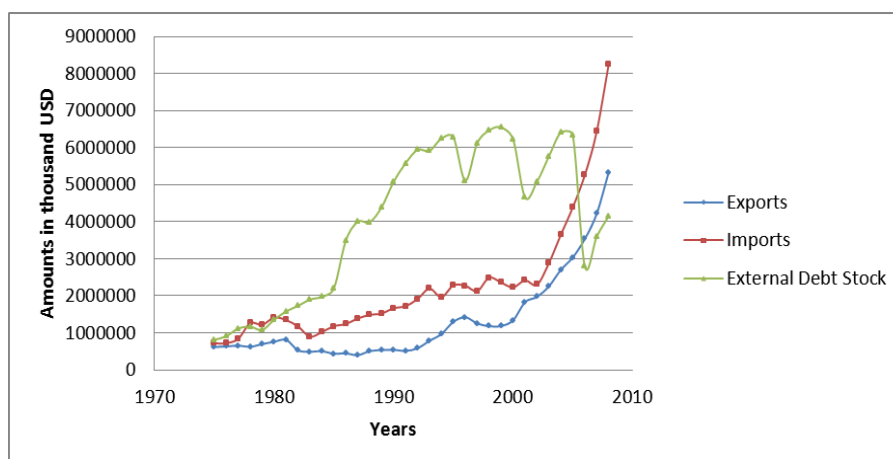
¹⁷ For more details about domestic savings in Africa, refer to UNCTAD report 2007.

¹⁸ Refer: http://en.wikipedia.org/wiki/Balance_of_payments#Standard_definition- accessed on 25/08/2010 for BOP standard definition, IMF definition in IMF BOP Manual, BOP = Current Account - Capital Account ± balancing item (i.e. errors and omissions). IMF definition, BOP = Current Account - Capital Account - Financial Account ± Balancing item

other transactions valued in monetary terms between a particular country and the rest of the world. Such transactions mainly include payments for the country's exports and imports of goods, services, and financial capital, as well as financial transfers. This study includes trade balance component of BOP for simplicity. Economic theory suggests that a balance of payment problem necessitates a country to borrow to finance trade. In the debt literature, trade balance adds to the foreign exchange gap.

The Tanzanian economy has been experiencing a persistent trade deficit since 1970s to 2008. That is, imports have been growing at higher rates compared to exports (See figure 9). Import volumes and prices have been rising over time while export volume and prices have been falling. Tanzania is heavily dependent on export of primary agricultural goods whose prices are very volatile in the work market, and production is rainfall dependent. Imports are largely consumables and construction materials. The government of Tanzania has been receiving loans from IMF as trade support to curb problems of foreign exchange requirements. The government ultimately repays loans and interests accruing from such loans. External debt trend by use of funds in economic sectors indicates that support on trade balance had largest share among other areas. The trend shows that on average, the share of trade support in the total disbursed debt by use of funds is the largest among other economic sectors, that is, 22.6% on average for 15 years from 1994 to 2008, and 31% in 2009 (See figure 2). This further justifies the use of trade deficit as one of the major determinants of public external debt accumulation in Tanzania.

Figure 9: Trends in Exports, Imports and stock of external Debt

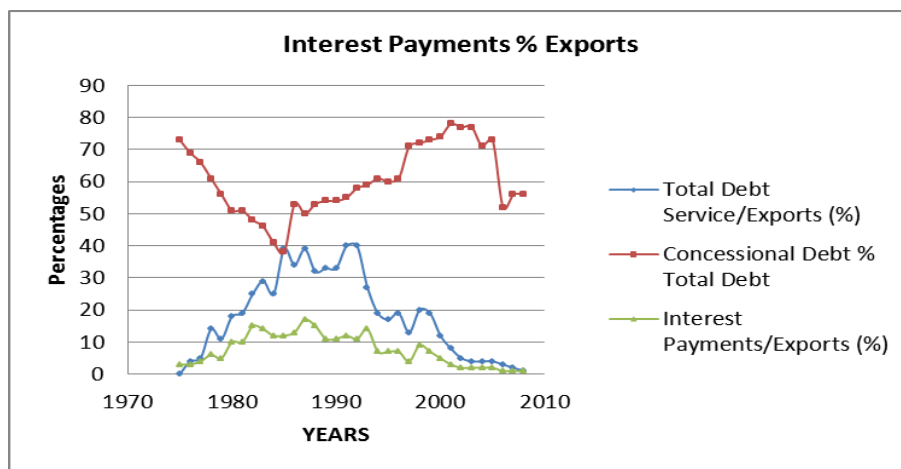


Source: Own construction from GDF annual data

3.7.4 Interest Payments

Tanzania benefits from concessional interest rates that are below global financial market interest rates because the country borrows much from multilateral organizations. However, delays in debt service as per agreed contracts with lenders normally lead to penalty which in turn builds up debt accumulation. For this reason, Tanzania has a significant share of accrued interest in the total debt stock. The share of interest payments in total public external debt service has been around 40% for a long time while principal payments accounts for 60% on average. Currently (from 2007-2009), interest payments is over 50% of the total debt service (computation is done from table 3.4.1). Table 3.5.1 and figure 10 also provide analysis of debt service.

Figure 10: Trends in public external debt service.



Source: Own construction from GDF annual data

Figure 10 suggests that interest payments has been less than 20% of exports, while total debt service has been over 50% of exports for a long time. Although these figures fall under sustainability ratios underlined in the literature, they could also mean that interest payment is low, not because accrued interest stocks are small but because the country is dependent to debt relief and therefore debt service is not that much significant. Debt relief, rescheduling of payments and accumulation of accrued interest implies debt is unsustainable by taking the definition given in the literature.

3.7.6 Real Exchange Rate (RER)

The Real Effective Exchange Rate (REER)¹⁹ also known as trade weighted index, is a multilateral exchange rate which is a weighted average of exchange rates of home and foreign currencies, with the weight for each foreign country equal to its share in trade. It measures the average price of a home good relative to the average price of goods of trading partners, using the share of trade with each country as the weight for that country. REER is an inflation corrected measure of country's competitiveness in international trade. The interpretation of the effective exchange rate is that if the index increases, the purchasing power of that currency is higher (the currency strengthened against those of the country's or area's trading partners). A lower index means that the currency depreciated, so that you need more of that currency to pay for imports.

RER affects external debt because loans are contracted and repayment of both principal and interest in foreign currencies. In addition, it affects capacity to service debt through its effects on investment, exports and imports. Currency depreciation increases domestic cost of external debt servicing because the debtor country has to use a lot of domestic currency to pay for external debts accrued from loans denominated in foreign currency (Tille, 2003). On one hand, a real depreciation makes imports of goods and services, including capital goods more expensive, while making exports more profitable on the other hand. In general, trade account deteriorates when the exchange rate appreciates and vice versa (Murshed, 1997, Ying & Rowe, 2007).

Therefore, since a large share of investment goods in Tanzania and many other LDCs is imported, domestic investment could be expected to fall with real depreciation. On the other side, appreciation would be expected to lower the profitability of exportable goods and reduce export volume and income. Some studies in public debt literature (such as Anoruo et al, 2006, Samson, 2002, Menbere, 2004) found a direct relationship between RER and public external debt. External debt itself (that is, receipt from loans) and other forms of aid inflows may lead to appreciation of the RER; and this may further make imports cheaper and exports less competitive, hence deterioration of debtor nation's trade balance.

Currently, currency composition of Tanzanian external debt is 55.3% USD, 24.2% Euro, 11.6% Yen, 2.4% Yuan and 6.4% others. Since export earnings are in USD, the country runs exchange rate risk because changes in dollar affects debt service capacity and hence debt sustainability.

¹⁹REER is calculated as: $REER = \sum_{i=1}^n W_i (E/P) / (E_i/P_i)$, where E is index of nominal exchange rate of Tanzania, E_i is the nominal exchange rate of a trade partner; P is Tanzania price index, P_i is index of domestic price of a trade partner and W_i is weight assigned to a trade partner (Edwards, 1989 contain details for concepts and measurement).

CHAPTER FOUR

METHODOLOGY AND MODEL SPECIFICATION

4.1 Introduction

This chapter outlines the methodology, model specification, measurement issues, estimation techniques and type of data that are used in empirical analysis. The study makes analysis of public external debt to GDP (dependent variable) versus explanatory variables (see sections 4.2 and 4.3) from 1975 to 2008. In this case, time series data and estimation techniques are seen ideal. Moreover, BETA coefficients are also calculated to establish relative contribution of independent variables in explaining variations in debt to GDP ratio (see section 4.5 and table 5.6).

The rationale for choice of variables and various tests used in time series is also given in this chapter. The tests are important to trace significant shifts in the variables before they are subjected to empirical analysis and obtain unbiased estimates and meaningful interpretation of results. Recent development in time series modelling emphasizes the need for verifying the existence of data stationarity and long run relationship among variables in a structural equation. In cases where data exhibits the presence of unit roots, short run dynamic properties of the structural model can be captured in the so called Error Correction Model (ECM). Refer Dickey & Fuller (1981) and Engle & Granger (1987).²⁰

4.2 Hypothesis

It has been argued that growth of external debt to GDP is directly related to trade deficit, government budget deficit and real exchange rates (that is, they all bear positive signs), while it is inversely related to domestic savings and interest payments on external debt (that is, they all bear negative signs). This study tests these hypotheses; together with the following main hypothesis:

- Accumulation of external debt is mainly driven by ***external factors (that is, variables that are more exposed to external economic relations and hence little government control)***; in this case, trade deficit, fluctuations in real exchange rate and interest payments on external debt.
- Accumulation of external debt is mainly driven by ***internal factors (that is, variables that mainly fall under domestic economic con-***

²⁰ Detailed explanation and procedures for all those tests are available in Gujarati (2003) and Wooldridge (2006).

ditions and hence more government control); in this case, domestic savings and government budget deficit.

4.3 The choice of variables and their allocation into external and internal categories.

The rationale for choice of the explanatory variables is the theoretical model described in the literature review section 2.5 in which justification and reasons for their use for the Tanzanian case were explained. It should be noted that as for the regression modelling, in order to avoid multicollinearity and other estimation problems, many variables that have been identified in equations 1-4 in section 2.5 are covered within major variables (for instance, trade deficit covers elements of export and import; budget deficit covers elements of expenditure and revenue, and growth of output is within the dependent variable debt to GDP ratio. In addition, interest payment is included to cater for debt service. Interest rate on debt is excluded due to the fact that it is concessional rates (it is often 3% for most public sector loans). Time series analysis requires continuous variables and at least 25 years of observation is required for meaningful analysis. A regressor with fixed values over time may produce spurious results.

Moreover, my econometric model, having included variables such as domestic savings, trade deficit, budget deficit and other control variables covers essential elements of the famous Three-Gap model which is the major framework underlying debt literature. Apart from the theoretical models in section 2.5, such variables have been widely used in debt literature in analysing sustainability of fiscal deficits (for instance Agenor & Montiel, 1996) and sustainability of external debts (example Keating and Keating, 2003); as well as explaining growth of external debt to GDP (example Samson, 2002 and Anoruo et al, 2006) in different contexts and countries. In all the three cases, external factors such as real exchange rate, interest payments and trade deficit were common although there is slight difference in the use of domestic factors across those studies; but fiscal deficits, domestic savings are also considered basic factors for accumulation of public external debts in most LDCs. These studies are also supported by others in explaining the debt problem (Dornbusch, 1998; Krumn, 1985; Iyoha, 1995). This could imply that there is some agreement in the literature about these factors being considered basic determinants of debt accumulation.

With regard to separation of such determinants into external and internal categories, literature recognizes that there exist linkages among most macro-economic variables, and there is narrow line between what is considered domestic and external (Ajayi, 1991). However, several studies such Ajayi (1991), Samson (2002), Maxwell (1989) and Khosrow (1990) have done such classification, basing on the nature of economies on which studies are conducted, since countries differ in degree of exposure to external economic conditions and the degree of government influence to control such variables by using domestic policy tools. This latter is mainly the basis of classification in this study.

By considering the degree of government control, trade deficit for example can hardly be minimized by governments of LDCs. It has been a concern by dependency school of thought that trade deficit has been mainly due to

unfavourable terms of trade. LDCs produce and export cheap primary products, mainly agricultural goods. On the other hand, they have to import expensive import goods necessary for investment and consumption. In many cases, LDCs are export and import price takers in the world market. Low technology also limits them to move from primary exports to manufacturing products. Technological limitation also prevents them from enjoying full potential benefits from natural resources such as minerals.

As for the RER, it is mainly determined by external components such as nominal exchange rate and domestic prices of trading partner. Even the domestic demand and prices of debtor nation can hardly be controlled now by government especially under the trade liberalization era. Along this line of thinking, it is justifiable to classify trade deficit, RER and interest payments as external factors on the basis of degree of exposure to external economic conditions and degree of government control in LDCs. Domestic savings and budget deficits can be manipulated by efficient use of resources and control avoidable consumption expenditure by enhancing financial discipline and accountability. It is emphasized in this study that, while the classification of variables may be thought arbitrary by others, it nevertheless allows us to identify the origin of debt problem and the degree of government ability to manipulate such variables and ultimately ensure public debt sustainability.

4.4 The Empirical Model

An econometrically estimable equation showing the relationship between the growth of external debt to GDP (as dependent variable) and explanatory variables; fiscal deficit, trade deficit, domestic savings, real exchange rates and interest payments on external debt has been formulated after analysis in chapter three and several tests of data in chapter five (see equation 8).

The model specification has resulted from the theoretical analysis of debt accumulation and the justification provided in section 2.5 of the literature review, resulting from formulations covered in equations (1) to (4); and the overall justification explained in section 4.3. It is therefore relevant now to summarize debt to GDP ratio (DGR) in a functional form as follows;

$$DGR=f(BD, DOSV, IP, TD, RER, \epsilon t) \quad (5)$$

Where,

The abbreviations stand for; DGR (Debt to GDP ratio), BD (Budget Deficit), TD (Trade Deficit), DOSV (Domestic Savings), IP (Interest Payments); all as proportion of GDP, RER (Real Exchange Rate) and ϵt (disturbance term).

If we assign parameters to each variable, equation (5) can be expressed as follows;

$$DGR = \beta_0 + \beta_1 BD + \beta_2 TD + \beta_3 DOSV + \beta_4 IP + \beta_5 RER + \epsilon \quad (6)$$

Knowing that normally data have outliers, and also to limit this study in estimating linear relationship between the external debt and respective explanatory variables, econometric model is transformed into logarithm form as follows;

$$\log DGR = \beta_0 + \beta_1 \log BD + \beta_2 \log TD + \beta_3 \log DOSV + \beta_4 \log IP + \beta_5 \log RER + \varepsilon \quad (7)$$

After all the tests on normality, co-integration and error correction model, final equation that shows changes in variables (as estimated in chapter 5) over time is expressed as follows;

$$\Delta DGR = \beta_0 + \sum_{i=0}^n \beta_i \Delta \log(X_i) t - i + \delta ECT_t + \varepsilon_t \quad (8)$$

Where, ECT is the predicted error correction term (or residual) and X_i denotes vector of explanatory variables.

4.5 Estimation Techniques

The econometric model in chapter five has been estimated using conventional Ordinary Least Square (OLS) technique. The OLS estimation technique has been chosen because of assumed linearity of relationship among the variables, and this has been made possible by transformation of data into natural logarithms. OLS is also useful in most of the time series data such as those used in this study because data is continuous. It should be noted that OLS has been used in a wide range of studies that seeks economic relationships with satisfactory results (Gujarati, 2003).

Before estimation of the model by using OLS, various tests²¹ have been undertaken to see the behaviour and characteristics of data. The normality test (for behaviour of variables), unit root test (for stationarity) and co-integration test (for order of integration so as to know number of equations that must be estimated) were performed on all the variables to determine their time series characteristics. The reason for doing these tests is that there is what is known as spurious regression when non-stationary time series data are estimated at their levels in a stochastic equation.

In addition, BETA²² coefficients are calculated in order to see relative contribution of selected independent variables in explaining variations in debt to GDP ratio. BETA coefficients are obtained by standardizing variable(s); hence avoids the problems of different measurement units on interpretation of results. According to Gujarati (2003), a variable is said to be standardized if we subtract its mean value from its individual values and divide the difference by the standard deviation of that variable. OLS and BETA coefficients attempt to answer our first and second research questions respectively.

²¹ These tests have been done using stata commands and respective results are given in respective tables in chapter 5.

²² For definition, formulae, interpretation and other details, see Gujarati (2003;p173-175). "If the coefficient of a standardized regressor is larger than that of another standardized regressor appearing in that model, then the former contributes more relatively to the explanation of the regressand than the latter".

4.6 Data Types and Sources

This research paper uses secondary data. The data which covers the period from 1975 to 2008 has been collected from various sources. The data on stock of external debt to GDP (dependent variable), balance of trade, budget deficits, interest payments on external debts and real exchange rate has been obtained from the Central Bank of Tanzania (BOT). The data for domestic savings and export and imports has been obtained from Tanzanian National Bureau of Statistics (NBS).

Other information and data that are used in this research paper have been obtained from Global Development Finance (GDF), IMF's International Financial Statistics (IFS) and World Bank databases, as well as Tanzanian Ministry of Finance and Economic Affairs. Sources have been identified in respective tables and sections with data. The major shortcoming in the data used in this study is inconsistency of the data of the same variables among different institutions. My observation is that such discrepancies do not largely affect results or trends especially when data are used as growth rates and ratios over-time.

CHAPTER FIVE

ESTIMATION AND ANALYSIS OF RESULTS

5.1 Introduction

This chapter presents and analyses the empirical results of the model described in chapter four. It presents time series characteristics of data using several tests undertaken, empirical findings and their interpretation. See sections 5.2 to 5.6.

5.2 Behaviour of variables

It is always a good practice to look at the behaviour of data distribution before subjecting it to estimation and analysis. Table 5.2 below provides a distributional nature of the variables used in this study. The interpretation is made basing on the joint probability (Jarque-Bera normality test)²³.

Table 5.2: Summary of descriptive statistics of variables in original form (all as proportion of GDP except Real Exchange Rate)

	Debt Stock	Interest Payment	Budget Deficit	Trade Deficit	Domestic Savings	Real Exchange Rates
Observation	34	34	34	34	34	34
Mean	0.69	0.12	0.01	0.02	0.05	389.70
Min	0.21	0.01	0.00	0.00	0.00	50.90
Max	0.96	0.71	0.04	0.09	0.15	827.85
Variance	0.0361	0.03	0.00	0.00	0.00	4482.00
Median	0.75	0.21	0.00	0.01	0.04	344.96
Pr(Skewness)	0.011	0.011	0	0	0.129	0.559
Pr(Kurtosis)	0.318	0.241	0.004	0.002	0.125	0.059
J.Bera (Pr>chi2)	0.0346	0.1128	0.0001	0.0001	0.1067	0.1289

²³ See Jarque, C.M. and Bera, A. K. (1987): *A Test for Normality of Observations and Regression Residuals*. Procedures and details are also found in Gujarati, D.N (2003) and many other econometric books. When JB probability is greater than one, then data is said to be normally distributed, and when JB probability is less than one, data is not normally distributed.

Table 5.2 indicates the behaviour of variables in their original form before any kind of data transformation. Variables (except interest payments, domestic savings and real exchange rates) were not normally distributed (because the Jarque Bera probability is less than 0.1 or is not significant at 10%). For more convenience and consistency, I transformed all variables into logarithm form in order to normalize, linearize and remove outliers. After transformation, all the variables became normally distributed.

5.3 The test for stationarity of variables

After transforming data into natural logarithms, the next step is to see if they are stationary as it is supposed to be before conducting regression.

Table 5.3 Result -Unit root test for stationary (all variables in GDP ratio except RER)

Variable	Augmented Dickey-Fuller Test		ADF at Two Lags	
	Test statistics	Critical value 5%	Test statistics	Critical value at 5%
log Debt Stock	-0.624	-2.978	-0.253	-2.983
log Interest Payments	-2.068	-2.978	-2.665	-2.983
log Budget Deficit	-0.952	-2.978	-0.003	-2.983
log Trade Deficit	-1.525	-2.978	-1.501	-2.983
log Domestic Savings	-3.183	-2.978	-2.493	-2.983
log Real Exchange Rates	-1.315	-2.978	-1.241	-2.983

From table 5.3, the result reveals that all variables are non-stationary at two lags. This is because the computed absolute values of the T-statistics ($|\tau|$) do not exceed the ADF (or MacKinnon) critical T-values, which lead us to fail (or not) to reject the null hypothesis ($\delta=0$) that there is unit root or the time series is not-stationary (Gujarat, 2003). The solution to make data stationary is to difference the variables.

Table 5.3.1 Results after differencing (test for stationarity)

Variable	Augmented Dickey-Fuller		ADF Lags (2)	
	Test statistics	Critical value at 5%	T- statistics	Critical value at 5%
DflogDebt Stock	-5.718	-2.980	-4.338	-2.986
Dflog Interest	-7.799	-2.980	-3.021	-2.986
Dflog Budget Deficit	-9.117	-2.980	-3.596	-2.986
Dflog Trade Deficit	-5.421	-2.980	-4.281	-2.986
Dflog Domestic Savings	-3.790	-2.980	-3.716	-2.986
DflogReal Exch.Rates	-5.213	-2.980	-3.719	-2.986

Table 5.3.1 shows that all variables became stationary after first difference as the computed absolute values of the tau statistics ($|\tau|$) exceeded the ADF

(or Mackinnon) critical tau values, which lead us to reject the null hypothesis ($\delta=0$). This as well, means that all variables are integrated of order one, [I (1)], (that is, they became stationary after just first difference). However, the test at first difference was performed with no constant (no intercept), meaning that the process under the null hypothesis is a random walk without a drift. That is, it is difference stationary process (DSP).

5.4 Co-integration test

Due to the results in section 5.3, according to Engel and Granger (1987), if two time series variables are integrated of order one, that is I (1) , there could be a linear combination between them which may be intergraded of order zero, I(0). This therefore, necessitated the test for presence of co-integration among the variables. The test was conducted by using Johansen Co-integration Test (see Greene, 2003).

Table 5.4: Results for co-integration test.

Maximum Rank	0	1	2	3	4	5	6	7
Eigen Value	.	0.727	0.6705	0.442	0.41	0.31	0.23	0
Trace Statistic	132.5	90.9862*	55.458	36.78	20	8.31	0.02	
5% critical value	124.24	94.15	68.52	47.21	29.7	15.4	3.76	

Number of observation=32, lags=2 (by default in stata)

The results in table 5.4 reveal that there is co-integration, and there is only one maximum rank of this co-integration (see the trace statistic with *). This is because the first significant value where trace statistics is less than critical value at 5 percent was found at maximum rank of one. This suggests that there is one co-integration equation which requires us to run an Error correction Model (ECM). With the help of economic theory and Granger causality test²⁴ (table 5.8 in appendices), which suggests that an equation normalized by Debt to GDP ratio (DGR) is significant if all other determinants (at original values) are excluded in the model, we reject the hypothesis that (TD, DOSV, BD, IP and RER) do not Granger cause DGR and believe that variables are correctly identified (that is, they do Granger cause DGR and not the other way round).

²⁴ It enables a researcher to establish if a given time series (X_t) is useful in predicting another time series (Y_t), after controlling for past values of the latter (Wooldridge, 2006).

5.5 Error Correction Model (ECM)

The ECM for the study followed the Engle Granger two step procedures due to the fact that there is only one co-integration vector. A regression with level variables (in log form) was run using OLS method to obtain the residual for long run relationship or an equilibrium error (details are available in Greene, 2003; Gujarati, 2003).

Table 5.5: Results for Unit root test for long run behaviour of the predicted residual

Residual	Augmented Dickey-Fuller Test(ADF)		Philips-Perron Test (PP)	
	Test statistics	Critical value at 5%	Test statistics	Critical value at 5%
Res (ECT)	-4.1	-2.98	-4.029	-2.978

Table 5.5 shows that the residual term is stationary after performing the two tests (ADF and PP) only once. This allowed us to estimate the residual term at its first lag, since the model was well specified by Ramsey RESET²⁵ test, with 0.6459 probability value of F-statistics leading us to fail to reject the null (Ho: model has no omitted variables). The ECM is set in the following form:

$$\Delta \log DGR = \beta_0 + \sum_{i=0}^n \beta_i \Delta \log(X_i) t - i + \delta ECT_t + \varepsilon_t \quad (8)$$

Where,

The abbreviations stands for; DGR (Debt to GDP ratio), BD(Budget deficit),TD(Trade Deficit), DOSV (Domestic Savings), IP (Interest Payments), all as ratios of GDP, RER (Real Exchange Rate), ECT (Error Correction Term or Residual) and ε_t (disturbance term).

Equation (8) was estimated to see changes in the dependent variables as a result of changes in explanatory variables. The summary results of the final equation are given in table 5.6. The process to final equation was through eliminating the insignificant variables from the model. In time series analysis, an Error Correction Model (ECM) is normally estimated with variables at differenced form. Since equation (8) is an ECM, all the variables are estimated at their differenced form. In addition, in time series lags are introduced in variables to see if previous levels or stocks of those variables have effects in the current estimates of the parameters. Thus, the final OLS result comprises dummy for 2000 and other variables: the first and second lags of trade deficit; domestic savings and its first lag; budget deficit and its first lag; interest pay-

²⁵ The Ramsey(1969) Regression Equation Specification Error Test (RESET) is a general specification test for the linear regression model. This test establishes whether a model is correctly specified or not; i.e. if there are omitted variables or there is non-linear relationship between the variables. See details in Wooldridge, J.M (2006).

ments with its second lag; the second lag of real exchange rates; together with the first lag of the residual term.

Table 5.6: Empirical Results for determinants of accumulation of Public External Debt

VARIABLES	OLS Coefficients	BETA Coefficients
Debt to GDP Ratio (Dependent Variable)		
Dummy for 2000	-0.426**	
	(0.163)	
First lag of Trade Deficit	0.1442*	0.086455
	(0.1725)	
Second lag of Trade Deficit	0.0880	0.172655
	(0.0550)	
Domestic Savings	-0.537***	-0.58567
	(0.128)	
First lag of Domestic Savings	-0.228*	-0.24851
	(0.117)	
Budget Deficit	0.141**	0.359852
	(0.0562)	
First lag of Budget Deficit	0.0826	0.210992
	(0.1531)	
Interest Payment	-0.200*	-0.32208
	(0.0962)	
Second lag of Interest Payments	-0.198**	-0.30672
	(0.0765)	
Second lag of Real Exchange Rate	0.344***	0.373856
	(0.118)	
First lag of predicted Residual	-1.351***	
	(0.221)	
Constant	-0.000791	
	(0.0643)	0.086455
Number of Observations	31	
R-squared(Measure of model fitness)	0.822	

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1; Statistical significance at 1%, 5% and 10% respectively.

Source: Author's computation using Stata based on data in table 5.7.

5.6 Model diagnostic tests and interpretation of results

Various model diagnostic tests were performed during the process and on the final model after dropping variables which had econometric problems and which could affect estimation and interpretation. Final results showed that the model is well specified with no omitted variables (Ramsey RESET test) as performed. Breusch-Godfrey LM test as well, suggested that there was no serial correlation (with joint probability of Chi square value of 0.2234 at lag 1). There

was also no heteroscedasticity problem (Breusch-Pagan and Cook-Weisberg tests, with P-value of 0.1045 of Chi square). There was no multicollinearity problem within the general model (Variance Inflation Factors-VIF 2.50 lower than 10).

In addition to that, the F-statistic test for the joint significance of the parameters in the model is highly significant at one percent level with the probability value 0.0000, while R-squared is 0.822. This means that about 82.2 percent of variation in debt to GDP ratio is explained by the independent variables (domestic savings, trade deficit, budget deficits, interest payments and real exchange rate). This could imply that the effect of immeasurable variables such as shocks, policy failures, political regimes and measurement errors accounts for 17.8 percent of variations in debt to GDP.

From the results given in table 5.6, domestic savings, second lag of real exchange rate and the error correction term are significant at one percent level. Budget deficit and second lag of interest payment are significant at five percent level, while first lag of trade deficit, first lag of domestic savings, first lag of budget deficit and interest payments at difference are significant at ten percent level. All explanatory variables bear *a priori* expected signs; except dummy 2000. This is the year when statistical test produced a structural break in debt to GDP ratio. This might be associated to HIPC which has significantly reduced debt to GDP ratio; and therefore it was expected to have negative sign.

With regard to the interpretation of OLS coefficients, the result reveals that, on average and *ceteris paribus*, one percent increment of domestic savings to GDP would decrease debt to GDP ratio by 0.54 percentage points; and vice versa. This suggests that low level of domestic savings in Tanzania is one of the major determinants of debt accumulation. Domestic savings and real exchange rate are the most statistically significant factors (at one percent level of significance). This could suggest that fluctuation in real exchange rate and domestic savings should draw attention of policy makers regarding efforts on reducing debt accumulation and ensure debt sustainability.

Additionally, the results indicate that, one percent increment in trade deficit to GDP would increase debt to GDP ratio by 0.14 percentage points; and vice versa. The coefficient bears expected sign and is statistically significant at ten percent level. This result also implies that the effect of trade deficit on debt to GDP ratio is realized after one year (that is, the variable became significant at its first lag). This statistical inference is consistent with the actual fact that Tanzania has experienced a negative trade balance almost every year since 1975 to 2008. Export performance has been poor since the failure of import substitution industrial development strategy, and high volume of imports, more of which is food stuff, soft business materials and luxurious goods such as vehicles instead of capital investment goods. Changes in weather and fall of prices of agricultural commodities in the world market are the main reasons for poor export performance.

Furthermore, it is deduced from the results that, on average, one percent increment in budget deficit would increase debt to GDP ratio by 0.14 percentage points; and vice versa, holding other things constant. The coefficient of budget deficit bears *a priori* condition and is statistically significant at ten percent level. This results point out to the existence of fiscal gap in Tanzania,

supporting the proponents of three gap model instead of two gap model, i.e. fiscal gap is also significantly binding. This statistical opinion is again consistent with the actual fact that Tanzania has been running a budget deficit almost every fiscal year since 1975 to 2008.

Moreover, the coefficient of real exchange rate bears expected sign and is statistically significant at one percent level. It is inferred from the results that on average, one percent appreciation in real exchange rate would increase debt to GDP ratio by 0.34 percentage points; and vice versa. This implies that real exchange rate is among the significant factors for external debt accumulation in Tanzania. This statistical opinion is supported by the fact that loans are denominated in foreign currencies and both external debt service and stock are affected by fluctuations in exchange rates. It is further deduced from the results that, on average, one percent increase in interest payment would decrease debt to GDP ratio by 0.20 percentage points. Interest payment is statistically significant at ten percent level, suggesting that policies for reducing debt accumulation should increase interest payments and monitor behaviour of real exchange rate; although these variables can hardly be influenced by domestic policies.

The coefficient of the error correction term indicates that the rate of adjustment towards equilibrium in the long run is about 135 percent which is a relatively high rate of adjustment. This could imply that, if debt distress occurs due to one or more of the factors explained above, 135% rate of adjustment is required to restore the equilibrium position; meaning that debt to GDP ratio is very sensitive to changes in the significant variables of the estimated model.

With regard to interpretation of BETA coefficients, holding other factors constant, and on average, the results indicates that, if each of the variables; trade deficit, real exchange rate and budget deficits increases by one standard deviation, debt to GDP ratio would increase by 0.10, 0.37 and 0.36 standard deviation units respectively. On the other hand, the results shows that on average and ceteris paribus, when each of the variables; domestic savings and interest payment increases by one standard deviation, debt to GDP ratio would decrease by 0.59 and 0.32 standard deviation units respectively.

The implication from the result could be that, policies to reduce debt accumulation or stabilize debt to GDP ratio for sustainability should focus on reducing trade deficit by increasing exports and reducing imports; and budget deficit by reducing growth of expenditure relative to revenue. Such policies should also focus on increasing domestic savings and debt service without accumulation of interest arrears. Relatively speaking, domestic savings has more impact on debt to GDP ratio compared to all other variables, while trade deficit has the least effect; at least in this statistical analysis. However this is not consistent with the fact that Tanzania receives a significant share of BOP support from IMF loans to finance trade gap. It could be a measurement era or more decomposition of BOP support offered could provide insights. Basing on these simulations, the relative impact of domestic factors seems higher compared to external factors.

CHAPTER SIX

POLICY IMPLICATION AND CONCLUSION

6.1 Introduction

This chapter presents summary of results from main analytical chapters three, five and background information from chapter one. It also provides main conclusions and policy implication. It further suggests some areas for further studies related to, but not covered in this study.

6.2 Summary of the results.

The empirical findings in chapter 5 after analysis of relative contribution of factors in public external debt distress, basing on the absolute values of BETA coefficients and level of OLS significance of variables suggests that, domestic savings and budget deficit (classified here as domestic factors) have large share in explaining variations in debt to GDP ratio compared to trade deficit, real exchange rate and interest payments (classified here as external factors). Moreover, all variables are statistically significant although at different levels. The significance of the variables in explaining distress in debt to GDP ratio is mainly consistent with the review done in other chapters.

In chapter one, I have indicated that Tanzanian public external debt is back to increasing trend despite a big debt relief in 2006. The proportion of external debt in the total national debt is significantly large compared to domestic debt. Moreover, for a long time, and in 2009 for example, the share of productive sectors in the use of external debt funds in economic sectors as percentage of DOD is very small (21%) compared to share of servicing trade deficit (31%) and other service sectors (48%). All these indicators do not provide a good signal for debt sustainability although the arbitrary threshold ratios for sustainability are in favour of Tanzanian debt situation.

The review of chapter three highlights that, debt to GDP ratio is not stable and the overall economy is vulnerable even to minor shocks. The country has low revenue growth rate due to low level of investments, low revenue base, large informal sector, and so forth. It is also claimed that there is poor tax collection and administration system; the long-time concern of donors and domestic stakeholders. Moreover, growth rate of expenditure is high compared to that of revenue, leading to budget deficit; necessitating borrowing. Inflated expenditure comes mainly from large government size and political bodies such as parliament.

Furthermore, the country is savings constrained due to poverty and inefficient financial markets and the nature of financial sector especially after privatization of all banks. This limits domestic borrowing, necessitating overseas borrowing. The situation is aggravated by persistent BOP difficulties resulting from higher import volume with constantly rising prices compared to highly

constrained export earnings due to constantly falling prices of commodities. The export performance is also largely affected by too much dependence on primary products especially agricultural goods whose production is rainfall dependent. The situation is further worsened by highly volatile exchange rates.

In addition, in chapter three we have seen that Tanzania is much dependence on foreign aid- grants, loans and debt relief which is a temporary measure. Debt relief didn't reduce new inflows of loans and grants and their share in the total budget.

6.3 Policy implication and conclusion.

This paper attempted to address debt problem from source. Better understanding of determinants of debt accumulation can be of great importance for its sustainability. Although most Tanzanian debt ratios fall below HIPC sustainability thresholds, the analysis of determinants of public external debts as reviewed in chapter 3 and empirical analysis in chapter 5 suggests that, more domestic efforts can be vital for debt sustainability rather than over-dependence on external aid. This suggests that, policies that could reduce debt accumulation should devote great efforts on measures that could increase domestic savings; reduce budget deficits, trade deficits, without of course forgetting interest payments and behaviour of real exchange rate over time.

Measures such as formalization of informal sector and modernization of tax collection and administration, alongside expenditure control could improve fiscal performance and reduce debt accumulation. Establishment of national development banks could tap domestic savings and facilitate investment, reducing overseas borrowing. Modernization of agriculture (for instance investing in irrigation system rather than rainfall dependent agriculture) could improve export performance. This could be done along with management of imports in terms of its volume and composition; major part could be devoted to inputs for productive investments and reduce luxurious imports such as vehicles which could also reduce imports of fuel and other related items.

6.4 Areas for further research

More empirical research that is different from the level of master's research paper could provide more insight of debt burden and its solution. The role of politics, corruption and foreign influence (supply side story of external debt) on public external debt accumulation could be an interesting area.

Appendices

Appendix A: TANZANIAN EXTERNAL DEBT ANALYSIS (US\$ million)

Year	1990	1995	2000	2004	2005	2006	2007	2008
1. Summary external debt data								
External debt stocks	6,446	7,364	7,136	8,557	8,335	4,028	4,974	5,938
Long-term external debt	5,786	6,203	5,964	7,011	6,998	3,026	3,916	4,599
Public and publicly guaranteed	5,786	6,203	5,964	6,519	6,438	2,443	3,172	3,710
Private nonguaranteed	0	0	0	492	560	583	744	889
Use of IMF credit	140	197	324	423	342	13	18	17
Short-term external debt	520	963	848	1,124	995	989	1,040	1,322
Interest arrears on long-term	404	904	646	795	604	583	603	739
Memorandum items								
Principal arrears on long-term	826	1,494	692	703	647	397	421	1,101
Long-term public sector debt	5,728	6,106	5,912	6,519	6,437	2,443	3,172	3,710
Long-term private sector debt	58	98	52	492	560	583	744	889
Public & publicly guaranteed commitments	697	141	391	589	617	840	858	824
External debt flows								
Disbursements	325	261	262	441	475	577	654	523
Long-term external debt	296	261	209	433	466	573	649	523
IMF purchases	29	0	53	8	8	4	4	0
Principal repayments	118	141	104	64	77	59	20	22
Long-term external debt	89	122	94	39	31	59	20	22
IMF repurchases	28	19	10	25	46	0	0	0
Net flows	224	98	202	549	459	533	665	647
Long-term external debt	207	139	115	393	435	514	630	501
Short-term external debt	16	-22	44	172	62	15	31	146
Interest payments	62	85	63	55	54	52	44	42
Long-term external debt	47	80	51	46	44	40	26	27
IMF charges	6	1	2	2	1	0	0	0
Short-term external debt	9	4	10	7	9	12	19	15
2. Other non-debt resource flows								
Foreign direct investment (net)	0	120	463	331	494	597	647	744
Portfolio equity flows	0	0	0	2	3	3	3	3
Profit remittances on FDI	0	2	13	58	66	66	68	68
Grants (excluding technical coop.)	677	451	745	1,353	1,033	5,252	2,053	1,658
of which: Debt forgiveness grants	..	..	235	292	68	4,171	644	2
IDA grants	..	..	..	143	13	14	31	28
Memo: technical coop. grants	208	265	150	174	176	208	101	140
3. Currency composition of public and publicly guaranteed debt (%)								
Euro	..	..	..	2.7	2.8	7.4	6.4	5.5
Japanese yen	8.5	10.9	7.9	7.8	7.0	5.0	4.0	4.3
Pound sterling	11.7	10.2	8.9	5.0	4.8	0.7	0.1	0.1
Swiss franc	0.6	0.1	0.0	0.0	0.0	0.0	0.0	0.0
U.S.dollars	35.7	38.8	52.0	57.3	54.1	46.3	40.1	41.1
4. Average terms of new commitments								
Official creditors								
Interest (%)	1.1	1.7	0.9	0.8	1.2	0.8	0.7	0.7
Maturity (years)	35.4	22.3	38.2	39.8	37.1	41.0	41.3	42.5
Grace period (years)	9.4	7.4	9.8	9.9	9.3	10.1	10.1	10.3
Private creditors								
Interest (%)	2.5	1.9	0.0	3.0	0.0	0.0	4.7	0.0
Maturity (years)	13.3	3.7	1.0	12.0	0.0	0.0	11.1	0.0
Grace period (years)	6.8	1.6	1.0	2.5	0.0	0.0	1.6	0.0
5. Major economic aggregates								
Gross national income (GNI)	4,072	5,131	8,959	11,153	14,002	14,097	16,129	19,876
Exports of goods, services & income	544	1,297	1,341	2,703	3,038	3,535	4,218	5,336
Worker remit. & comp. of employees	..	1	8	11	18	15	14	19
Imports of goods & services	1,665	2,281	2,230	3,653	4,390	5,258	6,441	8,251
International reserves	193	270	974	2,296	2,049	2,259	2,886	2,893
Current account balance	-559	-590	-499	-367	-864	-1,143	-1,580	-2,307
6. Ratios								
External debt stocks to exports (%)	1,184.3	567.8	532.1	316.6	274.3	113.9	117.9	111.3
External debt stocks to GNI (%)	158.3	143.5	79.7	76.7	59.5	28.6	30.8	29.9
Debt service to exports (%)	32.9	17.4	12.4	4.4	4.3	3.1	1.5	1.2

Short-term to external debt stocks (%)	8.1	13.1	11.9	13.1	11.9	24.6	20.9	22.3
Multilateral to external debt stocks (%)	30.6	37.9	45.8	56.6	58.4	36.9	43.9	45.1
Reserves to external debt stocks (%)	3.0	3.7	13.7	26.8	24.6	56.1	58.0	48.7
Reserves to imports (months)	1.4	1.4	5.2	7.5	5.6	5.2	5.4	4.2
7. Long-term external debt								
Debt outstanding and disbursed	5,786	6,203	5,964	7,011	6,998	3,026	3,916	4,599
Public and publicly guaranteed	5,786	6,203	5,964	6,519	6,438	2,443	3,172	3,710
Official creditors	5,299	5,798	5,775	6,437	6,341	2,358	3,079	3,621
Multilateral	1,976	2,791	3,267	4,839	4,869	1,484	2,182	2,677
of which: IBRD	243	87	11	0	0	0	0	0
IDA	1,250	2,182	2,593	3,916	3,861	1,056	1,585	1,971
Bilateral	3,324	3,008	2,507	1,597	1,472	873	897	945
Private creditors	487	405	190	82	97	86	93	89
of which: Bonds	0	0	0	0	0	0	0	0
Commercial banks	83	74	81	45	61	49	55	52
Private nonguaranteed	0	0	0	492	560	583	744	889
of which: Bonds	0	0	0	0	0	0	0	0
Disbursements	296	261	209	433	466	573	649	523
Public and publicly guaranteed	296	261	209	433	466	573	649	523
Official creditors	280	220	204	427	447	560	646	523
Multilateral	200	187	185	427	444	494	627	523
of which: IBRD	0	0	0	0	0	0	0	0
IDA	186	160	142	343	275	416	475	394
Bilateral	80	33	19	0	3	66	19	0
Private creditors	17	40	5	5	19	13	3	0
of which: Bonds	0	0	0	0	0	0	0	0
Commercial banks	4	5	5	5	19	13	3	0
Private nonguaranteed	0	0	0	0	0	0	0	0
of which: Bonds	0	0	0	0	0	0	0	0
Principal repayments	89	122	94	39	31	59	20	22
Public and publicly guaranteed	89	122	94	39	31	59	20	13
Official creditors	77	100	77	39	31	57	19	13
Multilateral	45	78	29	29	26	51	13	13
of which: IBRD	26	34	4	3	0	0	0	0
IDA	6	12	9	13	15	31	1	1
Bilateral	33	21	47	10	5	6	6	0
Private creditors	12	22	17	0	0	2	1	0
of which: Bonds	0	0	0	0	0	0	0	0
Commercial banks	0	0	0	0	0	2	1	0
Private nonguaranteed	0	0	0	0	0	0	0	9
of which: Bonds	0	0	0	0	0	0	0	0
Interest payments	47	80	51	46	44	40	26	27
Public and publicly guaranteed	47	80	51	44	42	38	23	21
Official creditors	44	77	49	44	42	36	22	21
Multilateral	27	56	23	37	38	29	17	21
of which: IBRD	17	8	1	0	0	0	0	0
IDA	8	16	15	28	30	20	10	13
Bilateral	17	20	26	7	4	7	6	0
Private creditors	3	3	2	0	0	2	1	0
of which: Bonds	0	0	0	0	0	0	0	0
Commercial banks	0	0	0	0	0	2	1	0
Private nonguaranteed	0	0	0	2	2	2	2	6
of which: Bonds	0	0	0	0	0	0	0	0
8. Debt stock-flow reconciliation								
Total change in external debt stocks	602	144	-719	1,304	-222	-4,307	946	964
Net flows on external debt	224	98	202	549	459	533	665	647
Cross-currency valuation	118	-136	-286	151	-420	-3,925	114	45
9. Debt restructurings								
Total amount rescheduled	183	0	342	0	0	0	0	0
Total amount forgiven	113	140	572	88	285	4,858	13	14
Debt buyback	0	0	0	0	0	0	0	0
Data on long-term private nonguaranteed debt are World Bank staff estimates from 2004 to 2007. Data on long-term private nonguaranteed debt for 2008 are reported by Central Bank for the first time. Tanzania was granted debt relief effective in 2006 under the Multilateral Debt Relief Initiative.								

Source: Global Finance Statistical Tables

Table 3.2.1: Tanzania selected macroeconomic indicators: 1975-2008

Year	Inflation (%)	Real GDP (%)	Nominal Exchange Rate (TZS/USD)	Export/import (%)
1975	26.5	5.7	7.71	48.4
1976	6.9	6.6	8.41	68.8
1977	11.6	0.4	8.31	68.1
1978	6.6	2.1	7.73	41.7
1979	12.9	2.4	8.29	45.1
1980	30.3	3.0	8.31	40.7
1981	25.7	-0.5	8.92	48.3
1982	27.6	0.6	9.52	39.5
1983	29.7	-2.4	12.46	46.6
1984	35.4	3.4	18.11	45.5
1985	32.3	4.6	16.50	28.5
1986	32.6	1.9	51.72	36.9
1987	29.8	4.9	83.72	31.2
1988	31.8	4.1	125.00	33.5
1989	30.3	4.0	192.30	35.1
1990	35.8	4.5	196.60	24.3
1991	28.7	5.7	233.90	22.0
1992	21.8	3.5	335.00	27.6
1993	25.3	4.2	479.87	29.4
1994	33.0	3.0	523.45	34.6
1995	28.4	4.5	550.36	40.3
1996	21.0	4.0	595.64	56.6
1997	16.1	4.0	624.57	56.1
1998	12.8	4.2	681.00	40.5
1999	7.9	4.7	797.33	35.5
2000	6.0	4.9	803.26	43.6
2001	5.1	5.6	916.30	45.3
2002	4.4	6.2	976.30	54.4
2003	3.5	5.7	1063.62	53.2
2004	6.0	6.7	1042.96	53.9
2005	4.9	6.8	1165.51	50.9
2006	6.20	6.2	1261.6	40.8
2007	7.10	7.1	1132.1	37.9
2008	10.80	7.4	1280.3	34.6

Source: Bank of Tanzania and Ministry of Finance and Economic Affairs

Table 3.2.2 Tanzanian major macroeconomic variables 1988-2008 (Thousand TZS)

YEARS	REAL GDP - MIL.TZS	GDP (%)	EXPORTS	IMPORTS	Nominal (period average)	Domestic savings	Domestic Savings as % of GDP
1988	1,119,017	4.4	48,810	141,338	100.1	40,347	3.60
1989	1,147,745	2.6	71,925	208,541	144.5	58,702	5.10
1990	1,219,236	6.2	104,843	311,133	197.6	78,578	6.40
1991	1,253,134	2.8	111,474	365,413	222.6	114,120	9.10
1992	1,275,917	1.8	170,438	539,096	301.9	131,249	10.30
1993	1,281,006	0.4	310,305	823,212	405.3	46,686	3.60
1994	1,298,943	1.4	265,177	1,002,880	509.6	-3624.7	-0.30
1995	1,345,246	3.6	390,378	1,253,739	574.8	75395.1	5.60
1996	1,401,711	4.2	455,419	1,203,517	580	270987.6	19.30
1997	1,448,214	3.3	438,209	1,208,296	624.6	284075.6	19.60
1998	7,803,926	4.1	748,973	1,565,325	664.7	289,820	3.70
1999	8,181,671	4.8	885,942	1,703,753	744.9	255,037	3.10
2000	8,585,340	4.9	1,064,773	1,702,544	800.4	337,598	3.90
2001	9,100,274	6	1,547,644	1,936,874	876.4	647,670	7.10
2002	9,752,177	7.2	1,836,223	2,072,225	966.7	814,566	8.40
2003	10,423,734	6.9	2,247,385	2,761,744	1,038.40	1,134,162	10.90
2004	11,239,735	7.8	2,745,596	3,641,808	1,089.40	1,395,649	12.40
2005	12,068,090	7.4	3,324,425	4,746,646	1,122.70	1,294,078	10.70
2006	12,881,163	6.7	4,047,990	6,404,597	1,251.90	1,432,663	11.10
2007	13,801,921	7.1	5,095,773	7,783,703	1,232.80	1,404,546	10.20
2008	14,828,345	7.4	6,230,730	9,612,093	1,196.30	2,868,999	19.30

Source: Tanzanian National Bureau of Statistics (NBS)

Table 3.3: Tanzanian Government Fiscal Operations 1975/76- 2006/07 (Millions TZS)

Year	Government Expenditure	Government Revenue	Budget Deficit	Budget Deficit (% of GDP)
1975/76	5,613.40	4,062.00	1,551.40	9.1
1976/77	7,571.60	4,933.70	2,637.90	11.7
1977/78	9,206.80	6,629.40	2,577.40	9.9
1978/79	10,194.50	6,442.00	3,752.50	13.0
1979/80	12,230.20	7,679.60	4,550.60	14.0
1980/81	14,755.20	8,511.40	6,243.80	16.2
1981/82	17,387.00	9,374.00	8,013.00	17.7
1982/83	18,998.90	12,581.00	6,417.90	12.2
1983/84	20,409.90	13,506.00	6,903.90	11.0
1984/85	25,550.50	18,638.00	6,912.50	8.8
1985/86	27,001.60	22,031.70	4,969.90	4.6
1986/87	38,473.50	29,351.00	9,122.50	6.5
1987/88	45,442.90	47,479.40	2,036.50	1.0
1988/89	57,297.60	70,417.40	13,119.80	4.6
1989/90	98,429.00	94,655.00	3,774.00	1.1
1990/91	125,933.00	133,238.00	7,305.00	1.8
1991/92	161,474.00	173,566.00	12,092.00	2.3
1992/93	263,412.80	164,109.00	99,303.80	14.9
1993/94	374,962.00	242,444.00	132,518.00	8.2
1994/95	398,023.80	331,238.00	66,785.80	3.1
1995/96	420,522.10	448,372.90	27,850.80	1.0
1996/97	515,389.30	572,029.70	56,640.40	1.6
1997/98	730,336.00	619,083.10	111,252.90	2.6
1998/99	816,706.60	689,325.30	127,381.30	2.4
1999/00	1,168,778.80	777,644.70	391,134.10	6.5
2000/01	1,305,035.30	929,624.00	375,411.30	5.5
2001/02	1,466,136.90	1,042,955.10	423,181.80	5.5
2002/03	1,989,537.80	1,217,517.00	772,020.70	8.8
2003/04	2,516,943.10	1,459,303.30	1,057,639.80	10.4
2004/05	3,164,282.30	1,773,709.40	1,390,572.90	11.9
2005/06	4,005,227.80	2,124,843.70	1,880,384.00	14.0
2006/07	4,474,680.90	2,739,022.40	1,735,658.50	11.5

Source: Bank of Tanzania Economic Operations (Various Years)

Table 3.4.1: The size and Stock of Public External Debt (in thousands of US Dollars).

Year	External Debt Stock	Disbursed Amounts	Principal Repaid	Net Flows on Debt ²⁶	Interest Payments	Net Transfers on Debt ²⁷	Total Debt Service ²⁸	Exchange rate
1975	812,074	110,499	3,652	106,847	1,041	105,806	4,693	8
1976	912,637	100,909	1,609	99,301	799	98,502	2,407	8
1977	1,118,013	162,097	2,584	159,514	1,003	158,511	3,587	8
1978	1,166,401	236,012	3,908	232,104	1,548	230,556	5,456	7
1979	1,080,489	163,850	5,362	158,487	1,524	156,964	6,886	8
1980	1,355,519	716,403	4,803	711,600	1,665	709,935	6,468	8
1981	1,578,604	326,677	3,616	323,062	2,913	320,149	6,528	8
1982	1,729,434	346,306	3,821	342,485	5,424	337,061	9,244	10
1983	1,899,334	399,927	9,404	390,522	5,200	385,323	14,604	12
1984	1,974,391	314,786	5,183	309,604	3,845	305,759	9,028	18
1985	2,202,509	274,686	81,481	193,205	19,449	173,756	100,930	16
1986	3,492,398	872,232	13,253	858,980	9,872	849,108	23,124	52
1987	4,000,013	208,687	36,196	172,491	27,444	145,047	63,640	84
1988	3,990,028	189,628	39,534	150,094	41,347	108,747	80,881	125
1989	4,397,462	428,528	43,755	384,773	43,377	341,397	87,132	192
1990	5,078,119	539,303	71,187	468,116	23,116	445,000	94,303	197
1991	5,579,234	244,776	70,889	173,888	53,868	120,019	124,757	234
1992	5,941,591	758,251	134,042	624,209	86,201	538,008	220,243	335
1993	5,916,059	258,104	115,893	142,210	101,619	40,592	217,512	480
1994	6,246,189	259,200	130,149	129,052	89,501	39,551	219,650	523
1995	6,280,683	237,408	106,737	130,671	55,013	75,658	161,750	558
1996	5,113,676	288,131	126,534	161,598	84,330	77,268	210,863	595
1997	6,120,660	1,529,297	95,395	1,433,902	50,365	1,383,538	145,759	624
1998	6,469,116	308,988	170,453	138,534	108,877	29,657	279,330	681
1999	6,548,056	394,257	141,464	252,793	73,641	179,151	215,106	797
2000	6,222,231	339,286	152,004	187,282	35,720	151,562	187,724	803
2001	4,659,000	206,848	143,785	63,063	40,831	22,232	184,616	916
2002	5,080,909	363,419	106,263	257,156	35,573	221,584	141,836	976
2003	5,765,093	535,182	111,261	423,920	45,836	378,084	157,097	1,064
2004	6,412,451	511,165	133,334	377,831	38,964	338,867	172,298	1,043
2005	6,338,204	591,297	142,755	448,542	29,391	419,151	172,146	1,166
2006	2,801,804	496,793	69,783	427,009	43,635	383,375	113,418	1,261
2007	3,597,890	718,677	23,539	695,137	25,037	670,101	48,576	1,132
2008	4,156,153	554,001	19,013	534,988	20,876	514,112	39,889	1,280

Source: Bank of Tanzania Database, 2010-Commonwealth Secretariat Debt Recording and Management System (CSDRMS)

²⁶ *Net Flows on Debt is given by Disbursed amount minus interest payments*

²⁷ *Net Transfers on Debt is given by Net Flows on Debt minus Interest Payments*

²⁸ *Total Debt Service is by Principal Repayments and Interest Payments*

Table 3.4.2 Growth Rate of Debt, Exports, Imports and GDP in Tanzania

Year	Growth Rates			
	Debt	Exports	Imports	GDP
1970	-	0.5	30.5	5.6
1971	22.9	1.7	4.3	4.1
1972	22.9	9.3	5.8	6.7
1973	26.8	1.3	9.9	3.0
1974	43.1	-5.9	28.8	2.5
1975	29.5	-23.2	-15.7	9.4
1976	42.0	26.9	-12.1	2.9
1977	32.7	5.5	3.1	0.3
1978	12.1	-27.4	27.7	2.1
1979	10.0	6.9	-9.3	2.4
1980	12.7	-28.6	-12.7	4.5
1981	7.6	-9.9	-18.6	0.0
1982	9.3	-32.3	-33.2	0.5
1983	10.6	-20.8	16.0	-2.3
1984	2.9	7.0	-4.0	3.3
1985	13.0	-24.7	47.5	4.5
1986	14.0	36.2	73.6	1.8
1987	19.7	34.8	15.0	4.9
1988	5.1	29.1	0.0	4.0
1989	-1.0	42.8	37.7	3.9
1990	14.5	2.4	5.0	5.0
1991	17.0	5.3	8.3	6.0
1992	1.7	10.1	-7.5	4.0
1993	1.6	34.0	19.5	4.0
1994	7.9	25.0	-0.1	3.0
1995	5.3	35.0	18.1	3.6
1996	-5.9	2.8	-5.2	4.5
1997	-1.1	-4.2	-4.0	3.5
1998	3.0	-9.7	20.9	4.0
1999	11.0	5.0	3.0	4.7
2000	8.6	21.8	-2.4	4.9

Source: Mbelle, 2001 and BOT (2000).

Table 3.5.2: Structure of Foreign Debt in Tanzania (Million USD)

Year	TDS	LTD	STD	EDS
1975	2342	1868	401	20
1976	2701	2070	534	24
1977	3469	2563	796	35
1978	4367	3015	1246	86
1979	4202	2791	1259	80
1980	5239	3297	1771	138
1981	5755	3655	1954	152
1982	6129	3718	2284	132
1983	6797	3965	2740	144
1984	7159	3990	3110	124
1985	9090	4629	4404	170
1986	4892	4420	401	154
1987	5498	4830	555	156
1988	6003	5246	616	162
1989	5844	5273	443	177
1990	6446	5786	520	179
1991	6552	5796	613	205
1992	6662	5854	587	234
1993	6762	5798	749	211
1994	7220	6123	885	183
1995	7364	6203	963	226
1996	7336	6098	1032	268
1997	7099	6005	848	163
1998	7503	6318	917	232
1999	7855	6548	994	221
2000	7136	5964	848	166
2001	6461	5515	605	148
2002	7079	5977	702	104
2003	7253	6001	814	87
2004	8557	7011	1124	119
2005	8335	6998	995	132
2006	4028	3026	989	111
2007	4974	3916	1040	64
2008	5938	4599	1322	65

Source: World Debt Tables (Various Issues)

EDS-Debt service on external debt; TDS- External debt stocks, total

STD-External debt stocks, short-term ; and LTD-External debt stocks, long-term

Table 3.5.1: Structure, Type and Composition of Tanzanian external debt service

YEAR	A	B	C	D	E	F	G	H
1975	0	47	0	0	17	612	0	3
1976	4	43	4	84	20	476	4	4
1977	5	45	5	121	23	282	5	8
1978	14	34	8	199	29	1,248	14	2
1979	11	34	9	181	30	1,850	11	2
1980	15	35	10	232	34	8,722	18	0
1981	15	37	10	242	34	10,376	19	0
1982	20	37	16	431	37	47,370	25	0
1983	26	38	19	558	40	14,112	29	0
1984	20	59	14	615	43	11,574	25	0
1985	33	38	31	1,009	48	27,522	39	0
1986	30	64	22	90	8	657	34	1
1987	34	59	29	139	10	1,745	39	1
1988	28	54	25	121	10	793	32	1
1989	32	41	29	82	8	817	33	1
1990	31	53	25	96	8	270	33	3
1991	39	58	33	119	9	301	40	3
1992	39	39	38	101	9	179	40	5
1993	26	45	25	95	11	368	27	3
1994	18	62	17	91	12	266	19	5
1995	17	67	16	74	13	357	17	4
1996	18	50	17	73	14	234	19	6
1997	13	79	10	68	12	136	13	9
1998	21	54	16	78	12	153	20	8
1999	16	44	15	84	13	128	19	10
2000	12	36	11	63	12	87	12	14
2001	5	50	8	33	9	52	8	18
2002	5	49	5	36	10	46	5	22
2003	4	65	3	36	11	40	4	28
2004	9	78	3	42	13	49	4	27
2005	4	88	2	33	12	49	4	25
2006	2	82	3	28	25	44	3	56
2007	1	69	1	25	21	36	2	58
2008	2	100	1	25	22	46	1	48

Source: Global Development Finance, (various years).

KEY

- A Debt service (PPG and IMF only, % of exports)
- B Multilateral debt service (% of public and publicly guaranteed debt service)
- C Public and publicly guaranteed debt service (% of exports)
- D Short-term debt (% of exports of goods, services and income)
- E Short-term debt (% of total external debt)
- F Short-term debt (% of total reserves)
- G Total debt service (% of exports of goods, services and income)
- H Total reserves (% of total external debt)

Table 5.7: Data used in Regression Analysis (in thousand TZS)

<i>Year</i>	<i>DGR</i>	<i>RER</i>	<i>IP</i>	<i>BD</i>	<i>TD</i>	<i>DOSV</i>
1975	0.59	255.8	1,041.4	1,551.40	98,682	2,532
1976	0.62	203.3	798.5	2,637.90	89,175	3,278
1977	0.63	215.7	1,003.0	2,577.40	186,145	4,771
1978	0.85	257.3	1,548.0	3,752.50	637,315	11,687
1979	0.87	303.7	1,523.7	4,550.60	521,260	10,575
1980	0.85	265.3	1,665.3	6,243.80	649,904	16,924
1981	0.71	97.6	2,912.5	8,013.00	536,850	18,582
1982	0.77	81.1	5,423.8	6,417.90	642,502	26,557
1983	0.85	77.3	5,199.8	6,903.90	407,878	40,945
1984	0.86	71.4	3,844.8	6,912.50	518,477	50,919
1985	0.96	50.9	19,448.8	4,969.90	741,733	73,484
1986	0.89	132.9	9,871.5	9,122.50	795,130	210,224
1987	0.81	211.4	27,444.3	2,036.50	990,375	407,207
1988	0.65	276.7	41,346.9	13,119.80	977,768	516,269
1989	0.69	668.1	43,376.8	3,774.00	987,292	847,311
1990	0.75	348.5	23,116.1	7,305.00	1,120,684	895,792
1991	0.80	279.2	53,868.4	12,092.00	1,209,264	1,321,107
1992	0.85	565.0	86,201.4	99,303.80	1,328,852	1,911,608
1993	0.84	592.3	101,618.7	132,518.00	1,407,193	1,852,026
1994	0.87	465.4	89,501.2	66,785.80	997,461	1,449,497
1995	0.84	419.0	55,012.7	27,850.80	984,481	1,452,533
1996	0.66	341.4	84,329.5	56,640.40	849,426	1,777,114
1997	0.76	355.8	50,364.5	111,252.90	875,652	1,332,071
1998	0.78	336.1	108,877.0	127,381.30	1,310,811	2,272,795
1999	0.76	526.3	73,641.4	391,134.10	1,171,902	2,617,201
2000	0.69	502.6	35,719.6	375,411.30	889,402	1,840,259
2001	0.48	524.2	40,831.2	423,181.80	589,987	1,448,569
2002	0.49	588.5	35,572.5	772,020.70	327,994	1,076,437
2003	0.53	776.4	45,835.8	1,057,639.80	627,181	923,699
2004	0.55	827.9	38,964.0	1,390,572.90	950,052	1,111,630
2005	0.51	695.6	29,390.7	1,880,384.00	1,351,551	1,311,855
2006	0.21	717.4	43,634.6	1,735,658.50	1,722,876	1,097,111
2007	0.25	598.1	25,036.6	1,033,169.70	2,223,563	509,442
2008	0.27	641.4	20,876.1	1,248,626.00	2,914,884	495,197

KEY: IP= Interest payments, DGR= Debt to GDP ratio, RER= Real Exchange Rate, TD = Trade Deficit, DOSV= Domestic Savings, and BD= Budget deficit.

NOTE: In regression on the STATA, all variables (except RER) were expressed as ratio of GDP.

Table 5.8: Granger causality Wald tests

<i>Equation</i>	<i>Excluded</i>	<i>chi2</i>	<i>Degree of freedom</i>	<i>Prob > chi2</i>
Log DGR	Log IP	20.766	2	0.000
Log DGR	Log TD	3.4561	2	0.108
Log DGR	Log DOSV	12.775	2	0.003
Log DGR	Log BD	6.9897	2	0.042
Log DGR	Log RER	1.3828	2	0.101
<u>Log DGR</u>	<u>ALL</u>	<u>54.771</u>	<u>10</u>	<u>0.000</u>
Log IP	Log DGR	20.78	2	0.000
Log IP	Log TD	0.64147	2	0.726
Log IP	Log DOSV	3.1387	2	0.208
Log IP	Log BD	0.07919	2	0.961
Log IP	Log RER	11.774	2	0.003
<u>Log IP</u>	<u>ALL</u>	<u>57.544</u>	<u>10</u>	<u>0.000</u>
Log TD	Log DGR	6.9647	2	0.031
Log TD	Log IP	7.5254	2	0.023
Log TD	Log DOSV	3.3062	2	0.191
Log TD	Log BD	3.0861	2	0.214
Log TD	Log RER	2.8796	2	0.237
<u>Log TD</u>	<u>ALL</u>	<u>24.161</u>	<u>10</u>	<u>0.007</u>
Log DOSV	Log DGR	6.7461	2	0.034
Log DOSV	Log IP	3.4344	2	0.180
Log DOSV	Log TD	8.4376	2	0.015
Log DOSV	Log BD	1.0964	2	0.578
Log DOSV	Log RER	12.756	2	0.002
<u>Log DOSV</u>	<u>ALL</u>	<u>41.299</u>	<u>10</u>	<u>0.000</u>
Log BD	Log DGR	0.0947	2	0.954
Log BD	Log IP	0.57533	2	0.750
Log BD	Log TD	0.81113	2	0.667
Log BD	Log DOSV	3.2698	2	0.195
Log BD	Log RER	2.8139	2	0.245
<u>Log BD</u>	<u>ALL</u>	<u>13.983</u>	<u>10</u>	<u>0.174</u>
Log RER	Log DGR	3.8369	2	0.147
Log RER	Log IP	10.262	2	0.006
Log RER	Log TD	0.0074	2	0.996
Log RER	Log DOSV	4.5172	2	0.104
Log RER	Log BD	1.1237	2	0.570
<u>Log RER</u>	<u>ALL</u>	<u>26.107</u>	<u>10</u>	<u>0.004</u>

Source: Author's computation from regression data set using stata software.

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