MACROECONOMIC IMPACTS OF EXTERNAL ASSISTANCE IN ETHIOPIA

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DECLARATION

The thesis is my original work, has not been presented for a degree in any other university and that all sources of material used for the thesis have been duly acknowledged.

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ABSTRACT

The thesis examines the impacts of external assistance on the economic performance of the country for the period 1960/61 –1999/00. The analysis makes use of the Johansen maximum likelihood estimation procedure estimating five equations to identify the independent effect of foreign assistance on investment and/or growth, saving, government tax revenue, government tax expenditure and real exchange rate. Accordingly, it is found that external assistance negatively affected the investment rate and hence the growth rate of the economy. The paper further investigates these unexpected negative relationships between foreign inflows and economic growth. The insignificant effect of external grant on domestic saving, negative impact of external grant on government consumption and the 'Dutch Disease' effect of both foreign grant and loan is responsible for the negative impact of foreign assistance on economic growth of the economy.

CHAPTER ONE

INTRODUCTION

1.1 Statement of the Problem

It is a fact that developing economies in general, and African countries in particular, experienced slow or negative economic growth. Among the major factors for this negative growth is insufficient capital stock. Perhaps capital is believed to be the major scarce factor in developing countries. Thus, capital formation in those economies is important to increase production and productivity. Basically, capital formation is determined by the saving rate but developing economies have faced by low level of income and hence low level of saving rate. Therefore, this low level of saving rate and the required rise in capital stock (or investment) create a resource gap. To fill this gap, least developed countries have looked for resource inflows or foreign assistance.

Basically, the idea of foreign assistance for development may be traced back to the Marshall Plan of the 1940's. Historically, European countries first received external assistance in the post world war II period. During this period European's were ironically faced by the large balance of payment deficit and economic depression. Thus, foreign assistance for economic revival was necessary. Actually, Europeans were enabled to get back on their feet. This success undoubtedly proved the importance of substantial transfer of capital to developing countries. Accordingly, developed economies started to supply foreign capital since 1950's.

In Africa the share of Official Development Assistance (ODA) to GDP has been increasing. It was about 2.4 percent during 1972/73 and rose to 5 percent in the year 1983/84 and 9.8

percent in 1998 [World Bank, 1998] Moreover, UNCTAD (2000) report indicated that aid accounts for over 25 percent of Gross National Product (GNP) in 20 countries, out of which 17 are in Africa.

In Ethiopia, a capital inflow was started around 1950's. [Alemayehu and Befekadu, 1998] During the imperial era, about 25 percent of the required investment was covered by external public capital. During this time all external assistance was mediated through the government and had no link with the public at large. The 1973/74 droughts changed the course of history of the country for the delivery of external assistance. During the Derg period, about 39 percent of total investment was financed by foreign aid. Even in subsequent years the magnitude of external finance that Ethiopia received increased continuously.

Despite the significant increase in foreign inflows the economic growth achieved by many Sub Sahara African countries has not been satisfactory. Most of these countries have been suffering from low level of development. Thus, the actual role of foreign capital inflow has been an area of controversy.

Actually, a number of studies have been conducted on the effectiveness of foreign assistance in LDC's. Nevertheless, these studies do not provide clear-cut conclusions. Different time series and cross-country investigations have come up with different results and different policy implications. Most of these cross sectional analysis suggest that the macro economic impacts of foreign assistance vary among countries that pointed out the need for empirical study for individual countries. However, this area is not explored in Ethiopia. Thus, this paper attempts to examine the macro economic impacts of capital inflows in Ethiopia.

1.2 Objective of the Study

The main objective of the study is analyzing the impact of external assistance on economic growth of the country. But, the impact of foreign inflows on growth depends on a number of factors like the recipient country's government allocation of capital inflows between consumption and investment (or saving) Thus, the paper specifically tries to analyze:

i) the impact of external assistance on saving rate of the country.

ii) the effects of foreign inflows on the fiscal stance of Ethiopia.

iii) the impacts of external inflows on the real exchange rate of the economy.

Finally, the study tries to provide appropriate policy implications.

1.3 Significance of the study

So far, little has been done on the impacts of foreign assistance (aid) on economic growth of Ethiopia. But, a number of studies have been undertaken based on cross-country analysis of LDCs. Cross-country analysis is an approach in which each country is treated as sample point assuming that the impact of foreign inflow is constant across countries that is the same in all LDCs.

However, the role of external assistance differs greatly from country to country. Further more, cross-country analysis assumes that countries are homogenous in terms of economic structure and policy reactions. However, these countries differ significantly on domestic policy measures, economic, political, cultural and social structures. Thus, it is obviously difficult to conclude and recommend policy based on the cross-country analysis.

In addition, past studies with the exception of few, analyzed the different macro economic impacts of foreign inflows separately. Actually, they are inter-related. For instance, if the government increases the consumption expenditure rather than investment due to foreign assistance, it will have a counter productive effect on growth of the economy. Thus, this paper tries to incorporate the important macro variables that are significantly affected by foreign assistance. Besides, using a more advanced econometric techniques (Johansen Maximum Likelihood Procedure), the paper attempts to provoke and lead a path for further studies in the field.

1.4 Organization of the paper

The remaining part of this paper has four sections. In chapter two, theoretical and empirical literatures are surveyed. This is followed by a brief summary of the performance of the Ethiopian economy. Chapter four is devoted to the econometric analysis. For the analysis, the Johansen Maximum Likelihood estimation procedure is employed using data for 1960/61 to 1999/00. Finally, conclusions and policy implications are presented in chapter five.

CHAPTER TWO

THEORETICAL FRAMEWORK AND EMPIRICAL LITERATURE

2.1 Theoretical Framework

The issue of effectiveness of foreign assistance in LDCs has been the interest of many researchers. These interests emanate from divergent theoretical and empirical positions on the impacts of external finance on the economic development of these countries. This section provides a brief review of the existing literatures, which will be useful for modeling the macro economic impacts of foreign transfers in the subsequent chapters.

2.1.1 External Finance and Economic Growth

The impacts of foreign capital inflows (predominantly aid in the case of Africa) on economic growth of least developed countries have attracted considerable attention since the mid 1950's. Rostow (1957), for instance, argued that aid is necessary for developing nations to supplement scarce domestic resources enabling them to advance from what he called 'take-off' stage to self-sustaining growth, [Todaro, 1994].

Similarly, Rosenstein-Rodan (1961) (in line with the basic Harrold-Domar growth model) stated that aid is required to fill the saving gap and ultimately make transition to self-sustained growth. This is only possible if the marginal propensity to save exceeds the average saving rate. Overtime, domestic saving will be

sufficient to finance the desired growth rate without external finance. [Rosenstein Rodan 1961, cited in white, 1992a]

Chenery and Strout's(1966) two gap model gave further economic argument for aid. They posited that there were three stages of transition leading developing economies to self-sustaining status. In each of these stages foreign aid flows were given an exalted role in fulfilling the requirement of the economy's transition. During the first phase, aid was required to bridge the gap between incremental investment and incremental domestic savings. In the second phase, although overall investment and savings had increased, the saving rate was still below the investment rate, hence aid is still required. During the third phase of transition, in the absence of adequate foreign exchange earnings, the economy required aid to finance imports that the domestic economy does not have the capacity to invest. [Cambell, 1994]

The above optimistic view was based on the assumption that developing economies are constrained by capital resources to reach their target growth rate. Thus, foreign capital inflow is important for these economies believing that it is all invested. However, the rapid increase in aid during the 1970's was accompanied by deteriorating growth performance. Despite high and rising aid inflows, several countries in Africa have experienced negative income growth during the 1980's. [World Bank, 1988]

White (1992a) also criticizes the two-gap model based on three points. First, it is a very sticky model with no substitution in production either between factors to relive capital shortage or to reallocate factors between sectors. Second, the underlying Harrold-Domar model is too simplistic representation of the growth process: many other factors besides capital accumulation affect growth. Third, the model doesn't incorporate any mechanisms by which aid may not be matched by one-for-one increase in investment, government development expenditure or foreign exchange. [White, 1992a]

2.1.2 The Saving Debate

The debate about the relationship between aid and savings can be divided historically into a number of distinct phases. During the 1960's, economists believed that capital inflows accelerate growth through raising (supplementing) the level of domestic saving or increasing the rate of domestic capital formation. [Chenery and Strout, 1966; Rostentein-Rodan, 1961]

During the 1970's the 'radicals', who believed that foreign assistance, rather than being the engine of growth, brings about negative impact on the economy, challenged the conventional aid theories. Criticizing the Chenery and Strout's (1966) two-gap model, Griffine (1970), Griffine and Enos (1970), and Weisskopf (1972) posited that foreign aid can be a substitute for saving and a large fraction of it is used for increasing consumption instead of investment and thus it will have a crowding out effect on domestic saving.

Although a number of studies reported the negative relationship between foreign aid and savings, White (1992a) criticize Griffin's (1970) model in particular and 'radicals' position in general based on three points. First, the absence of an economic model and thus including a very simple economic relationship can alter the conclusion. Second, Griffin's model doesn't provide the possibility that aid may increase income by more than the value of the inflow. Where it does so there would be a positive feedback effect on savings. Third, Griffin treated aid as untied income, but tying can force the country to save a higher proportion of the additional income than its marginal propensity to consume. [White, 1992a]

Papanek (1972) also argued that the observation of a negative correlation does not show any causation. It is possible that high per capita aid inflows and low average saving propensities are both caused by some other third factor such as political crises. Accordingly, Bowels (1987) attempted to investigate the causal relationship between domestic saving and foreign aid using the 'Granger Causality' test. His analysis suggests that the causal relationship can be inferred but the direction of causality is mixed. In countries where it holds it is found that it depends on the structure of aid (from multilateral or bilateral sources). This line of inquiry continues to this days and there is still less consensus in the area of "aid-growth' and 'aid-saving' debate.

2.1.3 Recipient's Fiscal Response to External Finance

A core deficiency of the above 'aid-growth' or 'aid-saving' debate is that it fails to recognize explicitly that aid is given primary to the government. Hence, any impact of aid on the economy will depend on government behavior, in particular how fiscal decisions on taxation and expenditure are affected by aid revenues. [Boone, 1996]

A relatively recent development in the literature avoids this critic by explicitly modeling how the impact of aid is mediated by public sector behavior. [e.g. Heller (1975), Mosely et al. (1987)] Earlier Griffin (1970) suggested that aid might lead to a decline in public savings through lowering tax revenues, as government reduces either tax levels or effort. [Griffin, 1970; cited in Cambell, 1999]

Heller (1975) analyzed the effects of an aid inflow on fiscal behavior in a model that assumes public sector decision makers maximize a utility function. This function includes public investment in different forms of public consumption, and domestic borrowing. The utility function is represented by a functional form, which ensures the diminishing marginal utility from each of the choice variables. Heller also set annual target for each revenue and expenditure category and these targets are further specified as a function of current and lagged values of some macro economic variables. (i.e. imports, private investment, income and primary school enrollment.) By maximizing the utility function subject to the budget constraint (i.e. government expenditure is equal to its revenue including foreign grants and

loans), Heller solved the set of first order equations that yield structural equations for estimation. [Heller, 1975 cited in Franco-Rodriguez et al. 1998]

However, Heller's model was criticized by arguing that it did not show the indirect impact of aid on taxes through its presumed positive impact on income or output. [McGillivary (1993, 1994), White (1994)] Basically, Mosely et al. (1987) extended Heller's original model by including aid's impact on growth of output and minor changes in the presentation of the public sector variable specification. Aid's impact on growth is considered by further specifying the target level of government investment. In Heller's model the target level of public investment is given as a function of lagged income and current private investment. Mosely et al (1987) made two extensions. First, the private investment part is further specified to include price effects of aid inflow. Second, income is specified to be a function of public and private capital stock and labor. [Mosely et al., 1987] Similarly, white (1993) gave a reformulation of Heller's model by explicitly considering the so-called indirect effect. His reformulation reveals that the new (demand driven) model is extremely based on the assumed existence of a Keynesian closure.

Even though Mosely et al. (1987) attempted to address the criticisms of Heller's model, White (1992) criticize the extended Mosely's model arguing that:

> Mosely et al. solve the model incorrectly, leaving endogenous variables in the reduced form expression for growth and so arrives at a far simpler result than is infact the case… And he treated important economic variables including national income and imports as exogenous. [White 1992: 190]

Employing Heller's (1975) framework Gang and Khan (1991) also analyzed the relationship between foreign aid and the fiscal behavior of Indian government. In trying to understand the specific links between foreign aid and development, they propose a two-step procedure. The first step involves determining the effect of aid on public investment and consumption on developmental variables such as, growth and income distribution.[Gang and Khan, 1991]

White (1995) pushes further the discussion of the fiscal response to foreign aid by assuming that some part of the aid inflow is anticipated. However, the previous studies implicitly assume that all aid is unanticipated. His study adopted the form of utility maximization equation that was used by Mosely et al. (1987) with the budget constraint that includes expected values. Expected levels of income and imports are given their lagged values, and expected taxes are given by the planed level and expected aid commitments. Finally, he suggested that aid is fungible-used to fund consumption and reduce taxes. [White, 1994]

The fungibility and displacement hypothesis was extensively tested by Pack and Pack (1990) estimating three types of equations. [i.e. non-development current expenditure, development expenditure and revenues] They suggested that foreign aid did not displace development expenditure but it stimulated total public expenditure.

Very recently Franc-Fodriguez et al. (1998) claimed that previous contributors of the fiscal response literature [such as Heller (1975), Mosely et al. (1987), Gang and Khan (1991)] have assumed that government set revenue targets for tax and borrowing, but treat aid as exogenous. Governments have a target for aid revenue and this 'expected' revenue is incorporated into the fiscal planning. Hence, aid is an endogenous variable. [Franc-Rodriguez et al. 1998]

Deviating from the conventional (classical) fiscal response literature, Alemayehu (1998) added an alternative approach. He developed the models based on stylized facts in Africa and come up with the view that policy makers decide their ways of financing the desired level of expenditure recursively. These policy makers are confronted with three costly ways of financing the level of expenditure. The first one is finance it through foreign capital inflows. The other is finance through domestic revenues. If these two sources cannot finance the desired level of expenditure, the government may resort to deficit financing. The model also disaggregates taxes into direct and indirect taxes. [Alemayehu, 1998] Alemayehu (1998) also indicated the major drawbacks of the classical fiscal response literature. The decision framework of utility maximization is not only inconsistent in its own framework (the choice variables are not independent) but also does not reflect how decision about financing in view of foreign inflow is made in African countries.

2.1.4 Foreign aid and the Real Exchange Rate - 'Dutch Disease'

As noted above, the two-gap model viewed capital shortage as the chief bottleneck to development in the least developed economies. However, the model was challenged by a number of researchers. For instance, Frindlay (1973) and McKinnon (1964) highlighted that the model neglects the price responsiveness inherent in the fixed coefficient formulation. It is upon these critics that the 'Dutch Disease' literature appeared.

Basically the term 'Dutch Disease' was first used to reflect the decline in the Netherlands export competitiveness following the discovery of the Groninger gas fields in the early 1970s [Benjamin et al., 1989] Thus, most studies of Dutch Disease have been done for developed countries. Edwards and Van Wijnbergen (1989) suggested that the effect of increased incomes from natural resource is similar to an increase in foreign aid inflows especially for developing economies. The similarity between the two lies in; first, both are almost certainly temporary. Second, both increase availability of foreign exchange at little or no additional use of domestic factors of production. Third, both revenues are at least partially spent on non-traded goods and thus leading to an appreciation of the real exchange rate. [Edwards and Van Wijnbergen, 1989: 1485]

However, Benjamin et al. (1989) claimed that the impacts of a discovery of natural resources or an influx of foreign revenues may be different in developing countries for three main reasons: (a) it is agricultural sector rather than the manufacturing

sector that is most likely to be hurt. (b) as domestic price rise, consumers may not shift entirely to imported goods since the domestically produced manufactured goods are imperfect substitutes for goods sold in the world market. (c) the resources movement effect associated with the influx of foreign revenues may be limited if the booming sector uses mainly imported capital and labor. He then concluded that if foreign aid is spent on imports, there might be little or no impact on the RER. [Benjamin et al, 1989]

Van Wijnbergen (1984) reinterprets the two-gap model by introducing the relative price effects of capital inflows. He analyzed a situation of dis-equilibrium in the non-traded goods sector and incorporated the consequences of dis-equilibrium on private behavior and traced the welfare effects of aid in different macro economic regimes. Accordingly he argued that:

> In the Keynesian regime, the RER is overvalued; since increased aid increases the equilibrium (NT-goods market clearing) RER, the discrepancy between the actual and market clearing RER goes down, thereby reducing the distortionary cost of the price rigidity (which is proportional to the square of that discrepancy), and so increasing the welfare effects of aid… In the classical regime, however, the actual exchange rate is below the market clearing one (there is excess demand for NT-goods), so here aid increases the discrepancy between the actual and equilibrium real exchange rate, reducing the welfare effects of aid in that regime."[Van Wijnbergen, 1984: 135]

Basically, aid was supposed to promote export and generate sufficient foreign exchange from export revenue to do away with future aid dependency. However, the possibility that foreign capital inflows induce an appreciation of the real exchange rate is still theoretically robust. Hence, foreign aid will reduce the degree of international competitiveness in the recipient country, making the export less competitive internationally. In addition to deteriorating trade performance, it increased the dynamic cost of anti export policies. [Van Wijnbergen, 1986a]

As noted above the RER appreciation induced by aid causes domestic resources to be shifted into the production of non-tradable. Since aid is providing additional foreign exchange, the reduction in foreign exchange earned by domestic output may seem to be not problematic. But, in the long term a number of problems may be identified. First, once the aid flow stops resources will have to be shifted back into the traded goods sector, which will be accompanied by real exchange rate depreciation. So that foreign exchange is more expensive and investment in traded goods is more desirable. Second, even assuming that resources are costlessly reallocated, the presence of 'learning by doing' in the traded sector leads to subsequent welfare loss. [Van Wijnbergen, 1984] The rational policy response to this situation is to subsidize export production in the first period. [White, 1992a]

Moreover, based on the fact that technical progress is faster in traded goods sector than in non-traded goods sector [as Van Wijnbergen called it a well established stylized fact; cited in White (1992)] the production shift to non-traded goods sector (spending effect) will reduce the rate of technical progress and hence the growth of

the economy. [Melo, 1988, cited in White, 1992] Thus, explicit policies need to be designed to reduce the conflict between export promotion and foreign aid. [Van Wijnbergen, 1986]

2.2 The Motivation of Foreign Assistance

A number of researchers have attempted to address the question 'Why foreign assistance? The earlier works of classicals gave economic reasons as the major motivation for foreign assistance. For instance, the basic argument of the two-gap model is that external finance can play a critical role in supplementing domestic resources in order to relieve savings or foreign exchange bottlenecks.

Beyond these economic reasons, donors could give financial assistance for other reasons such as political, moral, humanitarian and national self-interest. Todaro (1994) suggested that political motivation have been the more important factor especially for the major donor country, the United States. From the very beginning in the late 1940s under the Marshall plan (which aimed at reconstruction of the war torn economies of Western Europe), United States has viewed foreign aid as a means of containing the international spread of communism. When the balance of cold war interests shifted from Europe to the third world in the mid 1950's, the U.S aid program made a shift towards giving economic, political and military support for 'friendly' and geographically strategic less developed nations.

Opeskin (1995) explains the national self-interest as one of the important motivations of foreign assistance in three different forms. First, rendering of financial assistance to poorer states that share similar political values may encourage the spread of an ideology that is attractive to donor states. Second, aid may enhance demand for the donor states products by stimulating the recipient state's economic growth. Third, maintenance of social and economic stability in poorer countries may serve the interest of wealthier states, which would other wise have to shoulder the burden of an unwanted influx of refugees. [Opeskin, 1995] Mosely (1987) also suggested that bilateral aid is mostly used to increase export and buy political support from the donor country. He also identified three universal reasons for aid. These are, redistributive (governed by responsibility for the poor), allocative (since capital market is imperfect) and stabilization (to augment world aggregate demand and reduce unemployment).

Bauer and Yamey (1982) claimed that 'foreign aid is the source of North-South confrontation, not its solution… the pervasive consequence of aid has been to promote or exacerbate the politicization of life in aid-receiving countries' [cited in Meir, 1995]

Todardo (1994) argued that some development assistance may be motivated by moral and humanitarian desires to assist the less fortunate (i.e. emergency food relief) programs, but there is no historical evidence to suggest that over longer periods of time, donor nations assist others without expecting some corresponding benefits (political, economic, Military, etc) in return.

2.3 Empirical Literature

A number of studies have been undertaken to examine the relationship between foreign capital inflows (essentially aid) and some macro economic variables such as saving, investment, real exchange rate and economic growth.

Regarding the relationship between foreign aid and economic growth, the majority of studies estimate a single equation based on a linear relationship with growth as the dependent variable and aid (and other forms of capital inflows) as independent variable. But this technique runs into a number of problems such as simultaneity bias (if aid flows depend on growth and some other economic indicators) and multicollinearity (if aid flows are related to the variables on the right hand side of the equation.) [White, 1992a]

Those studies in which growth is regressed on aid as a sole explanatory variable gave varying results: the coefficient on aid is significantly positive (0.40 with a t-statstic of 3.1) in Papanek (1973) and Dowling and Hiemenzs (1982) [0.43 with a t-statstic of 2.14], but negative and insignificant in Vivodas (1973) and Mosely et. Al (1987). [Cited in White, 1992]

This different result could be caused by including different variables on the right hand side (RHS) of the regression equation. Papanek, for example, regressed growth onto the lag of income per capita, log of population, aid, and private investment, other capital inflows, primary exports and other exports. While,

Dowling and Hiemenz (1982) include four policy variables [export plus import over GDP as a measure of openness; taxes as percent of GDP to measure government's role in resource mobilization; share of public expenditure in GDP; and M2 over GDP to measure financial repression.][Cited in White, 1992a]

However, Griffin and Enos (1970) demonstrate the inverse relationship between capital inflows (as a proportion of national income) and the saving rate and thus growth. This was confirmed by similar results from other studies such as Griffin (1970), Weisskof (1972) and Bowels (1987)

Weisskopf (1972), using a sample of 44 underdeveloped countries data and applying a Two-Stage List Square estimation procedure, studied the impact of net capital inflows on domestic savings. He distinguished between the type of aid (grants and loans) and the source of aid (bilateral and multilateral.) He found that the precise response of public consumption to aid varies according to the type of aid. [Weisskof, 1972]

Bowles (1987), using time series data for 20 developing countries over the period 1960-81, investigates the causal relationship between foreign aid and domestic saving. In ten of the twenty countries, he found no causal relationship in either direction but for the remaining ten cases, Bowles found a mixed direction of causality. He then concluded that in those countries, which received the most aid from the multilateral institutions, their inflows were more likely to be determined by their saving behavior than vise versa. While in the three cases, changes in

savings are shown to cause changes in aid, and in five cases the converse (for one of these, there was a positive relationship) [Bowles, 1987]. This finding suggest that aid will not be endogenous which is contrary to the belief of Franceo-Rodriguez et al. (1998) who strongly argued that aid is endogenous.

Levy (1984) estimated two specified saving functions, one for the public and the other for the private sector, both including income on the right hand side of the equation. He concluded that aid still leads to a reduction in domestic savings, as its negative impact on public savings is not fully offset by the positive impact on income. However, White (1992a) criticize his findings by saying that " the methodology is not reported, but it appears that OLS was used on equation of the simultaneous system in turn" [White, 1992a: 188]

Furthermore, Levy (1987), using data for the period 1967-1980 for the total sample of 32 developing countries, estimated simple consumption function derived from permanent income hypothesis. He found that marginal propensity to consume out of anticipated aid is 0.27 compared to 0.71 for unanticipated aid. [Levy, 1987]

Morisset (1989) estimated the impact of aid on savings in Argentina using time series data for 1960-81. He found that the inclusion of additional variables on the right hand side (specifically, GDP, the real interest rate and the rate of inflation) rendered the coefficient on capital inflows (variously defined) insignificant. Giovannini (1983) also found that the coefficients on foreign saving for developing countries have mixed signs and are insignificant.

Using Ethiopian data, Haile and Alemayehu (2000) examined the relationship between savings, foreign aid and economic growth. Their findings suggest that foreign aid is negatively associated with private saving. The most important determinant of private saving in Ethiopia is GDP per capita and financial deepening, while investment (both private and public) is the most important determinant of economic growth.

Similarly, Alemayehu and Befekadu (1998) estimated a saving function in which aid and income are the only determinants of saving. Their result shows that aid inflows do not have statistically significant impact on the level of saving. Moreover, unlike the cross-country result reported in the literature, it has a positive sign in the short run but a negative sign in the long run.

Various empirical studies have been conducted to analyze the effects of foreign capital inflows on fiscal behavior of the recipient country. For example, Heller's (1975) econometric model focus on the interaction of several categories of public expenditure and domestic and foreign revenues. The model further distinguishes between alternative types of aid (grants Vs loans), and alternative sources (bilateral Vs Multilateral, private Vs Public). The result suggests that aid not only increases investment, but also simultaneously facilitates a reduction in the level of domestic taxes and borrowing. The magnitude of these effects and the precise response of public consumption to aid also vary according to the type of aid. Grants have a stronger pro-consumption bias, whereas loans are pro-investment. [Heller, 1975]

Just like Heller (1975), Pillai (1982) showed that grant flows have no impact on recurrent expenditure. Around 60 percent of grant aid was used to finance investment and the remaining 40 per cent used to reduce taxes. Accordingly, in Jordan loan finance was almost completely channeled into investment. [Pillai, 1982: cited in White, 1992]

Cashel-Cordo and Craig (1990) distinguish between different donors and the concessionality of aid. They find that multilateral aid increases the expenditure of the recipient government by more than does bilateral aid. And highly concessional aid increases expenditure by more than the value of the inflow. Thus, aid must displace either taxes or borrowing since expenditure rises by more than the inflow. [Cashel-Cordo and Craig, 1990]

Similar conclusions have been reached by a number of other empirical studies. However, some recent studies report contrary results. Pack and Pack (1990) estimated four structural equations that depict the fiscal behavior of the Indonesian economy. They found that on average, one rupiah (Indonesia's legal tender) of aid increased government expenditure by 1.58 rupiahs. These estimates indicate that in the largest categories aid is spent for the purpose for which it is given; but the additional revenues raised by the government are allocated to those types of expenditure least favored by foreign aid, partly confirming the fungibility hypothesis. [Pack and Pack, 1990] However, the value of R^2 reported leads one to suspect whether the regression is free from spurious regression problems. This

doubt is justifiable since the time series variables are not tested for the plausibility of the stationarity assumption and no other diagnostic tests are reported.

Similarly, Gang and Khan (1991) study claimed that foreign loans and multilateral aid went completely into investment; it did not increase government consumption. They also found a significant negative relationship between bilateral aid and government consumption. This is to mean that bilateral aid pulls resources out of non-investment expenditure and puts them into investment projects. [Gang and Khan, 1991] However, White (1994) criticizes their findings arguing, " Gang and Khan claimed that the Indian government has channeled all aid into investment. This is the miss-interpretation of their own results-which actually suggest that aid had not impact on government investment at all." [White, 1994: 162]

Alemayehu (1996), using pooled time series and cross country data for the period 1970-90 of three regions in Africa, estimate three set of equations which attempt to capture the recipients fiscal response to foreign capital inflows. The empirical findings show that; (a) the impact of capital inflows on taxes varies across different types of capital inflows and different regions. (b) capital inflows have strong positive impact on current government expenditure in three regions of Africa [East and South Africa, North Africa, and West and Central Africa] But the fact that his study is based on the pooled data of different African countries, drawing valid conclusion about a single country from such a result is difficult.

Recently, Franco-Rodrizuez and Morrissely (1998) analyzed the effects of aid revenue on government fiscal behavior with respect to tax, borrowing and expenditure decisions. They estimate a model in which aid is endogenous and domestic borrowing is allowed to finance both capital and recurrent expenditure in addition to aid and tax revenues. The result indicates that only half of aid has gone to government consumption and it has negative impact on public investment and tax effort.

A lot of empirical studies have been carried out to see the possibility and extent of 'Dutch Disease' in underdeveloped countries. Most of these studies are supportive of the thesis that the capital inflow leads to an appreciation of the real exchange rate [e.g. Cordon (1984), Van Wijnbergen (1984, 85, 86), Edwards and Van Wijnbergen (1989)]

Van Wijnbergen (1985) estimated the real exchange rate equation in which growth of real GDP, simple average of the current and once lagged growth rate difference between the country under consideration and industrial countries, terms of trade, aid (measured as total disbursement of grants and concessional loans-deflated by the import price index) and other forms of inflows (measured as the disbursement of non-concessional loans deflated by the import price index) are included as explanatory variables. He regressed the equation using OLS technique for five selected African countries. (i.e. Egypt, Ghana, Kenya, Malawi, Siera-Leoan and Tanzania) The result indicated that aid inflows [with the coefficient between –0.20 and -.70] have lead to an appreciation of the real exchange rate.

However, White (1992a) claimed that too much reliance should not be placed upon this result, since it suffers from miss-specification, multicollineority (Significant R^2 with insignificant coefficients), autocorrelation and wrong t-values. In addition, the equation only includes 'fundamental' determinants of the RER excluding the short-run factors such as movement in the nominal exchange rate. Alemayehu (1998) also questioned whether Van Wijinbergen's theoretical description tallies with a typical African country. He argued that the theoretical reasoning that he describes does not fit the stylized facts in a typical African economy. " In African countries the real appreciation due to the spending effect usually happens in the context of idle labour in urban areas and sticky production structure both in trade and non-traded sector." [Alemayehu and Befekadu, 1998: 19]

Younger (1992) showed the existence of Dutch Disease effect in Ghana. In his study, aid not only led to appreciation of the real exchange rate (through inflation) but also financial crowding out of the private sector. The Ghanaian government as a recipient of aid increased its expenditure through raising the consumption of domestic goods and hence crowding out private consumption. [Younger, 1992]

White and Van Wijnaraja (1991) examine the impact of aid on RER for Sri- Lanka using general to specific modeling technique. They showed that the massive expansion in transfers play a significant part in explaining the divergence between real and nominal exchange rate. [Cited in White, 1992a]

Benjamin et al. (1989) tried to look at the impact of oil boom and its Dutch Disease effect for Cameron. The simulation with a Computable General Equilibrium (CGE) model reveals that the agricultural sector is most likely to be hurt whereas some of the manufacturing sectors will benefit from the boom.

However, contrary to the previous results, Nyoni (1998), using co-integration technique and error correction model, found that aid inflows caused a real depreciation in Tanzania. Hence, Tanzania may continue receiving aid and use it for productive investment to stimulate a positive supply response. A similar result was obtained for Nigeria by Ogun (1995). Ndulu and Kimei (1997) gave a possible explanation for Tanzanian case. They argued that the positive correlation between foreign aid and the real exchange rate in Tanzania might be due to the fact that the recipient of much of aid was tied to import from the donor and fulfill outward oriented economic reforms. [Ndulu and Kimei, 1997]

CHAPTER THREE

MACROECONOMIC PERFORMANCE OF THE ETHIOPIAN ECONOMY

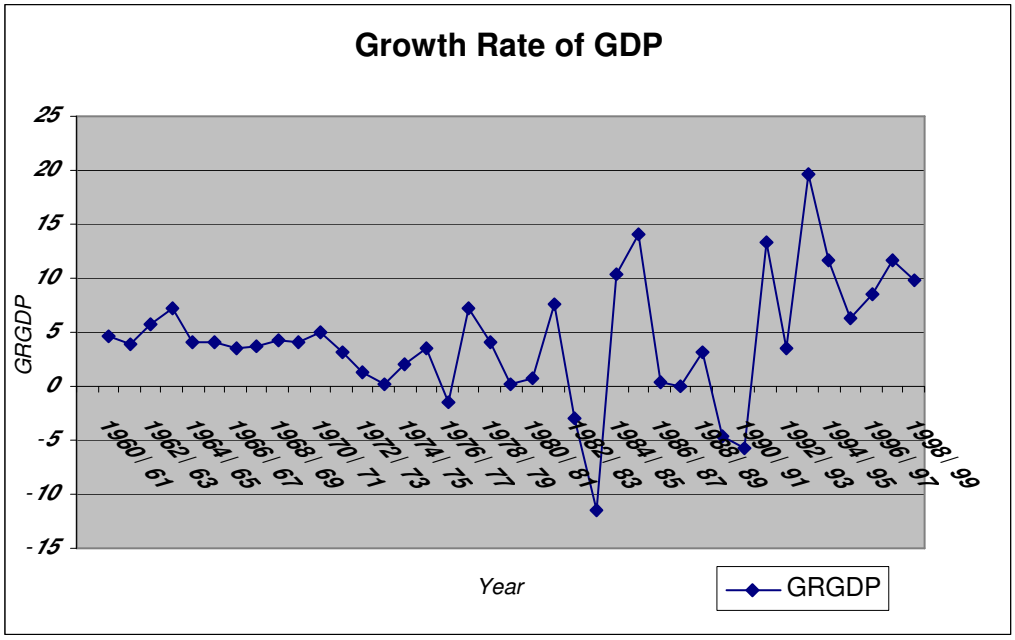
3.1 Real GDP and its Sectoral Contribution

For the last four decades, the Ethiopian economy has been growing at an average annual rate of 3.9 percent while the population has been growing at annual rate of 2.6 percent. [See Table 3-1]

During the Imperial era, the economy had been growing at a rate of 4.2 percent per annum with an average population growth of 2.1 percent. Even though agriculture had a great share to GDP (i.e 60.8 percent), it accounted only 31.2 percent of the growth of GDP. This is witnessed by the low relative contribution factor, which is 0.51. The other sectors have a relative contribution factor greater than unity implying that they contribute to GDP growth more than their contribution to GDP.

The average GDP growth for the Derg period was 1.9 percent per year compared with an average population growth of 2.8 percent per annum that leads to a decline in per capita income. As figure 3.1 indicates the GDP growth was negative in the year 1984/85 and 1992/93. Still agriculture contributed more than 50 percent of GDP.

Figure 3-1



However, the contribution of this sector to growth in GDP has significantly declined to14.9 percent (Contribution factor = 0.48). It was undertaken by the 'other' service sector whose contribution increased from 21 percent, during the Impirial era, to 47 percent during the Derg period. The shares of the growth rates of the industrial and distributive service sectors in the growth rate of GDP have declined in that period as compared to that of the imperial era.

Table 3-1: Growth Rates of Real GDP and its Sectoral components

Item/Period		1960/61-73/74	1974/75-90/91	1991/92-99/00	1960/61-99/00
Growth rate in real GDP		4.2	1.9	7.2	3.9
Sectoral Contribution to growth in GDP					
Agriculture	Percentage	31.2	14.9	24.3	25.4
	Cont. factor[1]	0.51	0.29	0.48	0.46
Industry	Percentage	22.7	18.1	16.3	14.7
	Cont. factor	1.71	1.43	1.50	1.15
Distributive Service	Percentage	24.9	20.5	20.0	19.9
	Cont. factor	1.9	1.35	1.45	1.42
Other Services	Percentage	21.2	47.0	39.4	40.3
	Cont. factor	1.66	2.37	1.57	2.19
Sectoral Contribution to GDP					
Agriculture		60.8	52.4	50.4	55.0
Industry		13.3	13.0	10.8	12.7
Distributive Service		13.1	14.8	13.8	14.0
Other Service		12.8	19.8	25.1	18.4
Growth rate in Population		2.1	2.8	2.6	2.6
Growth rate in PCGDP		4.1	3.8	9.4	5.2

Source: Authors Computation from the information obtained from MEDaC

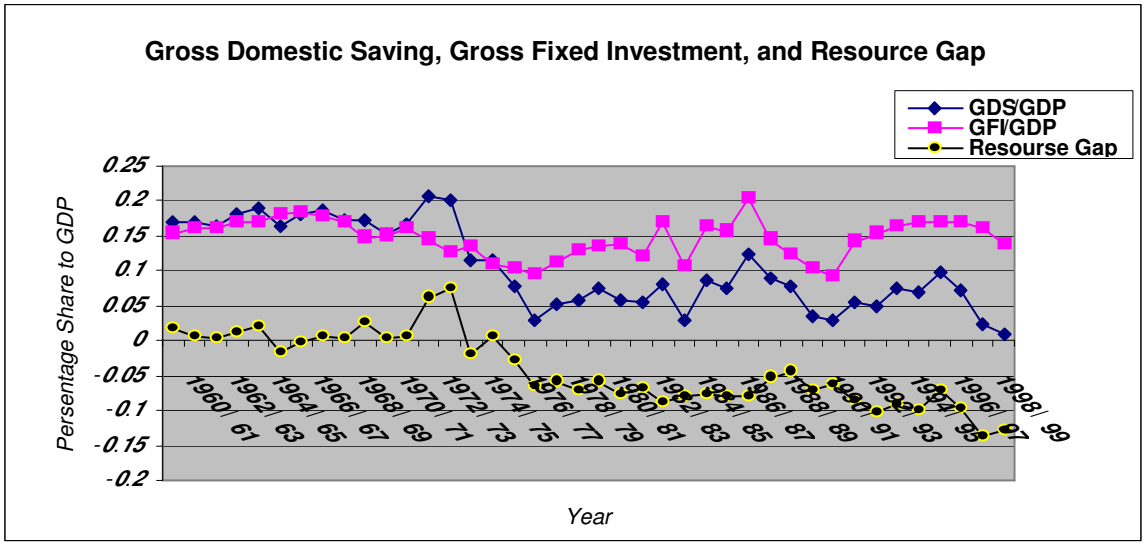
[1] See Appendix 1

Under the Ethiopian Peoples Revolutionary Democratic Front (EPRDF) regime (1991/92-1999/00), the growth rate of GDP has increased on average to 7.2 percent per annum with the population growth rate of 2.6 percent. The contribution of agriculture to growth has increased significantly over that of the Derg regime but did not catch up with what had been during the Imperial period. Despite its small share in GDP, the industrial sector still contributes to growth significantly.

3.2 Savings and Investment

It is the fact that a country's economic growth is significantly affected by the rate of investment and rate of savings. Like in other developing economies, Ethiopia has faced a shortage of local saving to finance domestic investment. The following figure indicates the pattern of Ethiopian Gross Domestic Savings (GDS), Gross Fixed Investment (GFI) and Resource Gap for the period 1960/61-1999/00.

Figure 3-2

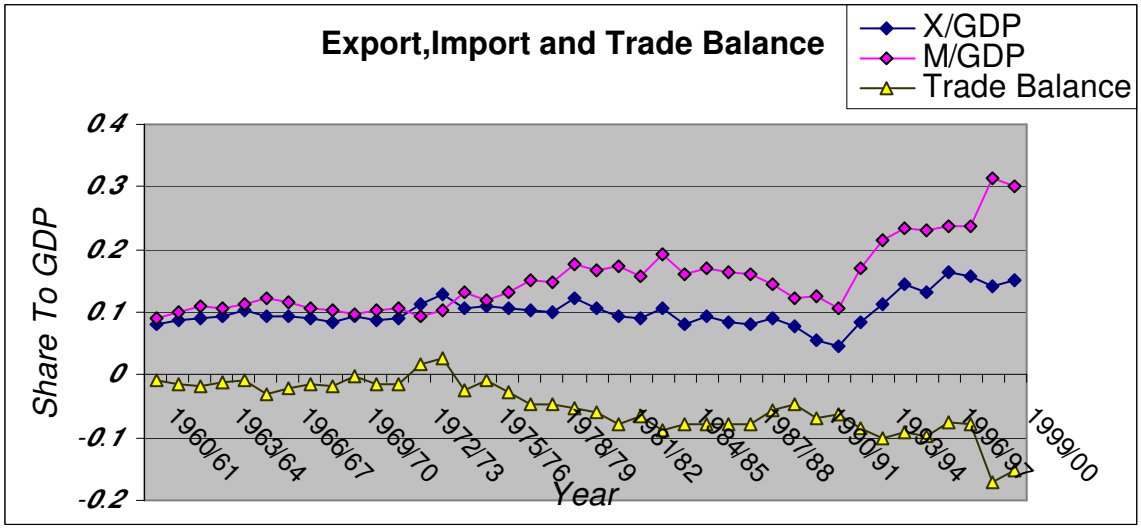


For the last four decades, GDS constituted on average 10.5 percent of GDP while GFI contributed on average 14.7 percent of GDP. During the Imperial era GDS more or less covered domestic investment. [See fig. 3.2] During this period GDS on average constituted about 17.7 percent of GDP while GFI contributed on average about 14.7 percent of GDP.

Since 1974/75, saving to GDP ratio showed a tremendous fluctuation but remained significantly lower than the figure recorded in the Imperial era. On average, GDS and GFI as percentage of GDP for the Derg period was 7.3 and 13.2 percent, respectively. This implies that there was a great gap between the saving ratio and the investment ratio. As figure 3.2 confirms, the investment ratio exceeded the domestic ratio for the whole period under consideration. During this period the gap between domestic saving and domestic investment was, on average, about negative 5.9 percent of GDP. The resource gap has been increasing with fluctuations during the EPRDF period. During this period, on average, GDS and GFI as a ratio of GDP registered 5.4 and 15.1 percent, respectively with the gap of 9.7 percent of GDP.

3.3 Balance of Trade

Fig. 3.3



The trade balance of Ethiopia has been negative for the last four decades except the last two years of the Imperial era.[see figure 3.3] In the period 1960/61-73/74 the trade balance ,on average, recorded a deficit of about 0.99 percent of GDP. It rose to about 5.8 and 10.1 percent of GDP per annum during the period 1974/75-1990/91 and 1991/92-1999/00, respectively.

Accordingly, the ratio of total export to total import, on average, fell from 91.0 percent in the Imperial era to about 62.7 percent in the Derg regime. It further declined to 54.8 percent during the period 1991/92-1999/00. This is mainly because of the stagnant export earnings, the decline in international primary commodity prices, the significant devaluation in 1992 and the consequent several small devaluations that immediately increase the local currency value of imports.

3.4 Real Exchange Rate

The Ethiopian legal tender currency was issued and the official exchange rate of this currency with US dollar was created (with the official exchange rate of 2.48 birr per US dollar) on July 23, 1945. After two decades, that is, on January 1, 1964, the Ethiopian birr was slightly devalued to 2.50 per US dollar. Following the collapse of the Britton Woods System, the birr was revalued to 2.30 birr per US dollr on December 21, 1971. The subsequent 10 percent devaluation of the US dollar had temporarily brought about undervaluation of the birr. In order to realign, the Ethiopian birr was again revalued to 2.07 per US dollar in February 1973. [NBE report, 1980]

Since then, the Ethiopian currency has been pegged to the US dollar at the rate of 2.07 birr per US dollar until the massive devaluation of October 1992. This fixed official exchange rate was left unaltered for two decades despite the floating of the major world currencies including US dollar. In effect the birr became overvalued in terms of US dollar as well as many other foreign currencies.

Realizing the negative effect of an overvaluation of the birr on the country's trade balance and on balance of payments, the TGE devalued the official exchange rate seven times reaching 6.25 birr per US dollar. The TGE also introduced a fortnightly auction for foreign exchange in May 1993 in an effort to liberalize the foreign exchange market and, hence, to achieve market determined exchange rate. The belief at the center of successive devaluation of the official exchange rate and the adoption of auction system is to return back the parallel market rate to the official line and thereby strengthen official reserves.

From May 1993 up to the unification of the official and the auction exchange rates on July 25, 1995, the exchange rate was partly determined by the government decree (applicable to the official rate) and partly by quasi-market forces (applicable to the auction rate) as represented by fortnightly auctions. After the date of unification the exchange rate of birr against US dollar and the resultant cross-rates have been determined only through the auction system. But, an inter-bank foreign exchange market has replaced the auction system since October 2001.

3.5 Trends, Magnitude and Composition of External Assistance

The poor performance of the Ethiopian economy has made external assistance a prominent feature of the country's economic structure. Since 1974, at which Ethiopia applied for loan from the International monetary fund, the country has grown more and more dependent on external assistance and has reached a stage where it cannot function with out it. [Alemayehu and Befekaudu, 1999]

External inflows are transferred into the country through two institutional arrangements: government and non-government organizations. Those coming from the government institutions comes in the form of official development assistance (ODA) i.e Aid (grants +loans). This paper only deals on ODA.

The volume of these aid flows has increasing over time. During the last ten years of the Imperial regime, foreign assistance grew very slowly (at an average annual rate of 3.8 percent) and started to grow sharply since 1978/79. In 1970/71, foreign receipts were about

154.1 million Birr (2.7 percent of GDP) and after a decade it rose to 335.8 million Birr (3.8 percent of GDP) It further rose to 1547.9 million Birr in 1988/89 accounting for about 10 percent of GDP. After a slit decline in 1990/91, foreign receipts again rose to 3470.5 million Birr in 1998/99. The aid flows also show an increasing trend measured as a percentage of other relevant parameters. [See Table 3.2]

Table 3-2: External Assistance as a percentage share of other Macroeconomic Variables

Item/Periods	1960/61-73/74	1974/75-90/91	1991/92-99/00
External Assistance as % of			
GDP	2.3	5.1	6.4
Total Revenue	23.3	25.2	33.4
Total Expenditure	20.9	19.3	25.6
Imports	22.2	33.8	29.5
Investment	14.6	38.8	41.9

Sources: Authors Computation from the data obtained from MOF and MEDaC.

As a proportion of GDP, foreign assistance increased from 2.3 percent in the Imperial regime to 5.1 percent in the Derg regime. It further rose to 6.4 percent during the period 1991/92-1999/00. External inflows also showed an increase relative to government revenue, total expenditure, imports and investment. Relative to total revenue foreign aid accounted, on average, about 23.3 and 25.2 percent during the period 1960/61-1973/74 and 1974/75-1990/91, respectively. It rose to 33.4 percent per annum during the period 1991/92-1999/00.

As a proportion of total government expenditure external assistance increased from 20.9 percent per annum to 25.6 percent from the Imperial era to the EPRDF period. Foreign aid as a proportion of imports accounted about 22.2 and 33.8 percent per annum during the Imperial regime and Derg period, respectively. It declined to 29.5 percent per annum during the period 1991/91-1999/00. In similar vein, aid as a proportion of total investment increased from 14.6 percent per annum in the Imperial era to 33.8 and 41.9 percent in the Derg and EPRDF regime.

In terms of composition, official development assistance to Ethiopia has two components: foreign grants and loans. During the period 1974/75-1990/91, the volume of aid was 11185 million Birr from which grants constituted 48.1 percent (5375.5 million Birr) and loans amounted to 5809.6 million Birr (51.9 percent). Thus, grants and loans had almost equal share during the Derg regime. The volume of aid has increased to 20182.9 million Birr during the period 1991/92-1999/00. In this period, more than fifty percent of the total aid flows is contributed by grant.

The composition of ODA in terms of sources reveals that about 70 percent of aggregate foreign aid flows were from bilateral. Since 1991/92, the share of bilateral sources declined. For instance, in 1995/96 from the total aid comes to the country 99.8 percent was from multilateral agencies and only 0.2 percent comes from bilateral sources.

3.6 The Performance and Structure of Public Finance

Since the Keynesian revolution the government intervention has been justified on a number of grounds. Since then government expenditure has become an important element in aggregate demand with serious implications on the macro economy. The existing situation of developing countries further justifies the active participation of government.

Developing economies are characterized by underdeveloped physical and social infrastructure, low levels of savings and investment. Therefore government has to provide these basic services to foster economic growth. This, in effect, provides a rationale for a rapid expansion of public finance in developing economies.

In Ethiopia, public finance has been taken place in the last four decades with dramatic expansion following the 1974 revolution. In the following section the performance of public finance for the last four decades will be examined.

3.6.1 The Structure and Trends of Government Revenue

Government revenue constitute of tax revenue, which is the largest component of the overall revenue, and non-tax revenue. Tax revenue is the sum of direct tax, indirect tax and foreign trade tax. The contribution of each to the total revenue is depicted in Table 3-3.

Table 3-3: The Contribution of Tax and Non-Tax Revenue to Total Domestic Revenue.

Item/Period	1960/61-73/74	1974/75-90/91	1991/92-99/00	1960/61-99/00
Tax Revenue	85.2	75.1	67.5	77.2
Direct tax	22.0	27.2	25.0	24.7
Indirect tax	26.2	22.3	25.9	22.8
Foreign trade tax	36.9	27.6	38.5	29.9
Non-tax Revenue	14.7	24.9	32.5	22.8

Source: Author's Computation from MOF data

3.6.1.1 Tax Revenue

As indicated in the above table, tax revenue has been the major source of domestic revenue over the period 1960/61-1999/00. In this period taxes contributed, on average, about 77.2 percent of the total domestic revenue, of which 24.7 percent is direct tax and 22.8 and 29.9 are from indirect and foreign trade taxes, respectively. During the Derg regime, taxes accounts, on average, about 75.1 percent of the total government income and it declined, on average, to 67.5 percent in the period 1991/92 – 1999/00.

Even though the dominance of tax as a source of domestic revenue has maintained, it has shown substantial changes both in terms of size and structure. At the starting year of the Derg regime i.e 1974/75, tax revenue amounted about 547 million Birr and it increased to 2.37 billion Birr in 1988/89. It further increased to 5.59 billion Birr in 1998/99. The recent increase in taxes is mainly due to the introduction of new taxes (such as revenue from urban

land lease, mining income tax, rental income tax). Another factor is the increasing effort exerted in improving tax administration by the regional governments particularly since fiscal decentralization.

Looking at the structure of tax revenue in the Derg regime, direct tax was the major source followed by foreign trade tax and indirect taxes. This structure has altered in the present regime where foreign trade tax has become the major sources of tax revenue followed by direct and indirect taxes. [See Table 3-3]

Foreign trade tax contributed, on average, about 27.6 percent of the overall tax revenue in the military period. It increased to 38.5 percent in the period 1991/92-99/00. The possible reasons for this significant increase in the share of foreign trade tax to total tax revenue are: (a) an increase in volume of foreign trade during this period, (b) an increase in value owing to an increase in import prices in domestic currency (Birr) following the 1992 currency devaluation and (c) shift in imports from low-taxed capital goods to higher taxed consumer goods [see Befekadu, 1998]

In terms of growth rate, domestic revenue grew, on average, by 9.7 percent and 17.3 percent during the period 1974/75-1990/91 and 1991/92-1999/00, respectively. Its component tax revenue showed a growth rate of 8.7 and 15.1 percent respectively, in the same period. Of the tax elements, direct tax registered a relatively higher growth rate of 11.2 percent followed by indirect tax during the Derg regime. In the present regime, foreign trade tax has witnessed an average growth of 26.7 percent. [See Table 3-4]

Table 3-4: Growth and Magnitude of Tax and Non-Tax Revenue

Items	Average Growth Rate			Ratio to GDP		
	1960/61-73/74	1974/75-90/91	1991/92-99/00	1960/61-73/74	1974/75-90/91	1991/92-99/00
Domestic Revenue	10.6	9.7	17.3	8.5	17.3	16.4
Tax Rev.	11.5	8.7	15.1	7.3	12.8	10.9
Direct Tax	11.0	11.2	13.7	1.9	3.7	4.1
Ind. Tax	22.5	10.0	9.2	2.3	4.3	2.8
For. Trade	8.8	6.1	26.7	3.1	4.3	4.1
Non-Tax Revenue	7.8	15.6	27.2	1.2	4.1	10.4

Source: Authors Computation from MOF data.

The percentage share of government income to the total domestic income (GDP) shows the capacity of the economy to generate revenues. As indicated in Table 3-4, the ratio of total domestic revenue to GDP averaged 17.3 and 16.4 percent in the period 1974/75 –1990/91 and 1991/92-1999/00, respectively. The magnitude of tax revenue as percentage of GDP, on average, accounted for 12.8 and 10.9 percent during the same period, respectively.

3.6.1.2. Non-Tax Revenue

Non-tax revenue that constitutes mainly of charges and fees, sales of goods and services, residual surplus and investment income, sales of movable property, and repayment of loans. It registered a growth rate of 7.8 percent per annum during the period 1960/61-1973/74. The growth rate of non-tax revenue increased, on average, to 15.6 and 27.2 percent per year in the Derg and EPRDF regimes, respectively.

Non-tax revenue constituted, on average, about 14.7 24.9 percent of the total domestic revenue in the period 1960/61-1973/74. Its contribution increased to 24.9 and 32.5 percent in the period 1974/75-1990/91 and 1991/92-1999/00, respectively. In actual values non-tax revenue registered about 168.2 million Birr in 1977/78 and it increased to 1 billion Birr in 1987/88. It further increased to 1.14 billion Birr in 1997/98.

A number of reasons have given for the increment in the contribution of non-tax revenue to total domestic government income in the recent periods. First, better financial performance of public enterprises and the resulting rise in residual surplus, capital charge, interest payments and state dividends to the Central Treasury. Second, the large sum proceeds obtained from privatizing public enterprises although it is a one-time increase. [MEDaC, 1999]

3.6.1.3 External Grants

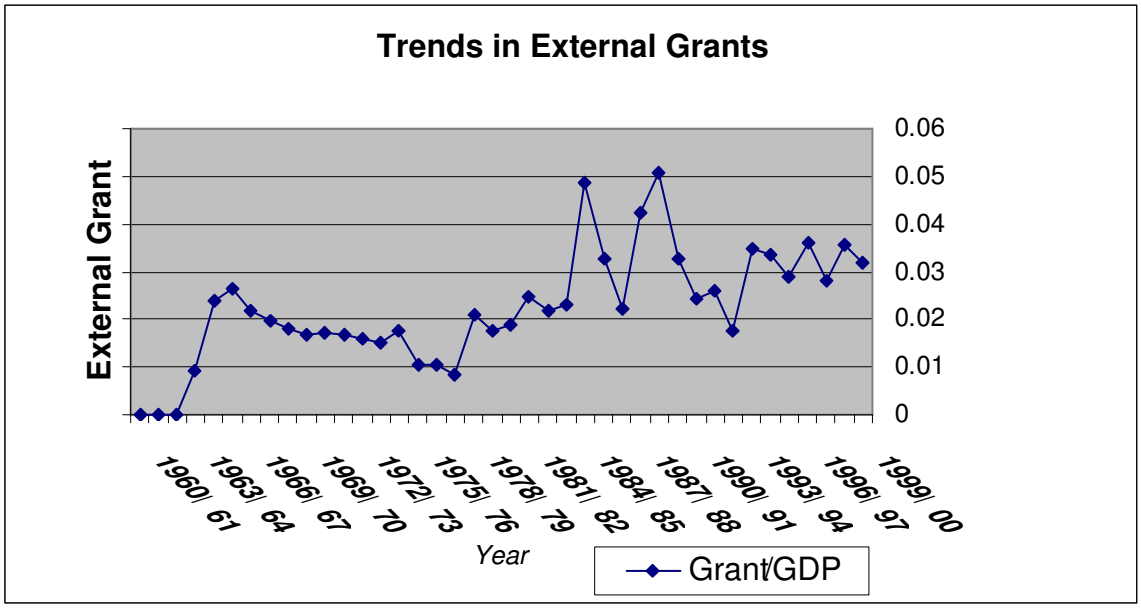
Over the last four decades (1960/61-1999/00), external grants showed a remarkable growth of 20.5 percent per annum. During the Derg regime, it grew on average by 19.7 percent per annum. Its growth rate has increased and reached to 20.4 percent ,on average, in the period 1990/91-1999/00. [See Table 3-5]

Table 3-5: Growth of External Grants

Period	Average annual growth rate	As percent of Total Revenue	As percentage of GDP
1960/61-1973/74	20.2	17.1	1.8
1974/75-1990/91	19.7	12.2	2.5
1991/92-1999/00	20.4	15.8	3.0
1960/61-1999/00	20.5	14.5	2.4

Sources: Computed from MOF data.

Fig. 3-4



External grant contributed on average 17.1 percent of the total government revenue during the Imperial regime. Its contribution has declined to 12.2 and 15.8 percent in the period 1974/75-1990/91 and 1991/92-1999/00. This could be because of the decline in support of the bilateral and multilateral donors.

3.6.2 The Performance of Government Expenditure

Government expenditure is divided into capital expenditure and recurrent expenditure. Capital expenditure is broadly defined as an outlay on projects that result in the acquisition of fixed assets and the provision of development services. Recurrent expenditure is generally defined as outlays of recurring nature which include items such as wages and salaries, maintenance and operating expenses, price subsidies, public debt and pensions [MEDaC, 1993]

3.6.2.1. Recurrent Expenditure

Recurrent expenditure accounted, on average, about 79.1 and 73.4 percent of the total government spending during the period 1960/61-1973/74 and 1974/75-1990/91, respectively. Its contribution declined to 66.5 percent in the period 1991/92-1999/00. [See Table 3-6] However, in actual amount it increased from 1.69 billion Birr in 1979/80 to 3.92 billion Birr in 1989/90 and it further increased to 13.74 billion Birr in 1999/00. As shown in Table 3.6 recurrent expenditure was growing by 12.1 percent per annum in the Derg regime while it grows by 16.8 percent per annum in the period 1991/92-1999/00. [See Table 3.6]

Table 3-6: Performance of Government Expenditure

Periods	Recurrent Expenditure			Capital Expenditure		
	As % of TOT. Exp.	As % of GDP	Average annual growth rate	As % of Tot. Exp.	As % of GDP	Average annual growth rate
1960/61-73/74	79.1	8.7	10.3	20.8	2.2	9.8
1974/75-90/91	73.4	18.7	12.1	26.6	7.1	14.6
1991/92-99/00	66.5	16.7	16.8	33.5	8.4	18.3
1960/61-99/00	73.7	14.7	12.6	26.3	5.7	13.9

Sources: Computed from the information obtained from MOF.

The possible reason why recurrent expenditure increased during the period 1991/92-99/00, while defense expenditure is substantially decreased is the duplication of government institutions in different regions. The other plausible explanation is that the increase in country's debt payment which become almost doubled to 13.7 percent of the recurrent spending in the post 1991 period. [See Table 3-7] A third explanation is the increase in expenditure related to the expansion of the extension program in agriculture, which constitute the major development strategy of the government.

Table 3-7: Structure of Recurrent Expenditure (as percent of Total Recurrent Expenditure)

Items/Periods	1960/61-73/74	1974/75-90/91	1991/92-99/00
General Services	51.4	60.2	39.9
Defense	22.0	53.2	25.1
Economic Services	11.3	6.2	9.2
Agriculture	2.6	2.4	5.6
Industry	0.3	0.2	0.3
Construction	5.1	2.3	0.4
Social Services	21.7	17.7	23.6
Education	14.4	12.2	15.1
Health	5.3	4.3	5.3
Transfers	8.1	11.5	21.9
Debt servicing	4.9	7.9	13.7
External debt	4.4	3.1	4.4

Sources: Computed from MOF data.

As can be seen from Table 3-7 above, a good proportion of the recurrent expenditure is allocated to general services. General service expenditure took on average 51.4 and 60.2 percent of the total recurrent expenditure in the period 1960/61-1973/74 and 1974/75-1990/91. It declined to 39.9 percent during the period 1991/92-1999/00. A bulk of the general services expenditure is defense-spending accounted for 22.0 percent in the Imperial

era. Its share increased to 53.2 percent and 25.1 percent in the Derg regime and EPRDF period, respectively.

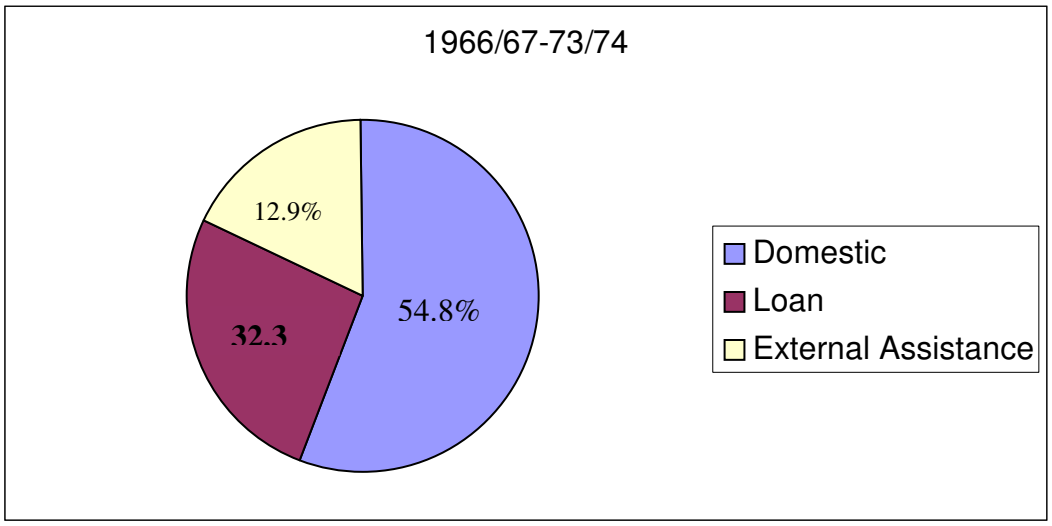
During the Derg period social service expenditure took on average 17.7 percent of total recurrent expenditure of which 12.2 percent and 4.4 percent was taken by education and health services. In the present regime the proportion of recurrent expenditure allocated to social service has increased. This is mainly because the government backs its face in the construction of roads and provision of health services.

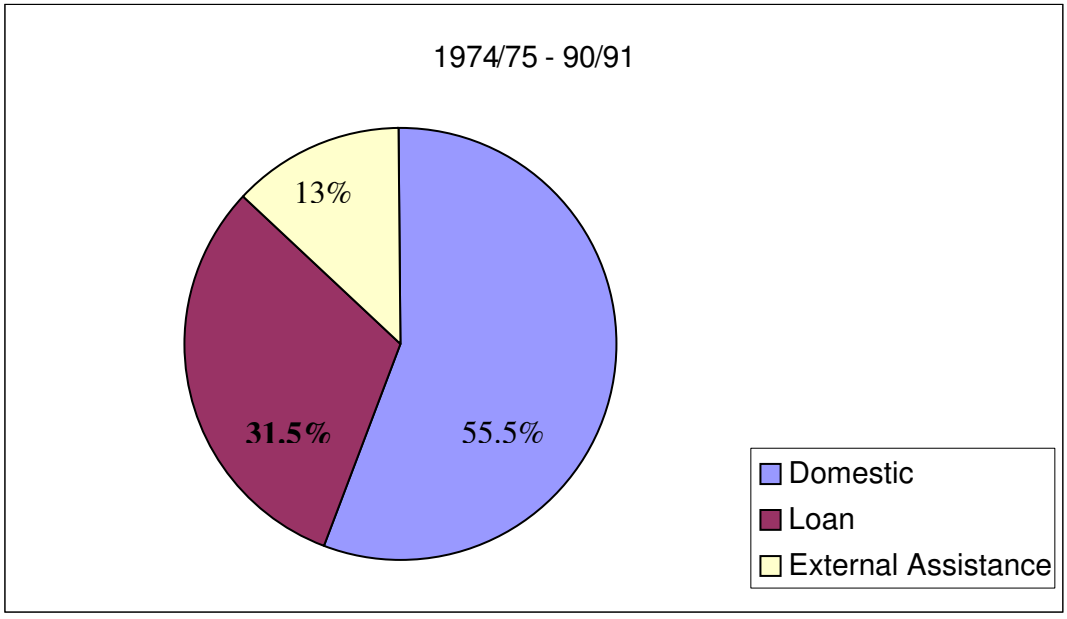
3.6.2.2 Capital Expenditure

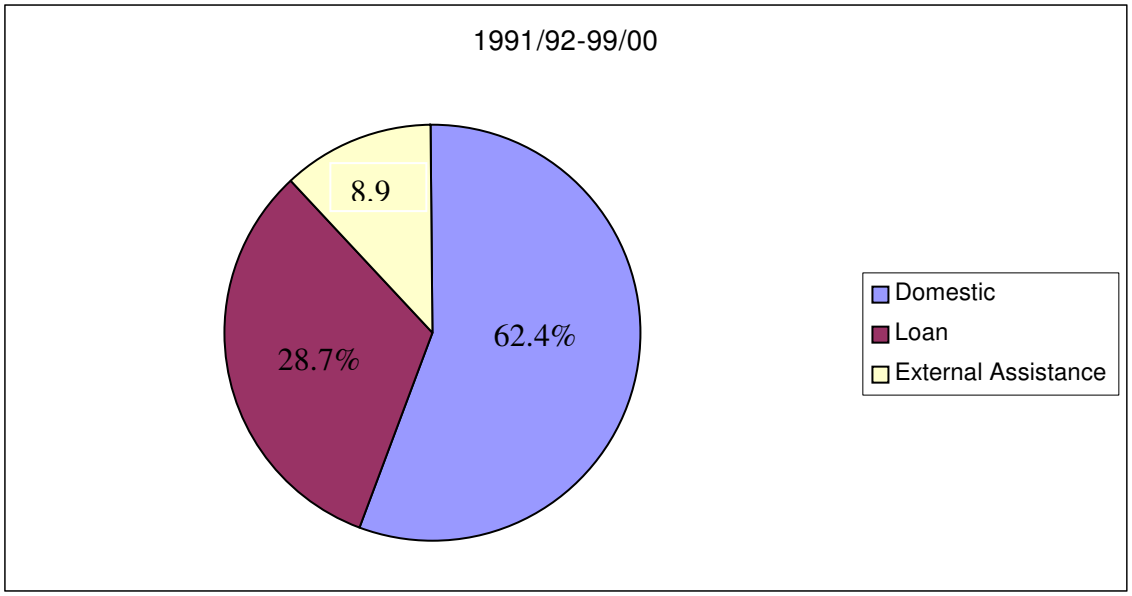
As shown in Table 3-6, capital expenditure accounted on average about 20.8 percent of the total government spending in the Imperial regime. It became 26.6 and 33.5 percent during the period 1974/75-1990/91 and 1991/92-99/00, respectively. Capital spending grew on average by 9.8 percent per annum during the period 1960/61-1973/74. The growth rate increased to 14.6 percent and 18.3 percent per annum during the Derg regime and EPRDF era, respectively. The recent growth in capital expenditure is resulted from massive spending on construction of roads, education, health and water supply [Solomon and Tadele, 1996]

The three major sources of finance to cover the government capital expenditure are the Central Treasury, External assistance and External loan. Their relative contribution as a source of capital finance is indicated in figure 3-5.

Figure 3-5: Source of Capital Expenditure Finance in three regimes.







Allocation from the central treasury cover, on average, about 54.8 and 55.5 percent of total capital expenditure during the period 1966/67-1973/74 and 1974/75- 1990/91,respectively. Its share has increased by 14.4 percent and reached, on average, to 62.4 percent during the period 1991/92-99/00. The explanation for this increment is the inclusion of counter part fund in central treasury.[2]

As indicated in figure 3-5, the government finance on average about 45.2 (12.9 +32.3) and 44.5 (13 + 31.5) percent of its capital spending by external sources (external loans +external grant) during the period 1966/67-1973/74 and 1974/75-1990/91,respectively. It has declined to about 37.6 percent in the post 1991 period. This implies that the government increases the

[2] Counter Part Fund is actually the combination of assistance and loan obtained from different sources and channeled through the national bank of Ethiopia. The NBE distributes the hard currency to importers based on the foreign exchange auction rate and collects Ethiopian Birr and after retaining the service charge, channels the rest to the Ministry of Finance which used the money to cover, among, other things, government expenditure.

reliance on domestic sources of finance, which believed to enhance the implementations rate of development projects by reducing the inefficiencies of disbursement of external loan and assistance.

3.6.3 Government Budget Deficit and its Financing

In early 1950's, the overall fiscal balance in Ethiopia was in surplus and followed by a decade of balanced budget. [Theshome, 1994] The fiscal deficit started to grow following the 1974 revolution. This was partly due to the relatively higher growth of expenditure than revenue caused by the increasing spending on defense.

In the post 1991/92 periods, domestic revenue has fully covered the recurrent expenditure and in the period 1994/95-1997/98, it partly financed the capital expenditure. [See table 3-8] The deviation in the level of fiscal deficit before grant and after grant clearly indicates the massive inflow of external assistance. During the Derg period, average annual deficit were 781.7 and 1097.9 million Birr with grant and with out grant, respectively. In the post 1991 period, the fiscal deficit has increased to 2222.0 and 3387.4 million Birr after and before grant, respectively.

Table 3-8: Government Budget Deficit and its Financing

Item/Periods	1960/61-73/74	1974/75-90/91	1991/92-99/00
Average annual deficit *(in millions of Birr)*			
Excluding Grants	115.4	1097.9	3353.7
Including Grants	47.4	773.2	2188.3
As a ratio of GDP	1.0	6.1	5.7
Domestic Revenue/Recurrent exp.	99.2	92.3	100.7
Domestic Revenue/Total exp.	78.0	67.2	65.5
Financing *(in millions of Birr)*			
External	40.3	332.8	1276.1
Domestic	7.2	440.3	912.5

Source : Computed from the data obtained from MEDaC and MOF.

The fiscal deficit is commonly financed from external assistance and loan; the later includes borrowing from domestic banks and non-bank sources. The magnitude of deficit financing from external borrowing has shown a fluctuating trend since 1974. In general, domestic borrowing followed an increasing trend up until 1990/91 and sharply declined since then. In contrast, external borrowing has increased in the post 1990/91 periods growing at annual average rate of 16.2 percent. This increasing trend of external borrowing and declining trend of domestic borrowing since 1991/92 reveal the shift of financing our deficit from domestic to external sources.

3.7 External Debt

The increased deficit in public finance with current account deficit and the low level of foreign assistance resulted in an increasingly problematic external debt situation and increasing debt servicing obligation. According to World Bank Global Development Finance (1998) Ethiopian's long term debt increased from 169 million US dollar in 1970 to 8843 million US dollar in 1991. This huge increase was due to increasing public finance deficit and current account deficit during the Derg regime. After the 1991 reform the external debt stock increased from 9003 million US dollar in 1992 to 9483 million dollars in 1996 but the rate at which it is growing is less than what is used to be in Derg regime.

The major creditors of long-term debt to the country are official sources consisting of bilateral and multilateral sources. For the last four decades the official creditor's share to total outstanding debt was the dominant. Within the official creditors, the share of bilateral source to total outstanding debt was the dominant during the Derg period. After the 1991 reform the multilateral sources has become an important source of credit.[see World Bank Global Development Finance, 1998]

CHAPTER FOUR

ECONOMETRIC ANALYSIS

4.1 Methodology of the Study

4.1.1 Stationarity and Unit Roots

The standard classical methods of estimation are based on the assumption that all variables are stationary.[3] However, most economic variables are not stationary. Models containing non-stationary variables will often lead to a problem of spurious regression, whereby the results obtained suggest that there are statistically significant relationships between the variables in the regression model when in fact all that is obtained is evidence of contemporaneous correlations rather than meaningful causal relations. Furthermore, inferences based on the standard statistical tests (i.e, t and F tests) will be invalid.

Therefore, it is necessary to test for stationary of time series variables before running any sort of regressional analysis. Often, non-stationary variables become stationary after differencing. Such a variable is said to have difference stationary process (DSP). Thus, it is possible to estimate using difference of variables if the differences are stationary. But such a procedure gives only the short run dynamics. And there would be a loss of considerable long run information.

[3] A given variable (a stochastic) process is said to be stationary if it has a constant mean, constant variance over time, and if the covariance between observations in two time periods depends only on the distance of the lag between the two period rather than the actual time that the covariance is computed. [See Gujrati, 1995]

Among the methods of testing the presence of unit roots in the variables, Dickey-Fuller (DF) and Augmented Dickey-Fuller (ADF) test are used in this study. Based on DF test, the series Y is stationary if the absolute value of 'δ' in the equation

$Y_t = \delta Y_{t-1} + U_t$ 4.1

is less than unity. However, it is not stationary if the absolute value of 'δ' in the above regression is greater than or equal to unity. But testing a null that the absolute value of δ is equal to one is statistically problematic. [See Harris, 1995] Hence, equation (4.1) can be re-written as:

$\Delta Y_t = \alpha Y_{t-1} + U_t$ 4.2

Where, $\alpha = (1-\delta)$

Hence, the null that $\delta=1$ is equivalent to H_0: $\alpha=0$.

However, DF test assumes that the data generating process follows the Auto Regressive of order one [AR(1)] which biases the test in the presence of serial correlation. The ADF test is used to overcome this limitation of DF test. That is why the ADF test is sometimes viewed as a means of conducting a DF test in the presence of auto-correlated errors. The ADF test is identical to the standard DF test but it is constructed within the regression model of the form:

$\Delta Y_t = \alpha Y_{t-1} + \sum \gamma_j \Delta Y_{t-j} + U_t$ 4.3

It follows the DF test explanation for tests of unit root.

4.1.2 Co-integration

Time series variables may be non-stationary but their linear combination is stationary. In such cases, we say there is co-integration (long run relationship) between the variables. Thus, testing for co-integration is almost mandatory. So far, there are two major methods of

testing co-integration: the Engel-Granger two-step procedure (EG) and the Johansen Maximum Likelihood procedure.

In the Engle-Granger two-step procedure, variables entering the co-integrating vector are tested for integration of the same order, order one I (1). Thus, the first step in this procedure is pre-testing the variables for their order of integration. The second step is estimate the long-run equation relationship and obtain the residual. And then test whether the residual is stationary. If it is stationary, then the variables are said to be co-integrated, that is, they do have long run relationship. The last step in Engle-Granger procedure is estimate the error correction model (ECM) including the lagged value of the residual as the explanatory variable. The ECM model is estimated to see the short run relationship between the variables.

We can detect two major defects of the EG procedure. First, it assumes that there is one co-integrating vector even when more than two variables are involved in the analysis. Thus, this procedure will not be applicable in the case where more than one co-integration relationship exists. Second, EG procedure a priori categorizes variables as exogenous and endogenous with an implication of simultaneity problem. The Johanson Maximum Likelihood procedure attempted to avoid the above two defects of EG method. Thus the study follows the Johanson procedure.

The Johanson method is nothing but a multivariate generalization of the Dicky-Fuller test. [Harris, 1995] Hence, given n potentially endogenous variables it is possible to model $\mathbf{X}_t$ as unrestricted vector auto regression (VAR) with p lags of $\mathbf{X}_t$ as:

$X_t = A_1X_{t-1} + A_2X_{t-2} + \ldots + A_pX_{t-p} + U_t$; ……..…….4.5

$Ut \sim IN(0, \Omega)$

Where; $\mathbf{X}_t$ = (n x 1) matrix,

A_i = (n x n) matrix of parameters and

U_t = independently and identically distributed n dimensional vector with vector mean 0 and variance Ω.

The Vector Error Correction (VECM) can be specified as:

$\Delta X_t = \sum \Pi_i \Delta X_{t-i} + \gamma_t D_t + \Pi X_{t-p} + \xi_t$ …….4.6

Where $\Pi = -(I - \sum A_i)$,

$\Pi_i = -(I - \sum A_j)$ and

D = vector of dummies, intercepts and predetermined exogenous variables.

The number of co-integrating vectors can be obtained by checking the significance of the characteristic roots of Π. It is believed that the rank of a matrix (r) is equal to the number of its characteristic roots that differ from zero. Thus, if Π has a full rank (i.e., there are r = n linearly independent columns), then all the variables in $\mathbf{X}_t$ are I(0). While if the rank of Π is zero, then there are no co-integration relationships. If there is reduced rank (that is, there are $r \leq (n-1)$ co-integration vectors), it is possible to represent Π as **αβ'** where **β** is (n x r) vector of long run parameters and (n x r) α matrix represents speed of adjustment to disequilibrum. [Harris, 1995]

The test for the number of characteristic roots that are significantly different from unity can be conducted using the following two test statistics:

$\lambda_{trace}(r) = -T \sum \ln(1 - \lambda_i)$ …….4.7

$\lambda_{max}(r,r+1) = -T \ln(1-\lambda_{r+1})$ ……...4.8

where; λ_i = the estimated values of the characteristic roots (also called eigenvalues) obtained from the estimated Π matrix and

T = the number of usable observations.

The null hypothesis is that the number of distinct co-integration vector is less than or equal to r against a general alternative. Johanson and Juselius (1990) provide the critical values of λ_{max} and λ_{trace} statistics obtained using simulation studies. [Harris, 1995]

4.2 Model Specification

In line with the theoretical propositions reviewed in the literature, the impacts of external assistance are examined specifying the following five equations.

4.3.1 Growth Function

To examine the theoretical avenue between foreign assistance and economic growth, a simple growth model is specified along the Harrod-Domar Growth model.

The Harrod-Domar model is given by:

$g = 1/k(\delta K/Y)$……..…….4.9

Where, g = the growth rate

K= capital

k = the incremental capital output ratio (ICOR)

The δ indicates a change, so that δK indicates the incremental increase in the capital stock. Since there is no accurate capital data in Ethiopia, capital stock is replaced by gross fixed capital investment (I), and obtain equation (4.10)

$g = 1/k\ (I/Y)$……..……..……4.10

Investment can be further replaced by its source of finance including domestic savings (S) and foreign savings proxied by the amount of official development assistance (A).

$I = S + A$……..……...…….4.11

The variable official development assistance is further decomposed into foreign grants (FG) and foreign loans (FL) to see their individual impacts on growth. Then equation (4.11) becomes

$I = S + FG + FL$ …….……..……4.12

Expressed as a proportion of GDP, equation (4.12) can be given by:

$I/Y = S/Y + FG/Y + FL/Y$…….……..……..4.13

In logarithmic form equation (4.13) is expressed as:

$LI/Y = LS/Y + LFG/Y + LFL/Y$ …….…….4.14

For a given value of ICOR, an increase in foreign assistance (foreign grant and/or foreign loan) will raise growth if it positively influences the rate of investment.

4.3.2 Saving Function

To examine the relationship between foreign inflows and saving, the following saving function is specified.

$S/Y = f[PY, F, D, M, RI, IF]$……4.15

Where, S = domestic saving,

PY= per capita income,

F = foreign assistance,

RI = real interest rate,

D = dependency ratio,

M = Money supply and

IF = inflation,

The estimable model in logarithmic form is given as:

$$\ln S/Y_t = \alpha_o + \alpha_1 \ln PY_t + \alpha_2 \ln F_t + \alpha_3 \ln D_t + \alpha_4 \ln M_t + \alpha_5 \ln RI_t + \alpha_6 \ln IF_t + U_t \quad \ldots\ldots 4.16$$

To know the independent impacts of external loan and external grant, foreign assistance can be decomposed into foreign grant (FG) and foreign loan (FL). Then saving equation becomes:

$$\ln (S/Y)_t = \alpha_o + \alpha_1 \ln PY_t + \alpha_2 \ln (FL)_t + \alpha_3 \ln (FG)_t + \alpha_4 \ln D_t + \alpha_5 \ln (RI)_t + \alpha_6 \ln (IF)_t + U_t \quad \ldots\ldots 4.17$$

The following is the justification for the inclusion of each of the variables in the above saving function. A number of studies hypothesized that the level of per capita income has a positive effect on the saving rate. The real interest rate is an important macro-policy variable that is widely cited in the literature. But the sign cannot be predicted because the income and substitution effects work in opposite direction.

Inflation may affect saving independently from its effect through the real interest rate. Theoretically, the effect of inflation on private saving is ambiguous. An uncertainty about future asset values could either discourage saving because of the substitution effect of the lower real rate of return or encourage saving for precautionary motives. As discussed in the literature, foreign saving (foreign inflows) could affect national saving positively or negatively depending on the substitutability and complementarily between saving and foreign assistance.

Demographic factors also have an important influence on aggregate saving. A country's aggregate savings rate is low, ceteris paribus, to the extent that it has more dependent in its population. Thus, one would expect saving rates to be affected negatively by the dependency ratio.

4.3.3 Fiscal Response Model

As discussed in the literature, the fiscal response literature adopts a kind of utility maximization equation that was developed by Heller (1975). But such a function does not depict the fiscal posture of typical African economy.[See Alemayehu and Befekadu, 1998]. Thus, in order to get a relatively better view about the decision makers, the following two equations are specified.

4.3.3.1 Government Tax Revenue

The government tax revenue (TR) is defined to be a function of economic activity (Y) and external assistance (A). In log form it is given as:

$$\ln TR = \beta_0 + \beta_1 \ln Y + \beta_2 \ln A \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 4.18$$

Where: $\beta_1 > 0$; $\beta_2 < 0$.

Through raising tax base economic activity (Y) is believed to have a positive impact upon tax revenue. To identify the independent effect of foreign loan and foreign grant, foreign assistance is decomposed into foreign loan and foreign grant. Hence, equation (4.18) can be expressed as:

$$\ln TR = \beta_0 + \beta_1 \ln Y + \beta_2 \ln FL + \beta_3 \ln FG \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 4.19$$

4.3.3.2 Government Current Expenditure

The government current expenditure (G) is assumed to be positively related to total revenue (R) and foreign inflow (A). The lagged value of the dependent variable is included to portray the persistence of previous patterns of expenditure. Formally,

$\ln G = \gamma_1 + \gamma_2 \ln R + \gamma_3 \ln A + \gamma_4 \ln G_{t-1}$……..……4.20

Where, $\gamma_i > 0$; for i = 1,…,4.

Decomposing foreign inflows into foreign grant and foreign loan, equation (4.20) is given by:

$\ln G = \gamma_1 + \gamma_2 \ln R + \gamma_3 \ln FL + \gamma_4 \ln FG + \gamma_5 \ln G_{t-1}$……..……4.21

4.3.4 Dutch Disease Model

Following Edwards (1989), the dynamics of Real Exchange Rate (RER) behavior could be effectively traced by the following equation:

$\log e_t = \eta[\log e_t^* - \log e_{t-1}] - \delta[Me_t - Me_t^*] + \lambda[\log E_t - \log E_{t-1}]$……4.22

Where, e_t and e_t^* are the actual and the equilibrium RER, respectively. Me_t and Me_t^* are the indices of the actual and the sustainable levels of macro-economic policies, and E is the nominal exchange rate. η,δ and λ are positive parameters.

The first bracketed term is the deviation of the actual rate from its equilibrium level. It puts pressure on the RER to move towards its equilibrium level and the attendant dynamics is captured by the parameter η. The third bracketed term captures the nominal exchange rate policy and its attendant dynamic is captured by λ.

In order to estimate the above equation for RER dynamics, it is first necessary to specify an empirical equation for the equilibrium RER ($\log e_t^*$) and define the macro economic disequilibrum term [$Me_t - Me_t^*$]

Most studies specify a general form of equilibrium RER that employs the "fundamentals" as the key determinants. This formulation is given as:

$$\log e_t^* = \beta_0 + \beta_1 \log (TOT)_t + \beta_2 \log (GC)_t + \beta_3 \log (F)_t + \beta_4 \log (OP)_t + U_t \quad \ldots\ldots 4.23$$

where, TOT = terms of trade,

GC = government consumption of non-tradables,

F = foreign inflows and

OP = a measure of openness of the economy

Assuming that macro economic policies are inconsistent, [$Me_t - Me_t^*$] could be defined by excess supply of domestic credit (EXCD) measured as the rate of growth of domestic credit minus the lagged rate of growth of real GDP, i.e

$$EXDC_t = \{d \log (\text{domestic credit}) - d \log (GDP)_{t-1}\} \quad \ldots\ldots 4.24$$

Replacing equation (4.23) and (4.24) into equation (4.22), the general model used for estimation is:

$$\log e_t = \alpha_0 + \alpha_1 \log (TOT)_t + \alpha_2 \log (GC)_t + \alpha_3 \log F_t + \alpha_4 \log (OP)_t + \alpha_5 \log e_{t-1} + \alpha_6 (EXDC)_t + \alpha_7 (NDEV)_t + U_t \quad \ldots\ldots 4.25$$

Where, NDEV = nominal devaluation

By decomposing foreign inflows into foreign grant (FG) and foreign loan (FL), equation (4.25) becomes:

$$\log e_t = \alpha_0 + \alpha_1 \log (TOT)_t + \alpha_2 \log (GC)_t + \alpha_3 \log (FG)_t + \alpha_4 \log (FL)_t +$$

$$\alpha_5 \log (OP) + \alpha_6 \log e_{t-1} + \alpha_7 (EXDC)_t + \alpha_8 (NDEV)_t +$$

$$+ U_t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 4.26$$

This specification allows the estimated relationship to include developments in the fundamentals and short run variables such as nominal devaluation and foreign inflows.

Even though the central bank has control or influence in the determination of the nominal exchange rate, the real exchange rate depends not only on monetary variables but also on real exchange rate fundamentals. [Edwards (1989), Ghura and Grennes (1993)] These factors of the RER can be examined under two broad categories known as long run and short run determinants. In the short run both monetary and real factors affect the real exchange rate. While only the real factors affect the RER in the long run.

The effect of TOT on the RER is ambiguous and depends on whether the income effect dominates the substitution effect. If the income effect dominates the substitution effect, a rise in TOT will appreciate the equilibrium RER [Edwards (1989), Mwega(1992)]

The exogenous foreign inflows will raise domestic expenditure above the national income, generating excess demand for non-tradable. To restore equilibrium, the relative price of non-tradables has to rise and hence appreciation of the RER.[Edwards (1989), Corden (1980)]

Most conventional analysis regarding trade restriction postulate that a reduction in import tariff (or import Quota) exerts a downward trend on the relative price of importable. This generates excess demand for importable and excess supply of on non-traded goods. To re-

establish equilibrium, the price of non-traded goods will decline. This leads to a depreciation of the RER. The reverse will be true for an increase in import tariff. [Edwards (1989), Mwega(1992)]

An increase in public sector consumption puts demand pressure on non-tradable goods markets. This leads to price increases and hence a real appreciation. Reduced public sector consumption is expected to generate a real depreciation. [Edwards, 1989]

The ability of a nominal devaluation to affect the RER depends on the real exchange rate misalignment and the extent to which the actual macroeconomic policies deviate from their sustainable and consistent levels. Excessive monetary growth also causes the equilibrium RER to appreciate at least in the short run. [Edwards, 1989]

4.4 Data Sources and Description

The data sources of this analysis are the national income accounts of Ethiopia as prepared and compiled by the Ministry of Economic Development and Co-operation (MEDaC), the data base of the Ministry of Finance, quarterly and annual bulletins of the National Bank of Ethiopia, various survey reports and statistical abstracts of the Central Statistical Authority, the database of the Ethiopian Investment Authority, and the International Financial Statistics (IFS) of the International Monetary Fund (IMF).

The period chosen for econometric analysis is 1960/61-1999/2000. But to estimate the saving function the researcher obliged to choose the period 1967/68-1999/2000 depending on the

availability of the data. Regarding foreign grant and foreign loan data, there is a significant statistical discrepancy between domestic and external sources. To be consistent with other dataset used in the analysis, the study stick to the domestic data that is compiled by the Ministry of Finance and entered as sources of capital expenditure.

For the analysis dependency ratio is the relevant variable. It is measured as the ratio of dependent population[4] to working population.[5] Similarly, domestic saving is measured as the residual between GDP and Consumption. The real interest rate is the other important variable used in the analysis. It is simply measured as: [(1+r)/(1+f)]*100 where r is the nominal interest rate and f is the inflation rate.

Based on the Purchasing Power Parity (PPP) approach, the RER is measured as: RER=E P_w/P_c where E is the nominal exchange rate defined as Birr/$, P_w is the foreign wholesale price index and P_c is the domestic consumer price index (CPI). These indices are constructed taking 1980 as a base year.

A term of Trade (TOT) is the other relevant variable in the analysis. It is measured as the ratio of export unit price index to import unit price index where the indices are calculated using Fisher's index formula.[6] These indices are also constructed taking 1980 as a base year. Regarding the openness of the economy, it is proxied by the ratio of total export (X) plus

[4] Those people under age 15(very young) and over 60 (retired).
[5] Those people with the age between 15 and 60.
[6] Fisher's Index Formula:

$$Pf = (P^{1a} + P^{pa})^{1/f} \quad \text{where} \quad P1a = \Sigma P_n Q_o / P_o Q_o \text{..... Lasperyer's Index}$$
$$Ppa = \Sigma P_n Q_n / P_o Q_n \text{ ..... Paachers' Index}$$

Import (M) to GDP.[i.e, (X+M)/GDP)] Nominal devaluation is captured by dummy giving 1 for the years in which devaluation takes place and 0 for the others.

4.5 Estimation Results and Analysis

As explained before, variables entering in the estimation equation are required to be stationary. Accordingly, unit root test is conducted using Dicky-Fuller (DF) and Augmented Dicky-Fuller (ADF) tests. Both tests show that all variables are non-stationary and I(1)except real interest rate which is I(O).[See Appendix 3] The existence of co-integration vector are tested using the Johansens Maximum Likelihood estimation method. The results are summarized as follows.

4.5.1 Results of Growth Function

As it is evident from Table 4-1, the null for no co-integration is rejected while a case of one co-integrating vector is supported by both λ_{max} and λ_{trace} statistics.

Table 4-1: Tests for number of Co-integrating Vectors

Ho: rank=r	$-T \ln(1-\lambda_{r+1})$	λ_{max} (0.95)	$-T \Sigma \log(1-\lambda_i)$	λ_{trace} (0.95)
r=0	30.41*	27.1	58.99**	47.2
r≤1	17.9	21.0	28.58	29.7
r≤2	8.96	14.1	10.68	15.4
r≤3	1.718	3.8	1.718	3.8

** Rejection at 1% level of significance.

* Rejection at 5% level of significance.

Once it is statistically supported that there is one co-integrating vector, the first column of the α-matrix and first row of the β'matrix are relevant. And α_{11} (= -0.43) represent the speed of adjustment with expected sign and statistically significant. [See Table 4-2]

Table 4-2: Results of Co-integration analysis (PCFMIL output)

(a) Standardized β' Eigenvectors

LI/Y	LS/Y	LFG/Y	LFL/Y
1.0000	-0.4347	2.1699	-0.3269
-0.6945	1.0000	-3.8776	7.3277
0.4035	0.0744	1.0000	-0.1327
-2.0536	2.8846	-2.9546	1.0000

(b) Standardized α-coefficients

LI/Y	-0.4329	-0.0097	-0.5685	-0.0142
LS/Y	0.0546	0.0313	-0.1777	-0.0395
LFG/Y	0.2707	0.0008	-0.0653	0.0027
LFL/Y	0.1340	-0.1075	-0.0584	0.0031

A test for weak exogeneity is conducted by imposing a zero-restriction on the α-coefficients of the first column using LR-test[7] and the results are summarized in appendix 4-1. According to this result, the zero restriction on α coefficients does not reject the null hypothesis which means that all the variables are weakly exogenous.

[7] The LR-test statistic used for the restrictions is given by $-2 \log (Q) = T \Sigma \log (1-\lambda_i^*)/(1-\lambda_i)$ where, Q = (restricted maximized Likelihood)/(Unrestricted Maximized Likelihood), T = number of observations, r = rank, and λ_i and λ_i^* are eigenvalues for unrestricted and restricted model, respectively. [Harris, 1995]

The long run coefficients of the respective variables should be tested for significance to determine which variables uniquely constitute the co-integration vector. Thus, a zero-restriction again is imposed on each β coefficient and the results for the LR-statistics are summarized in appendix 4-1. According to this result, foreign loan is insignificant while foreign grant is significant. Hence, the single equation model with the estimates of the long-run coefficients can be written as:

LI/Y = 0.4347 LS/Y - 2.1699 LFG/Y + 0.3269 LFL/Y

The coefficient of foreign grant is found to be negative and significant while foreign loan is positive and insignificant. This indicates that foreign grant inflows negatively affects the investment rate and hence the growth rate.

Once a case of one co-integrating vector is supported and all the variables are weakly exogenous, the short run dynamics is estimated using the general to specific modeling approach based on Ordinary Least Square (OLS) techniques. The results are summarized in Table 4-3.

Table 4-3: Results of the VECM

Dependent Variable: DLI/Y			
Variables	Coefficients	t-prob.	
Constant	0.0014	0.0063	Diagnostic Tests
DLS/Y-1	0.4687	0.0001	AR 1-2 F(2.30) = 1.0397[0.3659]
DLFG/Y	-0.0903	0.0010	ARCH 1 F(1,30) = 1.9126[0.1769]
VLI/Y-1	-0.4291	0.0014	Normality χ^2 (2) = 0.9789 [0.6129]
R^2 = 0.54			Xi ^ 2 F(8,23) = 0.6065 [0.7630]
F(4,32) = 9.5872 [0.0000]			Xi ^ Xj F(14,17) = 1.2584 [0.3225]
DW = 2.03			RESET F(1,31) = 0.00017 [0.9896]

The Breush-Pagan test of higher order serial correlation up to two lags (AR and ARCH), the test for normality based on skiwness and kurtosis (Normality χ^2), the white test of heteroscedasticity (Xi ^ 2) , the specification/heteroscedasticity test (Xi ^ Xj) , the RESET test of functional form did not detect any statistical problems. The adjusted R-square is reasonably high and the calculated F- statistics is significant indicating that the variables included in the equation explain the dependent variable. The coefficient of the vector error correction term is significant with expected sign and reasonable magnitude [VLI/Y-1 = -0.42]. Thus, it takes more than two years to adjust fully.

It is evident from the short run result that foreign grant has negative and statistically significant impact on the investment ratio (and hence growth). But foreign loan has insignificant effect on the investment ratio and hence growth of the economy. The negative

impact of foreign grant on growth is in conformity with cross country and time series empirical evidences reported in the literature. But it is contrary to the expectations and philosophy of both donors and recipients. To explain this observed irregular relationship between foreign assistance and growth, the study carried out a series of investigation on the impacts of foreign assistance on saving, fiscal system of the country and the 'Dutch Disease' effect.

4.5.2 Results of Saving Function

Like to the growth function, the existence of co-integration vectors has been tested. As evidenced from table 4-4, both λ_{max} and λ_{trace} statistics support the existence of one co-integrating vector. Thus, the first row of the β matrix represents the long run coefficients and α_{11} (= -0.5596) indicates adjustment towards the long run steady state path. The sign and magnitude is fairly reasonable.[See Table 4-5]

Tests for vector serial correlation is checked before estimation to avoid possible multicollinearity. It is found that real interest rate (RI) and inflation rate (IF) are highly correlated and hence the variable (IF) is dropped from the analysis.

Table 4-4: Tests of Number of Co-integrating Vectors

H0: rank=r	$-T \ln(1-\lambda_{r+1})$	λ_{max} (0.95)	$-T \Sigma \log(1-\lambda_i)$	λ_{trace} (0.95)
r=0	52.2**	39.4	122.8**	94.2
r≤1	26.43	33.5	67.56	68.5
r≤2	19.34	37.1	41.14	47.2
r≤3	14.14	21.0	21.8	29.7
r≤4	7.065	14.0	7.662	15.4
r≤5	0.5971	3. 8	0.5971	3.8

** Rejection at 1% level of significance.

Table 4-5. Results of Co-integration Analysis [PCFMIL output]

(a) Standardized β' Eigenvectors

LS/Y	LFG/Y	LFL/Y	RI	LPY	LDP
1.0000	9.8486	-1.8115	9.5623	-52.877	71.160
-2.5272	1.0000	-1.0147	-1.2149	0.05568	0.00011
3.4333	0.0098	1.0000	4.9729	0.00023	3.1237
6.1713	-22842.0	12382.0	1.0000	0.12651	47.183
-8.1439	-1941.0	23509.0	0.4499	1.0000	2.8421
-1.1898	16958.0	12414.0	0.02968	9.1722	1.0000

(b) Standardized α-coefficients

LS/Y	-0.55962	3882.2	-777.66	-0.0026	0.045
LFG/Y	2.4468	-0.094509	-0.24801	1.1685	3.8539
LFL/Y	5.0075	0.40539	-0.21399	3.2774	-9.9554
RI	-0.10976	4438.8	-8478.8	-0.011317	-0.07006
LPY	0.000772	296.64	368.71	-0.001386	-0.001012
LDP	0.000647	-729.82	395.24	-0.011618	0.002193

For this particular analysis, a test for weak exogenity is conducted by imposing a zero restriction on the α-coefficients using LR-test. The results are indicated in appendix 4-2. As the appendix shows the test for zero restrictions on α-coefficients do not reject the null (i.e. all the variables under consideration are weakly exogenous.) Thus, the single equation model with estimates of long run coefficients can be written as:

LS/Y = -9.8486 LFG/Y + 1.8115 LFL/Y - 9.5623 RI + 52.877 LPY - 71.160 LDP

The significance of these long run coefficients should be tested to determine which variables uniquely constitute the co-integrating vector. Accordingly, again a zero-restriction is imposed on each coefficient and the results for the LR-statistics are summarized in appendix 4-2.

As shown in appendix 4-2, both foreign grant and foreign loan are found to be statistically insignificant indicating the external assistance did not affect the saving ratio in Ethiopia. One possible reason is that rather than being saved, the foreign inflows might be consumed over the period under consideration. Real interest rate, per capita income and dependency ratio are found to be the important determinants of domestic saving in Ethiopia.

As explained before, in this particular analysis a case of one co-integrating vector is supported and all the variables are weekly exogenous. Thus, the Parsimonious Vector Error Correction Model (PVECM) is estimated using OLS technique. The parsimony can be achieved by removing the insignificant regressors. Accordingly, the results are summarized as follows:

Table 4-6: Results of VECM

Dependent Variable: DLS/Y			
Variables	Coefficients	t-prob.	
Constant	-0.155	0.0205	Diagnostic Tests
DLS/Y-1	0.291	0.0035	AR 1-2 F(2,22) = 0.056435[0.9453]
DLPY	0.178	0.0019	ARCH 1 F(1,22) = 0.0018097[0.9665]
DLPY-1	1.08	0.0055	Normality χ^2 (2) = 1.866 [0.3934]
DRI	-0.060	0.0012	Xi ^ 2 F(10,13) = 2.3683 [0.0736]
VLS/Y-1	-0.5599	0.0001	RESET F(1,23) = 0.0060289 [0.9388]
R^2 = 0.47 F(4,32) = 4.2573 [0.0003] DW = 2.03			

The estimated short run model has quite acceptable diagnostic tests. The coefficient of the vector error correction term is significant with expected sign and reasonable magnitude (-0.56), which approximates the coefficient in the first row of the α-matrix, i.e. $\alpha_{11.}$ so, it takes about two years to adjust fully.

Like the long run model, both foreign grant and foreign loan do not have statistically significant impact on the saving ratio. This might be one of the reasons for the irregular relationship between external inflows (or foreign grant) and growth rate that is empirically tested before. Real interest rate and per capita income are found to be significantly affected domestic saving.

4.5.3 Results of Fiscal Response Model

(a) Government Tax Revenue

Before estimating the equation with non-stationary variables, a test for number of co-integrating vectors is carried out. As Table 4-7 below indicates, both λ_{max} and λ_{trace} tests for reduced rank shows that it is possible to reject the null for no co-integration.

Table 4-7: Tests for number of Co-integration Vectors

Ho: rank=r	-T ln(1-λ_{r+1})	λ_{max} (0.95)	-T Σ log(1-λ_i)	λ_{trace} (0.95)
r=0	60.03**	31.5	97.22**	63.0
r≤1	21.05	25.5	37.2	42.4
r≤2	13.95	19.0	16.15	25.3
r≤3	2.201	12.3	2.201	12.3

** Rejection at 1% level of significance.

In addition, the result of co-integration analysis is summarized in Table 4-8. Since the test for number of co-integration vector supported the existence of one co-integrating vector, the first row of the β' coefficient represent the coefficient of long run parameters and α_{11} (= -0.33) indicates the speed of adjustment to disequilibrum.

Table 4-8: Results of Co-integration Analysis.

(a) Standardized β' Eigenvectors

LTR	LGDP	LFG	LFL	Trend
1.0000	-2.1321	-0.43868	-1.6216	0.22628
2.5323	1.0000	-1.6184	-0.49849	-0.10917
3.6005	-1.6768	1.0000	0.45570	-0.41454
2.6230	-8.5321	-1.3155	1.0000	0.48508

(b) Standardized α-coefficients

LTR	-0.338020	0.016517	-0.059031	-0.0067045
LGDP	0.0090342	-0.017501	-0.023295	0.0038163
LFG	0.034841	0.37645	-0.082877	0.0064474
LFL	0.46033	0.072390	-0.13072	-0.035690

The tests for zero restriction on α-coefficients do not reject the null (See appendix 4-3) that all the variables are weakly exogenous. Therefore, the single equation model with estimates of long run coefficients can be written as:

LTR = 2.1321 LY + 0.43868 LFG + 1.6216 LFL - 0.022628 Trend

Similarly, a zero-restriction is imposed on each long run parameters to test their significance using LR-test. Accordingly, both foreign grant and foreign loan are found to be statistically significant. But, contrary to the theoretical literature, the signs of both foreign grant and foreign loan are positive.

So far, the existence of long run relationship is statistically assured and the associated long-run parameters are determined. To complete the analysis in the Johansen framework, one has to estimate the coefficient of the short run dynamics. Accordingly, the short run dynamics is estimated using the ordinary OLS method and the results are shown in Table 4-9.

Table 4-9: Results of VECM

Dependent Variable: DLTR			
Variables	Coefficients	t-prob.	
Constant	1.0795	0.6256	Diagnostic Tests
DLTR-1	0.1124	0.0010	AR 1-2 F(2.31) = 0.78952[0.3837]
DLGDP-1	0.0567	0.0024	ARCH 1 F(1,31) = 0.46872[0.5011]
VLTR-1	-0.3561	0.0000	Normality χ^2 (2) = 0.46091 [0.7265]
R^2 = 0.6285			Xi ^ 2 F(8,23) = 0.46093 [0.7942]
DW = 1.98			Xi ^ Xj F(14,17) = 0.4921 [0.8425]
			RESET F(1,31) = 1.4592 [0.1426]

The diagnostic tests of the short run model do not detect statistical problems. The coefficient of the vector error correction term is significant with expected sign and reasonable magnitude, i.e, –0.35, which approximates the coefficient of $\alpha_{11.}$ Thus, it takes about three years to adjust fully.

Unlike the long run model, the coefficients of both foreign grant and foreign loan are found to be statistically insignificant. This indicates that the financial assistance coming to Ethiopia could not affect the government tax revenue. It might be due to the size of the assistance that

was not big enough to affect the tax system of the country. Lagged values of GDP and tax revenue are found to be significantly affected the tax revenue in the country.

(b) Government Consumption Expenditure

As shown in Table 4-10, the null for no co-integration is rejected and the existence of one co-integrating vector is supported by both λ_{max} and λ_{trace} statistics.

Table 4-10: Tests for number of co-integrating vector.

H0: rank=r	$-T \ln(1-\lambda_{r+1})$	λ_{max} (0.95)	$-T \Sigma \log(1-\lambda_i)$	λ_{trace} (0.95)
r=0	33.46**	27.1	70.62**	63.0
r<=1	23.1	25.5	37.15	42.4
r<=2	9.825	19.0	14.06	25.3
r<=3	4.23	12.3	4.23	12.3

** Rejection at 1% level of significance.

Since it is statistically supported that there is one co-integrating vector, the first column of the α-matrix and the first row of the β' matrix are relevant. And α_{11} (= -0.52) represent the speed of adjustment to the steady state level with expected sign and it is statistically significant.[See Table 4-11]

Table 4-11. Results of Co-integration Analysis [PCFIML output].

(a) **Standardized β' Eigenvectors**.

LG	LTR	LFG	LFL	Trend
1.0000	-0.7738	-0.37284	-0.75930	-0.054481
-1.1882	1.0000	-0.28931	0.37508	0.0006505
-1.2402	1.8677	1.0000	0.054846	-0.16508
2.0792	1.0534	-3.5714	1.0000	-2.0045

(b) Standardized α-coefficients

LG	-0.52264	0.16867	0.017023	-0.0064404
LTR	0.14224	0.068932	-0.081622	-0.007866
LFG	-0.49176	0.41044	-0.19590	0.0059057
LFL	-0.60792	-0.7317	-0.21081	-0.017030

Tests for vector serial correlation is carried out to examine the degree of possible multicollinearity among the regressors. Accordingly total revenue(R) and foreign loan are highly correlated. To overcome this multicolinaerity problem total tax revenue (TR), instead of total revenue is used.

A zero restriction is imposed on both α-coefficients and β-coefficients to test the weak exogenity and significance of long run coefficients, respectively. [See appendix 4-4] According to the result, the zero restriction on α-coefficients does not reject the null. That means all the relevant variables are weakly exogenous. Moreover, both the coefficient of

foreign grant and foreign loan are found to be statistically significant. The single equation model with the estimates of the long run coefficients can be written as:

LG = 0.7738 LTR + 0.3728 LFG + 0.7593 LFL + 0.054 Trend

According to the above result, both foreign grant and foreign loan positively affect the government consumption that confirms with the theoretical avenue. Similarly, tax revenue positively affects the government current expenditure.

Since it is evidenced that the variables are weakly exogenous and the existence of one co-integrating vector is supported, the short run dynamics is estimated using the usual OLS method of estimation.[See Table 4-12]

Table 4-12: Results of VECM

Dependent Variable: DLG			
Variables	Coefficients	t-prob.	
Constant	-0.0294	0.3532	Diagnostic Tests
DLG-1	0.7891	0.0007	AR 1-2 F(2.30) = 0.076131[0.9269]
DLTR-1	0.42668	0.0012	ARCH 1 F(1,30) = 0.10457[0.7487]
DLFG	0.0626	0.0006	Normality χ^2 (2) = 1.1584 [0.5603]
VLG-1	-0.5354	0.0002	Xi ^ 2 F(8,23) = 0.49691 [0.8458]
R^2 = 0.529			Xi ^ Xj F(14,17) = 0.3552 [0.9718]
F(4,31) = 8.9882[0.0001]			RESET F(1,31) = 0.38152 [0.5413]
DW = 1.87			

The diagnostic tests reported above show that the estimated short run model is quite acceptable. The overall fit of the regression as given by the value of R^2 (=53%) is quite good for transformed variables. The speed of adjustment mechanism (VLG_1) indicates that the past rate of government consumption from its equilibrium level is adjusted in the current period by about 53%. So, it takes about two years to adjust fully.

The above result also shows that the short run coefficient of foreign grant is found to be positive and statistically significant. Thus it supports the hypothesis that foreign inflows encourage governments to increase public consumption.

4.5.4 Results of 'Dutch Disease' Model

Similar to the previous models the existence of co-integrating vectors has been tested for the Dutch Disease model. (See Table 4-13) The λ_{max} statistics indicates the existence of one co-integrating vector. But the λ_{trace} statistics supports the existence of two co-integrating vectors. Since λ_{max} statistics is more powerful than the λ_{trace} statistics [Harris, 1995], we can support the existence of only one co-integrating vector. Hence, the first column of the α-matrix and the first row of the β-coefficient are relevant for the analysis.[See Table 4-14]

Table 4-13: Tests for number of co-integrating vector.

H0: rank=r	$-T \ln(1-\lambda_{r+1})$	λ_{max} (0.95)	$-T \Sigma \log(1-\lambda_i)$	λ_{trace} (0.95)
r=0	60.56**	45.3	164.1**	124.2
r≤1	38.4	39.4	103.5**	94.2
r≤2	24.52	33.5	65.14	68.5
r≤3	20.09	27.1	32.93	47.2
r≤4	14.1	21.0	20.53	29.7
r≤5	6.072	14.1	6.436	15.4
r≤6	0.3642	3.8	0.3642	3.8

** Rejection at l% level of significance.

Table 4-14. Results of Co-integration Analysis [PCFIML output].

(a) Standardized β' Eigenvectors.

LRER	LTOT	LOP	LFG	LFL	EXDC	NDEV
1.0000	0.0009	-2.7345	1.2944	0.365	3.922	0.34674
-0.1433	1.0000	-0.40433	0.0009	0.122	1.489	0.91742
-0.5628	-0.7620	1.0000	-0.3758	0.514	2.695	-0.25071
-0.0059	1.8768	1.2353	1.0000	-0.413	-1.777	-0.56723
-0.3964	3.4794	-11.725	1.3858	1.0000	-4.099	2.5358
-0.0668	1.2605	0.886	-0.0133	0.684	1.0000	-2.1196
0.57365	-5.2988	12.554	0.48582	2.592	2.0609	1.0000

(b) Standardized α-coefficients.

LRER	-0.56746	0.62085	0.86904	0.26746	0.067825
LTOT	-0.059422	-0.27775	0.15010	-0.16502	-0.0028797
LOP	0.022011	0.12087	-0.00090	-0.05105	0.022178
LFG	-0.050670	0.39045	-0.19288	-0.06094	-0.032044
LFL	0.21158	-0.18546	0.04855	0.25475	-0.012418
EXDC	-0.11902	-0.12041	0.65426	0.06757	0.011873
NDEV	0.031458	-0.087615	0.054726	-0.07170	0.033763

Test for vector serial correlation is conducted to avoid the possible multicollinearity among the variables. Accordingly it is identified that foreign grant and government consumption are highly correlated and hence the variable government consumption (GC) is dropped in the estimation.

Weak exogeneity test is conducted by imposing zero restriction on relevant coefficients using LR-test. The result is indicated in appendix 4-5. According to this result all the α-coefficients are weakly exogenous at 1% level of significance. Therefore, the single long run equation can be written as:

LRER = -0.0009 LTOT + 2.7345 LOP - 1.2944 LFG - 0.365 LFL

- 3.922 EXDC - 0.34674 NDEV

Here again, zero restrictions are imposed on long run coefficients using LR-test.[See appendix 4-4] to test the significance of long run parameters. According to the result, it is found that foreign grant is significant while foreign loan is insignificant. The last task in

Johansen framework is estimating the parsimonies error correction model using Ordinary Least Square (OLS) method of estimation. The result is shown in 4-15.

The diagnostics tests reported above show that the 'Dutch Disease' model is reasonably acceptable. It is evident that the coefficient of determination of the equation is reasonably high for transformed variables. Moreover, the calculated F-statistic is 9.34 and significant

Table 4-15: Results of VECM

Dependent Variable: DLRER			
Variables	Coefficients	t-prob.	Diagnostic Tests
Constant	0.024	0.0031	AR 1-2 F(2,24) = 1.9301[0.1670]
DLTOT-1	-0.97	0.0096	ARCH 1 F(1,24) = 0.11162[0.7361]
DLOP-1	2.42	0.0027	Normality χ^2 (2) = 1.7015 [0.3637]
DLFG	-1.36	0.0046	Xi ^ 2 F(14,11) = 1.289 [0.3406]
DLFL	-0.49	0.0066	RESET F(1,25) = 3.538 [0.0717]
DEXDC	-3.204	0.0034	
VLRER-1	-0.58	0.0000	
R^2 = 0.77			
F(4,31) = 9.3465[0.0000]			
DW = 1.97			

at 1% level, indicating that the variables included in the equation are important in explaining the RER. The coefficient of the vector error correction term is significant with expected sign and reasonable magnitude (VLRER-1 = -0.58)

The result shows that, in the short run, both foreign grant and foreign loan negatively affect the RER and both of them are statistically significant. Thus, both foreign grant and foreign loan have 'Dutch Disease' effect in Ethiopia. Beyond, external assistance (foreign grant and foreign loan) terms of trade and policy inconsistencies negatively affected the RER. But, openness of the economy positively affects the RER in Ethiopia.

CHAPTER FIVE

CONCLUSIONS AND POLICY IMPLICATIONS

5.1 Conclusions

In development literature it has been believed that foreign assistance has been taken as one of the strategies of development for least developed countries. Ethiopia has received external assistance since the 1950s but the economy has been growing downwards. Hence, examining the impacts of external assistance on the economic performance of the economy is the main objective of the thesis.

Different theories have been proposed in an attempt to explain the relationship between foreign assistance and economic growth. During the 1960's people believed that capital inflows accelerate growth through supplementing the level of domestic saving or increasing the rate of domestic capital formation. However, 'the radicals' in the 1970's believed that rather than being the engine of growth, foreign aid can be a substitute for saving and a large fraction of it is used for increasing consumption instead of investment. They also believed that aid might lead to a decline in public savings through lowering tax revenues, as government reduces the effort to collect the tax. The radicals also emphasized the possibility that foreign capital inflows induce an appreciation of the real exchange rate. Hence, it would be appropriate to analyze the effects of external inflows on investment and/or saving, government tax revenue and consumption and real exchange rate separately.

The poor performance of the Ethiopian economy has made external assistance a prominent feature of the country's economic structure. Since 1974 the country has grown more and

more dependent on external assistance. For the last four decades foreign assistance has been growing at average rate of 20.5 percent accounting for about 4.5 percent of GDP. However, the economy has been growing down wards contrary to the expectations of donors and recipients.

With such background the study uses both descriptive and econometric techniques to identify the macroeconomic impacts of external assistance in its disaggregated form (i.e. foreign grant and foreign loan). Accordingly, it is found that foreign assistance negatively affects the investment rate and hence the growth rate of the country. This is contrary to the philosophy of both donors and recipients. To examine this irregularity, it has been important to investigate the impacts of foreign inflows on other macro variables that could affect the growth rate. Thus, the study carried out a series of investigations on the effects of external assistance on saving, government tax revenue, government current expenditure, and real exchange rate. The conclusions of each of them are summarized as follows:

1. The long run analysis found that both foreign grant and foreign loan are statistically insignificant in the saving equation. In the short run too, both foreign grant and foreign loan are statistically insignificant. This implies that external assistance in Ethiopia did not have any effect on the saving rate of the country. This might be one of the reasons for the irregular negative relationship between foreign assistance and economic growth of the economy.

2. Theoretically, it has been believed that foreign assistance (foreign aid) leads to a decline in public savings through lowering tax revenues, as government reduces either tax levels or effort. But both the long run and short run analysis found that both foreign loan and foreign grant have no significant impact on the government tax revenue.

However, foreign grant positively affects the government consumption supporting the hypothesis that foreign assistance encourages governments to increase public consumption. This might also be the other factor for the negative relationship between external assistance and economic growth of the country.

3. Finally, the analysis found that foreign grant negatively affects the real exchange rate. In the short run, both foreign grant and foreign loan have the 'Dutch Disease' impact [i.e. they appreciate the real exchange rate.]

In sum, the insignificant effect of foreign assistance on saving rate and, the positive effect on government consumption, and the 'Dutch Disease' impact are the responsible factors for the negative impacts of external assistance on the economic growth of the Ethiopian economy.

5.2 **Policy Implications**

The study has provided empirical evidences on the impacts of external assistance at its disaggregate level on the domestic saving, government income, government spending, real exchange rate and economic growth in general. These empirical findings highlight a number of useful policy and theoretical implications for development.

One immediate implication of the analysis is that foreign loan had almost no impact on the growth of the economy. This might be due to the minimal amount of loan coming to the country. This suggests that increasing inflow of foreign loan is important to minimize the problem of capital shortage. However, foreign grant had a negative effect on investment, government behavior (i.e. increase in government consumption). This could be explained by misuses of this capital during the period under consideration. Hence, it is vital to use these resources efficiently to revert the adverse effect of external assistance on the growth of the economy.

In a country that is among the poorest in the world with 85% of the population eking out means of survival from agriculture a proper use of resources should have focused poverty eradication and should have target this linchpin of survival. Unfortunately, the gaps to be filled are too big to be easily brooked by the government nor by the volume of assistance that has been forth coming. Hence, the only option for successfully transferring from external assistance in Ethiopia is through increased but more refined volume of aid focused on the rural population targeting human capacity building to increase their productivity.

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APPENDIX 1

Relative Contribution Factor

A sector, which accounts for a major part of GDP may not necessarily contribute to growth of GDP significantly. The vary simple method to determine the contribution of a sector to growth in GDP in relation to its contribution to GDP is to look at the ratio of the percentage contribution of a sector to its share in GDP. It is simply calculated as the ratio of growth rate in the value-added of a sector to growth rate in GDP. That is:

$$\Phi = [g_i^*/g] / [Y_i/Y] = \{g_i [(Y_i/Y)/g]\}/ (Y_i/Y) = g_i /g$$

Where g = growth rate in GDP

g_i = the growth rate of value added in the i^{th} sector

Y_i/Y = the share of the i^{th} sector in GDP

Φ = relative contribution factor

If a sector contributes to growth as much as its share in GDP, Φ equals 1, if a sector is contributing to growth less than its share in GDP, $\Phi < 1$, and if the share of the growth rate of a sector in the growth rate of GDP is greater than its share in GDP, then $\Phi > 1$.

APPENDIX 2

UNIT ROOT TEST

Variables	DF		ADF	
	With drift	With drift and trend	With drift	With drift and trend
LS/Y	-1.5409	-2.6068	-1.2789	-2.3272
LI/Y	-2.0071	-3.0282	-2.2234	-2.1640
LFG/Y	-2.1537	-2.8936	-2.7354	-3.6936
LFL/Y	-2.9405	-3.3084	-2.2330	-4.1121
RI	-6.4410	-3.8716	-3.9835	-6.5260
LY	-1.6374	-0.76551	-2.2916	-0.7655
LPY	-0.4178	-1.6549	-0.1987	-0.9786
LDP	-0.0911	-3.2537	-2.1418	-2.0190
LTR	-0.7823	-2.5811	-0.80815	-3.1107
LG	-0.13616	-1.8236	-0.12015	-2.3554
LR	-0.41253	-2.2752	0.38924	-2.5685
LRER	-2.5240	-2.4371	-2.4231	-3.1325
LTOT	-1.9144	-4.0720	-1.0242	-3.9896
LOPNESS	-0.85739	-1.8399	-0.99153	-1.9875
EXDC	-2.2662	-2.3289	-2.3810	-2.4475
LFG	-1.6394	-2.0054	-1.1418	-1.0190
LFL	-0.5470	-1.9876	-0.9845	-0.7968
DLS/Y	-3.6569	-6.8847	-4.0566	-3.9943
DLI/Y	-8.5421	-8.4323	-3.7328	-3.6718
DLFG/Y	-7.3276	-7.2325	-7.1807	-7.1195
DLFL/Y	-7.9753	-7.8252	-6.6124	-6.5013
DRI	-10.786	-10.583	-6.0582	-.5.8618
DLY	-6.2368	-7.2665	-5.4378	-3.6133
DLPY	-3.0675	-3.6745	-6.7894	-6.9219
DLDP	-3.3441	-5.2972	-3.7044	-4.4238
DLTR	-5.4474	-5.3809	-4.0065	-3.9525
DLG	-4.7894	-6.3079	-3.4865	-3.3671
DLR	-6.3337	-6.3079	-3.2873	-3.7843
DLRER	-9.5664	-9.4244	-6.7242	-6.6315
DLTOT	-7.0122	-6.9042	-6.0015	-5.9120
DLOPNESS	-5.5055	-5.5303	-3.5503	-3.5962
DEXDC	-13.398	-13.201	-5.7730	-56892
DLFG	-7.3345	-6.0842	-3.8723	-3.3716
DLFL	-4.9812	-6.9835	-3.8740	-3.3018
Critical Values				
at 5%	**-2.94**	**-3.531**	**-2.945**	**-3.539**
at 1%	**-3.62**	**4.216**	**-3.623**	**-4.232**

APPENDEX 4-1

Growth Function

1. Test for zero-restriction of α-coefficients

	LS/Y	LFG/Y	LFL/Y
LR-test: $\chi^2(\approx 1)$	0.075311	1.075311	1.1476
P-value	(0.6901)	(0.4901)	(0.2841)

2. Test of zero-restrictions on the Long run parameters

	LS/Y	LFG/Y	LFL/Y
LR-test: $\chi^2(\approx 1)$	7.3579	8.9042	0.24689
P-value	(0.0067)**	(0.0028)**	(0.6193)

** Rejection at 1% level of significance.

APPENDIX 4-2

Saving Function

Tests for zero-restrictions of α-coefficients

	LFG/Y	LFL/Y	RI	LPY	LDP
LR-test: $\chi^2(\approx 1)$	0.92973	2.7357	2.159	3.8254	0.34117
P-value	(0.3349)	(0.0981)	(0.0765)	(0.0505)	(0.5592)

Test of zero-restrictions on the Long run parameters

	LFG/Y	LFL/Y	RI	LPY	LDP
LR-test: $\chi^2(\approx 1)$	0.014243	2.5404	2.1239	4.4796	8.5941
P-value	(0.9050)	(0.1110)	(0.000)**	(0.0343)**	(0.0034)**

** Rejection at 1% level of significance.

APPENDIX 4-3

Government Tax Revenue Function

1. Tests for zero-restrictions of α-coefficients

	LFG	LFL	LY	Trend
LR-test: $\chi^2(\approx 1)$	0.15082	0.1816	0.52152	3.7392
P-value	(0.6978)	(0.5201)	(0.4702)	(0.0532)

2. Test of zero-restrictions on the Long run parameters

	LFG	LFL	LY	Trend
LR-test: $\chi^2(\approx 1)$	35.188	13.91	2.5648	12.228
P-value	(0.0000)**	(0.0002)**	(0.1093)	(0.0005)**

** Rejection at 1% level of significance.

APPENDIX 4-4

Government Consumption Function

1. Tests for zero-restrictions of α-coefficients

	LR	LFG	LFL	Trend
LR-test: $\chi^2(\approx 1)$	3.8153	4.9521	3.3861	2.8215
P-value	(0.0508)	(0.0561)	(0.0657)	(0.0930)

2. Test of zero-restrictions on the Long run parameters

	LR	LFG	LFL	Trend
LR-test: $\chi^2(\approx 1)$	7.0984	3.6567	8.0309	2.2292
P-value	(0.0077)**	(0.0058)**	(0.0046)**	(0.1354)

** Rejection at 1% level of significance.

.

APPENDIX 4-5

Dutch Disease Model

1. Tests of zero-restrictions on α-coefficients

	LTOT	LOPNESS	LFG	LFL	EXDC	NDEV
LR-test: $\chi^2(\approx 1)$	1.5415	0.78319	0.5274	5.218	1.273	1.0509
P-value	(0.2144)	(0.3762)	(0.4677)	(0.0223)*	(0.3591)	(0.3053)

2. Test of zero-restrictions on the Long run parameters

	LTOT	LOPNESS	LFG	LFL	EXDC	NDEV
LR-test: $\chi^2(\approx 1)$	1.9149	10.487	17.323	2.9237	7.9822	0.38167
P-value	(0.1664)	(0.0012)**	(0.0000)**	(0.0873)	(0.0047)**	(0.3367)**

** Rejection at 1% level of significance.
* Rejection at 5% level of significance