

ADDIS ABABA UNIVERSITY
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FACULTY OF BUSINESS AND ECONOMICS

EXTERNAL DEBT AND ECONOMIC GROWTH IN
ETHIOPIA

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LIST OF ABBREVIATIONS

ADF	African Development Fund
CAB	Current Account Balance
DDSR	Debt and Debt-Service reduction
ERP	Economic Reform Program
EPRDF	Ethiopia Peoples Revolutionary Democratic Front
GDP	Gross Domestic Product
GDS	Gross Domestic Saving
GNP	Gross National Product
HICs	Heavily Indebted Countries
HIPCs	Heavily Indebted Poor Countries
IFS	International Financial Statistical Year
IMF	International Monetary Fund
IDA	International Development Association
LDCs	Less Developed Countries
LIBOR	London Inter Bank Offered Rate
MEDaC	Ministry of Economic Development and Co-operation
MoFED	Ministry of Finance and Economic Development
OPEC	Organization of Petroleum Exporting Countries
OLS	Ordinary Least Square
SILICs	Severely Indebted Low Income Countries
SIMICs	severely Indebted Middle Income Countries

SSA	Sub-Saharan Africa
TGE	Transitional Government of Ethiopia
2SLS	Two Stage Least Square
WB	World Bank

ABSTRACT

This study uses a simultaneous equation approach to investigate the impact of external debt on economic growth in Ethiopia using a macroeconometric model estimated for 1970-2000. The empirical findings reveal that external debt does not affect growth directly. The results indicate that external debt affects investment positively and is statistically significantly indicating external debt in Ethiopian case encourage investment rather than depress it. Furthermore, the result also confirms that there is no sign of crowding out effect through which external debt is hypothesized to affect growth.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

The debt crisis was perhaps the dominant macroeconomics problem of the 1980s for many highly indebted developing countries. Analysis of the causes of the crisis, its domestic consequences, and the nature of the desirable policy responses -on the part of both the international community and domestic governments in the indebted countries -has generated an enormous literature.

In revisiting the 1970s with a focus of debt, the following stylized facts emerge; transitory commodity price booms, expanded access to private financial and other trade credit, and huge public expenditures were some of the features of the most indebted developing countries. When the second oil prices shock hit in the late 1970s, most countries were poorly positioned to absorb it, given their higher level of debt and its less concessional structure. During the new development of the 1980-83 period, world recession, further terms of trade deterioration, high interest rates, delayed adjustment programs, and drought all complicated by the disruption and decline in private and official lending. This resulted in the sharply deteriorated economic conditions and out look for most of Sub-Saharan Africa (Krumm, 1985).

During 1980s, available empirical evidence shows that in Sub-Saharan Africa (SSA) per capita income (measured by gross national product per person) declined at an average annual rate of 2.2 percent, per capita private consumption fell by 14.8 percent; and the terms of trade fell by 9.1 percent. Between 1981 and 1990 the average annual growth rate of real GDP in SSA was 1.7 percent. Given the region's high population growth rate, the average annual growth rate of real GDP per capita between 1981 and 1990 was -0.9 percent. Thus, among all the regions constituting developing countries, Sub-Saharan African's performance was the poorest, with the exception of the Middle East and North African region (Iyoha, M. A. 1999). As the result, the decade of 1980s is widely regarded as African's "lost decade" of development opportunities.

Both external and domestic factors have contributed to this disappointing over all performance. The external factors are sharp losses in the term of trade, the oil price shocks of 1973-74 and 1978-79, the expansion of the Eurodollar, a rise in public expenditure by African governments following increases in commodity price during the early 1970s, recession in the industrialized nations and rises in real interest rate. For many countries, the effects of those adverse external developments have been compounded by unfavorable weather conditions. Among domestic factors, high rate of population growth, which resulted in the inevitable decline in per capita welfare; low human capital development, and inadequate infrastructure, which have constituted major impediments to private sector development and the supply response of the economy in general are common.

In addition, inappropriate domestic policies, and natural calamities such as drought are some of the main factors. Moreover, ethnic conflicts, political instability and protracted civil wars

have aggravated the economic performance of several African countries (World Bank, 1994). But in African case, the main debt problem are essentially a trade problem and trade related structural problems in the continent (Alemayehu, 2002).

The immediate trigger for the debt crisis was a reversal in the relationship between the "safe" real interest rate in the international capital markets and the rate of growth of real GDP in the Highly Indebted Poor Countries (HIPCs). During most of the decade of the 1970s, the real long-term rate of interest in industrial countries fell well short of the rate of real GDP growth registered by the HIPCs as a group. Under those circumstances the public sector in those economies could service their existing debt through new borrowing, without the need to generate their own fiscal resources for the purpose. The absence of solvency constraints on fiscal policy in these countries was manifest in the large fiscal deficits in many of them during this period (countries could borrow without any limit) (Agenor and Montiel, 1996). This suggests that, for a large subset of HIPCs, the origin of the crisis is to be found in the public sector. Ethiopia is no exception to the composition of external debt as the countries alluded to above.

There has been therefore a growing concern about the extent to which accumulated large stock of external debt by Less Developed Countries (LDCs) act as a deterrent to their economic growth and development. The debt crisis, which has been argued, resulted from a complex combination of elements, some of which are external to the individual debtor countries, while others were direct result of economic policies pursued with in particular indebted countries (Sachs and Larrain, 1994).

Thus, the debt crisis experienced by the Sub-Saharan African's countries is used as a benchmark for studying the impact of the external debt on economic growth in Ethiopia. One should note that even though Ethiopia has not experienced a debt crisis the studies done for the debt stricken countries focus on economic growth. Because it is not necessarily the case that a country be in a debt crisis to necessitate investigating the impact of external debt on economic growth. On this note that I under take the study on Ethiopia.

Ethiopia as developing country has not been spared either. By 1964, the country utilized Birr 247.9 million, of which Birr 48.0 million was repaid, and the outstanding debt amounted to Birr 199.9 million. By 1974 the cumulative disbursement was Birr 875.9 million, of which Birr 227.7 million was repaid leaving an outstanding balance of Birr 648.2 million (Befekadu Degefe, 1992).

Therefore, in 1974/75 the total external debt was merely US\$371 million which had rose to US\$3.5 billion and Ruble 3.1 billion at the end of June 1992 and further went up to US\$4.1 billion and Ruble 3.3 billion on June 30, 1999.

Using the exchange rate of Ruble 0.6 for US1\$, so as to convert the debt stock in dollars, the total debt owed to the Russian Federation was US\$5.6 billion. Therefore, the total debt stock of the country as at June 30, 1999 was US\$9.7 billion, out of which US\$5.3 billion was arrears of principal and interest. The exchange rate of Ruble 0.6 for 1US\$ is the agreed exchange rate for Russian debt as there is no initial exchange rate on the agreement concerning the debt from Russian federation as a result, the amount varies depending of the exchange rate used.

However, recently such a huge amount of stock of debt had considerably been reduced almost by half following the 80 percent cancellation made by the Russian Federation. Thus, the stock of external debt as at the end of June 2000/01 went down to 5.46 billion Dollars. Furthermore, Ethiopia has reached a decision point enhanced HIPC relief in October 2001 with the estimated debt relief of 1,930 million, which expected to reduce the current figure significantly.

External available resources in the form of loans from donor to recipient nations are commonly rationalized in terms of their being beneficial to a recipient if the loans help to improve the productive capacity. So that the economy of the borrowing country becomes self-sustaining rendering further borrowing unnecessary (Krumma, 1985). One of the conditions essential for external loans to have a positive growth impact on the economy is to ensure that the marginal productivity of each foreign loan is, at least, greater than the cost of the principal and interest repayment (Cline, 1985). This condition would further necessitate that foreign loan, once obtained, should be used in productive sectors and in basic infrastructures that can facilitate the productivity of other sectors of the economy of the borrowing country so that external debt servicing does not constrain the debtor's economic performance. The outcome of not servicing maturing foreign debt obligations is an accumulation of arrears, which damages the credit worthiness stance of a recipient country. As a country becomes less credit worthy, further lending to such a country becomes risky and creditor nations and institutions alike tend to reduce, if not totally freeze, external loans to debtor's nation. This action harms the economic performance of the debtor nation, as its economic growth is dependent, among other factors, on the availability of foreign loans (Mjema and Musonda, 1994)

1.2 Statement of the Problem

The key starting point for understanding the macroeconomic effect of government fiscal deficit is the economy's aggregate resource or saving-investment constraint. The saving-investment constraint shows how conventional public deficits are financed by surpluses from the private sector and the rest of the world.

One of the greatest problems facing many Sub-Saharan African countries today in general and Ethiopia in particular is therefore, the amount of their external indebtedness. The external debt problem is becoming more acute for a number of reasons. First, the size of the debt relative to the size of the economy is enormous and can lead not only to capital flight but also may discourage private investment. Secondly, debt servicing payments form a significant proportion of the annual export earnings. Meeting debt servicing obligations eats significantly into whatever other services can be provided to improve the welfare of the citizens and therefore has macroeconomic implications. This raises the question of whether a country can grow fast enough to maintain debt obligations and adequate domestic investment. Thirdly, the burden of debt for a large number of Sub-Saharan African countries threatens not only the execution but also the prospects of success of adjustment programs being embarked upon. Fourth, the current system of debt management has a dire macroeconomic impact on an economy's output (Ajayi, 1991).

As Milton Iyoha, (1999), noted also, devaluation, which featured in virtually all-Structural Adjustment Programs (SAPs) leads to an increase in total debt and debt service payments denominated in domestic currency. The deflation required by the SAPs leads to a fall in

domestic production and a reduction in national income available for consumption, provision of public services and investment. A reduction in investment meant a fall in economic growth, meanwhile, foreign investment, which was expected to increase on the adoption of SAPs failed to materialize, due to a lethal combination of political instability, poor macroeconomic policies, weak economic performance and the debt overhang syndrome. In addition, heavy debt service payments have been shown to "crowd out" foreign investment. Indeed, aid and foreign investment were routinely diverted in to debt service payments mainly to pay the multilateral institutions (WB and IMF) as debt owned by the multilateral institutions cannot be rescheduled or written off (Kapijipanga, 1996).

Besides, debt rescheduling by bilateral donors does not constitute true debt stock as rescheduled debt often attracts higher interest rates while the interest accumulated is capitalized "so, rescheduling has not solved the problem but rather intensified it" (Ibid).

As mentioned earlier the external debt for Ethiopia is expected to increase significantly in the immediate future because of the need to secure finance from external sources to under take big infrastructure projects. This external debt will have to be repaid in the future against depreciating Birr. Since devaluation of domestic currency or appreciation of foreign currency means an increase in the real value of debt-service repayments. Therefore, the problem is how economic growth will be affected by the repayment of the external debt in the long run. Since, the external debt may be expected to affect economic growth in two ways: (1) the required debt service payment may create the crowding out effect on investment by transferring resources out of the country in the form of interest and principal repayment: and (2) large debt

may overhang and discourage investment especially private investment in that the private sector in the anticipation of increased taxes.

But provided that the country has the capacity to service the debt regularly and not merely wasted on inefficient state enterprises and maintaining artificially high consumption levels, this fund may lead to economic growth. That means, if it will be used for profitable investment purposes (including others basic infrastructural development), due to low capital-labor ratio in most LDCs, it expected to improve the level of economic growth of such countries.

1.3 Objective of the Study

The main aim of the study is to provide an analysis of the external debt service capacity faced by Ethiopia, and the implication of external debt on economic growth. The study therefore has the following specific objectives:

- To highlight the macroeconomic performance of the Ethiopian economy;
- To highlight the of Ethiopia's external debt including its structure and composition;
- To analyze the external debt burden and debt servicing capacity;
- To analyze the impact of external debt on economic growth and finally to draw policy implications for macroeconomic management.

1.4 Hypotheses of the Study

External debt is expected to have positive impact on economic growth. This is the case when an expansion of public debt leads to an increase in public expenditure and an increase in economic growth through the government expenditure multiplier. But an increase in the external debt might indirectly depress the level of GNP by creating debt overhang effect, crowding out effect, discouraging capital formation and encouraging capital flight due to tax increase expectation. Therefore, the impact of external debt cannot be determined a priori. It depends on the magnitude of the two effects. Moreover, according to literature there is a certain point on the debt laffer curve beyond which the external debt has negative effect on economic growth. This issue is discussed in detail under literature review. Therefore, since according to debt sustainability criteria Ethiopia is belongs to the HIPC's, we hypothesis that external debt burden and services negatively affect economic growth in Ethiopia.

1.5 Methodology, Data Source and Limitation of the Study

The study relies on secondary data for the period 1970 to 2000. The major sources of data are Ministry of Finance and Economic Development, National Bank of Ethiopia and Central Statistical Authority of Ethiopia. Moreover, International Financial Statistical of the IMF (IFS) and various World Debt Tables are also used.

To pursue this analysis, adopting from the Chowdhury (1994) model, we used simultaneous equation using Two Stage Least Squares¹. (See the model specification part).

The first limitation arises from the problem of inconsistency of data as reported by different institutions. Even data from the same institution shows different figures for the same year. Proxy variables are also used as need arise. For instance, marginal productivity of capital is computed by dividing change in capital formation to change in output as proxy variables. Moreover, the lack of long time series of data may limit our finding because long time series of data means more information that makes the finding more reliable though the series we have is adequate for the purpose (simultaneous equation).

The paper is organized as follows. Section one is introduction and background of the study. Section two gives a review of the theoretical and empirical literatures. Section three provides an overview of the performance of the Ethiopian economy over the period 1970-2000, tracing to the movements of the key macroeconomic variables over this period. Section four is model specification and econometric analysis of the study and section five is conclusion and policy recommendations of the study.

¹ According to most literatures (Gujarati, 1995, Green, 2000, et.al), Two Stage Least Square is a generalized instrumental variables technique. It is a regression method for obtaining point estimates of structural coefficients by direct estimates. Estimates of such coefficients are known to be consistent and asymptotically efficient.

Chapter Two

LITERATURE REVIEW

2.1 THEORETICAL LITERATURE

2.1.1 Debt Crisis and its Origin

Debt crisis refers to a situation where a country announces that it could not meet its forthcoming debt repayments on its outstanding debt to international creditors. That means announcing it would be unable to continue servicing (paying interest and amortization payments on its debt).

For instance, for the first time on 12 August 1982, the Mexican government announced that it could not meet its forthcoming debt repayment on its US\$ 80 billion of outstanding debt to international banks. This was the first sign of the international debt crisis. Soon after the Mexican announcement, a number of other Less Developed Countries (LDCs) announced that they too were facing severe difficulties in meeting forthcoming repayments. Therefore, through out the 1980s and 1990s the problem faced by LDCs in servicing their debts has been one of the major international policy issues (Keith Pilbeam, 1998).

According to Keith Pilbeam, the origin of this debt crisis dates back to the oil price shock following the Egypt-Israel war of October 1973. The quadrupling of the oil price was

particularly harmful to the non-oil producing developing countries who experienced an enormous increase in their import expenditure on top of which resulting in recession severely curtailed their export earnings. As a result, the current account deficit of most LDCs rose from US\$ 8.7 billion in 1973 to US\$ 42.9 billion in 1974, and US\$ 51.3 billion in 1975. Their terms of trade also deteriorated substantially between 1973 and 1975 from 100 to 40, which meant that in 1975 they needed two and a half times the export volume for every unit of imports than they had in 1973.

Although LDC indebtedness rose substantially from US\$ 130 billion in 1973 to US\$ 336 billion in 1978, they were relatively experiencing healthy rates of economic growth and not having any particular difficulties in servicing their debts. However, over the following four years, a number of unfavorable factors led to a rapid deterioration of their indebtedness and ability to service their repayments. Some of those factors are:

In 1979 the Organization of Petroleum Exporting Countries (OPEC) cartel more than doubled the price of oil, from US\$ 13 per barrel to US\$ 32 per barrel. Industrialized countries' response to this second oil shock was more uniform since they were determined to reduce the inflationary consequence even if this meant an increase in their unemployment levels.

At the end of 1979 the US authorities adopted a tight monetary policy designed to control inflation, with the UK, Germany, France, Italy and Japan adopting similarly tough policies. While, by contrast, LDCs preferred to borrow further funds and their outstanding debt nearly doubled from US\$ 336 billion in 1978 to US\$ 662 billion in 1982.

In addition to increasing indebtedness there was also a substantial rise in interest rates. That means the dollar London Inter Bank Offered Rate (LIBOR) interest rate increased from 9.5 to 16.6 percent between mid-1978 and mid-1981. Therefore, the rise in interest rates was one of the major factors contributing to the severe world recessions of 1981 to 1983. In turn, the recession had a devastating effect on the LDCs as it dramatically reduced their export volumes and the price of their exports leading to a substantial fall in export earnings. Moreover, the recession induced the developed economies to adopt a more protectionist stance vis-a-vis imported goods, which further squeezed export earnings (Ibid.).

The high US interest rates and borrowing had other two effects. First, bankers were less willing to lend to the LDCs because of the increased attraction of lending the money to the US. Second, the high interest rates contributed to a rapid appreciation of the US dollar, which in turn meant an increase in the real value of LDC debt-service repayments.

Table 2.1 shows the interest payments that developing countries pay on their external debt, expressed as a fraction of GNP and broken down by region. Figures for 1980 and 1983 represent the period when the debt crises first exploded.

Table 2-1 Interest payments/GNP, Developing countries (percent)

Year	Sub-Saharan South Africa	East Asia and Pacific	Europe and Central Asia	North &Middle East	Africa & Caribbean	Latin America
<u>Asia</u>						
1980	1.7	1.5	2.2	2.1	3.5	0.6
1983	2.2	2.0	2.8	2.1	5.6	0.9
1985	2.7	2.2	1.4	1.5	5.5	1.0
1987	2.5	2.1	1.3	1.6	4.1	1.2
1989	3.0	1.7	1.4	2.4	2.9	1.3
1991	3.2	1.7	1.4	2.4	2.5	1.3

Source: World Bank, World Debt Table, 1992-93 Washington. D.C.

Latin America had the highest fraction of GNP dedicated to paying interest on its debt between 1980 and 1983; when this fraction climbed from 3.5 to 5.6 percent. The interest/GNP figures for Latin America are significant because the rise of interest rate payments on the debt was directly linked to the failure of many of heavily indebted developing countries to service their external debt. Thus, the rise of the interest rate in Latin American countries on their debts between 1980 and 1983 was a heavy burden that some countries were unable to manage. The debt crisis is therefore, closely related to the inability of these borrowing countries to service their debts (Francisco L. Rivera-Batiz and Lvis A. R ivera-Batiz, 1994)².

². This debt service refers to loan amortization and payments of the interest on the loans while loan amortization is the disbursements made by the borrower to repay the loans.

According to Francisco L. Rivera-Batiz and Lvis A. R ivera-Batiz, there are three main reasons why Latin American countries more adversely affected than other developing countries. First, loans to those economies were granted mostly by private creditors, with relatively limited participation by so-called Official lenders and because of relatively high-income levels of Latin American economies by developing countries standards. Thus, the Latin American's predominantly private sector loans were deeply affected by the surge of market interest rates in the late 1970s and early 1980s. Because the interest rate hike resulted in massive increases in the interest payments of Latin American countries when compared to developing nations more dependent on official debt.

A second factor that helps to explain why some countries fell in to a debt crisis in the 1980s while others did not involves policy maker's differences regarding international trade. There are three main types of trade policy that can be observed among developing countries. There are inward-oriented, natural resource export-oriented and industrial export-oriented. Inward-oriented or import-substitution trade regimes are countries in which the government has encouraged the production of goods that compete with imports. The goal is to reduce the consumption of foreign goods and improve the current account balance (CAB) by producing these goods domestically. In general, inward-oriented policies favoring increased domestic production of import substitutes act to discourage the production of exports by shifting resources from export-producing industries to import-substituting sectors. Import substitution regimes can thus seriously undermine a country's export base.

National-resource exports-oriented regimes, by contrast, seek to exploit natural resources and to raise the nation's export of raw materials such as oil, copper, and tin. Such a policy

however, does not necessarily mean that the economy's export base becomes more solid. It is now well known that countries that have expanded their export of natural resources have simultaneously weaken their exports of manufactured goods.

The third type of trade regime, manufacturing-exports-oriented regimes have not generally involved the economy in huge government natural resource projects or in policies blocking international trade; rather they are aimed at liberalizing & promoted exports of manufactured goods.

Of the three trade regimes, only the industrial-exports-oriented regime was able to provide a solid basis to sustain the increased interest burden faced by heavily indebted countries in the 1980s.

A third set of factors that have been postulated to explain the debt crisis surrounds the uses of the funds borrowed by developing countries. Some economists have stressed that the loans were used for consumption purposes and were not invested properly. It is argued that the borrowed money was not put to good use, having been wasted in conspicuous consumption by public officials, bribes, corruption, excessive hiring of government employees, and in purchasing military equipment. Presumably, if the funds had been invested wisely, countries would have been able to repay them.

The result of all these factors was that in 1982 most LDCs, particularly in Latin America, found themselves both with record levels of indebtedness and debt-service repayments, while their ability to raise revenues to finance the repayments had greatly diminished. Because

much of the borrowing they had taken had not been profitably used for investment purposes but merely wasted on inefficient state enterprises and maintaining artificially high consumption levels (Ibid.).

In the early 1980s the Mexican economy was facing a mixture of external and internal problems. Since the mid-1970s Mexico had been a major oil exporter and for this reason was a beneficiary of the rise in oil prices resulting from the 1973-74 and 1979 oil shocks. As the Mexican State both owned and controlled the oil industry, the revenues from oil sales accrued directly to the government. International bankers, particularly in the US, looking at Mexican oil reserves viewed Mexico as a very safe place to lend money. Given its high oil revenues the Mexican government was keen to adopt a program of increased public expenditure for improving its infrastructure and a variety of social programs. As a result, the government ran a huge fiscal deficit which led to high economic growth. Thus, overall, Mexico experienced a prosperous decade in the 1970s (Keith Pilbeam, 1998).

But following the second oil shock, since industrialized countries had taken measures to reduce their dependence on imported oil, some major problems began to confront the Mexican economy. In addition, the major worldwide recession led to a further decline in the demand for oil. Mexico's relatively high inflation rate (27 percent in 1981) made the peso, which was pegged to the US dollar increasingly overvalued. The peso overvaluation, combined with the authorities' fiscal deficit (16.2 percent of GDP in 1982) and decline in oil export revenues, meant that Mexico's current account had moved in to large deficit (12.5 percent of GDP in 1981 and 6.2 percent of GDP in 1982 (Ibid.).

In a bid to reduce the current account deficit, the peso was devalued in February 1982 but the government failed to adopt other measures to control the deficit such as reducing its fiscal deficit and monetary growth rate. In such circumstances, the main effect of the devaluation was to give an additional boost to Mexico's inflation rate. As the result of the deteriorating position of Mexico's economy and the lack of confidence in its government's resolve to reduce its budget deficit made international bankers increasingly reluctant to extend further new loans to Mexico. In addition, with Mexico facing ever-increasing debt repayment, its ability to service them was being undermined by its reduced export earnings. To stop a crisis developing, the Mexican government announced on 12 August 1982 a moratorium on its debt repayments until a satisfactory arrangement could be drawn up with its creditors.

According to Kieth Pilbeam, to manage the crises there were three phases undertaken:

Phase 1: Crisis Management 1982-October 1985.

Bankers initially perceived the crisis as a temporary 'liquidity' problem rather than as a solvency problem; and as a result it was argued that the debtors were facing temporary financing difficulties due to the rise in US interest rates and a squeeze on their export earnings. Therefore, the main strategy was to reschedule the debt repayments falling due with the aim of avoiding an outright default that would seriously threaten the financial stability of exposed banks and the banking community in general.

A number of short term debt-rescheduling packages were arranged, the main features of which included a short-term 2-4 years maturity structure on rescheduled debt, with interest

and fees chargeable for the rescheduling. An important point about these agreements was that the banks only lent money so that the debtor countries could continue to service their debts.

Phase 2: The Baker Plan Phase October 1985- March 1989.

In October 1985 the US Treasury Secretary James Baker announced a major three-year initiative for managing the debt crisis. The plan was launched against a background of increasing disenchantment on the part of debtor nations over the recessionary impact of adjustment programs and the drying up of voluntary bank lending. The plan endorsed the case-by-case approach to dealing with the debt crisis, which is treating each debtor nation in a manner appropriate to its individual circumstances. Baker envisaged debtor nations 'growing out' of their debt problems by undertaking market-based structural reforms, including trade liberalization, cuts in government expenditure and relaxation of regulations relating to inward foreign investment. The plan was based on (1) debt rescheduling and renegotiations between commercial banks and the debtor government. (2) Increased lending on the part of the World Bank and IMF coupled with the use of IMF-styled conditionality and (3) promotion of market-oriented reform such as the privatization of public enterprises geared to reducing government regulatory burden in developing countries.

Overall, the implementation of the Baker plan was not considered a success. Voluntary bank lending did not resume on the scale envisaged by the plan and even official lending fell well short of its target. As a result, economic growth in Mexico, Brazil and Argentina stagnated and inflation rocketed. Although their current account performance stabilized, their rates of economic growth, levels of investment to GDP and trade volumes exhibited a significant

slowdown. Indeed, the overall levels of indebtedness and many of the debt service ratios continued to deteriorate.

The main reasons for the failure of the plan were fairly straightforward because there was little incentive for banks to extend further new loans when the problems of the region were already viewed as of too much debt. Also, the plan offered little incentive for the debtors to undertake new investment since any improved economic performance would merely result in increased payments to the creditor banks.

The failure of official agencies to resolve the crisis meant that the banks increasingly sought other means of resolving their difficulties. Thus, from the mid-1980s a secondary market for developing country debt emerged on which the creditor banks could sell their outstanding loan assets to third parties (mainly other commercial banks) at a discount to their face value.

Part of the secondary market was made up of swap between banks, which enabled them to reshuffle their loan exposure portfolios to various countries. The price of secondary debt of the debtor nations plummeted from an average of 70 cents to 35 cents per dollar over the period of the baker plan. This reflects the increasing probability that a significant proportion of the debt would eventually have to be written off. One of the reasons behind the rising discount was a Brazilian Moratorium on its debt repayments announced in February 1987 which increased the perception that the debt crisis would be difficult to resolve without some form of debt reduction.

Phase 3: The Brady Plan Era since March 1989

The new US Treasury Secretary Nicholas Brady signaled a significant reformulation of the strategy for dealing with the debt crisis in March 1989. Accordingly, the case-by-case approach, encouraging debtors to undertake market based reform, and the adoption of stable macroeconomic policies has continued to be viewed as essential components for resolving the debt crisis. However, in addition to emphasizing the need for new bank lending, the Brady plan also explicitly recognized the contribution that voluntary debt forgiveness could make in resolving the crisis. That is he focuses on continued economic reform and adjustment in developing countries and shifted the emphasis toward debt-reduction schemes on a case-by-case. Thus, both the World Bank and the IMF were asked to set aside funds for this purpose to be targeted at SIMICs with high external debt problems and to undertake appropriate adjustment programs.

Subsequently, US Treasury under Secretary David Milford set a target of \$70 billion in debt forgiveness on the \$340 billion of debt owed by 39 of the major debtor nations. The IMF and the World Bank earmarked \$24 billion of funds that could be used for lending purposes designed to support countries that adopted appropriate economic policies and where a debt and debt-service reduction (DDSR) program was successfully negotiated.

Overall, the implementation of the phase 3 Brandy plan was considered a 'spectacular success'. Brandy-type deals as being particularly successful in reducing high and volatile external transfers to more manageable and predictable levels. It achieved significant results at

relatively low levels of debt forgiveness of approximately 15 percent of the overall debt burden, and annual interest savings to the debtor nations of 0.5 - 1 percent of their GDP or around 3 percent of their export earnings (Cline, 1995).

2.1.2 Debt overhang, Investment and growth

According to Krguman (1988), Debt overhang is defined as a situation in which the expected repayment on foreign debt falls short of the contractual value of the debt. Similarly, according to Eduardo Borensztein (1990), the debt overhang crisis is defined as a situation in which the debtor country benefits very little from the return to any additional investment because of the debt service obligations.

Agenor and Montiel (1996), an approach to this issue of external debt is motivated by several observations. Much policy-oriented discussion of the debt problem centered on the question of whether the crisis was one of solvency or of liquidity problem.

A liquidity problem refers to the inability of a country to service its debts now in the amount initially contracted. That means lack of liquidity occurs when a county does not have enough cash on hand to pay current obligations. Whilst the solvency issue relates to whether the value of a country's liabilities exceeds the ability to pay at any time; a country is insolvent when it is incapable of servicing its debt in the long run (Ajayi, 1991).

According to Kletzer (1988), indebted developing countries were clearly solvent; that is, the present value of their prospective resources (as measured by the discounted value of their real

out flows) was many times greater than their debt obligations. If these countries were solvent, it is necessary to explain why they would have been illiquid, that is, why external creditors would have been unwilling to sustain the pace of lending.

One approach to this question is to distinguish between the ability to pay and the willingness to pay. Thus, while indebted countries may have been solvent (able to pay), legal sanctions compel payment of the type that can be applied to domestic debtors are unavailable against sovereign debtors. Debt contracts negotiated with such debtors have to be self-enforcing and must find it in their interest to comply with their payment obligation. In that perspective, the debt crisis can be interpreted as one in which the willingness to pay decline for a variety of reasons. Among many factors there are domestic and external factors that responsible for this outcome (crisis). The domestic factors often cited include wrong macroeconomic policies such as fiscal irresponsibility and exchange rate misalignment, policies that deter savings such as negative real interest rates, which in turn reduce investment and encourage capital flight and financing long-run projects with short-term credits. External factors include oil shocks, deterioration in the terms of trade and rising foreign interest rates.

An alternative resolution to the solvency-liquidity problem is, while the debtor countries may have been solvent, debtor governments may not have been. The relevance of this perspective is supported by empirical observation that the overwhelming proportion of external debt outstanding in the heavily indebted developing countries at the time of the out break of international debt crisis was owed by the public sector (Agenor and Montiel, 1996).

This suggests that approaching the crisis from a fiscal perspective may yield insight that would tend to be obscured by treating the debtor country as a single agent. In particular, the crisis can be viewed as one of debtor solvency. Thus, this study will focus particularly on the fiscal external debt, as almost over 95 percent of Ethiopia's external debt are public and publicly guaranteed.

Since 1982, rate of investment has fallen dramatically in most debtor countries. For the group of 15 heavily indebted countries, the average investment to GDP ratio in 1982-87 was 18 percent, compared to a 24 percent in 1971-81. Among the reasons that could have caused this sharp drop in investment, the foreign debt situation is certainly a prime suspect (Eduardo Borensztein, 1990). This led to reduced economic growth accompanied by sharp contractions in domestic investment; substantial capital outflows, and in some cases, greatly increased rates of inflation. It has been also suggested that foreign debt is a disincentive to investment. Thus, reductions in foreign debt can kick-start the economy (Ibid.). That means, since the existence of a debt overhang creates disincentives for domestic investment in the debtor country, debt forgiveness can both stimulate domestic investment and increase the actual payments received by creditors.

According to Eduardo Borensztein (1990), there are two channels through which the foreign debt may affect investment. The "debt overhang" channel and the "credit rationing" channel. According to the debt overhang when foreign debt obligations cannot be fully met with existing resources and some negotiation process between the debtor country and its creditors determines actual debt payments. The amount of payments can become linked to the economic performance of the debtor country. As a consequence, at least part of the return to

any increase in production would be devoted to debt servicing. This creates a disincentive to invest from the debtor country's point of view. For the same reason, the debt overhang is also likely to discourage government efforts to undertake adjustment policies and, through actual or expected economic policies, it is likely to spread to the private sector discouraging investment. Thus, Borensztein argued that the debt overhang had an adverse effect on private investment, which was strongest when private debt, rather than total debt, was used as a measure of debt overhang.

Therefore, debt 'overhang' is a constraining factor in that (i) debt service absorbs profits that otherwise could have been reinvested in capital accumulation. (ii) When the overhang becomes big enough, the source of foreign savings dries up and, if it is not replaced by increased domestic savings, domestic real loan rates of interest rise (Borensztein, 1989).

Most empirical evidence shows that there is negative relationship between debt and growth. For example, in the Philippines a \$1.3 billion reduction in international bank debt was calculated to increase the demand for funds for productive investment by 2 percent of GNP. In Argentina, Brazil and Mexico debt service has crowded out investment rather than consumption with private investment being sharply reduced (Hallwood and MacDonald, 1994).

The related view of the causes of the slow down in economic growth in Latin American countries since the early 1980s, is the confidence gap theory in which the sources of foreign saving, domestic saving and domestic demand for investment funds collapse together. The main reason is that poor macroeconomic management and the impact of adverse external

events that leads to greater uncertainty throughout a debtor's economy. Especially in many Latin American countries during the 1980s there developed a general lack of confidence in the economic system as a whole (Ibid.).

The second channel is the credit rationing effect (or inability to obtain new financing), which is more indirect and arises from the higher domestic interest rates that prevail in a debtor economy as a consequence of its unfavorable standing in international financial markets. Thus, it refers to the situation where debtor country can not obtain new loans because it would not be able (or willing) to service them. It may arise from the fact that a highly indebted and non- performing debtor is unlikely to obtain any foreign borrowing beyond the involuntary rollover of interest and amortization payments that are not met. In fact, credit ration is situations where by domestic interest rates exceed the international rate, because of constraints faced by that debtor in international financial markets.

Similarly, according to Classens and Diwan, (1990), there are two possible channels through which debt burden can depress capital accumulation and economic growth. The first is that the external debt is expected to hamper the level of investment and hence growth when debt servicing obligation demanded the limited resources of highly indebted countries. The debt burden may affect the current flows of resources available to the country in the present; that is, resources used to service debt may crowd out public investment and hence discourage private investment because of the complementarity between private and public investment. As debt servicing demanded higher resources, the share of public investment will shrink because most governments cannot lower consumption. When there is less public spending on basic infrastructure, private investment will also be discouraged.

The second way through which external debt may affect investment and growth is through debt overhang effect. The debt overhang theory refers to the view that future large debt servicing creates a disincentive effect for a current as well as future investment. Ajiya (1997) sharing this idea argued that the debt overhang suggested that an indebted country would only benefit less from an increase in output or exports so there will be a disincentive effect on investment and growth in the future. He also pointed out that a high debt stock is not a good measure of debt overhang because the disincentive effect arises only when debtor cannot meet its contractual obligations. That means if a high debt service export ratio is being serviced regularly there will be no distortions in production or investment decisions.

The heavy debt-service payments have inevitably put great pressure on the budget, leading to rising fiscal deficits in the highly indebted countries. This leads to several problems. The first is that taxes need to be increased in order to raise the resources (in domestic currency) to service the debt. One of the consequences of the anticipated tax burden is to depress investment (the debt overhang effect); second, it is necessary to transform the domestic resources in to foreign exchange, in which debt service must be paid. The desperate demand for foreign exchange to service debt often results in aid resources being routinely diverted to finance debt-service payments. Third, the stiff demand of high debt-service payments on the budget results in forced reductions in public investment and reduced spending on education and health. The diversion of resources from public investment to debt service is related to the crowding out hypothesis. Thus, pressures of debt service have relevance from the fiscal sustainability of high investment, as demonstrated in the debt overhang. Thus, growth is bound to be retarded as a result of the depressing effect on investment of heavy debt service payments and the reduction of growth supporting government's expenditures.

According to Krguman (1988), a debt overhang is defined as a situation in which the expected repayment on foreign debt falls short of the contractual value of the debt. For example, take the case in which debt would be paid in full if a favorable state occurs. In this case, it is likely that foreign debt generates a negative incentive effect on investment, or on productive and adjustment efforts in general. The reason is that the debtor does not benefit fully from an increase in production because part of it must be devoted in bad states of nature, to service past accumulated debts. This affects the relevant margins considered for investment and production decisions.

He also touched on the bad state and good state in the context of external debt. A question arises as to what a bad state is and what good state is. He also takes a look at foreign borrowing and macroeconomic adjustment to external shocks. The negative external shocks can be taken as the bad state.

He considers three of the most important external shocks from which developing countries have suffered since 1978; interest rate increase, commodity prices fall and stagnant quantities of commodity export. His results emphasize that the structure of an economy and the inter-temporal nature of disturbances are key determinants of the impact of external shocks.

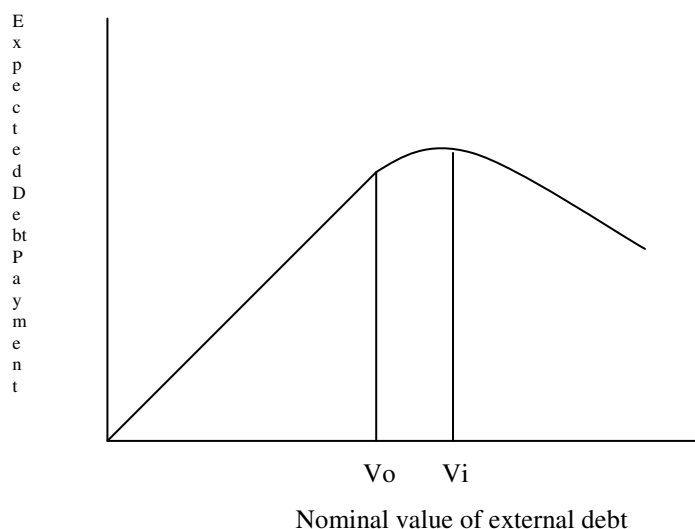
Higher interest rates have an effect on wealth through their impact on raising the cost of servicing the existing stock of debt. They also have an impact on the desired extent of consumption smoothing over time. Permanently lower commodity prices, on the other hand, instantaneously reduce the level of output value, but leave the growth rate essentially unchanged. Finally, lower export volume growth has only a minor impact on the current value

of output, and a more substantial impact on its future value. The expectation of high interest rates makes it desirable to eliminate all outstanding debt and not to borrow any more. Investment is, therefore, substantially reduced. As debt is eliminated and the impact of high interest is reduced, however, investment and consumption gradually recover. When the fall in commodity prices is expected to be permanent changes are much sharper. There is a larger immediate depreciation. This raise in profitability is however expected to continue over a longer period, so investment expenditure rises sharply.

As the build up of debt during the 1970s unfolded its effects in 1980s it soon appeared that the debt was too large to be serviced in full. It is in this context that the idea of a "debt overhang" was applied to the cases of the developing countries. Debt became a tax to the country's resources. According to Krgman (1988), the debt overhang gives rise to a debt laffer curve effect.

The proponents of debt reduction say that reducing the debt overhang will raise the probability that the remaining debt will be paid, by stimulating economic growth benefiting both creditors and debtors. It is therefore argued that it is possible for debt reduction to raise expected payments from the debt, if the likelihood that the remaining debt will be paid is much greater (see graph below).

The Debt laffer curve



The horizontal axis in this figure represents the nominal value of developing country debt and the vertical axis shows the expected payment from the debt. That is, as the nominal value of the external debt increases the creditors expect debt repayment to fall. The segment AB showing higher debt is associated with equal increases in expected payments when the debt is relatively small. Both rise in the same proportion because, at low level of debt, banks can expect full repayment from debtors.

At debt levels above V_0 , however, there is a positive probability that the country will not be able to completely repay its debts. The curve BC then shows how the expected debt payments behave in response to higher and higher indebtedness. Above V_i , increased indebtedness reduces the expected repayments on the overall debt. After a point, debt becomes so big that economic growth in the country is hampered and perverse incentive effects surface that reduce expected payment in absolute terms.

Various factors can give rise to these perverse incentive effects. Large debt accumulation implies large repayment and greater taxes to finance them. Greater taxes reduce the incentive to invest and to engage in productive effort, reducing economic growth and the country's ability to pay. Also, excessively high debt leads to conflict between debtors and creditors, as well as among various groups within the domestic economy. These conflicts lead to lower expected debt repayments. This means that, at a point like H, debt reduction would actually increase expected debt payments as the result both debtors and creditors would benefit from it (Francisco L. Rivera-Batiz and Lvis A. R ivera-Batiz, 1994).

Sachs (1990) and Kenen (1990) argued that the external debt overhang is a major cause of stunted economic growth in heavily indebted countries. Hence, there is an urgent need for debt reduction and international debt relief facility. The rationale for this is two-fold (1) the required debt service payments for some countries are so large that the prospects for a return to growth path are dim, even if they adopt strong adjustment programs. (2) The existence of a large debt overhang inhibits private investment programs by virtue of the uncertainty and adverse incentive effects it creates along the way.

As Krguman (1989) argued also high government debt service payments required high tax rates which in turn discourage capital formation and repatriation of capital flight. Dornbush (1988), sharing this idea, argued that since the government is the main maker of debt service payments in most of the highly indebted developing countries, the beneficial effects of currency devaluation raises the domestic currency debt. In addition this worsens the budget deficit, raises the rate of growth of money supply and deteriorates the country's terms of trade.

Bulow and Rogoff (1990), arguing that the external debts of developing countries are a symptom of poor economic management and performance rather than a primary cause of stifled growth represent the second view. Bad domestic management such as over-valued exchange rates disadvantages the private sector in earning foreign exchange and there are apprehensions and expectations of currency devaluation, which leads to speculate capital flight. Fiscal deficits, fear of inflation, high taxes and actual and anticipated deficits scare away private investment.

2.2 Empirical Literature.

Chowdhury used a structural simultaneous equation model built to capture the interrelationship between public and private external debt, capital accumulation and production function. This simultaneous equation is constructed on the basis that the dependent variables are not only determined by independent variables but some of the independent variables are in turn determined by the dependent variables.

Thus, in an attempt to resolve the existing controversy about the cause and effect relationship between external debt and economic slowdown, he conducted the Granger causality tests with data on indebted developing countries of Asia and the Pacific. The results of these tests indicate that the Bulow-Rogoff (1990) proposition that the external debt of the developing countries is a symptom rather than a cause of economic slowdown is rejected. He also indicated that the Dornbusch-Krugman proposition that external debt leads to economic slowdown is rejected. But a feedback-type relationship is not rejected for two countries. In view of the mixed results, the nexus of inter-relationships between public and private debt

accumulation, capital accumulation and production is estimated within a simultaneous equation system.

The estimated results indicate that the overall effects of the public and private external debts on GNP are small and of an opposite sign, where as an increase in the GNP level raises substantially the public and private external debts.

He argued that the positive estimates of the indirect effects of the public external debt on GNP obtained indicate that the capital flight generated by tax rise expectations is smaller than the contribution of public borrowing in financing investment in capital stock. Moreover, the direct and hence the full effects of the public external debt on GNP are positive and substantially large.

The direct effect of the private external debt on GNP is positive. However, the adverse indirect effects on the external debt on GNP through lowering private investment and the overall level of capital stock are large in absolute value and substantially exceed the direct effect. Thus, the full effects of the private external debt on GNP are negative.

In his estimates also, the GNP has positive direct effect on the stock of capital. Moreover, in reducing the aforementioned positive effect of GNP on the public and external debts, the effect of GNP on capital stock is indirectly amplified by the positive effect of the public external debt on capital stock. The overall effect of GNP on capital accumulation is positive. The marginal product of capital is also positive and there is diminishing marginal productivity of capital.

The problem with this is that pooling of data across countries imposes an identical structure on all countries. But this does not arise in our study since I only look at one country with adequate data running from 1970 to 2000. In my study also there will be only output equation and investment equation. In our investment equation we incorporate the debt stock to GNP ratio and total debt service payments to exports of goods and services ratio to measure whether there is debt overhang effect and to capture the "crowding out" effect, respectively.

S.Ibi Ajai (1995) looks at capital flight and external debt in the case of Nigeria. He argued that there are two kinds of linkages between external debt and capital flight. The first linkage runs from external debt to capital flight while the second runs from capital flight to external debt.

(1) Debt-driven capital flight: as a consequent of external borrowing, residents of a country are motivated to move their assets to foreign countries, then we have debt-driven capital flight. Capital flees or leaves the country in response to attendant economic circumstances directly attributable to external debt itself.

The attendant economic circumstances leading to debt-driven capital flight are expectations of exchange rate devaluation, or fiscal crisis, possibility of a crowding out domestic capital and avoidance of taxes and ex-production risk.

(2) Flight-driven external borrowing: capital flight drains national foreign exchange resources, forcing the government to borrow abroad. This situation develops as a result of capital that has left the country there is a gap, which needs to be filled in the domestic economy. Consequently, there is a demand for replacement on the part of both the

government and the private sector. The reasons why external creditors are willing to meet this demand are attributable to different risks and returns facing resident and non-resident capital.

In Nigeria for the years 1977, 1980 & 1986, capital outflows exceeds foreign debt accumulation indicating the depletion of domestic resources. In the periods of high growth rate in external indebtedness in Nigeria the growth of investment as a percentage of GNP was the highest. Thus, increases in debt accumulation had positive effects on investment (S. Ibi Ajayi, 1995). From this we note that capital outflows should not exceed the accumulation of foreign debt to avoid a slow down in economic performance.

As he noted also in period of high growth rate in external indebtedness as in the period 1977-81 in Nigeria, the growth in gross investment as a percentage of GNP was at its highest range of 20-27 percent for the entire period. Thus, increases in debt accumulation had positive effects on investment. But the effect it could have had on growth in GNP was counteracted by capital flight. When the capital flight /change in debt ratio was 69 percent, 36 percent, 352 percent and 122.5 percent, growth rates were negative 6 percent, 4 percent 4 percent and 48 percent, respectively. Thus, these findings will seem to lend credence to the general belief that capital flight has deterrent effects on the growth of the economy.

Barfour Osei (1995), in his study on Ghana, argued that debt repayment inevitably imposes constraints on a debtor country's growth prospective since it involves the transfer of resources to other countries. Therefore, in order to adequately appreciate the problem of indebtedness, it is essential to relate the debt with its repayments of some income resources generated by the debtor out of which the repayments could be made.

He noted that movements in the ratio of debt service payment to export of goods and services (debt-service ratio) and total external debt to income (GNP) are the two most important index used to assess the debt burden; the higher the ratios, the greater the burden.

As he noted also Ghana is a severely indebted low-income country. The debt service ratio rose sharply from 39 percent in 1983 to a peak of 67 percent in 1988 before falling back to about 39 percent in 1990. It must be pointed out that the sharp rise in the debt service ratio from 1983 was due largely to repayments of accumulated arrears and rescheduled debt prior to economic reform program (ERP). Thus, with reference to the debt-service ratio and the debt-GDP ratio, it is clear that Ghana has faced liquidity difficulties since 1983 and that its ability to remain solvent has also been impaired. Therefore, Ghana's need to pursue accelerated growth in order to reduce its debt problems and, more importantly, to break out of its low income status makes it worth while to investigate how far external indebtedness would affect future growth. Barfour Osei used the most recent literature that used by Cohen (1985), Solis and Zedelo (1985) and Vanwynbergen (1989) to relate foreign indebtedness to long-run growth.

The model uses a level of out put (Y), given by

$$Y = \bar{P}K$$

Where $\bar{P}$ is the reciprocal of the incremental capital-out put ratio, and K is capital stock.

The rule used for D_t is the dynamic equation.

$$D_t = D_{t-1} (1 + \gamma)$$

Where

D = is debt & γ is a constant that is varied in each scenario.

Another equation is as follows:

$$(M_t - X_t) = (\gamma - r) D_{t-1}$$

Thus, various scenarios of r and γ would not only allow an assessment of economic growth prospects, but also the different paths of the trade balance ($M_t - X_t$), as well as indications of the debt burden such as D_t/GDP . Varying r in the scenario from 0.00 to 0.10 he arrives at these results. The incremental capital-out put ratio was calculated following its conventional definition as the ratio of capital formation in the current period to the increase in GDP over the previous period.

Allowing for three possible value of the rate of interest ($r = 0.01, 0.03$ or 0.06), simulations were run for the period 1991-2000. Using this methodology, Osei estimates indicate that, Ghana's trade balance would widen. As the percentage of GDP, the trade balance would grow from about 5.9 to a peak of about 7.7, before falling marginally to about 7.1. Consequently, the debt burden would remain high. The debt/GDP ratio would stay above the critical 50 percent. These results re-emphasise the necessity for Ghana to pursue exports to wards self-sustaining growth. The growth estimates indicate that Ghana would maintain a 4 percent to 5 percent growth rate for the next decade. This may be considered satisfactory, especially if viewed against the average rate for sub-Saharan Africa for the last ten years at below 2 percent and which most analysts believe may not improve in the next decade.

Finally, he reached on the basic conclusion that external debt repayments are major constraints to Ghana's economic performance. Thus, the current debt situation requires that

Ghana take steps to increase its ability to service foreign debt by vigorously pursuing export expansion.

Mjema (1996) attempts to analyze the impact of foreign debt in Tanzania by using a simultaneous equation model, taking in to account the direct as well as the feedback effect of debt. He found that the impact of the debt service ratio on real growth in GDP is negative. Similarly Ocaya (1999) argued that, the debt variable has negative significant impact on per capita income for both highly indebted and less indebted countries.

Amoating and Amoaku-Adu (1996) also argued that if a greater proportion of export revenue were used to service external debt, then little foreign exchange would be available for investment and growth. This shows an inverse relationship between debt servicing and investment and growth.

M.A Iyoha, (1999), using a simultaneous equation and simulation method on sub-Saharan African countries found that there is a debt overhang and crowding out effect in Sub-Saharan African countries because of the excessively high stock of external debt that depress investment and lowers the rate of economic growth.

Therefore, the debt servicing capacity is linked to economic growth as we have seen in the case of Ghana and others. When the external debt is great more resources will be committed to the payment of the external debt leading to a leakage from the economy hence slowing down economic growth. In the case of Nigeria we also learn that accumulation has a negative effect on investment.

Regarding the effect of external factors on private investment it can be viewed from two angles:

First, a raise in international interest rates on debt will increase the burden of debt and thus, reduce the import capacity, which may have a direct negative effect on the level of private investment (Alemayehu, 1997). Second, the domestic private sector itself holds foreign assets and if the burden of future debt is viewed as a heavy tax burden, this can lead to capital flight.

Many studies relating to the above-mentioned issues have been carried out. In the case of Ethiopia, Befekadu (1992) used a method of eye-balling to test the debt overhang effect on investment. In his conclusion, the debt overhang hypothesis does not seem to hold in Ethiopian case. Using similar methodology Alfred Kebbie Sesay (1998), in his master's thesis concluded that the effect of long-term foreign borrowing on growth had had a mixed result. These mixed results can be attributed to a number of factors. First, it is not the volume of external capital that matters but rather how it was used. He indicated that between 1964 to 1977 and between 1993 to 1995 external capitals contributed positively to the growth of Ethiopian economy while between 1977 to 1992 the contribution was negative. He justified therefore during the Imperial era and under the Transitional Government of Ethiopia (TGE) foreign capital was used in the development of infrastructure whilst the Derg era used a large proportion of foreign capital in the procurement of arms. Thus, from this he concluded that the debt crisis is more of a policy problem. This is in close link with Ajay's findings that Nigeria had implemented policies that led to the accumulation of debt in excess of what was sustainable.

During the Derg era the increasing levels of government expenditure was made in defense with noticeable neglect of the social and economic sector development. As a result, health and education standards deteriorated and the rate of economic growth decelerated considerably (Teshome, 1994).

The second aspect of debt relates to the growth in interest rate relative to the growth rate of GDP. During the Imperial era, world interest rate on debt grew at an annual average of -3.6 percent whilst GDP grew at an annual average of 6.2 percent. The opposite was observed during the Derg era. Then world interest rate on debt grew at a higher rate (8.0 percent) relative to that of GDP growth of 1.9 percent (Eshetu and Makonnen, 1992). This situation was reversed under the TGE. During this period GDP recorded a higher growth over that of interest rate on debt as the result of the ongoing Economic Reform Program.

Moreover, he estimated the determinate of private investment in Ethiopia using the Hendry (1983) approach of Error Correction Model based on general to specific approach and conclude that public investment, import and previous level of investment are the most significant factors in explaining private investment in Ethiopia. Hence he rejected the debt overhang hypothesis in the short-run with the possibility of its impact in the long- run.

One basic disadvantage of the eye-balling method is that it does not provide sufficient empirical evidence between the regressed and the explanatory variables (since it only provides trends in economic variables). In addition to this the weakness of this approach is that it does not distinguish between private and public investment.

Dawit Walelegne and Yemisirach Asafa (2001) using Engel-Granger ECM regression also found that there is no evidence of debt overhang effect and a crowding out effect of debt on investment in Ethiopia. The limitation of this approach is that since there is controversy about the cause and effect relationship between output equation, investment equation and import demand equation they used, using simultaneous equation may be more appropriate had it been used than using single equation. In this regard our work is expected to overcome this problem.

Therefore, in this study we adopted Chowdhury (1994) simultaneous equation model to analysis the impact of external debt on economic growth.

CHAPTER THREE

MACROECONOMIC PERFORMANCE OF THE ETHIOPIAN ECONOMY

3.1 Trends in GDP and value added in various sectors

The performance of the Ethiopian economy during the Derg period has been unsatisfactory on account of civil war, recurrent drought, high population growth and inappropriate economic policy and management.

During the Imperial era, the economy had been growing at a linear growth rate of 4.1 percent per annum while population and per capita income was growing by 2.3 percent and 1.8 percent per annum, respectively³. In the same period, the value added in the agricultural sector were growing by 2.1 percent while the other sectors were growing by more than 6.8 percent per annum (see Table 3.1 and Figure 3.1).

³ This period was characterized by a political system dominated by land owning aristocracy at the apex of whose power structure is the king. It largely pursued a market based economic policy. Moreover, this period is considered where modernization of the economy as well as the building of infrastructure is aggressively carried.

Table 3.1 growth rates of real GDP and its sectoral components.

Period	Growth rate of			Growth rates of value added in the various sectors			
	GDP	population	PCGDP	Agriculture	Industry	Distributive service	Other service
1960/61-1973/74	4.1	2.3	1.8	2.1	7.0	7.8	6.8
1974/75-1990/91	2.1	2.8	-0.7	0.6	3.0	2.9	5.1
1991/92-2000/01	5.04	2.9	2.6	2.9	7.2	7.2	7.8
1960/61-2000/01	3.7	2.7	-0.006	1.9	5.7	6.0	6.6

Source: Ministry of Finance and Economic Development (MOFED) various issues.

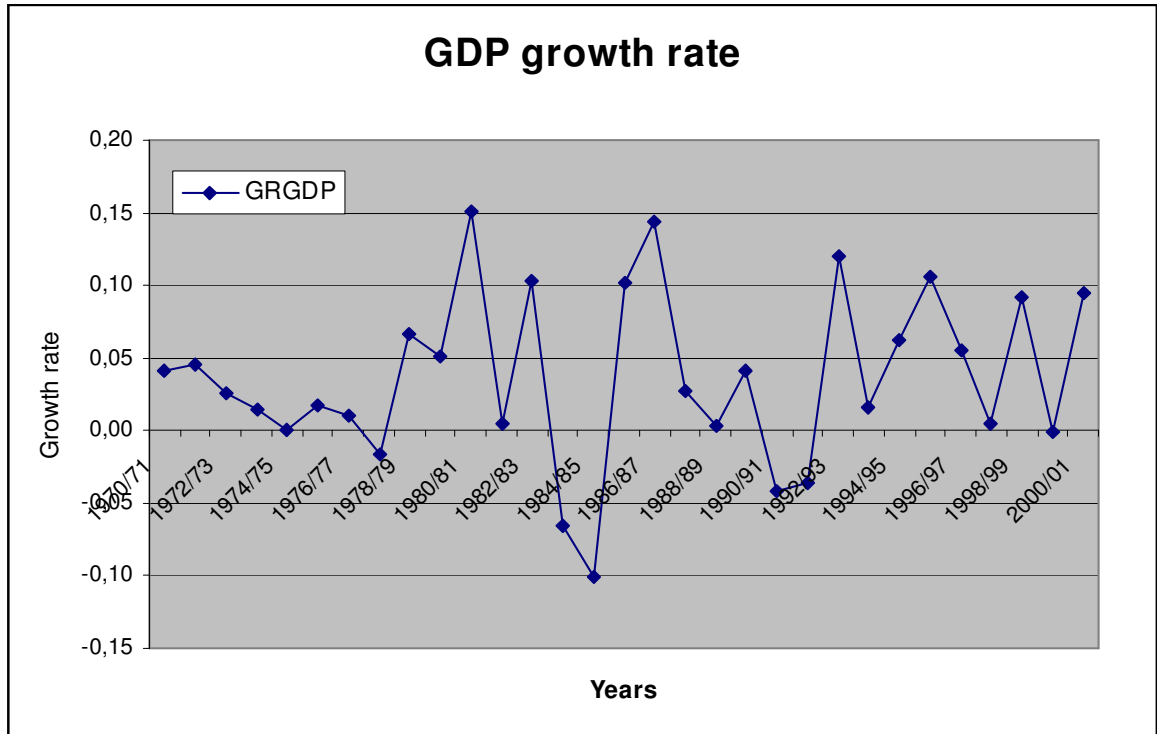
During the Derg period (1974/75-1990/91), the growth performance of the economy was dismal⁴. In this period, the GDP growth rate of 2.1 percent per annum was not even enough to keep the level of per capita income constant with a population growth rate of 2.8 per annum, per capita income declined by about 0.7 percent per annum. When we subdivided the period, during the period 1974/75-1977/78 the growth rate was 0.3 percent and the growth rate in per

⁴ In this period there was a radical departure in ideology and, hence, associated policies. This period also witnessed the attempt to establish a 'socialist' economy by the military regime.

capita being -2.3 percent. This is mainly due to the instability with new economic policy and the war with Somalia. But during 1978/79-1982/83 as the result of stability and good weather condition, growth rate increased to 4.6 percent and per capita income became 1.8 percent. In 1983/84 and 1984/85 growth decreased by 5.7 percent and 9.1 percent, respectively. This is due to the sever drought of that period. Especially the decelerated in GDP to -0.7 percent in 1982/83 is mainly related to the sharp decline in industry value added (-8.3 percent) due to the collapse in manufacturing (-8.3 percent) and construction (-14.7 percent) despite a growth in mining. In 1985/86 and 1986/87 this rate picked to an average of about 12 percent as the result of recovery form which again fall to -0.01 percent in 1988/89. This indicates that growth episodes are extremely irregular (Alemayehu, 2002).

This dismal performance is reflected in all the sectors except for the service sector. During 1980/81-1990/91 agricultural production grew by a mere 2 percent per annum while industry and distributive service grew by 0.57 percent per annum on average. During this period, aggregate expenditure exceeded GDP by 6 percent that is higher than under per 1974 period average by 5-percentage point. This is mainly due to the expansion of public sectors as the result of socialist ideology that encouraged expenditure on public enterprises, state farms expansion and civil war.

Figure 3.1



Post 1991, the new regime adopted typical structural adjustment policies with the support of the Bretton Wood institutions. Therefore, in terms of economic policy, this period witnessed a marked departure from the previous 'Socialist' system of command economy that repress private sector. As a result, during this period, relatively good economic performance is recorded though it experienced fluctuations. On the average, the economy and per capita income have been growing by about 5.04 and 2.6 percent per annum, respectively during 1991/92-2000/01⁵. In fact this makes the country “one of the seven ‘fast’ growing economies of Africa for the decade”. If there had not been frequent drought and the Eritrean aggression

⁵ One should notices that the growth performance has been still fragile and uneven. Moreover, when we take on a year-to-year basis, the growth was rhythmical. This is mainly due to heavily dependence both on vagaries of nature and external shocks, including the war with Eritrea.

of may 1998, the growth rate of GDP would have been expected to be higher⁶. However, the domestic absorption was significantly higher than GDP, having a share of 111.3 percent out of GDP on the average. This is because, in our case, excess demand was a prevalent feature of the economy through out the period under consideration.

In 1997/98 and 1998/99 the poor performance in the agricultural sector owing to the drought which severely affected the agricultural sector lowered the share of agriculture in GDP significantly. As a result, real GDP fell by 1.2 percent. Since 1998/99, however, real GDP recovered and recorded increase of 6.3 percent over the preceding year. During the fiscal year 1998/99 industry grew by 11.3 percent which was mainly due to the 20 percent increase in the large and medium scale manufacturing. Despite the impressive growth recorded in the 1998/99, the contribution of the industrial sector remained almost constant at about 11 percent over the years except in 2000/01 when it declined to 6.7 percent. On the other hand, the share of services sectors (distributive and other services), at 44.1 percent of the total GDP in 1998/99, showed a jump, though still lower than agricultural sector (see Table 3.2 below).

⁶ The observed recovery of growth during the period 1992/93-1996/97 with the growth rate of 7 percent is partly explained by the recovery from the very small base and good weather condition, and partly because of the reform implemented.

Table 3.2 Growth in real GDP and its components in percent

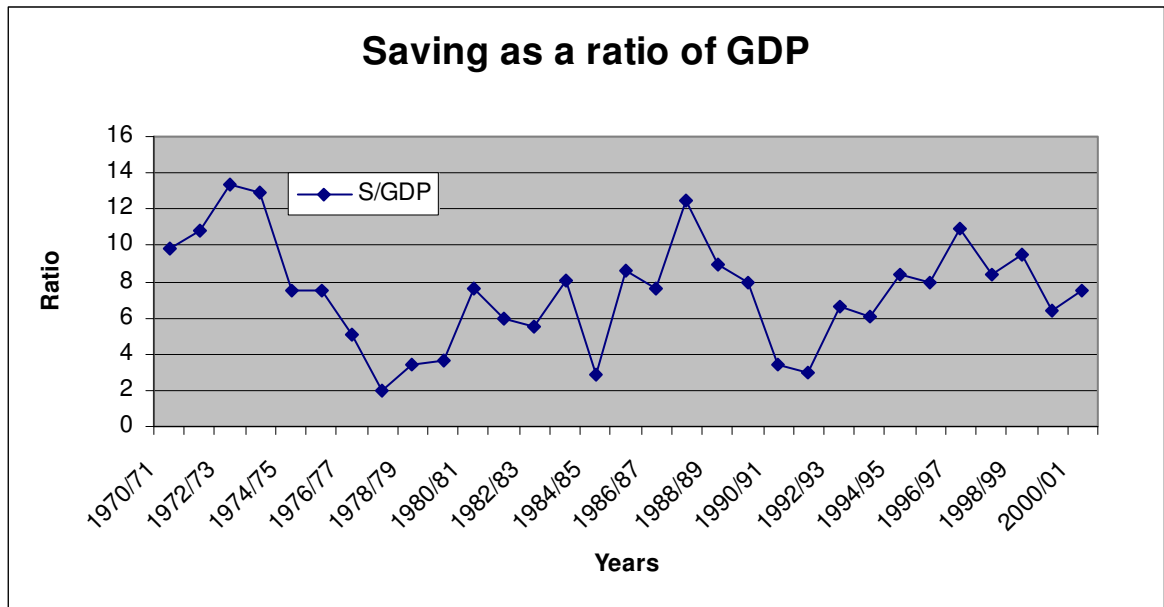
	1992/93-1998/99	1997/98	1998/99	2000/01
agriculture	2.4	-10.8	3.8	13.1
Industry	6.5	2.3	11.3	6.7
Distributive				
Service	6.7	5.6	3.5	6.1
Other Services	8.1	13.4	9.8	4.3
Total	4.9	-1.2	6.3	8.7

Source: MoFED

3.2 Trends in saving.

It is a known fact that economic growth is significantly affected by the rate of investment that in turn is related to saving. Gross domestic saving (GDS) as percent of GDP was decent and reasonably steady over time reaching 13 percent in the last years of the imperial regime. During the Derg regime, though the socialist state was supposed to increase savings by increasing taxes on luxuries commodities and introducing mechanisms to increase savings from working people, the rate of saving was quite low. Moreover, there was a tremendous fluctuation in saving ranging from a high of 12.5 percent in 1987/88 and a low of 3.4 percent in the last year of the Derg.

Figure 3.2



On the average, GDS as percentage of GDP for the last 10 years of the Derg period was 7.1 percent per annum. Thus, domestic saving was quite low not only in comparison with the pre-revolution period, but also in view of the country's investment demand. By 1988/99-1991/92 the growth rate of GDS appeared to be negative, this is basically a result of a negative contribution of the government sector saving to the gross domestic saving (dis-saving by the government).

The major cause for this dramatic decline in saving rate was not the increase in public consumption; rather it was a marked increased in government consumption.

When we see the performance of gross domestic saving to GDP ratio during the 1992/93-2000/01 the sign of recovery is observed being 8.0 percent of GDP on average⁷. Therefore, though the average was low, the trend of domestic saving showed a steady increase indicating that some of the measures taken by the EPRDF government encouraged saving. But in general, the saving rate is still lower for sustainable economic growth. On the average, in Ethiopia the ratio of GDS to GDP has been lower compared with the Sub-Saharan Africa which on average had been 16 percent and 14 percent in 1970's and 1991 respectively (World Bank, 1993).

3.3 Trends in investment

In the 1960s, total investment was growing at an annual compound growth rate of 5.3 percent and in 1970s it was 9.9 percent. The growth rate reached 14.6 percent in the 1980s. In the last period of the Derg regime, however, it became negative as the result of severe misguided economic policy prevailed in the entire period and particularly because of the height of political crisis and the devastating war of the period⁸.

During the period 1991/92-2000/01 the ratio of total investment to GDP was 17.2 percent which showed an increasing trend due to the relatively conducive environment that is

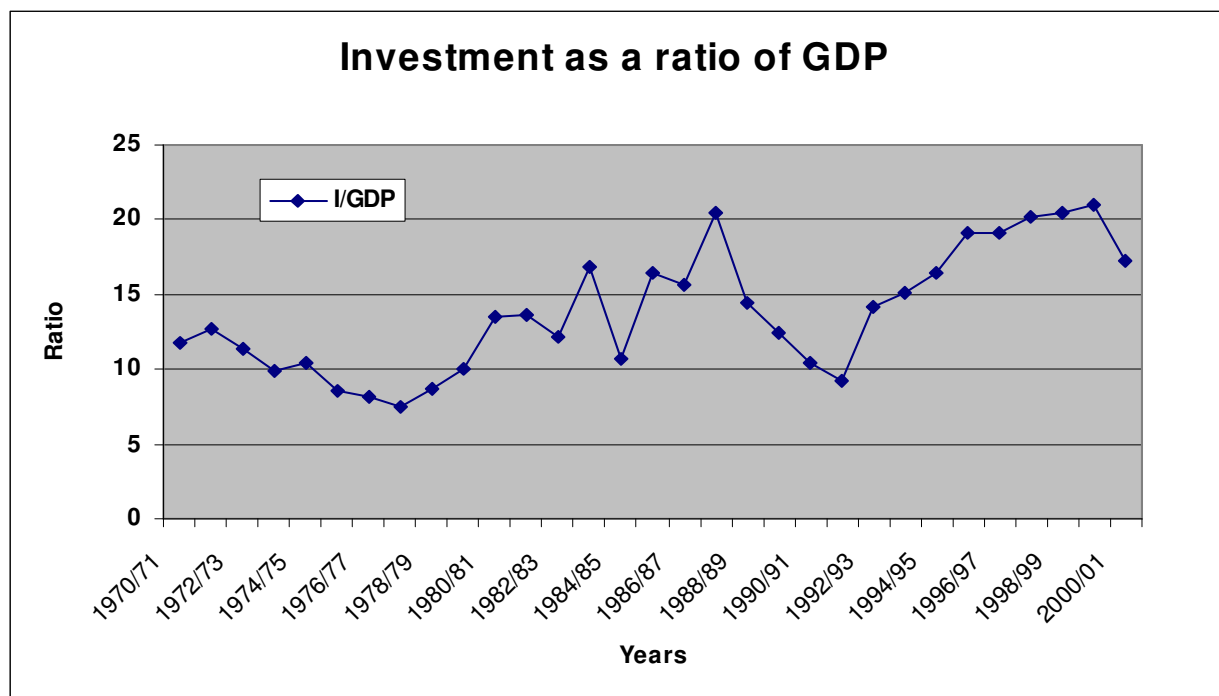
⁷ During the 1999/00- 2000/01 the saving to GDP ratio is significantly reduced due to the war with Eritrea and natural disaster witnessed around that time (especially in 1998/99).

⁸ In general high spending on 'unproductive' public enterprise where defense spending constitute more than half the budget, running inefficient public enterprises, bias against the private sectors, low diffusion of farm technology, the extremely closed nature of the economy and low utilization in industries and others had their share in explaining the negative contribution of policy during this period.

institutional shift from public to private that favors the post reform period of the current government.

The investment to GDP ratio did not follow the trend of GDS. It averaged 12.5 percent for the entire 17 years of the Derge while the last 10 years of the Derg period showed an increase to 14.3 percent. This trend has started to show a steady recovery since 1992/93 increasing to 20 percent in 1997/98 and 21 percent in 1999/00 but declined to 17.2 percent in 2000/01. On the average, for this period it reached 17.2 percent, which could have been 18.1 if 1991/92 year of EPRDF is discounted as indicated on figure 3.3 below.

Figure 3.3



When we see the growth rate of private investment it was about 6 percent in the 1960's while government investment was growing by only 0.04 percent. In the 1970s, following the socialist ideology of the military government, the growth rate of private investment became - 1.36 percent while public investment grew by an annual compound rate of 20.8 percent. In 1980 private investment was growing at an average growth rate of 1 percent while the growth rate of public investment was as high as 14 percent. These growth rates in the Derg regime are in line with the then socialist ideology that deliberately discourages private investment through different government policies like capital ceiling, price control, and the general effort of expanding of public enterprise and discouraging of private enterprise and others.

During 1991/92-1999/00 the growth rate of private investment accelerated to 11.6 percent per annum following relatively the conducive environment created by the current government. But the growth rate of public investment was still high, about 46 percent especially investment in infrastructure.

Thus, in the 1960s the share of private investment in GDP was around 11.1 percent while that of public investment was 1.8 percent. In the 1980s this share reached 9.6 percent of GDP while the share of private investment was reduced to 5 percent. Recently (1999/00) the share of public sector investment was 6.3 percent while that of private investment was around 8 percent of GDP.

Resource Gap

Gross domestic saving constituted 90.8 percent of gross investment in the last two years of the 1960s that magnificently declined to 77 percent per annum in the 1970s and reduced to 51 percent per annum in 1980s. This figure is further reduced to 44 percent between 1992/93-2000/01.

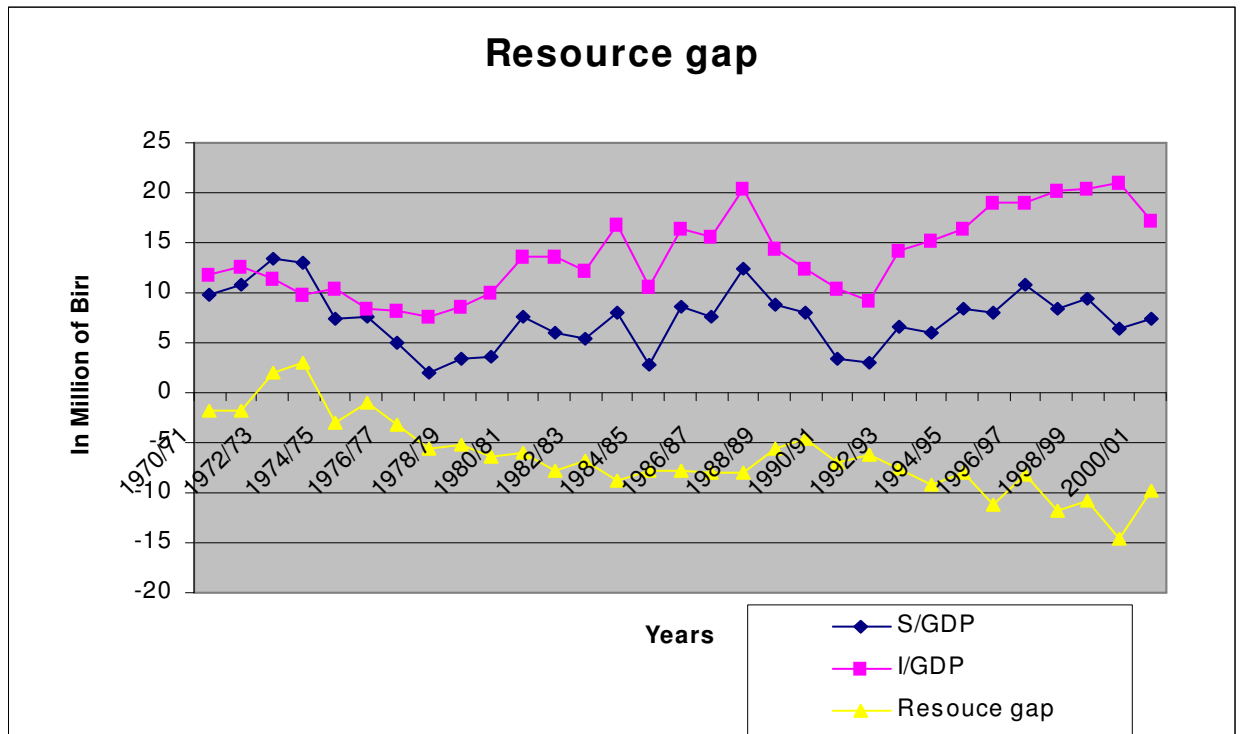
Throughout the period 1960/61-2000/01, the ratio of investment to GDP was higher than the saving to GDP ratio with the exception of 1972/73 and 1973/74 as indicated on figure 3.4 below. As a result, the difference between domestic saving and domestic investment, commonly called resource gap, was 1.30 percent of GDP per annum in 1960s, 2.23 percent in 1970s and 7.1 percent in 1980s. The gap magnified and reached about 9.7 percent of GDP between 1991/92-2000/01.

This implies that the economy was facing a serious resource gap to finance the investment expenditure. To bridge this resource gap, external financing (foreign saving by way of grants and loans from abroad) had been required extensively.

As the resource gap expanded, the external debt as a percent of GDP increased from 25.6 percent in 1981/82 to 43.1 percent in 1990/91, and reached 169.4 percent of GDP in 1998. The financing of such high level of debt was also high and ever increasing. As a result, the debt service ratio increased from a low level of 12.9 percent of goods and services to a high of 69.9 percent, averaging 34.4 percent for the whole Derg period. It reached a maximum level

of 82.5 percent in 1991/92, then declined to 34.5 percent in 1999/00 leaving a very small amount of foreign exchange from the export earnings for domestic investment purpose.

Figure 3.4



3.4 Balance of payments

According to Keith Pilbeam, (1998), Balance of payments is a statistical record of all the economic transactions between residents of the reporting country and residents of the rest of the world during a given time period. It reveals how many goods and services the country has been exporting and importing, and whether or not the central monetary authority (Central Bank) has added to or reduced its reserves of foreign currency is reported in the statistics.

Traditionally, the statistics are divided in to two main sections -the current account and the capital account, with each part being further sub-divided. The explanation for division in to these two main parts is that the current account items refers to income flows, while the capital account records changes in assets and liabilities (Ibid.).

The Trade Balance is referred to the visible balance because it represents the difference between receipts for exports of goods and expenditure on imports of goods which can be visibly seen crossing frontiers while the Current Account is the sum of visible trade balance and invisible balance. The invisible balance shows the difference between revenue received for exports of services and payments made for imports of services such as shipping, tourism, insurance and Banking. Receipts and payments of interest, dividends and profits are also recorded in the invisible balance.

Capital Account Balance: this refers to the records of the transactions of the movement of financial capital in to and out of the country.

3.4.1. Current Account balance

Trade Balance

The structure of Ethiopia's foreign trade did not show any marked change in the past few decades. Among the items which the country exports, the major ones are coffee, leather and leather products, pulses and oil seeds. Historically, these items altogether account for about

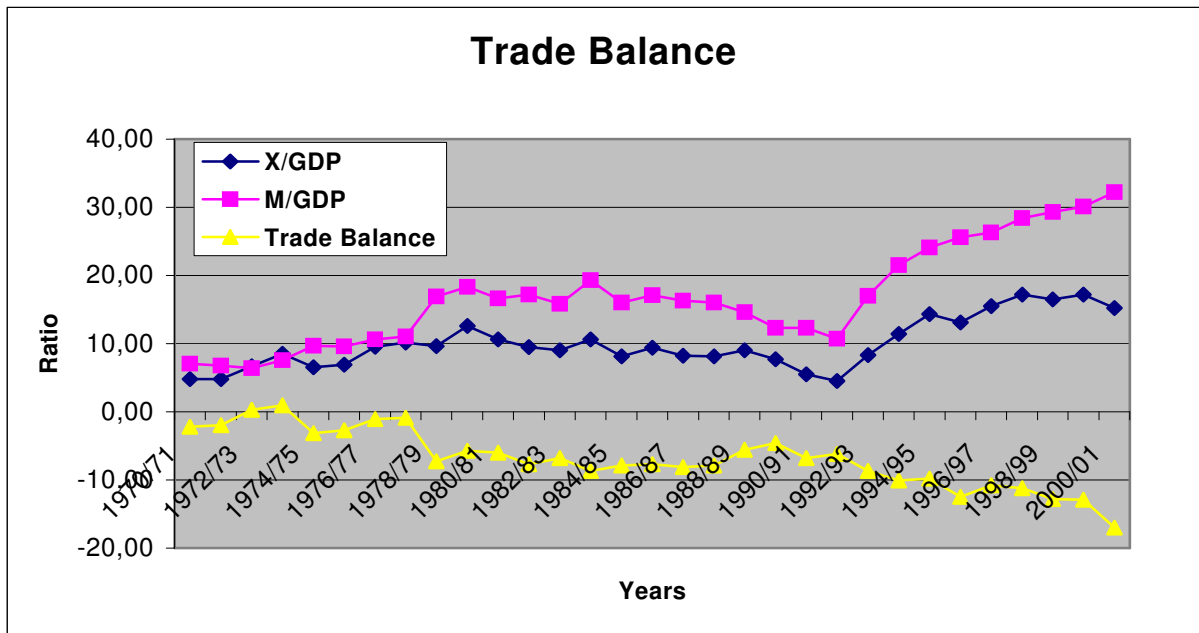
80 percent of total exports. For over three decades, coffee has been the dominant item accounting for more than 50-60 percent of total exports. During the fiscal year 1999/00 merchandise export earnings amounted to 4144.7 million Birr (8 percent of GDP). Despite an 11 percent increase in other exports there was a 20 percent decline in export earnings in general which is mainly explained by a sharp fall in earnings from coffee export.

During the year 2000/01 the total export earnings amounted to Birr 3,679.8 million, indicating a decline of 7 percent compared to the preceding year. This was mainly attributable to a 32 percent decline in coffee export receipts, which in turn, was a result of the continued decline in the international market prices of coffee from Birr 20.9/kg in 1998/99 to 18.3/kg in 1999/00 and further down to Birr 15.2/kg in 2000/01. This indicates the adverse consequences of heavy dependence on a single commodity, coffee.

Ethiopia, being a small open economy, is highly dependent on external trade. Openness, as measured by the share of external trade in GDP, increased significantly from around 20 percent in 1960/61 to 45 percent in 1999/00 (Danel, 2001).

In the last decades also the Ethiopian external sector can be characterized as a net importer except the last two years (1972/73 and 1973/74) of the Imperial period. In 1970s, the trade balance recorded a deficit of 2.3 percent of GDP, which rose to about 7.1 percent in the 1980s. On the average, during the period 1992/93-2000/01 it increased to 11.2 percent (see figure 3.5).

Figure 3.5



In the 1960s, the values of exports were growing on the average by 9.1 percent while the values of imports were growing at 8.2 percent per annum. As a result, the growth rate of trade balance became 12.3 percent of GDP per annum. In 1970s this growth rate of the export is 10.5 percent per annum while the trade balance rose to 2.3 percent of GDP. This is because of high growth rate of import as a percentage of GDP. In 1980s the annual growth rate of export became -0.5 percent while that of imports were 3.2 percent per annum, driving the trade balance to 7 percent of GDP. This deceleration of growth of exports in this period can be attributed to the policies adopted by the Derg government which include controlling and restricting the private sector from participating in external trade, prices and quantities; and other distorted anti-market rules. Moreover, since export is determined by exogenous foreign market, situations in the rest of the world may also contributed to this poor performance.

During 1991/92-2000/01, exports were growing by 14.3 percent per annum while imports were growing by 21.5 percent. This high growth rate of imports and exports is in line with the trade liberalization policy adopted since the reform of 1991/92. But the total export performance is still remains very weak and rigid in structure. As a result, trade balance had rather expanded to reach an average of 10.2 percent of GDP between 1991/92-2000/01. But in 2000/01 it expanded to 17.1 percent of GDP.

The increase in the negative trade balance shows the declining share of exports in covering the import bill. Export earnings were covering about 86 percent of the import bill in the 1960s, which went down to 77 percent and 54.8 percent in the 1980s and 1990s, respectively. This indicates that the domestic capacity to import is eroded continuously, which in effect leads the country to rundown its reserve and to be dependent on foreign financial flows to meet its import requirement.

Current Account Balance

With relatively buoyant imports and a sluggish export, the current account deficit before official transfer was 2.56 percent of GDP per annum in the 1960s. It rose to about 7.45 percent of GDP in the 1980s from which it declined to about 5.60 percent during 1992-1998 (MEDaC, 1999).

The share of net official transfer as a proportion of nominal GDP amounted to 0.34 percent of GDP in the 1970s and 2.73 percent in 1980s. It rose to 3.7 percent of GDP between 1991 and 1992. On the average, the current account balance after official transfer registered a surplus of

0.12 percent of GDP per annum in the 1970s. However, it swung to a deficit of 3.90 percent of GDP per annum in the 1980s. This figure turned to a surplus of 0.83 percent of GDP between 1991/92- 1997/98 (Ibid.).

In the fiscal year 1998/99, the current account position of the country witnessed deterioration. The deficit in the current account balance during this period expanded significantly from 6 percent of GDP in 1997/98 to 12 percent of GDP in 1998/99 excluding official transfers. The deterioration in the current account balance specifically in 1998/99 is explained by poor performances in the merchandise trade and net services.

In 1999/00 there was an improvement in the current account deficit from 12 percent of GDP in 1998/99 to 10 percent of GDP in 1999/00. This is due to the marked increase in net services (30 percent) and private transfers (54 percent) (National Bank of Ethiopia Annual Report, 1999/2000).

3.4.2 Capital Account Balance

The capital account was in surplus during 1970-1992 period exception for 1977, 1990 and 1992 when deficits were Birr 40.51 million, Birr 93.36 million and Birr 414.62 million amounted to 0.66, 0.80 and 3.22 percent of GDP, respectively (MEDEaC, 1999). This account registered a surplus of 1.74 percent and 3.86 percent of GDP in 1970 and 1980s, respectively. The capital account surplus reached its peak of 15.33 percent of GDP in 1982

from where it declined slowly until 1990. But it was not always large enough to finance all the current account deficits during the period under consideration.

The development in capital account revealed an upsurge in amortization, on the one hand and a slowdown in the level of disbursements and foreign direct investment in the form of privatization proceeds, on the other. This scenario led to a significant (88.5 percent) decline in the net long-term capital, which is in direct contrast with the improvement in 1998/99. Compared with the 1998/99 fiscal year, in 1999/00 the level of disbursements as well as foreign direct investment went down by 18.9 percent and 50.1 percent and stood at Birr 1432.4 million and Birr 509.1 million, respectively. But, the level of amortization increased by 57.2 percent to Birr 1748.2 million. As a result, the net-long-term capital recorded a drastic decline from Birr 1675 million to Birr 193.3 million.

By contrast, the net short-term capital, which is related with trade finance, registered a sharp rise from Birr 64.6 million in 1998/99 to Birr 943.4 million in 1999/00. This movement lessened the slowing down impact of the net long-term capital on the overall capital account balance. In total, capital account in 1999/00 stood at Birr 1136.7 million (2 percent of GDP), down by 34.7 percent from the preceding year level of Birr 1739.6 million (3.4 percent of GDP).

When we see the overall balance of payments of the country, the overall balance of payments deficit in 1999/00 widened to Birr 2546.1 million (4.9 percent of GDP) from Birr 352.9 million (0.7 percent of GDP) in the preceding fiscal year. The deterioration in the overall balance of payments was associated mainly with the significant slowdown of the capital

account balance, which more than offset the observed improvement in the current account balance and official transfers.

3.5 Public finance

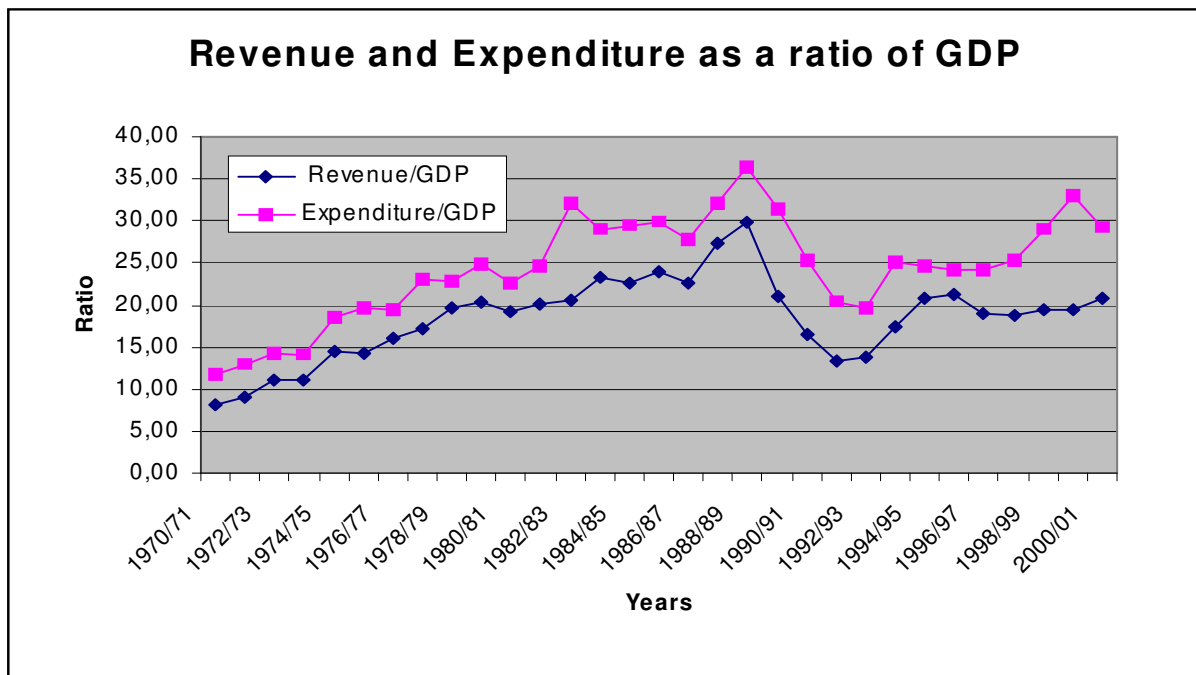
Budget deficit is conventionally defined as revenue minus expenditure of the central government. In Ethiopia it is quite clear that the government budget balance has never been in surplus since 1960s. Moreover, the extent of the deficit has undergone significant changes over the different periods.

As Teshome (1992) put it “during the period 1950-55 budgetary surpluses were recorded. During the period 1955-65 balanced budget were maintained more or less while between 1965-74 the deficit was kept small as the result of ‘fiscal conservatism’. After wards a large and persistently rising fiscal deficits was sustained. This is due to the 1974 revolution that introduced the socialist ideology with expanded public sector without adequately expanding government revenue in addition to the expanded war in different directions.

With the expansion of public ownership and management almost in all socioeconomic activities after 1973/74, government expenditure jumped from 14 percent of GDP to 18.6 percent in 1974/75, a 4.6 percent increase in a year. Government expenditure continued to increase over the years until it reached a climax of 36.37 percent of GDP in 1988/89. Its composition was still concentrated on recurrent expenditure (expenditure items which are recurring in the process of delivering government economic and social services) of which

defense expenditures account for 25 percent in most of the period, reaching about 50 percent in the last years of the Derg regime.

Figure 3.6



Capital expenditure (outlay on development projects that result in the acquisition of fixed assets and thereby enhance the capacity of the country for the production of goods and the provision of economic and social services) was low compared to that of recurrent expenditure. During 1980s, it accounted 30 percent of the total government expenditure.

When we see government revenue it consistently increased from 10 percent of GDP in 1974/75 to 29.8 percent of GDP in 1988/89. In 1997/98, the total government revenue was

20.8 percent, which increased to 22 percent in 2000/01. From this total about 83 percent is collected from domestic sources while the remaining 17 percent came from external grants.

But the budget deficit has remained significant even after the introduction of various reform programs in 1992/93. In 1999/00 government expenditure was around 32 percent of GDP while total government revenue was 19.4 percent of GDP. This clearly indicates that there is an excess of government expenditure over revenue, which leads to huge budget deficit.

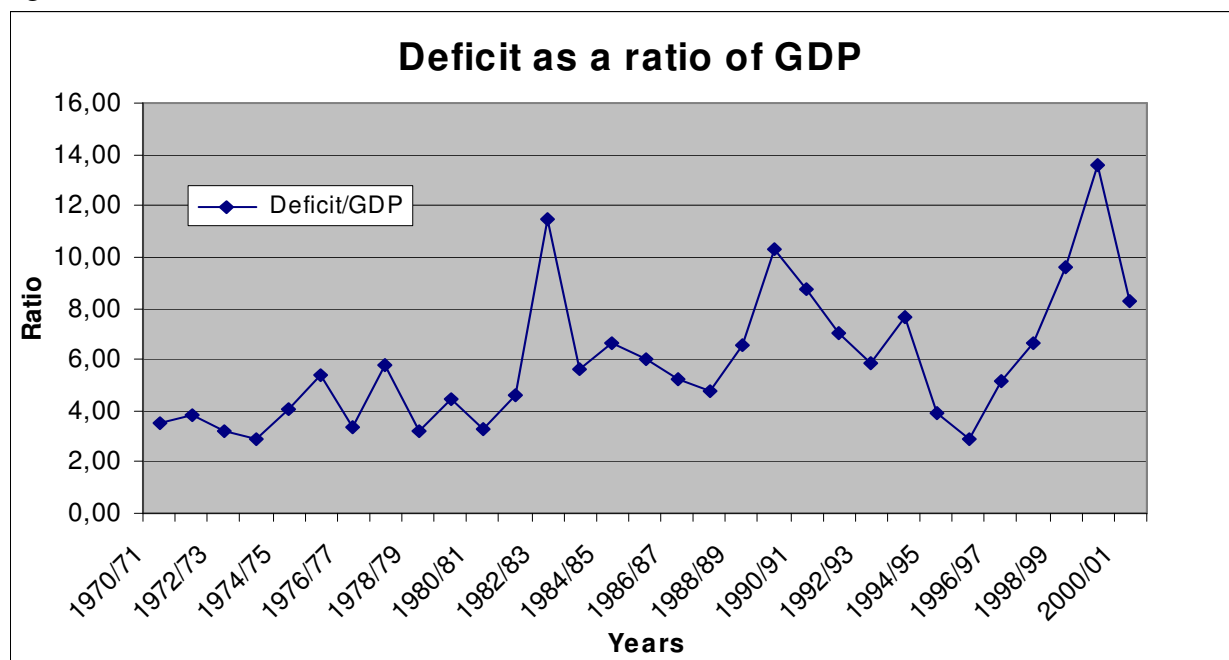
In 1998/99 and 1999/00 this fiscal deficit increased to 9.6 percent and 13.6 percent of GDP, respectively. This is due to the break out of war with Eritrea in 1998 and the natural disaster in the same year. In 2000/01 this figure decreased to 8.2 percent of GDP.

In the Derg period therefore, the escalating expenditure over revenue was a major cause of the deficit. In monetary terms the total government expenditure increased from 2.3 billion (22.6 percent of GDP) in 1980/81 to 5.6 billion Birr (36.37 percent of GDP) in 1988/89. During this period among the factors that contributed to this expansion, were the government bureaucracy, the launching of series of expensive campaigns, the literacy and villagization campaigns and mostly wars in Ogaden and Eritrea.

After the reform of 1991/92, the total government spending during 1999/00 was Birr 17.2 billion, (about one-third of GDP at current market prices). This spending recorded a 15 percent rise over the previous fiscal year. But a significant share of total expenditure was

taken by recurrent expenditure, which tended to increase since 1997/98, and actually reached 80 percent during 1999/00.

Figure 3.7



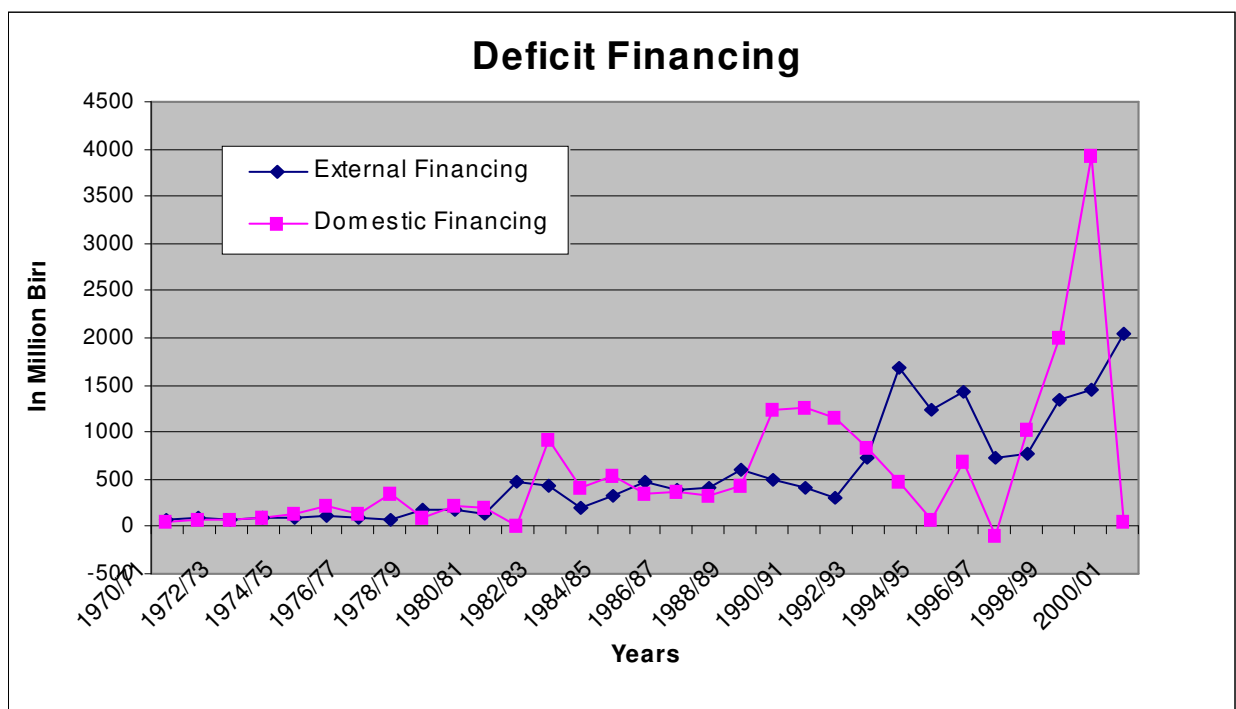
In 1999/00 the recurrent expenditure increased by 36 percent over the previous year, which decreased by 25 percent in the year 2000/01. But still the recurrent outlays dominate over the capital expenditure. This share is reduced to 67.4 percent of GDP in 2000/01 from high level of 80 percent in 1999/00.

In 1997/98 and 1998/99 the increased recurrent expenditure on general services, mainly defense outlays related with the border conflict with Eritrea, and drought related expense contributed to the significant upsurge observed in total government spending.

During post reform 1991/92 devaluation of the domestic currency and the rehabilitation process in the after war period also contributed for the high growth of total expenditure. During the same period government revenue was growing by 18.4 percent per annum.

When we see the financing of the deficit, it had been financed from both external and domestic sources. External sources include external borrowing and grants while domestic sources include borrowing from banking system and non-banking sources. Apart from the success in containing expansion of deficit, the post reform period was marked by the shift in the mode of financing to external sources.

Figure 3.8



In 1990/91, about 25 percent of the deficit (including grants) was financed from external borrowing while domestic sources financed the remaining 75 percent. This proportion of deficit financed by external borrowing rose to as high as 78 and 94 percent in 1993/94 and 1994/95, respectively, which increased to 115 percent in 1996/97. In 1995/96 and 1997/98, however, net inflow of external borrowing covered 67 and 43 percent of the deficit including grants, respectively. On the average, during 1991/92-2000/01 63 percent of the deficit is financed by total external finance.

The external assistance, which is one part of external finance and mostly referred to as grants, contributes about 28 percent of the total deficit finance annually in 1983/84- 1994/95 while in 1995/96- 1999/00 its annual share increased to 41 percent of the total deficit financing.

Regarding external borrowing it accounts, on average for about 54.8 percent and 43.7 percent of the external finance during 1983/84-1994/95 and 1995/96-1999/00, respectively and it financed about 36 percent and 29.8 percent of the fiscal deficit annually. Therefore, unlike grants, external loan is the most important source in financing capital expenditure.

The domestic financing of the fiscal deficit constitutes on average about 39.6 percent out of which banking system contributed more than 90 percent in the period 1983/84-1990/91. In 1991/92 79 percent of the deficit is financed domestically which reduced to 6 percent in 1994/95. During the period 1994/95-1998/99, its average share out of the total deficit finance was only 17.3 percent which currently increased to 36.5 percent and 63.4 percent in 1998/99 and 1999/00, respectively because of the war with Eritrea that freezed access to foreign loan.

3.6 External Debt

External debt is an accumulation of annual loans entered into between one's country government and creditors nation (public external debt), or guaranteed by the government (publicly guaranteed external debt) and between private and creditor nation (private external debt).

In Ethiopian case, almost all the external debt is an accumulation of annual loans entered into between the Ethiopian government and creditor nations and lending institutions. The latter includes multilateral financial institutions and private lenders.

The origin of external debt can be traced to the willingness of the debtor country to borrow and the lenders to lend. From the debtor country's perspective, the need for external loan arises from the imbalance between domestic savings and investment, which is referred to as the resource gap. To fill the gap between these two, countries have two main options. One is relying totally on domestic savings to finance the investment demand (which is tantamount to limiting imports to the amount of foreign exchange generated by the country) while the second option is to borrow externally and close the gap between desired investment and domestic saving. The benefit of long-term external credit is to increase investment above and beyond what the country can afford. In this regard, the second alternative has been the most popular in countries that experience resource gap (Befekadu Degefe and Berhanu Nega, 1999/00).

In Ethiopia both the debt stock and the debt to GDP ratio increased steadily since 1980s and the 1990s. This makes Ethiopia one of the Sub-Saharan, which have a total debt that exceeds their GNP, having a debt to GNP and debt to export ratios of 108.2 percent and 642.4 percent in 1980s and 150 and 980 percent in 1990s, respectively⁹. The comparable figure of debt to GNP ratio for East and South Africa and North Africa is 129.5 percent and 77.8 percent, respectively [Alemayehu, 1997]. This may causes the country to have severe debt servicing difficulties especially when the fund is miss used. Despite efforts at rescheduling, the country has not been able to meet its debt service obligations, arrears have accumulated, and thereby raising the stock of external debt.

Almost all the outstanding debt of Ethiopia is held by the public sector or is guaranteed by the government regardless of the borrower.

There are three factors that explain the phenomenal growth of external debt over a period of a decade. First, the devaluation of the domestic currency of October 1, 1992 inflated the Birr equivalent of the external debt, which existed at that time by the same proportion as the devaluation. While the US dollar denominated debt increased from US\$ 4.3 billion to 4.7 billion between 1992 and 1993 fiscal years, the Birr denominated debt increased from Birr 6.6 billion to Birr 18.8 billion, much more than US\$ 300 million in new debt. Thus, the nearly three fold increase in the Birr denominate debt stock was mainly due to the devaluation of the domestic currency.

⁹ But, long term loans are not mean to be serviced out of current GNP at one time rather the payment is distributed over a long period of time depending of the terms of agreement.

The second factor is because the contracted debt entered in to by the Ethiopia government as every year the government gets new loans, which go to increase the debt stock.

The third factor is due to arrears that are capitalized. These arrears have started appearing in Ethiopia's external balance sheet since 1980s when the country failed to meet its obligation on debt for the first time. Therefore, arrears become a common increasing feature.

Nowadays, arrears are considered as the key indicators of the intensity of debt-burden as they clearly signal the ability of a country to honour its debt obligation.

The interest arrears had been 0.1 percent of export or 0.01 percent of GNP in 1981 which reached a peak of 53 percent of export and 8.4 percent of GNP in 1998. The principal arrears also increased from a low level of 0.12 percent of export and 0.013 percent of GNP in 1981 to 71 percent of GNP and 449.7 percent of exports in 2000.

In sum, by the year 2000 the total arrears (principal and/or interest) reached 480 percent of export 81 percent of GNP and 54.5 percent of total external debt (see table 3.4.1 below).

Table 3.3 Indicators of Debt Burden for some selected years (All are in percentage)

	1972	1981	1989	1992	1994	1996	1998	2000
Debt to GNP ratio*	11.1	35.6	98.6	173.2	208.9	169.4	158.2	160.2
Debt to Export ratio	91.5	332	1034.8	2036.9	1781.7	1224.3	1001	1260
Arrears to GNP ratio	---	0.025	0.87	33	66.5	80.4	79.5	81.2
Arrears to Export ratio	---	0,23	9.1	388.1	567.05	581.2	503	480
Interest arrears to total arrears	---	46.2	23.2	14.5	12.3	10.1	10.6	15
Principal arrears to total arrears	---	53.8	76.8	85.5	87.7	89.9	89.4	81

*Include the debt to the former USSR.

Source: World Development Indicators CD ROM; 2000 and my own calculation.

In general, the increasing debt to GNP and debt to export ratios in addition to interest and principal arrears showed an unprecedented increase in the level of the country's external debt. And those indicators listed above revealed that the total debt is well above the nation's GNP and around 10 fold of total export in 2000 implying that the debt burden, as compared to the country's capacity, is too heavy to take care of itself. But the recent Ethiopian government reached a decision point for enhanced HIPC relief in October 2001 of estimated 1,930 million dollars expected to reduce the figure significantly.

The external debt of Ethiopia in the past has also exhibited noticeable change in its structure and composition. In 1992, the share of multilateral, bilateral and commercial credits, excluding the ruble denominated loan, was 41.6 percent, 41.4 percent and 17.0 percent, respectively. On June 30, 2000, however, the respective ratios have become 52 percent, 45.6 percent and 2.4 percent. This shows an increasing trend towards multilateral debts. The sharp increase in the proportion of multilateral debts is associated with loans obtained mainly from the World Bank, the IMF and the ADF to finance the structural adjustment program. The share of bilateral creditors on the other hand is declining over time due to the debt relief obtained from the Paris club creditor countries. Also the remarkable decline in the share of commercial credits is the result of the commercial debt buy-back operation completed in 1996¹⁰. When the ruble denominated debt is included the respective ratios would change considerably, that is the share of bilateral debt in 1992 and 2000 became 76 percent and 72 percent, respectively.

¹⁰ Debt buy-back refer to entering the secondary market to buy debt that is trading at price below face value. The purpose is to wipe out debt by buying at discount prices in the secondary market.

Table 3.4 Total external debt by source in million Dollars

Creditors	Amount (30/06/92)	%	Amount (30/06/00)	%
Multilateral	1473.5	16.8	2834.9	52.0
official Bilateral	6713.0	76.3	2486.7	45.6
-Paris club	6010.6		1868.3	34.3
O/W Russia	5248.2	59.7	1234.5	22.6
-non-Paris club	702.4		618.4	11.3
Commercial	603.7	6.9	130.4	2.4
Total	8790.2	100	5452.0	100

Source: Ministry of Finance and Economic Development.

Multilateral Creditors

Recently the debt owed to multilateral creditors has exhibited significant increase. It has increased from its level of US\$ 1473.54 million (42 percent of the total excluding the ruble debt) as at end of June 1992 to US\$ 2570.1 million (63 percent of the total excluding the ruble debt) at the end 1998, showing a 57 percent increment over the years.

Among the Multilateral creditors, the major ones are the World Bank, particularly the International Development Association (IDA) and the African Development Fund (ADF). As at June 30, 2000, out of the total debt owed to multilateral creditors, US\$ 1758.7 million (62

percent) was owed to the International Development Association (IDA). The rest US\$ 834 (29 percent) was owed to the Africa Development Bank Group and US\$242.3 million (8.6 percent) was owed to the others creditors.

Official Bilateral creditors

The group of official bilateral creditors consists of the Paris club creditors as well as the non-Paris club creditors. The debt owed to this group of creditors (excluding the ruble debt) has declined from US\$ 1464.75 million in 1992 to US\$ 1376.06 million in 1998. The debt relief obtained twice from the Paris club creditors could explain this decline. When the ruble denominated debt is included, official bilateral debt in 1992 and June 30, 2000 would be US\$ 6713.97 million and US\$ 5230 million, respectively.

Official Paris club creditors

The major Paris club creditors of Ethiopia are Austria, Belgium, Canada, France, Germany, Italy, Japan, the Netherlands, Sweden, the Russian Federation, the United Kingdom, and the United State of America.

The total debt owed to these countries, as at June 30, 2000 amounted to US\$ 1868.3 million, which is lower than the figure for the last fiscal year (US\$ 6560.7 million) by US\$ 4692.4 million (71.5 percent). This remarkable decline can be mainly attributed to the 80 percent up front discount the country got from the Russian Federation. In June 30, 2000 the most

prominent ones in terms of volume of debt stock are Russia, Italy and USA, which constituted about 66.1 percent, 18 percent and 5.1 percent, respectively of the total Paris club debt.

The non-Paris club creditors

The non-Paris club creditors group includes the former Socialist countries of Eastern Europe, namely, Bulgaria, Czech and Slovak Republics, Hungary, Poland, Rumania, Yugoslavia as well as Algeria, Libya, Israel, India, Peoples Republic of China and Peoples Democratic Republic of Korea.

The total debt owed to these countries, which amounted to US\$ 702.41 million in 1992, has increased to US\$ 618.4 million in June 30, 2000. This amount represented 51.8 percent of the total bilateral debt and 17.4 percent of the total debt stock (excluding the ruble debt). Including ruble, the share of non-Paris club creditors out of bilateral and total debt would be 10.2 percent and 7.4 percent, respectively. The increase in the share of the non-Paris club creditors is because of the increase in the accumulation of interest arrears. Out of the total debt owed to the non-paris club creditors, the highest amount, which is US\$ 242 million or 39 percent is owed to Libya, followed by the former Yugoslavia US\$ 4124.2 million (20 percent) and North Korea (US\$ 89.9 million (15 percent)).

Commercial creditors

The share of commercial creditors at June 30, 1992, stood at about US\$ 603.69 million (17 percent) of the total debt (excluding ruble debt) of the country. Out of this, commercial credits amounting to US\$ 319 .97 million (53 percent) of the total was Ethiopian Airlines credit. Over the years commercial credits have declined and at June 30, 2000, they reached US\$135.1 million (3.3 percent) of the total debt of the country. The main reason for the significant decline in the share commercial credits was the debt buy-back operation undertaken in April 1996, and by which a total amount of US\$ 226 million, excluding US\$ 30 million interest, had been extinguished. Out of the total commercial credits as at June 30, 2000, commercial credit amounting to US\$ 67.7 million was Ethiopia Airlines credits, which is not eligible for the debt buy-back operation and the rest US\$ 67.4 million was commercial credit which was not yet been settled by the operation.

When we see the total external debt of Ethiopia by end users it shows an increasing trend in the share of the central government's loans. As at end of June 1992, the central government's loans (excluding the Ruble denominated) amounted to US\$ 2846.9 million or 80 percent of the total, while the rest US\$ 691.1 million (20 percent) was other public sectors' loans. This increasing trend has continued over the years and has at June 30, 2000, US\$ 5236.0 million (96 percent) were central government loans and the rest (US\$ 216 million) was owned to parastatals. This implies that the dependence of the government to finance particularly its capital budget from the external source has been increasing over the years. In addition, as a result of the Paris club debt rescheduling, some proportion of their public sector loans now has become part of the central government loans.

In addition to looking the structure and the extent of the external debts, it is worth while to assess the terms and conditions by which the country acquired loans. Because as the source of finance differs so do the terms and conditions. Accordingly, the maturity period of new financing has increased to 40.6 years in 1998 from its 31.8 years in 1970 and 21.8 in 1990, respectively. The average interest rate on debt outstanding declined from 4.4 percent in 1970 to 3.6 percent in 1980, with some fluctuations in the meantime. But this figure increased to 6.6 percent and 4.7 percent in 1990 and 1991, respectively. In 1998, it decreased significantly to 0.6 percent because of a good relationship between the government and the lenders. The average interest rate also declined by about 3.8 percentage point in 1998 as compared to 1970. The grace period though it did not varied much in the period 1970-1991, the average grace period, which was 6.6 years in 1970 and 6 years in 1991 increased to 9.3 in 1995 and 10.1 years in 1998. Moreover, the level of concessionality of newly contracted external loans has significantly increased, since the grant element, which was 43.3 percent in 1970 and 36 percent in 1991 rose to 81.3 in 1998 (see table 3.6 below).

When we see the external debt burden indicators of the country, the debt service ratio is one of the most frequently used debt burden indicators. The level of sustainability is between 20-25 percent. Between the years 1989 and 1993, this ratio for the country has been continuously declining from 32.1 percent in 1989 to 13.6 percent in 1995. It should be, however, noted here that the decline was not due to the improvement in the debt servicing capacity of the country. Particularly for the period 1989-1992, the decline was rather due to the unilateral decision of the former government to postpone payments to bilateral creditors. The decline in the ratios from 1993 to 1995 is because of the debt relief obtained from the Paris club creditors.

Table 3.5 Average Terms and Conditions of all Creditors

Year	1970	1980	1990	1991	1992	1993	1994	1995	1996	1997	1998
Interest (%)	4.4	3.6	6.6	4.7	1	1.7	1.1	1.0	2.2	2.4	0.6
Maturity period (Years)	31.8	18.5	21.8	20.3	40.1	40.7	40.4	36.3	30.4	33.5	40.6
Grace period (years)	6.6	3.6	2.9	6	9.8	9.2	9.3	9.3	7.6	7.4	10.1
Grant element (%)	43.3	38.8	23.7	36	73.7	72.5	71.6	76.1	62.1	60.7	81.3

Source: World Debt Table and Global Development Finance, various issues.

For the other debt burden indicator, debt-to-exports ratio is used and the level of sustainability is 220 percent-250 percent. This ratio for Ethiopia was well above the threshold and has been continuously increasing. The same is true for debt-to-GNP ratio while the level of sustainability is 80 percent, the ratio for the country particularly after 1993 was beyond the sustainable level. As a result, Ethiopia is labeled as one of the severely Indebted Low Income Countries (SILICs) or the Heavily Indebted Poor Countries (HIPC).

In general, analysis of foreign debt in Africa in general and Ethiopia in particular depicts that the bulk share of external loan comes from official source, both bilateral and multilateral as the result their respective share in debt stock of is increasing over time.

As the debt problems of those countries is increasingly becoming acute over time, one of the relatively new development in the international economic environment is the Highly Indebted Poor Countries (HIPC) Initiative. This initiative is designed to provide debt relief for severely indebted countries with the belief that "without comprehensive debt relief, most of those countries would remain indefinitely dependent on exceptional financing in the form of flow rescheduling of official bilateral debt. Even with continued provision of concessional financing and their pursuit of sound economic policies".

Launched in 1996, the initiative marked for the first time that multilateral, Paris club, and other official bilateral and commercial creditors united in a joint effort to reduce the debt stock of the world's most-distressed poor countries. Accordingly, central to the initiative is the debtor country's continued effort to ward-macroeconomic adjustment and structural reforms. Ethiopia is one of the eligible countries for the Initiative and currently the Ethiopian government has submitted the Interim Poverty Reduction Strategy Paper, which is one of the requirements of the initiative.

Accordingly, Ethiopia has reached a decision point for enhanced HIPC relief in October 2001. The total amount of debt relief is estimated at about US\$ 1,930.0 million, which accounted for 36 percent of the nominal debt stock as at July 7, 2001.

CHAPTER FOUR

MODEL SPECIFICATION

4.1 General Chowdhury Structural Model

Chowdhury used a structural simultaneous equation model built to capture the interrelationship between public and private external debt, capital accumulation and production function. This simultaneous equation is constructed on the basis that the dependent variables are not only determined by independent variables but some of the independent variables are in turn determined by the dependent variables.

The structure of the Chowdhury Model is as follows:

Aggregate production function:

$$Y_{it} = \delta_0 + \delta_1 D_{it} + \delta_2 Dp_{it} + \delta_3 K_{it} + \delta_4 k_{it}^2 + \delta_5 L_{it} + \delta_6 L_{it}^2 + \delta_7 AG_{it} + E_{1it}$$

Capital accumulation equation:

$$K_{it} = \alpha_0 + \alpha_1 Y_{it} + \alpha_2 D_{it} + \alpha_3 Dp_{it} + \alpha_4 K_{it-1} + \alpha_5 AG_{it} + \alpha_6 P_{it} + \alpha_7 IN_{it} + E_{2it}$$

Public and Publicly guaranteed external debt accumulation equation:

$$D_{it} = \beta_0 + \beta_1 Y_{it} + \beta_2 D_{it-1} + \beta_3 AG_{it} + \beta_4 TT_{it} + \beta_5 IN_{it} + E_{3it}$$

Private external debt accumulation equation:

$$D_{pit} = \gamma_0 + \gamma_1 Y_{it} + \gamma_2 P_{it-1} + \gamma_3 AG_{it} + \gamma_4 TT_{it} + E_{4it}$$

Where

Y = GNP

K = Capital stock

D = Public and Publicly guaranteed external debt

DP = Private external debt

L = Labor force

AG = Percentage of labor force in an agriculture.

P = Population

IN = Income share accruing to the bottom 40 per cent of households. Proxy variable for income inequality.

Chowdhury used the three-stage least squares (3SLS) to achieve consistent and efficient estimators on pooled annual observations for the period 1970-1988 on ten countries in Asia and Pacific. Refer to the empirical literature part of this paper for the detail summary and conclusion of Chowdhury findings.

4.2 structural model

Here a structural model of output and investment equation are adopted from Chowdhury (1994) to analyze the impact of external debt on growth. The Chowdhury Model is a simultaneous equation model. This model is justifiable on the grounds that the growth-debt relationship is not a simple one. Hence, he came up with a structural simultaneous equation model built to capture the interrelationship between public and private external debt, capital accumulation and production function.

Thus, we specify two structural equations as follows:

Aggregate output equation: equation (1)

$$RY_t = \alpha_0 + \alpha_1 IY_t + \alpha_2 TED_t + \alpha_3 L_t + \alpha_4 RF_t + \alpha_5 RER_t + \alpha_6 TOT_t + U_{1t}$$

Investment equation: equation (2)

$$IY_t = \beta_0 + \beta_1 RY_t + \beta_2 MPK_t + \beta_3 EDY_t + \beta_4 TDS_t + \beta_5 POP_t + U_{2t}$$

Where

RY = Real income

IY = Investment

TED = Total external debt

L = Labour force

POP = Population

RF= Rain fall

TOT= Terms of trade

RER = Real exchange rate

MPK = Marginal product of capital

EDY = Ratio of total external debt to income

TDS = Total debt service to exports of goods and service ratio.

U_{it} = Random disturbance term assumed to be Gaussian White noise

4.3 Description of variables

In the aggregate production function the inspiration used in this study is neoclassical, tracing its roots to Solow (1957) who argued that output depended on capital and labour inputs and on disembodied technical change. It also owes much to the modifications introduced by development economists, particularly Chenery and his associates (e.g. Chenery and Strout, 1966), that emphasized the role of investment and the investment-income ratio. In this study, therefore, it is hypothesized that output depends on total external debt, level of investment, labour force, rainfall and real exchange rate and terms of trade.

When we see the effect of total external debt on GDP, one can expect a both way relationship as the country's level of indebtedness might affect the GNP level in the following ways. First, the higher the level of indebtedness, *ceteris paribus*, the larger the country's leverage, the more limited the external sources of credit, and the greater the number of financial stress and liquidation that adversely affect the GNP level directly and indirectly through discouraging

domestic investment. Second, an increase in the public and publicly guaranteed external debt might indirectly depress the level of GNP by encouraging capital flight due to tax increase expectations. However, if a significant portion of external borrowing is directed toward financing efficient investments in productive capital, positive correlation between the country's GNP level and its external debt can be anticipated. Therefore, the effect of external debt on income can't be determined a priori.

The system also includes socioeconomic variables, such as the total labour force (L), the population (P), and rain fall (RF).

The labour force variable is included in the aggregate production function. Labour is considered to have an effect on GNP as input in production. Upward shift in the aggregate output (supply) curve of developing countries depends most importantly on employed labour force. The higher the employment rates the higher the growth of output (positive relationship). But we should not forget also that the labour force includes the unemployed labour force. There is also some argument that the contribution of the labour force can be negative for developing countries in that additional unskilled and inefficient labour decreases output rather than increasing it (Feder, 1983; Todaro, 1994). This can be true in the case of Sub-Saharan African countries in general, and Ethiopia in particular, where most of the labour force is unskilled and the possibility of making it more productive is limited. Therefore, the expected sign can't be predetermined.

Investment: the growth rate of investment of a country is obviously expected to have a positive impact on the growth of output. Because output is directly affected by the growth rate of investment (positive relationship).

Real Exchange Rate: Real exchange rate is included in the output equation as a proxy for policy reform. Thus, on the one hand, devaluation of real exchange rate is expected to encourage exports and discourage imports, thus improve balance of payments and hence positively affect output. On the other hand, as domestic currency devalued the value of import increased and as the result cost of production (especially cost of imported input materials) will raise which affect output negatively. Thus, the sign depends on these two forces.

Terms of trade: - in the output equation also we incorporate the effects of changes in the country's terms of trade (TOT). On one hand, it is expected that an increase in TOT increase the level of income (improve balance of payments). On the other hand, TOT is expected to have a negative effect on income through the price effect. That means, when the price of import increase relative to exports through the price effect the demand for imports will fall. This affects the level of output negatively especially when the country depends highly on imported input in the production process. Therefore, depending on the magnitude of the income and price effects the impact of TOT on income can be either positive or negative.

Many analysts believe that the poor investment and growth performance of many highly indebted less developed countries (including those in Sub-Saharan Africa) since the onset of the global debt crisis in 1982, can be attributed in part to the disincentive effect of their external debt burden. This phenomenon is often referred to as the “debt overhang” problem.

The debt overhang hypothesis posits that the accumulated external debt of these countries acts as a tax on future output and, thus discourages investment (especially private investment).

Researchers like Sachs (1989) and Krugman (1988) have also analyzed the “crowding out” effect of debt service payments. This arises from the fact that many highly indebted poor countries frequently divert resources, including foreign aid and other foreign exchange resources, to take care of pressing debt service obligations, particularly debt owed to the multilateral institutions, which is deemed “non-reschedulable”.

Based on this theory we incorporated the total debt to income ratio (which is the usual measure of debt overhang) and debt service to exports of goods and services ratio (which is expected to capture the “crowding out” effect of external debt) in our investment equation. This is to allow for the potential existence of both a debt “overhang” effect and “crowding out” effect of external debt. Therefore, the external debt to income ratio and the ratio of debt service to exports are expected to affect investment negatively.

Some researchers, including Borensztein (1990), have suggested that the debt overhang effect is expected to be particularly strong when considering private investment and private debt. This hypothesis could not be tested in this study due to the unavailability of the required data, especially the unavailability of private debt and long period private investment data.

Income: income is also included in the investment equation since it is expected to capture the “investment accelerator” effect (M.A. Iyoha, 2000). This is because higher income means higher saving which leads to higher investment. As a result, higher income is expected to

accelerate investment level. Thus, growth rate in income is expected to affect investment positively.

Marginal productivity of capital: marginal productivity of capital is expected to have positive effect on investment (Ibid.). Since it measures by how much the income is increase per unit increase in capital, higher marginal productivity of capital expected to encourage investment. Thus, marginal productivity of capital is expected to affect level of investment positively.

The socioeconomic variable, population (P) is also included in the investment equation as indicators of income distribution which; in addition to GNP, can affect the domestic level of savings. The larger the population the smaller the share of income allocated to savings. As a result, population is expected to have a negative impact on investment.

The simultaneous equation model is constructed on the basis that the dependent variables are not only determined by independent variables but some of the independent variables are in turn determined by the dependent variables. That is the dependent variable Y is determined by the level of investment (I), which is also dependent variable in the second equation. In the presence of simultaneity the method of 2SLS and instrumental variables (exogenous variables) will be used as it gives estimates that are consistent and efficient (Gujarati, 1995)¹¹. Because, in the presence of simultaneity, applying, say, the method of OLS, disregarding other equations in the system, leads to biased and inconsistent estimates. That is, as the

¹¹ According to Green (2000), variables X_t are said to be predetermined in the model if X_t is independent of all subsequent structural disturbances and as a result can be treated, at least asymptotically, as if they were exogenous in the sense that consistent estimates can be obtained when they appear as regressors.

sample size increases indefinitely, the estimates don't converge to their true (population) values no matter how large the sample size.

While a fundamental assumption of regression analysis is that the right-hand side variables are uncorrelated with the disturbance term, in the presence of simultaneous equation model (when there is simultaneity problem), since this assumption is violated, both OLS and Weighted Least Square estimators are biased and inconsistent. But, if there is no simultaneous equation or simultaneity problem, the OLS estimators produce consistent and efficient estimators. Therefore, if we apply 2SLS methods when there is in fact no simultaneity, these methods yield estimators that are consistent but not efficient (i.e. with smaller variance) (Ibid.).

This simultaneity problem arises because some of the regressors are endogenous and are therefore likely to be correlated with the disturbance, or error term. Thus, a test of simultaneity is essentially a test of whether (an endogenous) regressor is correlated with the error term. If it is, simultaneity problem exists in which case alternative to OLS must be found; if it is not, we can use OLS. To find out which is the case in a concrete situation we test for simultaneity problem using the Hausman Specification Test. To carry out the Hausman test first we run two OLS regressions. In the first regression, we regress the variables LIY and LRY on other exogenous variables and instrumentals in the two equations and retrieve the residuals separately. In the second regression, we re-estimate the output equation and investment equation with the residuals from the first regression and second equation as additional regressors. Therefore as we can see from the regression results using

the F-test and t-test, the coefficient on the first stage residuals (R_y) and (R_i) for both equations significantly rejects the hypothesis of consistent OLS estimates. Thus, we estimated our model simultaneously using 2SLS. (See equations below).

$$\begin{aligned}
 LIY = & -7.94 + 2.04LRY + 0.05LMPK + -2.42LPOP + 0.23LEDY - 0.06LTDS + 2.93R_y \\
 & (-3.42) \quad (4.38) \quad (2.52) \quad (-3.80) \quad (2.58) \quad (-0.81) \quad (4.69) \\
 R^2 = & 0.82 \quad F \text{ statistic} = 18.4
 \end{aligned}$$

$$\begin{aligned}
 LRY = & 4.53 + 0.29LIY - 0.04LTED + 0.10LRF + 1.26LL - 0.04LTOT - 0.002LRER + 0.19R_i \\
 & (5.57) \quad (2.4) \quad (-0.97) \quad (0.78) \quad (4.39) \quad (-0.69) \quad (-0.02) \quad (3.37) \\
 R^2 = & 0.98 \quad F \text{ statistic} = 144
 \end{aligned}$$

Where figures in parenthesis are the t-values, and R_y and R_i stand for residual values from the reduced form equation of output and investment equation, respectively. LRY and LIY in the two equations above are the fitted values of the output and investment equation, respectively. Others are as defined under the structural model.

In simultaneous system of equations, it is also important that whether we have to worry about the stationarity of the time series data. Because econometric theory requires that variables should be stationary if inferences is to be non-spurious¹².

¹² Spurious regression problem is a situation where there is a statistically significant relationship between non-stationary variables when in fact there is no meaningful causal relationship between the variables (Harris, 1995).

In Johnston (1997), similar crucial question is raised that whether the non-stationarity variables posed special problems for conventional 2SLS like for conventional inference procedures from OLS regressions. As cited by Johnston this problem has been also investigated by Cheng Hsiao¹³ and the conclusion is that the conventional 2SLS inference procedures are still valid:

"As cited by Johnston therefore, nothing needs to be changed in applying conventional 2SLS estimator formula to estimate the unknown parameters and formulate Wald type test statistics. One gets the same point estimates and asymptotic covariance matrix. The resulting Wald type test statistic remains asymptotically chi-square distributed. In other words, non-stationarity and co-integration don't call for new estimation methods or statistical inference procedures...."

Therefore, one still needs to worry about the issue of identification and simultaneity bias, but one needs not to worry about the issues of non-stationarity and Co-integration. All one needs to do in structural model building is to follow the conventional wisdom (Johnston, 1997, PP, 317).

¹³ Cheng Hsiao, "Statistical Properties of the Two Stage Least Squares Estimator under Co-integration," Working paper, University of Southern California, Los Angeles, 1994.

4.4 Identification Problem.

By identification problem we mean that whether numerical estimates of the parameters of a structural equation can be obtained from the estimated reduced form coefficients. A model can be either identified or not identified. It is said to be exactly identified if unique numerical values of the structural parameters can be obtained, underidentified if it is impossible to obtain unique numerical values of the structural parameters and it is said to be overidentified if more than one numerical value can be obtained for some of the parameters of the structural equations (Maddala, 1992; Gujarati, 1995; Green, 2000).

The identification problem arises because different sets of structural coefficients may be compatible with the same set of data. To put the matter differently, a given reduced form equation may be compatible with different structural equations or different hypothesis (model), and it may be difficult to tell which particular hypothesis (model) we are investigating (Gujarati, 1995).

When we apply the order conditions of identification, the order condition shows whether our model is exactly identified, under identified or over identified while the rank condition confirms identification.

For this purpose let's assume that;

M = number of endogenous variables in the model.

m_i = number of endogenous variables in a given equation.

K = number of predetermined variables in the model.

k_i = number of predetermined variables in a given equation.

The order condition of identifiability

The order condition of identifiability is a necessary but not a sufficient condition of identification. It may be stated in two different but equivalent ways as follows:

In a model of M simultaneous equations, in order for an equation to be identified, it must exclude at least $M-1$ variables (endogenous as well as predetermined) appearing in the model. If it excludes exactly $M-1$ variables, the equation is just identified. If it excludes more than $M-1$ variables, it is over identified. Or in a model of M simultaneous equations, in order for an equation to be identified, the number of predetermined variables excluded from the equation must not be less than the number of endogenous variables included in that equation minus 1 (Ibid.).

Accordingly in our case;

If we let M be the number of endogenous variables in the system and $(M-m_i) + (K-k_i)$ is the total number of variables (endogenous and pre-determined) missing from the i^{th} equation;

- 1 If $(M-m_i) + (K-k_i) = M-1$, the equation is exactly identified.
- 2 If $(M-m_i) + (K-k_i) > M-1$, the equation is over-identified.
- 3 If $(M-m_i) + (K-k_i) < M-1$, the equation is under-identified.

Here $M=2$ and $M-1=1$.

Output equation: $(M-m_i) + (K-k_i) = 4$ therefore this equation is over-identified.

Investment equation: $(M-m_i) + (K-k_i) = 6$ therefore this equation is also over-identified.

Therefore, since the system of equations is found to be over-identified according to order condition of identification, we applied 2SLS estimation technique in estimation of the unknown parameters of the structural equations. Because the method of 2SLS is especially designed for over identified equations, although it can also be applied to exactly identified equations. But when the equation is exactly identified, the result of 2SLS and instrumental variable method (ILS) are identical. The basic idea behind 2SLS is to replace the (stochastic) endogenous explanatory variable by a linear combination of the predetermined variables in the model and use this combination as the explanatory variable in the lieu of the original endogenous variable. The 2SLS method thus resembles the instrumental variable method of estimation in that the linear combination of the predetermined variables serves as an instrument, or proxy, for the endogenous regressor (Ibid.).

The Rank condition of identifiability

The rank condition states that in model containing M equations in M endogenous variables, an equation is identified if and only if at least one nonzero determinant of order $(M-1)$ $(M-1)$ can be constructed from the coefficients of the variables (both endogenous and predetermined) excluded from that particular equation but included in the other equations of the model. In our model both equations satisfy the order condition of identifiability. But since

testing rank condition is a formidable task and unusual for a model to pass the order condition but not the rank condition, we checked only order condition of identifiability.

For large simultaneous-equation models, applying the rank condition is a formidable task Harvey (1990). The order condition is usually sufficient to ensure identifiability. That means although it is important to be aware of the rank condition, a failure to verify it will rarely result in disaster. According to Green (2000) also, it is unusual for a model to pass the order but not the rank condition. Moreover, he argued that in case when either the conditions are obvious or the model is so large and has many predetermined variables that the conditions are met trivially.

4.5 Empirical results

In order to see the effect of external debt on economic growth, a simultaneous equation model is now specified. In particular, the output equation and the investment equations are solved using the Two-Stage-Least Squares (2SLS) method.

In this system of equations, there are two endogenous variables, LRY and LIY. There are also ten exogenous and pre determined variables namely LL, LRF, LRER, LTED, LIY_1, LMPK, LEDY, LTDS, LPOP and LTOT. Where L stands for natural logarithms. The preliminary econometric estimation of our simultaneous equation model using the Two-Stage Least Squares regression method showed that both the output equation and the investment equations exhibited serial correlation. It was therefore re-estimated with the instrumental variable technique using the Cochrane-Orcutt iterative technique for removing first-order serial correlation of the error. This is indicated by DW statistic below 2 especially below about 1.5

is a strong indication of positive First Serial Correlation (Johnston, 1997). This First order Serial Correlation is estimated by AR(1) model. The final equations were obtained and reported below (where t-values are reported in parentheses below the appropriate coefficients). Furthermore see appendix 1 and 2 for detail computer output (estimation) of the two equations.

As stated before, the main objective of the paper is to analyze the effect of external debt on economic growth rather than to model the determinant of economic growth. The 2SLS estimation of the two-equations simultaneous system produced the following results.

Output Equation

$$\text{LRY} = 4.23 + 0.159\text{LIY}_1 + 0.018\text{LTED} + 1.06\text{LL} + 0.22\text{LRF} + 0.04\text{LRER} - 0.035\text{LTOT}$$

(4.25) (2.36) (0.482) (4.7) (1.4) (0.4) (-0.5)

$R^2 = 0.96$ $\text{Adj } R^2 = 0.95$ $\text{DW} = 1.75$ $\text{F Statistic} = 101$

Where figures in parenthesis are t-values.

In the output equation, the explanatory variables included together explain over 95 percent of the systematic variations in output during the period being studied. The F-value of 101 is highly significant, passing the significance test at the 1% level. Thus, the hypothesis of a significant linear relationship between growth of output and the explanatory independent variables is validated.

As we can see from the regression result, including the constant term, two variables (LIY_1 and LL) became significant at 1% level of significance.

The growth of total external debt variable (LTED) has positive effect on growth of output but it is not significant. This suggests that growth rate of total external debt does not significantly affect growth rate of output directly. In Chowdhury (1994), both public and publicly guaranteed external debt (D) and private external debt (P) positively and significantly affected output.

From 2SLS estimation it was found that the one-period lagged value of investment gave better and more consistent results than its contemporaneous value, especially when we attempt to correct for autocorrelation using Cochrane-Orcutt method of iterations. Thus, the most satisfactory results were obtained with this first order autoregressive scheme using one period lagged value of investment. Thus, one period lagged value of investment became significant at 1% significance level by converging after only 4 iterations.

Growth rate of labour force has a positive effect on growth of output and is statistically significant at 1 % level of significance. This is because labour force is used as factors of production and the higher the growth rate of labour force the higher the growth of of output (positive relationship).

The availability (volume) of rainfall has also positive coefficient but statistically insignificant.

Real exchange rate became insignificant but with expected sign (positive). This positive sign indicate that real exchange rate affect growth of output positively though insignificant.

Terms of trade: - terms of trade became insignificant in affecting output, with negative sign.

When we compare the result with studies done in the area, the finding is inline with the finding by M.A Iyoha, (2000). That is, in Sub-Saharan African country growth rate of income is significantly and positively affected by growth rate in labour force and lagged value of investment variable using similar methodology (simultaneous equation). This is also true that in other studies, Ajayi (1997) and Chowdhury (1994) growth rate of investment affected growth rate of output positively and significantly.

In Ethiopian case similar study is done by Dawit Walelegne and Yemisirach Asafa and found that level of investment, labour force and aid variables affected output significantly.

Investment Equation

In the investment equation as we hypothesized we regressed log of investment on log of real output, log of marginal product of capital, log of total debt stock to GNP, log of total debt service to exports of goods and services and growth rate of population (log).

Accordingly;

$$LIY = -7.32 + 1.93LRY + 0.052LMPK + 0.25LEDY - 0.075LTDS - 2.32LPOP$$

$$(-2.12) \quad (2.60) \quad (2.98) \quad (2.60) \quad (-0.99) \quad (-2.30)$$

$$R^2 = 0.84 \quad \text{Adj } R^2 = 0.80 \quad DW = 2.1 \quad F\text{-Statistic} = 17.35$$

Where figures in parenthesis are t-values.

In the investment equation it can be concluded that the independent variables in this equation explain over 80 percent of the systematic variations in investment during the period under the study. Moreover, the F-value of 17.35 is significant at the 1% level, indicating that there is a significant linear relationship between the independent variables taken together and growth rate of investment. All the signs are correct with a priori expectation.

Among the independent variables in the equation, four variables (LRY, LMPK, LEDY and LPOP) pass the significance test at 1% level.

Growth rate of output has positive impact on the growth of investment and statistically significant. This indicates that the higher the growth of output the more the growth of investment. Thus, there is an evidence of hypothesized “investment accelerator” effect of output.

Growth rate of marginal productivity of capital became highly significant at 1 % level of significance with positive sign. Therefore, as obviously expected, when marginal productivity of capital increased, it encourage growth rate of investment.

The growth of debt overhang variable (LEDY) is highly significant at 1% level of significance with positive sign. This clearly indicates that in Ethiopian case external debt encourage growth rate in domestic investment rather than creating disincentive (depressing). But growth rate of total debt service ratio (LTDS) is statistically insignificant though its sign is negative, which suggests that there is no evidence of the crowding out effect of debt service

payment on investment. This is in line with Ajayi (1997) suggestion that this variable can be positive or negative while negative coefficient signifies a crowding out effect.

Population: - population became significant at 1 % level of significance with negative sign. This indicates that growth rate of population decrease growth of investment through discouraging domestic saving. That means the larger the population the smaller the share of income allocated to saving and hence investment. This is in line with Chowdury (1994) finding.

In general, this result contrast with many studies, specifically the study by M.A. Iyoha, (2000), which concluded that in Sub-Saharan African countries, since the debt overhang variables (D/Y) and "crowding out" effect variable (Ds/X) are highly significant and their sign is negative, there is clear evidence of both debt overhang effect and "crowding out" effect. This indicates that their effect is to depress the level of investment in Sub-Saharan African countries.

But this may not be true for individual countries. Because there is high diversity even among African countries and it depends on country's individual circumstance that reflected by their macroeconomic performance such as savings and investment as a percentage of growth domestic product, terms of trade, export growth, inflation and growth in growth domestic product and others political and social factors.

The study is in line with the argument by Chenery and Strout (1966) that foreign resources would supplement available resources, remove the bottlenecks and make higher rates of

growth feasible rather than creating disincentive. According to (Berhanu Nega, 1999), similarly, external resources in Ethiopia have been used to create a relatively good macroeconomic environment and stable political condition, which in turn used as leverage for crowding in investment.

The study is also in line with the finding of the study by Ato Dawit Walelegne and Yemisirach asafa, (2001), that the debt overhang variable is insignificant and positive in sign. Therefore, they concluded that debt overhang effect might not hold in Ethiopian situation. They also found that there is no evidence of the crowding out effect of debt service payment on investment.

This may be due to the known fact that especially during the Imperial era and after post reform of 1991/92, external resource in Ethiopia is mainly used in financing capital budget projects and rehabilitate infrastructural projects and expansion of the health and education projects that affects economic growth directly through investment in different forms. This is in line with the study by Befekadu, (1992) and Alfred Kebbie Sesay (1998). Alfred concluded that between 1964 to 1977 and between 1993 to 1995 external capitals contributed positively to the growth of Ethiopian economy while between 1977 to 1992 the contribution was negative. He justified that during the Imperial era and under the Transitional Government of Ethiopia foreign capital was used in the development of infrastructure whilst the Derg era used a large proportion of foreign capital in the procurement of arms. In our study the overall effect of external debt (from 1970-2000) became positive, this may be the utilization of external debt under the Imperial era and under the current government offset the miss utilization under the Derg era.

Moreover, in Ethiopia foreign resource inflow is greatest when domestic resources are not sufficient to support life at subsistence level, such as the 1974 and 1983-86 droughts Befekadu, (1992). This is also due to borrowing from financial institutions, which is very small, and the bulk of the credit is tied to either projects or goods, and utilization is closely supervised to ensure that the resources are not diverted to other uses. This is especially true of the credit made available by multilateral institutions such as the World Bank and African Development Bank.

In addition, this could be also due to the remarkable diligence in servicing debt till recently. As a result, the direct distortionary effect of accumulating debt arrears was very minimal. Secondly, it is due to decline in debt servicing ratio because of the continuously declining of the ratio for the country starting from 1988/89 on ward except in 1996/97. The decline in the period 1989-1992 is due to the unilateral decision of the former government to postpone payments to bilateral creditors. While the decline in the ratio since 1993 is mainly due to debt relief obtained from Paris club creditors in the year 1992 and 1997 and similar measures at different period.

CHAPTER FIVE

CONCLUSION AND POLICY RECOMMENDATIONS

The study has investigated the impact of the growth rate of external debt on economic growth using simultaneous equation among output and investment equation in Ethiopia based on the available literature and data on the area.

The regression results of the output equation reveal that one lagged value of growth rate of investment and growth rate of labour force significantly affected growth rate in output with expected sign (positive). Therefore, this implies that investment affects output through the multiplier effect of capital and labour force affected output as it is used as factor of production. Furthermore, the coefficients 0.16 and 1.0 indicate by how much the growth rate of output increased per unit increase in growth of investment and labour force, respectively. External debt variable has no significant effect directly on growth of output. This is because according to many economic theories, external debt affects output through the investment channel.

In the regression result of investment equation it is confirmed that output has investment accelerator effect. Moreover, growth rate in marginal product of capital affected investment significantly implying that the higher the productivity of capital, encourage growth rate of domestic investment. In this investment equation, debt overhang variable (LEDY) affected investment positively and is statistically significant. Therefore, this indicates that growth rate

of external debt encourages growth rate in domestic investment that implies external resource (debt) do not create disincentive effect through the expectation of higher tax because of high indebtedness. Moreover, the coefficients of growth rate of output, marginal product of capital, and total external debt to income ratio of 1.9, 0.05, and 0.25, respectively indicate by how much the growth rate of investment increased per unit increase in output, marginal product of capital, and external debt to income ratio, respectively.

In addition, in the investment equation growth rate of population became negative and statistically significant. This clearly indicate that higher growth rate of population discourage the growth rate of domestic investment by discouraging domestic saving and the coefficient - 2.3 indicates by how much growth rate of investment decrease per unit increase in population growth rate.

In general, from the analysis it is possible to recommend that the government further should increase the wise and proper utilization of external resources by investing on selective and productive investment including basic infrastructural developments that facilitate the productivity of other sectors of the economy. Because there is nothing wrong with borrowing rather what matters is how the borrowed fund is used. Thus, from the result above we concluded that there is no sign of the theoretically hypothesized debt overhang and crowding out through which the debt channeled to affect investment and hence output.

This does not mean that the government should continue depending on foreign resources, because it has a serious implication that dependency on foreign resource especially for development purposes is both risky and unreliable. But currently, as far as there is high

resource gap between domestic saving and domestic investment, to achieve some growth target, government may be forced to finance the gap by available options at hand among which foreign resource, particularly debt, is one. Therefore, wise and proper utilization of foreign resource given its short-run and long-run macroeconomic implications and management is recommended.

REFERENCES

- Agenore, P.R. And Montiel, P.J. (1996), *Development Macroeconomics, and New Jersey*, First Edition, Princeton University press.
- Ajayi, S. Ibi, "Capital Flight and External Debt in Nigeria," paper presented at the African Economic Research Consortium Workshop (Nairobi, Kenya, 1990).
- _____, (1991), "Macroeconomic Approach to External Debt: The case of Nigeria," *African Economic Research Consortium Research Papers*, No 8, English press Limited, Kenya.
- _____, (1995), "Capital Flight and External Debt in Nigeria", *African Economic Research Consortium Research Papers*, No 35, English press Limited, Kenya.
- Alemayehu G. (1998), Finance and Trade in Africa: Modeling Macroeconomic Response in a World Economy Context (unpublished Ph.D Dissertation). The Hague Institute of Social Studies.
- _____, (2002) "Debt Issues In Africa: Thinking Beyond the HIPC Initiative to Solving Structural Problems" WIDER Discussion Paper, Helsinki forthcoming).

Alemayehu Geda and Danel Zarf (1999), "Profile of Ethiopia's External Debt," In the Ethiopian Economy Performance and Evaluation, (Alemayehu Geda and Berhanu Nega, Ed.) Addis Ababa.

Alfred Kebble Sesay (1998), Economic Growth and Foreign Debt: The Ethiopian Experience (1964-1995), An MSC thesis presented to the School of Graduate Studies Addis Ababa.

Amoating, K. and Amoaku-Adu, B. (1996), "Economic Growth, Export and External Debt causality: The Case of African Countries," *Applied Economics*, 28, PP 21-27.

Andrew C. Harvey (1993), *Time Series Models*, 2nd edition New York.

Barfour. O. (1995), "Ghana: The Burden of Debt Service Payment Under Structural Adjustment," *African Economic Research Consortium Research Papers*, No 8, English press Limited, Kenya.

Barungi, B. M. and Antingi, M. (2000), "Growth and Foreign Debt: The Ugandan Experience," *IMF publication*.

Befekadu Degefe (1992), "Growth and Foreign Debt: The Ethiopian Experience: 1964-1986," *African Economic Research Consortium Research Papers*, No 13, English press Limited, Kenya.

Befekadu Degefe and Berhanu Nega (1999/00), "Annual Report on the Ethiopian Economy,"
The Ethiopian Economy Association Vol. I.

Berhanu Nega and Seid Nuru (1999), "Performance of the Ethiopian Economy, 1991-1998,"
In the Ethiopian Economic Performance and Evaluation, (Alemayehu Geda and
Berhanu Nega, Ed.) Addis Ababa.

Bulow, J. and Rogoff, K. (1990), "Cleaning up Third World Debt Without Getting Taken to
the Cleaners," *The Journal of Economic Perspective*, 4(1), 31-42.

Chowdhury Khorshed (1994), "A Structural Analysis of External Debt and Economic
Growth: Some Evidence of From Selected Countries in Asia and Pacific," *Applied
Economic*, 26 (12).

Claessens, S. and Diwan, I. (1990), "Investment incentives: New Money, Debt Relief, and the
Critical Role of Conditionality in Debt Crisis," *The World Bank Economic Review*,
4(1).

Cline, W.R. (1995), "International Debt Re-examined," *Institute for International Economics*,
Washington DC.

Danel Zerfu (2001), Macroeconomic Policy Modeling for Ethiopia, An MSC thesis Presented
to the School of Graduate Studies, Addis Ababa University.

Dawit Walelegne and Yemisirach Asefa, (2001), The Impact of Foreign Financing on Economic Performance in Ethiopia, Paper Presented for the 11th Annual Conference on the Ethiopian Economy at Rift Valley Hotel, Adama November, 2001.

Eduardo Borenstein (1990), "Debt overhang, Credit Rationing and Investment," *Journal of Development Economic* 32(2) 315-335.

Eshetu Chole and Mekonnen Manyazwal (1992), *The Macroeconomic Performance of the Ethiopian Economy: Structure, Problems and Policy Issues*, (Mekonnen Tedesse, Ed) Addis Ababa.

Fitzgerald, E.V.K et al (1992), " External constraints on Private Investment Decision in Developing Countries," *Institute of Social Study, Working Paper* No 43.

F.L. Rivera - Batiz L.A.Rivera -Batiz (1994), *International Finance and Open Economy Macroeconomics*, 2nd Edition New York: Macmillan.

George C.Abbott (1993), *Debt Relief and Sustainable Development In Sub-Saharan African*, 1st Ed, Great Britain.

Greene Joshua (1989), *External Debt Problem of Sub-Saharan Africa* in J.A. Frenkel,

G.S. Maddala (1992), *Introduction to Econometrics*, 2th Ed New York.

MEDaC, (1999), Survey of the Ethiopian Economy, Review of Post-Reform Developments (1992/93-1997/98), Addis Ababa.

M.P. Homi J. K. and Hisanobus. (1987), "Foreign Borrowing and Macro Economic Adjustment to External Shocks," *Journal of development Economics*, 26(1).

Hallwood C.P and MacDonald, R. (1994), *International Money and Finance*, 2nd Ed, Blackwell.

Harris, Richard (1995): *Using Cointegration Analysis in Econometric Modeling*, Printce-hall.

Iyoha, M. A. (1999), "External Debt and Economic Growth in Sub-Saharan African countries: An Econometric study," *African Economic Research Consortium Research Papers* No 90, English press Limited, Kenya.

_____, (2000), "An Econometric Analysis of External Debt and Economic Growth on Sub-Saharan African countries," *IMF publication*.

Johnston, J. (1997) *Econometric Methods*, 4th Ed, London: McGraw-Hill.

Keith Pilbeam (1998), *International Finance*, 2nd Ed, London, City University.

Kenen, P.B. (1990), "Organizing Debt Relief: The need for a new institution," *The Journal of Economic Perspective* 4(1), 7-18.

- Krugman, P. R. (1988) "Financing versus Forgiving a Debt overhang," *Journal of Development Economics*, 29 PP 253-268.
- Krugman, P. R. (1989), *Market-Based Debt-Reduction Scheme*, in J. A. Frenkel, M. P.
- Krumma, K.L. (1985), "The External Debt of Sub-Saharan Africa: Origins, Magnitude and Implications for action," *World Bank Staff Working Papers*, No.741. Washington, D.C. The World Bank.
- Mekonnen Bekele (2001), Foreign Direct Investment in Sub-Saharan Africa and its contribution to Economic Growth, An MSC thesis Presented to the School of Graduate Studies, Addis Ababa University.
- Mjema, G. D. (1996), "The Impact of Foreign Debt Servicing in the Economy of Tanzania: A Simultaneous equation approach," *African Journal of Economic Policy*, 3(1).
- Na'eno, N. k. (2000), "The External Debt problem of Kenya," *IMF Publication*.
- Tolessa Aboma (2001), The Impact of Foreign Aid on Domestic Saving, Investment and Economic Growth: The Case of Ethiopia, An MSC thesis Presented to the School of Graduate Studies, Addis Ababa University.

Solomon H/Eyesus and Tesfaye Berhanu. (2001), Debt Management in Ethiopia, Paper Presented for the 11th Annual Conference on the Ethiopian Economy at Rift Valley Hotel, Adama November 2001.

William H. Green (2000), *Economic Analysis*, 4th Ed, New York.

World Bank (various years). World Debt Tables/Global Development Finance, Washington, DC.

APPENDIX 1: 2SLS Estimation Result of Output Equation

Dependent Variable: LRY
Method: Two-Stage Least Squares
Date: 05/18/02 Time: 12:24
Sample(adjusted): 1971 2000
Included observations: 30 after adjusting endpoints
Convergence achieved after 4 iterations
Instrument list: LL LRF LRER LTOT LPOP LEDY LTED LTDS LMPK
LIY_1

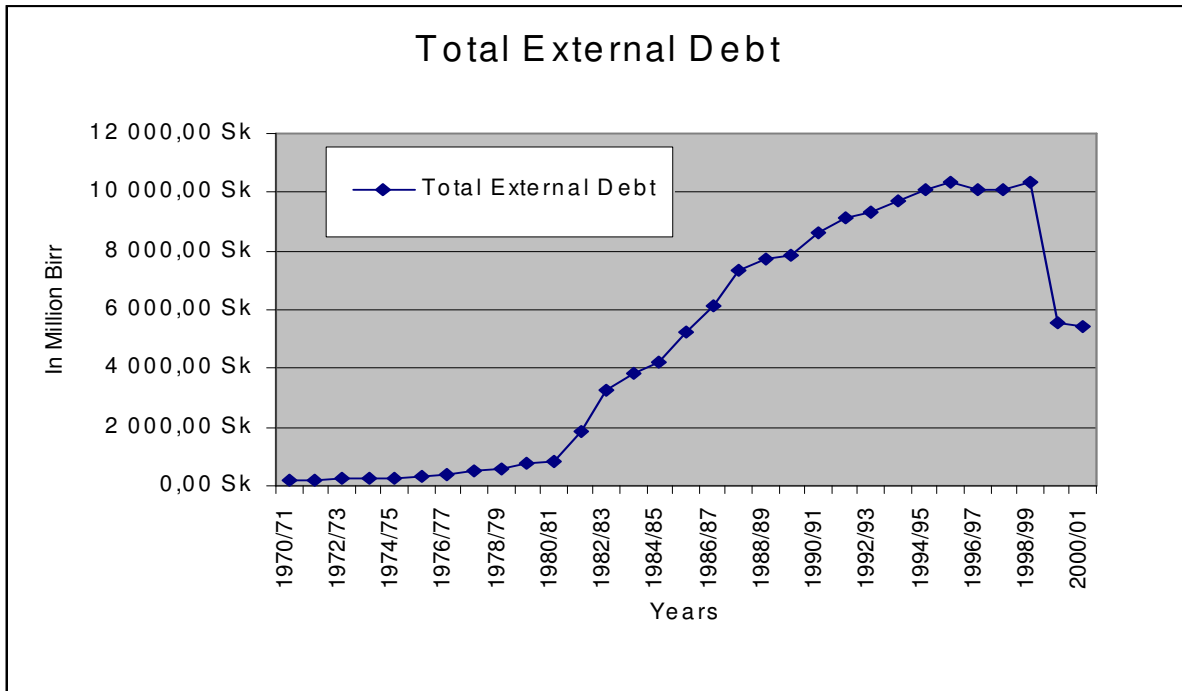
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.230680	0.996161	4.246983	0.0003
LIY_1	0.159437	0.067619	2.357882	0.0277
LTED	0.018251	0.036144	0.482419	0.6918
LL	1.062242	0.225689	4.706657	0.0001
LRF	0.219653	0.156962	1.399399	0.1756
LRER	0.037551	0.090694	0.414045	0.6828
LTOT	-0.035137	0.070119	-0.501110	0.6213
AR(1)	-1.30E-05	4.03E-05	-0.322804	0.7499
R-squared	0.960929	Mean dependent var		9.212164
Adjusted R-squared	0.950361	S.D. dependent var		0.292314
S.E. of regression	0.058198	Sum squared resid		0.074515
F-statistic	101.3727	Durbin-Watson stat		1.750243
Prob(F-statistic)	0.000000			
Inverted AR Roots	-0.00			

APPENDIX 2: Estimation Result of Investment Equation

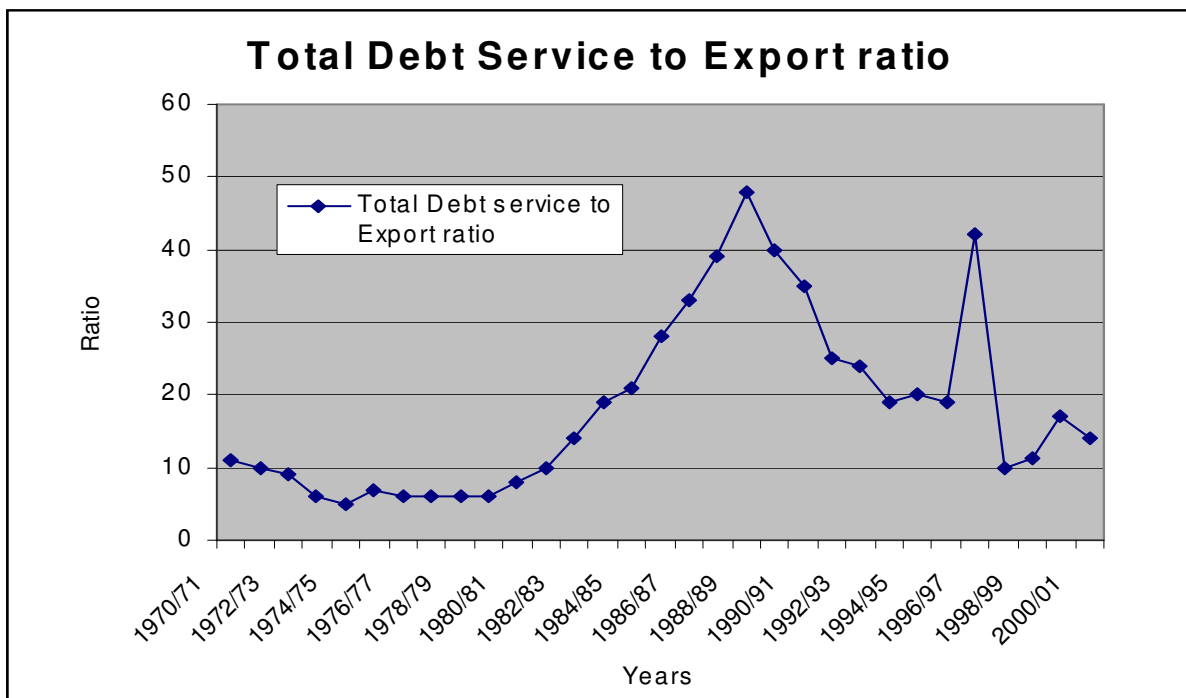
Dependent Variable: LIY
Method: Two-Stage Least Squares
Date: 05/18/02 Time: 12:36
Sample(adjusted): 1971 2000
Included observations: 30 after adjusting endpoints
Convergence achieved after 4 iterations
Instrument list: LL LRF LRER LEDY LTDS LTOT LPOP LMPK LIY_1
LTED

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-7.320861	3.447738	-2.123381	0.0447
LRY	1.927483	0.741029	2.601090	0.0160
LMPK	0.052331	0.017583	2.976235	0.0068
LEDY	0.249080	0.095858	2.598426	0.0161
LTDS	-0.074979	0.075584	-0.992008	0.3315
LPOP	-2.315278	1.021556	-2.266423	0.0331
AR(1)	0.447782	0.194850	2.298086	0.0310
R-squared	0.843513	Mean dependent var		2.573766
Adjusted R-squared	0.802690	S.D. dependent var		0.296555
S.E. of regression	0.131728	Sum squared resid		0.399105
F-statistic	17.35400	Durbin-Watson stat		2.103402
Prob(F-statistic)	0.000000			
Inverted AR Roots	.45			

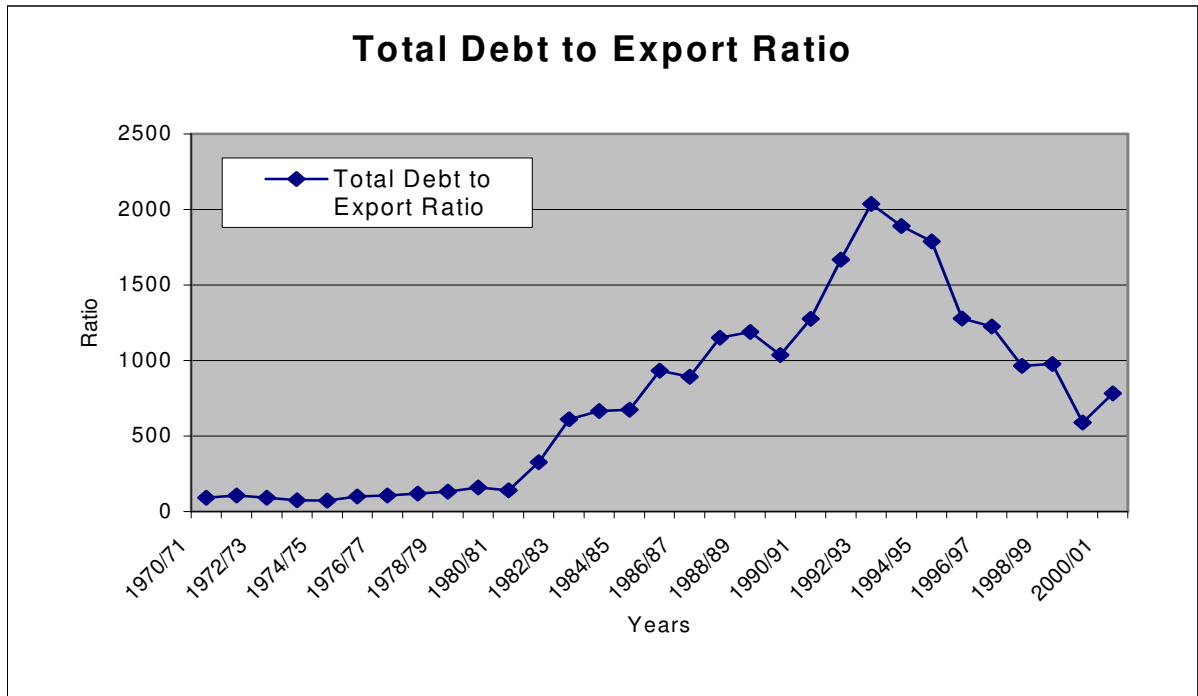
APPENDIX 3: Trends in Total External Debt



APPENDIX 4: Trends in Total External Debt to GNP ratio



APPENDIX 5: Trends in Total External Debt to Exports of Goods and Services ratio



APPENDIX 6: Trends in Total External Debt Service to Exports of Goods and Services ratio

