ECONOMIC LIBERALISATION AND DETERMINANTS OF PRIVATE INVESTMENT IN ETHIOPIA: AN EMPIRICAL ANALYSIS (1975-2000)

BY

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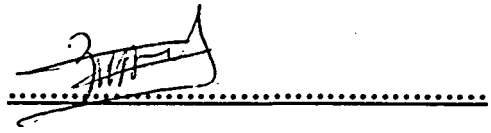
DECLARATION

This research is my original work and has not been presented in any other University.



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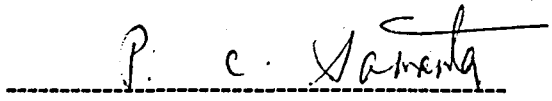
This research paper has been submitted with our approval as University supervisors.



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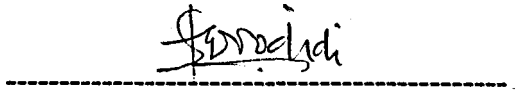

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ABSTRACT

This research proposed to investigate the impacts of macroeconomic variables and economic reforms on private investment in Ethiopia. This was prompted with the views being accorded Private sector investment today as the best economic agent in achieving sustainable development in developing countries.

The outcome of this study would be deemed useful for Ethiopian policy makers in designing and formulating polices that would create an enabling environment for the flourishing of private sectors investment so as to boost growth and development of the economy. The accomplishment of this needs the information on economic and non-economic factors affecting Ethiopia's private sector, hence the objective of this study. The study applies the time series annual data for the period, 1975-2000.

The study also employed a modified version of flexible accelerator model, which is adapted to incorporate some of the structural and institutional characteristics in developing countries. The econometric evidence reported that private investment is affected negatively and significantly by the debt stock, which the country borrows from international institution, the public expenditures, lagged depreciation of real exchange rate, long run inflation, and the war plagued between Ethiopia and Eritrea. Where as, the credit disbursed to private sector, the debt service payment, short run inflation, and the economic reforms, which captured by dummy variable D1 (economic liberalization.) are related in favor of private sector and affect significantly.

Any appropriate investment policy to be formulated with a motive of encouraging private investment in Ethiopia must therefore take into consideration the impacts of these variables.

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CHAPTER ONE

INTRODUCTION

1.1 Background

Economic liberalization or adjustment policies advocated by the IMF and World Bank dominate policy making in developing countries. In brief, economic liberalization means the process of transition from an inward looking, heavily protected and highly regulated economic regime towards an open economy that strives for efficiency through competition in the market. Stabilization aims at minimizing short-term macroeconomic imbalance through reduction on the demand side. Structural adjustment programme is intended to give a boost to the supply side by allowing the market forces to act and by bringing institutional changes to achieve greater efficiency (Thomas *et.al* 1991; Mosley 1991).

Appropriate economic liberalization of market involves trade policies characterized by removing license issuance constraints, quantitative restrictions, highly differentiated tariff rates, export taxes and endless bureaucratic procedures; privatization of un- productive public enterprises; deregulation of prices, lifting up of entry and exit restrictions are amongst the other. Placing restriction on import and export trade causes impediment to economic growth, and removing these impediments is the essence of the reformist agenda (Bhagwati, 1978; Krueger, 1978). Economic reform is long term and time taking process. In many developing countries, it is revealed that there is slow recovery of private

investment despite a decisive move to market-oriented reform. Initially, investment may fall during the first phase of economic adjustment unless most of the adjustment is accomplished through increased domestic saving. Macro economic stabilization, including squeezed monetary and credit policies, will have an adverse short run effect on private investment. Tight money and credit polices adversely affect private investment through higher real cost of bank credit or through the stock of real credit available to firms. If the economy reform taken is not fully credible, the investment response will be affected. The private sector may perceive the trade and financial liberalization as temporary policy that has high probability of being reversed.

In this context, private investment may not respond at all or even fall. Economic liberalization actually helps to increase exports, increase efficiency, aimed at increasing savings rate, reducing the capital output ratio, increase market efficiency, increase competition for better, helps the consumers to buy the available goods at the right price, high employment opportunity, and provide ways for efficient allocation of resources.

In many developing countries, the reduction in aggregate demand is often borne disproportionately by investment, especially in public sector, rather than by consumption, which may be at already low levels. The recovery of private investment particularly in tradable goods sector is critical for restoring overall capital formation and economic growth. Recognizing the importance of economic liberalization and significant impact of private investment for economic growth, recent attention is focusing on determinants of

private investment taking into consideration the specific situation of developing countries. As Mwega (1997) put it, sub-Sahara African countries have lower saving and investment rates than other less developed countries. Thus in order to promote the growth rate of investment, each country is expected to formulate a conducive and credible economic reform policies.

Like many other African countries, Ethiopia has faced serious economic difficulties from the mid 1970s through the entire decade of the 1980s. The turbulent economic crisis which the country underwent were: low growth rate of per capita income, deterioration in balance of payment, slow growth rate of GDP and huge debt servicing followed by accumulation of debt. The reason behind the poor state of the economy were: prolonged civil war, deteriorating terms of trade, high interest rate, protectionism, the overall macroeconomic mismanagement, and inconsistent political economy policy. Thus, lack of appropriate incentives schemes to promote efficient use of resources generally led to distortions in all sectors of the economy. The way out of these distortions is to introduce a comprehensive economic reform, the aim of which is to regain internal and external balances thereby promoting sustainable development in all sectors. The Economic reforms that were taken during the imperial regime (period before 1974) were a start-up to move forward in economic development.

The imperial government (1930-1974) that ruled the country for forty-four years had played a significant role in embarking on the modernization process. In 1945, the

government launched its industrialization programme along with the issuance of the first investment policy. In 1950, the first legal document of the investment policy came out. This document had given special privileges for foreign investors. The incentives, which included in the document were: a five-year tax holiday, duty free importation of machinery, and remittance of profit, income tax relief (Degefe, 1992). In 1954, the government exempted imports of all industrial and agriculture fixed capital from all duties and taxes (p.34, cited from Degefe, 1992). Owing to the fact that the government was determined to promote the agricultural and industrial sectors, the imperial government legislated an investment decree and established an implementing office. This proclamation favored both domestic and foreign investors with given capital ceiling. Thus, the annual GNP growth rate and per capita growth rate increased substantially. In the last years of the imperial regime, the gross domestic saving was 13%, which was decent and steady in comparison to the succeeding government.

The Derg (1974-1991) took over power from imperial regime in 1974. The Derg, the co-coordinating committee of the armed forces, were formed on 27 June 1974, following the mass movement of February 1974. The Derg declared in February 1975 to follow socialist oriented economic policy. Except small-scale business and industry, road transportation, and domestic and foreign trade, the remaining sectors or activities were reserved for the state. In January 1975, the government nationalized all financial institutions and insurance companies. The nationalization process swept the industrial and agricultural sectors. Thus, the Derg affected adversely the economic performance of

the country. The declining trend of the macroeconomics variables aggravated the deteriorating condition of the economy.

During the time of the Derg, the saving and investment ratio were discouraging. There was a tremendous fluctuation of saving ranging form a high of 12.5% in 1987/88 and low of 3.4% in 1990/91. Under this socialist system, the participation of private sector was declining particularly foreign direct investment, but the public sector was given a major role to play in the economy. However, in 1983, the government promulgated the joint venture proclamation that stated the condition and areas in which foreign investors could invest in the country. In 1989, the government liberalized investment possibilities through special decrees, which eased the conditions and offered opportunities to the Domestic Private Capital. In 1990, one year before its downfall, the Derg promulgated a mixed economy that had little impact on the economy.

Following the overthrow of the Derg in may 1991, the succeeding government declared that it adopted market oriented economic system in order to stabilize and speed up the growth of the slump economy. The policy reforms that were taken lifted up most of the barriers imposed on the private sector. A new investment policy that seemed more liberal and less bureaucratic was introduced; moreover, the Investment Office of Ethiopia (IOE) was established to facilitate applications for investment. Despite the relative increase in private investment during the early phase of the SAP (1992–1996), the performance of private investment has been low even in comparison with other sub-Saharan African

countries (Deailami and Walton, 1992).

The following section highlights the economic reform that are implemented by the current government (from 1991 to the present), and the stabilization and adjustment programme of the previous governments (the Imperial and the Derg).

1.1.1 Overview of Economic Liberalization in Ethiopia

The Imperial regime encouraged both domestic and foreign investors by setting conducive economic polices. The economic reforms that were undertaken by the government were: trade liberalization, convenient tax policy, financial liberalization, and privatization. As the result, there was tremendous economic growth in the country during this regime. The private sector played a dominant role in economic development of the country due to the presence attractive environment for investment.

Nonetheless, the situation was completely reversed when the military regime took over power in 1974. Owing to the fact the government decided to follow the socialist economic system, the involvement of the private sector in the economy was reduced substantially. In the end of 1980s, the Ethiopian authorities had conducted a through review of economic performance and admitted the downward trend of economic growth. Hence in detailed report to the party in November 1988, the new guidelines for economic management were laid down by the governing party re-emphasizing the important role of

private sector could play in the growth of the economy. In June 1989, the government issued a decree, which raised the ceiling of capital of investment for private sector entrepreneurs who are engaged in manufacturing, hotels, and transport; moreover, it streamlined license issuance and also improved the incentives for foreign investors.

In subsequent period, as it was discussed by Ageba (1997), the Derg government allowed privatization of commercial agriculture, decentralizing of the public sector, and reform on labor and employment laws. During its last days in 1990, the military Junta declared a 'mixed economy' policy, which lifted most of the barriers for the private investment. However, due to lack of confidence in government policy, and the serious civil war of the time, the policy did not bring the much-needed change.

The new government, which ousted the military Junta by May 1991, announced the economic reform programs that include: reorganization of state owned enterprises and marketing boards; the elimination of all export duties; the devaluation of the currency by 59%; the introduction of foreign exchange auction system; deregulation of prices; and privatization process are amongst others. One of the major undertakings in this economic reform was the encouragement of the private sector development. Besides, most new macroeconomic policies aimed at creating attractive investment environment for private sector with a view creating effective free market system. The other economic reforms include: changes in private investment policy, fiscal and monetary policies, labor market policies, private sector deregulation and exchange rate realignment.

Following the reform, there was a substantial reallocation of resources from the public to the private sector through the elimination of differential interest rates on deposit and lending for private and public sector. The realignment of the exchange rate was taken through devaluation and introduction of the Auction System. In October 1992, the Ethiopian currency (birr) was devalued from 2.07 birr per dollar to 5.00 birr per dollar. At the same time the exchange rate of parallel market was 7.80 birr to the dollar. In May 1993, The National Bank introduced an auction system, which implied the application of dual exchange rate primarily to the importation of basic items such as petroleum, pharmaceuticals, and payments of debts and other external obligation (Ageba, 1997).

1.2. Statement of the Problem

The most disturbing features of the experiences with economic reforms in Ethiopia, like in many sub-Saharan African countries, have been a disappointing response to private investment.

There is no doubt that the low performance of private sector, since 1970s to date, has adversely affected the economy. In 1970s and 1980s,the rate of private investment to GDP declined substantially in comparison to previous years as the result of socialist oriented economic policy and political instability. Due to nationalization policy of 1970s the space left for the private sector to operate was very discouraging. Thus, the public sector was privileged to play a dominant role in determining the economy.

The crucial stumbling blocks for the private sector development in 1980s, apart from the main economic policy were: the policy of imposing capital ceiling, price controls, and the beauruacracy involved in releasing license for foreign exchange allocation. Particularly, the capital ceiling constraint was a disincentive to saving and investment as compared to the previous period. As a result of price controls, there was serious monetary deepening, which resulted in unanticipated increment of money supply. Owing to the fact that the rate of private investment was declining, the increment of public expenditure had given rise to mounting inflationary pressures and external debt payment problem. Thus, the physical control of external deficit brought about excess demand that resulted in higher inflation and faster depreciation of foreign exchange allocation. In effect, the economy became highly fragile and dependent on foreign financing.

In 1990s also, the rate of private investment did not show an impressive growth as it was expected despite the economic liberalization. However, some of the macro- economic indicators have indicated better management of the economy in comparison to the previous decades. Some of the reasons that are presumed for low private investment growth rate are: less commitment of government in implementing polices and the effect of social and political uncertainty with in and outside the country. As Collier and Gunning (1994) expressed policy incredibility may have consequences for various aspects of poor investment growth.

In the light of the foregoing discussion, it is clear that unless there is an overturn of the trend of private investment, the realization of economic development is highly doubtful. Given the fact that private investment is the main engine for better performance of the economy, the researchers and policy makers have to investigate and find out the main determinants. It is with this regard that this study is proposed to be carried out. The study will seek to analyze empirically the effects of the economic and non-economic factors on private investment and provide policy options geared towards solving the problem and / or ameliorate the difficulty caused by market unfriendly polices in the country.

1.3 Objectives of the study

The overall objective of our study is to assess the implications of liberalized economy and the macro economic variables on private investment in Ethiopia.

The Specific Objectives are:

(i) To identify the actual macro-economic variables and any other non-economic factors such as civil conflict and war that are able to explain the reasons for the low private investment growth.

(ii) To examine the effect of economic liberalization on private investment since 1992-2000

(iii) Based on the findings, in (i) and (ii), suggest policy option in view of promoting private investment.

1.4 Significance of the Study

Investment is a crucial factor for the country's economic development particularly for developing countries. Therefore, developing countries are expected to allocate a substantial amount on research. So that various interested groups who can make a difference on the country's economy will utilize the findings of this research. Besides, the findings are of paramount importance for policy makers, private and foreign investors to undertake their business effectively and efficiently. Furthermore, identifying the main variables in this area will definitely help the investors to assess their position, moreover, to overcome any hindrances that are yet to come on the process. Generally, it enables to create confidence on domestic and foreign investors to invest in the country. As a result, the findings can help the country to lay down an important framework for country to follow the economic growth path successfully.

CHAPTER TWO

Literature Review

2.1 Introduction

This chapter discusses investment in a liberalized economic environment. Section 2.1.1 of this chapter gives a brief account of the literature that has underpinned the economic reform and its subsequent effect on private investment, and section 2.1.2 discusses the macroeconomic variables that determine private investment.

2.2 Theoretical Literature

The theory of investment dates back to Keynes (1936) who first called attention to the existence of independent investment function in the economy. Investment refers to real investment, which adds to capital equipment. In his theory, Keynes shows the role of investment in the accumulation of capital and creation of value in the process of production.

Following Keynes investment theory was the famous accelerator theory, which stated that investment has a linear relationship with output change. This theory, given an incremental capital/output ratio, discussed clearly the techniques to compute the investment requirements associated with a given target for output growth. In this analysis, here is a constant ratio of desired capital stock to output. In this accelerator model, xpectation, profitability, and cost of capital play no role in determining investment.

Thus, two other major theories of investment, the flexible accelerator and Tobin's Q theory were formulated. The modified versions of these theories have not got rid of the limitations described above.

The flexible accelerator principle model, which was popularized by Jorgenson (1967), framed its theory based on the optimal accumulation of capital theory. This neo-classical theory assumes that the level of investment depends on the volume of output and the user cost of capital. The user cost of capital in turn depends on the real interest rate, the price of capital goods and the rate of physical depreciation. The basic notion behind this model is that the larger the gap between the existing capital stock and the desired capital stock, the greater a firm's rate of investment. The theory can be put in the following equation form:

$$I_t = K_t - K_{t-1} = \beta (K_t^* - K_{t-1})$$

Where:

I_t = net investment

K_t^* = desired capital stock

K_{t-1} = last periods capital stock

β = Partial adjustment coefficient

Investment is a fixed proportion such that the value is taken by deducting the actual capital from the desired capital. Tobin's Q theory (Tobin 1969) postulates that the main

force driving investment is the Q-ratio or the ratio of the market value of existing capital stock to its replacement value. Tobin argues that delivery lags and increasing marginal cost of investment are the reason why Q would differ from unity. If the ratio of Q is greater than unity, the firm would want to increase the capital stock but if Q is less than one, the firm would reduce the capital stock.

Another approach dubbed neoliberal (Galbis, 1979) emphasizes the importance of finance deepening and high interest rates in stimulating growth. The proponents of this approach, McKinnon (1973) and Shaw (1973), argued that developing countries are bound with financial repression, and if these countries were liberated from their repressive condition, this would induce savings, investment and growth. Liberalization increases not only savings and loanable funds; it will also result in more efficient allocation of these funds, in which both contributing to higher economic growth. In the neoliberal view, investment is positively related to the real rate of interest in contrast with neo classical theory.

2.2.1 Macro economic determinants of private investment

Private investment mainly depends on economic growth, real interest rate, real exchange rate, uncertainty, credit availability, terms of trade, democracy, level of indebtedness, and debt services. This paper will assess the theoretical literature of various authors who addressed the above variables in relation to private investment.

There is a considerable debate in the literature over the role of real interest rate on private investment. A few economists asserted that they are positively related on developing countries (McKinnon, 1973 and Shaw, 1973). They argue that private investment in developing countries is positively related to the accumulation of real money balances and real money balances is also positively related to the deposit interest rates. Despite this argument, Haque, Lahiri, and Montiel (1990), and Green and Villanueva (1991) find that investment is a negative function of real interest rate.

A real depreciation can also affect private investment demand mainly in two ways. First, a real devaluation raises the real cost of capital goods and intermediate goods in terms of domestic goods. Secondly, it has been pointed out that the devaluation may turn out to be contraction despite an improved trade balance. Redistribution of income from wages to profit in domestic economy may cause an upward shift in aggregate savings propensity (Krugman and Taylor, 1978). Consequently, investment may fall or turn out to contract by curtailing the availability of imports (Sen and Mukhopadhyay, 1994).

A growing number of literature have emphasized the important role of uncertainty in private investment decision (Dixit and Pindyck, 1994; Rwegasira and Mwegardoo; Luis Serven, 1997). It is a consequence of the irreversible nature of most investment expenditure. Most investors would wait to gather new information before making an investment decision in uncertain environment. High inflation rate, for instance, are always to be an indicator of macroeconomic instability. Apart from the above discussion,

the availability of credit and foreign debts are other most significant variables in determining private investment (Matin, 1992).

Most developing countries launched stabilization programmes during the mid eighties with strict ceiling on domestic credit. However, it is believed that a reduction in fiscal deficit would eventually restore the normal flow of domestic credit to private sector.

The debt overhang arises in a situation when a debtor country benefit very little from the return of extra investment due to debt service obligation (Sachs, 1988, and Krugman, 1988). This creates a disincentive to investment from the point of view of debtor country, and this is purely a demand side explanation. However, there exists a very important supply side channel too. It may rise due to credit rationing in both domestic and foreign markets. International creditors may not lend new money to highly indebted country. Fiscal problems caused by non-availability of external financing may lead to a reduction in the flow of loans from domestic financial institutions for capital formation to the private sector.

The term of trade is the other main factor that determines private investment. The share of import in GNP is an important determinant of credit worthiness of a country in the international market for loans (Eaton and Gesovitz, 1980 and 1981). This is because countries, which are more dependent on imports, are more vulnerable to external shocks, and therefore they are more likely to default (Demiques-kunt and Detragiache, 1984). High export variability may encourage lenders to lend more because it raises resources

available for repayment in high-income periods (Eaton and Gersovit, 1981).

As it is stated above, these macroeconomic variables have significant influence in determining the private investment effectively; the liberalized economic environment has to be revealed. Otherwise, the relationship becomes artificial and becomes cumbersome to formulate genuine economic policies by policy makers. The next section will examine on how the economic liberalization and private investment are related.

2.2.2 Liberalization of the economy and private investment

Trade, financial, and exchange rate liberalization in general are the core component in facilitating the growth of private investment particularly in developing countries. Changes in these policies affect credit availability, infrastructure investment and reserves that in turn affect the speed and direction of investor response to the gap between actual and desired capital stock (Martin and Wasow, 1992). In other words, an increase in fiscal deficit without additional inflow of foreign savings must lead to either an increase in private saving or a decrease in private investment.

Trade liberalization is central in most structural reform programmes, this type of reform policies often involve the elimination of quotas and a reduction in tariffs. Reducing import protection leads to an expansion in capital-intensive activities and a contraction in labor intensive. In that respect, a reduction in investment may be expected after liberalization. An increase in the productivity of investment may compensate for the

possible reduction in the volume of investment as capital starts to flow to activities where resources have higher productivity (Solimano, 1992). In his illustration, Solimano (1992) asserted that if reform under trade liberalization is not fully credible, the investment response might be affected negatively. The private sector may perceive the trade liberalization as a temporary policy that has significant probability of being reversed. Under uncertainty and lack of policy creditability, the national investor may prefer to shift to liquid assets.

On financial sector, the liberalization policy has strong impact on private investment. The financial reform will improve the domestic capital market by lifting the controls over interest rates, allowing more freedom for entry and exit of financial intermediaries and eliminating quantitative controls and subsidies on credit. The combination of positive real interest rates and liberalized financial system is expected to improve the allocation of credit toward various activities with higher rates of return. According to N. Ndungu (1997) after financial liberalization in Kenya, the financial sector seems to have shrunk contrary to expectations, as he pointed out some of the causes, he said that interest liberalization took place too fast before structural reforms were in place. Generally, there is a few empirical evidence on the impact of positive higher real interest rate on productivity of investment that indicates the slow effect of financial liberalization in short run but more important in medium and long run (Dornbusch and Reynoso, 1989). On the same area, Ogungbenn, Mutambuka and Alalude (1996) have put forward the same ideas on the effect of liberalized financial system on saving, investment and growth in Nigeria.

On their discussion, they emphasized that the importance of carrying out research to identify the effect of such regulated financial conditions on variables such as savings, investment and growth prior to the removal of various administrative regulations.

Privatization also affects both the level and efficiency of investment in more indirect ways. Mostly privatization policies may be part of a broader package oriented in increasing the role of private sector to play in the economy by creating conducive environment that encourages capital formation. Deregulation includes lifting the barriers for entry and exit, issuance of license and other bureaucratic impediments to resources. In that sense, deregulation creates an enhanced supply and investment response by making institutional and legal changes in line with price signals (Solimano, 1992).

2.3 Empirical Literature

There is quite a good number of literature on private investment in developing countries but very few literature analyze pertaining to economic reforms and private investment. However, this study reviews of the literature to articles that are directly relevant to this study. For convenience, the empirical evidence on Ethiopia is given priority. From the literature surveyed, no study was found that specifically examines the economic liberalization and determinant of private investment in Ethiopia.

However, Mitiku (1996) carried out an important study on determinants and constraints

of investment in Ethiopia using econometric estimation and survey method. The objective of his empirical study was to determine the variables that explain the fluctuating of private investment growth and also investigate the major constraints of private investment. In his commendable study, he showed factors that attributed to constraints. In his econometric analysis, private investment is determined by availability of finance, the real exchange rates, investment policy, debt service payment and debt overhang. Where as, the real interest rates, growth per capita GDP, public investment and change in terms of trade did not affect private investment. The survey method resulted in (in Addis Ababa and Tigray region) identifying bureaucratic procedures, lack of infrastructure (particularly power) and access to finance as the leading constraints for the entire operation and expansion. Access to and the cost of land are the specific leading constraints in capital city (Addis Ababa region) in addition to what is mentioned above. In other areas, he identified political/policy uncertainty and labor regulations as less important. In his conclusion, he ascertained that it is the availability of finance rather than the interest rates as being crucial determinants of private investment.

Ronge and Kimuyu (1997) carried out a study on private investment in Kenya. The main hypothesis tested in their paper was the response of private investor to the gap between the actual and desired stock of capital, which depends on the availability of credit, the real exchange rate, the stock of public debt, the level of public investment in infrastructure and macroeconomic stability. As they reasoned out why they assumed

these variables have an impact on private investment, they said that unlike most developed countries, one of the main constraints in the developing countries is the quantity of the investible funds. In their empirical analysis, they used time series data and estimated the investment equation using OLS. In their findings, they have shown that most of the regressors that they put in model are important determinants in private investment.

Foreign exchange rate and credit affect private investment significantly and positively. On the other hand, macroeconomic instability and debt overhang have negative impact on investment. Sundararajan and Thakur (1980) carried out their study in India and Korea .On their study; they said that in short run public investment crowds out private investment. Nonetheless, this negative effect is more than offset in the long run as public sector activities raise productivity of private capital stock since additional expenditure creates effective demand for products manufactured by private firms. Thus, investments by the government stimulate and compliment private investment.

Dornbusch and Reynoso (1989) describe the adverse effect of double-digit inflation on private investment. On their analysis, high inflation not only increases risks to longer-term projects but also an indicator of macroeconomic instability. Besides, it is also a failure on the part of the government to manipulate economic policy towards desirable direction. These types of problem are common in less developing countries (LDCs) where the correlation between inflation and economic growth (employment) seems to be

significant.

Owing to the fact that large external debt burdens, Latin American Countries and Sub-Saharan African countries in particular have been adversely affected by high percentage of debt services. High external debt service payment consumes a substantial share of export revenue required to finance imports. Whereas, large external debt to GDP represent a tax on present or future generations and this reduce incentives meant to attract investors (Borensztein, 1989). Such large debt creates difficulties in meeting debt service obligations, a situation calling for debt rescheduling, complete written off or default putting the credit-worthiness of less developing countries debtor-nations into serious doubt. This could lead to deteriorating relations with creditors and consequently reduced aid and private capital inflows (Mirakhor and Montiel, 1987).

In a study of private investments foreign capital inflow and public policy using time series data, it was found that the cost of capital to a large extent determined by the real exchange rate, negatively affected investments as much as the relative cost of capital goods. The impact of real rate of exchange was significant, a reflection of the importance of quantitative controls in this regard (Dailami and Walton, 1989).

Blejer and Khan (1984) focused their studies on the effect of government economic policy on private investment in taking a sample of 24 LDCS; and they found that the level of private investment was positively related to expected real GDP, change in bank

credit to the private sector, foreign capital inflows and in infrastructure investment. However, there has been a lot of controversy surrounding the theoretical basis on which the public sector can compliment and substitute private investment at the same time.

Solimano (1990) carried out a study in Chile using a three-equation model. On his empirical findings, it was found that the real exchange rate affected the level of profitability as well as the level of output. Thus, real private investment fell sharply in Chile in 1982-83 and took about four years to recover. The large devaluation that occurred in 1982 to 1984 hurts the profitability of investment through an increase in the replacement price of capital. But, the profitability of the expanding export and import competing sectors led to a revival of private investment. The simultaneous equation presented in the Solimano paper showed that the short run effect of devaluation on private investment is positive.

Chibber and Shafik (1990) addressed the same set of issues for Indonesia with a larger macroeconomic model of the economy. Their model confirmed that private investment is determined by the real exchange rate, real interest rates and output. The real exchange rate has a negative short run effect on private investment since devaluation leads to higher replacement cost of capital, and the cost of imported inputs as well. The deviation of the real exchange rate from its equilibrium level, affects the level of the real interest rate in the economy. The domestic real interest rate equals to the foreign interest rate plus expectations on a real depreciation. A delay in adjusting the exchange rates to its

equilibrium level leads to of capital flight due to expectations of devaluation and a rise in domestic interest rates. However, the actual devaluation of exchange rates lowers these expectations and reduces real interest rate.

Hebbel and Muller (1991) used a data from 1970-1988 for Morocco to deliver a framework for private investment. They used a time series and the two stage least square (TSLS) that specified to instrumentalize the lagged dependent variable. They used a specification that combines neoclassical variables, borrowing constraints, public infrastructure, uncertainty variables and relevant lags to study private investment moving variances of GDP .The user cost of capital plus the debt to GDP ratio are also used as certainty variables. To reduce the incidence of problems derived from spurious correlation and non-stationary of the variables, they used rate instead of absolute levels for all relevant variables. On their main findings, private investment in Morocco is significantly influenced by the cost of capital, the expected return on investment, the level of aggregate demand or capacity utilization, bank credit and structure of financial markets, trade shocks, the availability of public sector capital services, and uncertainty as reflected by the foreign debt/GDP ratio.

J. Greene and D. Villanueva (1991) has conducted an empirical study using panel date of 23 developing countries. In this study, they estimated the equation of private investment using pooled time series, and cross sectional approach. Their investment function specified the neoclassical theory to study the behavior of private investment

under various macro variables for 23 countries. The equation is given in the following form:

$$IP/Y = f\{RI, GR_{t-1}, IPUB/GDP, CPI, INC_{t-1}, (DS/XGS)_{t-1}, (DEBT/GDP)_{t-1}, Z\}$$

Where: IP/Y = the ratio of private sector investment to GDP

RI= the real deposit interest rate, as measured by the ratio {1+NINT}/ 1 + ECPI,

where: NINT is the nominal interest rate and ECPI is the expected inflation rate.

GR_{t-1}= the lagged percentage change in real GDP per capita

IPUB/GDP= the ratio of public sector investment to GDP

INF= the rate of inflation.

INC_{t-1}= the lagged level of per capita GDP in current US dollar

$\{DS/XGS\}_{t-1}$ =the lagged ratio of external debt service payments to exports of goods and services

$\{DEBT/GDP\}_{t-1}$ = The lagged ratio of the country's stock of external debt to its nominal GDP.

Z= A vector of country dummy variables, one for each country in the sample.

In their estimation, they used lagged values for current valuestof real per capita growth (INC) $_{t-1}$, per capita GPD level (GR) $_{t-1}$ and for debt service ration. (DS/XGS) $_{t-1,}$ this mechanism helps to reduce the possibility of simultaneous equation bias in coefficient estimates.

To decide on real interest rate, they tried three different variants, that is one the current period value to the percentage change in consumer price index as the expected inflation rate: the second is the previous year value; and the last one is the value of the year ahead. In the process of estimation, the consumer price change one period ahead (CPI) $_{t+1}$ has brought best result to generate the real interest rate. They estimated separate equation for the two sub periods that is 1975-81 and 1982-87;this will help to test the effect of the post 1981 debt crisis on the results.

On their findings, they revealed that IPUB/GDP and GR $_{t-1}$ is positive and highly significant, while the lagged debt service and debt stock are both negative and significant. In addition, the estimated coefficient for the inflation rate (CPI) was negative and highly significant, implying that a higher inflation rate, other things equal, had a negative impact on the private investment rate. The finding is more consistent with neo classical investment model than with McKinnon and Shaw hypothesis. As it suggests high real interest rates serves more to deter investment by raising the user cost of capital than to promote investment by increasing the volume of financial savings.

Also the recent study done by, Lahiri, and Monteil (1990) supported the above view that the interest rates appear to be negatively and highly significant related to domestic investment rates. In the same pattern Serven and Solimano (1992) carried out the econometric analysis to identify the main determinant of private investment. On their estimation for 23 developing countries using a cross-section time series, they found that the same result except that in Serven and Solimano investment function, uncertainty variable has been included as a proxy for variability of exchange rate and inflation and interest rate was disregarded.

The empirical study done by Tun Wai and Wong (1982) investigated a modified version of the flexible acceleration theory of investment with reference of five developing countries. They tested three of their hypothesis that private investment depend on government investment, the change in bank credit and the change of foreign capita to private sector. Having analyzed some theoretical argument, he specified the following mathematical postulate of private investment in LDCs.

$$IP_t = \beta_t \left(KP_t^{*} - KP_{t-1} \right) + \delta KP_{t-1} + V_{it} \ldots\ldots\ldots (1)$$

Where:

KP and KP* are the actual and desired capital stock of private sector respectively.

IP = Private investment

V_{it} is taken as an error term.

They assumed that replacement investment is proportional to the existing capita stock and gross fixed capital formation of the private sector. In addition, they assumed also the reaction coefficient, β, depends positively on the change in bank credit for the private sector (DCP) and net capital inflows to the private sector (CMP). Both assumption were given due to the discrepancy exist between the desired and the existing capital stock. Thus:

$$Pt = f\{\Delta DCP_t/KP^*_t - KP_{t-1}, CMP_t/KP_t^* - KP_{t-1}, U_{2t}\} \ldots\ldots\ldots (2)$$

On their third equation, they formulated a linear regression model for private investment and specified that the desired capital stock as being proportional to the private sector output (QP) and further assumed equation (2) is linear. Thus, the model is given as

$$IP = \delta_0 + \delta_1 QP_t + \delta_2 \Delta DCP_t + \delta_3 CMP_t + \delta_4 KP_{t-1} + U_{3t} \quad \text{---------} \quad (3)$$

Further they assumed that private sector output is a linear function of government investment (IG) and private investment. Later, they provided the investment function as:

$$IP_t = b_0 + b_1 IG + b_2 DCP_t + b_3 CMP + b_4 KP_{t-1} + U_{4t} \quad \text{----------} \quad (4)$$

At last, they affirmed from the empirical result that public investment, the change in bank credit and capital inflow to the private sector play an important role in determining private investment.

2.4 Overview of literature

It is clear that the macroeconomic variables play a dominant role in determining the private sector in developing countries. Most of the theoretical and empirical literature discussed only the economic factors paying little or no attention to non-economic factors. Macroeconomic factors alone could not be effective remedy to diagnose the economy rather the solution has to be justified along with other social and political factors.

Therefore, the non-economic factors have to be addressed together with the economic factors in order to bring the necessary change to the private sector. As Samanta (2001) discussed, most African countries officials prefer to list down the oil shock problem, unfavorable trade, and debt stock as stumbling block for better economic growth without considering how fast the prolonged civil war and militerisation lead the continent to be poorer.

On the light of the above discussion, this paper will take into account both the economic and non-economic factors in order to analyze the private sector in Ethiopia.

CHAPTER THREE

METHODOLOGY

3.1 Theoretical Framework

On the basis of economic theory, most of the main macroeconomic variables that affect private investment are identified. These variables are similar to other variables, which are used by different authors. These macroeconomic variables are justified on the basis of theoretical and empirical literature. Here it is of paramount importance to point out that the theoretical models of private investment have been used in developing countries in most cases but the empirical studies of determinant of private investment have not clearly shown which of these models can be used more accurately for developing countries. As it is also shown in this paper, there is ambiguity in the nature of identifying the right variable for empirical analysis. In developing countries, the main macroeconomic policies, which are largely used are monetary and credit policy, fiscal and exchange rate policy. The model formulated in this paper has been designed to capture these policies since they have significant role in determining private investment behavior as it is discussed in the literature.

3.2 Model Specification

On the ground of foregoing analysis, an eclectic modeling approach of private investment is used. The model is adopted from Tun wai and Wong (1982), and Green and Villanueve (1991); and the model is modified so as to make it consistent with the

objectives of our study .The models appears to be similar with most models that has been used by researchers to analyze the private investment in developing countries. As it is indicated in literature review, the main variables used are: real GDP, real exchange rate, real interest rate, real foreign exchange reserve, real public investment, trade shock, debt service payments, rate of inflation, and debt overhang.

In our paper, on addition to macroeconomic variables, dummy variables also are included to capture the political instability that has been in the country for decades, the economic reforms and the war fought between Ethiopia and Eritrea.

In the light of the foregoing discussion, the model has been chosen to evaluate the private investment in Ethiopia. Therefore, the following modified linear investment function is assumed for multiple regressions using ordinary least square (OLS).

On their analysis, private investment is determined by real GDP growth, real exchange rate, real interest rate, real deposit interest, real foreign exchange reserves, availability of foreign exchange, real public sector investment, income per capita, the size of debt service burdens, change in terms of trade, macroeconomic instability (as proxies by the rate of inflation). This model has been chosen taking into consideration the availability of the data. The following modified linear investment function is assumed for multiple regression using ordinary least square method (OLS)

It is postulated that:

PIGDP = F (pubGDP, dtGDP, TOT, R.G.GDP, dsXGS, RER, CrGDP, Inf,Inf^2, D1, D2] .....Equation (1)

The percentage change in inflation, debt service ration and external debt measure macroeconomic instability. Apart from rate of inflation, the other variables measure foreign exchange constraints, and real exchange rate measures the impact of devaluation on private investment.

Where PIGDP = the ratio of private investment to GDP

pubGDP= the ratio of public investment to GDP.

RER= Real exchange rate

dsXGS= the debt service ratio to expert earning

TOT =Terms of trade

R.G.GDP = Rate of real growth in gross domestic product

Inf= is the rate of inflation in short run

Inf^2= is the rate of inflation in long run..

CrGDP=the ratio of credit disbursed to private sector to GDP

dtGDP= the ratio of debt stock (external and internal) to GDP

D1=1 is post derg economic reforms (1992-2000)

D1=**0** otherwise

D2=1 war with Eritrea (1998-2000)

D2=0 otherwise

POSTULATES

dtGDP – is expected to be negative to private investment

PubGDP – is ambiguous, it could be negative or positive (crowd in or out) to private Investment.

dsXGS – is expected to have a negative coefficient to private investment

Inf –is expected to have positive coefficient in short run.

Inf^2 – the coefficient is expected to negative since inflation adversely affect investment in the long run.

CrGDP – coefficient is positive to private investment

RER – coefficient is expected to be positive as it is related to private investment

TOT- is expected to have positive coefficient.

R.G.GDP-is positively related to private investment.

$$PIGDP = b_0 + b_1\ pubGDP + b_2\ dtGDP + b_3\ TOT + b_4 R.g.GDP + b_5\ dsXGS + b_6\ RER + b_7 CrGDP + b_8\ Inf + b_9\ Inf^2 + b_{10}\ D1 + b_{11}\ D2 \quad \text{....Equation (2)}$$

3.3 Econometric estimation technique

The investment model of equation (2) is estimated using ordinary least square (OLS).

The time series data (1975 –2000) of each variable will be analyzed before estimating the model. This is because, before running regression of the variables, analysis of each variable about its distribution (normal or skewed) and its trend (stationary or non stationary) is essential. This will involve testing for the order of integration of each variable using the Dickey – Fuller (DF) and Augmented Dickey Fuller (ADF) unit root tests.

3.3.1 Test of stationarity

Most macroeconomic data is trended or integrated such that the variables chosen may have means that change with time and have infinite variance. There is therefore a likelihood of obtaining promising diagnostic test statistics but of spurious regression results provided the data analysis was done on the level form of the variables. To curb the problem of non–stationary data, a number of tests are carried out with a view of deternding the data. This is because data with in deterministic trend (stationary) enable us to make valid inferences of the available times series data. The contrasts between stationary and non-stationery can be illustrated using the following example. Both series are cases out of simple AR (1) model of the form:

$$Y_t = \alpha Y_{t-1} + \epsilon_t. \quad \ldots\ldots\ldots Eqn\ (3.1.1)$$

A stationary series is one where $|\alpha| < 1$. Stationery series have finite variance, transitory innovation from the mean value. The value of the mean of a stationery series is independent of time and also has a finite variance. In contrast, the non-stationery series is

the one where $|\alpha| \geq 1$. The non-stationary series has infinite variance and the series rarely crosses the mean. As it is indicated above, the unit root test enables us to identify whether the series is stationary or not. The unit root test also is the best way to enable us to refer the series in terms of order of integration. A series is said to have been integrated of order (d) if it is stationary after differencing the series 'd ' times. In other words, a series has 'd' unit roots. Such a series is denoted *as* x_t *–I (d).* Using the same terminology, the stationery series is referred to as I (o).

Engle and Granger (1987) employed two-step procedure technique in order to overcome the problem of non-stationary. A brief illustration of the technique is given as follows. The models containing non-stationary variables will often lead to a problem of spurious regression whereby the results obtained suggest there is statistically significant relationship between the variables in the regression model when in fact all that is obtained is evidence of contemporaneous correlation rather meaningful casual relationship.

.Y_t is non-stationary on equation 3.1.1 if $|\alpha| = 1$,but if $|\alpha| < 1$, then the process generating Y_t is integrated of order zero and hence it is stationary. Once the data is stationary, we are now able to estimate equation (3:1:1) by OLS. Unfortunately, we cannot determine the t-test statistic distribution once the variable is non-stationary. This necessitates the unit root tests normally termed as Dickey-Fuller (DF) test.

3.3.2 DICKY FULLER TESTS

This is centered on the hypothesis that in (3:1:1), $\propto$ =1(the unit root test) against the alternative hypothesis that $\propto < 1$ i.e. (Y_t is stationary). It is based on the equation that

$$\Delta Y_t = \beta Y_{t-1} + \epsilon_t \quad \text{.....3.1.2}$$

Where $\Delta Y = Y_t - Y_{t-1}$. By substituting (Yt and making Yt the subject of the formula, 3.1.2 can be re-written to resemble 3.1.1 as

Where $Yt = 1+(1+\beta)Y_{t-1} +\varepsilon_t$.....3.1.3

Where, $\acute{\alpha}= (1+\beta)$. The DF tests for the negatively of (in the OLS regression equation 3.1:3. In it, we test the hypothesis that

H_0: $\beta= 0$

H_1: $\beta < 0$

If $\beta< 0$ in equation 3.1.3, then $\propto<1$ in equation 3.1.1, if the null hypothesis is rejected in favor of the alternative hypothesis, the implication is that in equation 3:1:1, $\propto < 1$ and Y_t is integrated of order zero (stationary). There are four DF tests for the order of integration I (d). In our analysis we used Augmented Dickey Fuller test (ADF) and Dickey Fuller test (DF).

When the variables were subjected to unit root test using Augmented Dickey Fuller

(ADF) test, it was found that all the variables were non-stationary in their levels. This is because the calculated t-ADF values are less than the critical t-ADF value for all the variables at both levels of significance. Thus there was need to difference the variables so as to make them stationary series.

One of the drawbacks of the Dickey Fuller test is that it necessarily assumes the DGP (data generating process) is an AR (1) process. If it is not then, autocorrelation in the error term will bias the test. In order to overcome the problem, the augmented Dickey-Fuller test can be used. The ADF test is identical to the standard DF but is constructed within a regression model of the form:

$$\Delta y_t = y_{t-1} + \Sigma\, y_t \Delta y_{t-j} + U_t$$

3.3.3 Cointergration and error correction mechanism.

Cointegration test is of paramount importance in regression purposes. Most macro economic data have long run relationship. However, in the process of differencing the non-stationary variables, there is high tendency of the short and long run relationship among variables to be lost. Therefore, testing the presence of long run relation ship is paramount before conducting the regression. According to Ndungu (1998) if a set of I (1) variables are cointegrated, they can be generated by error correction mechanisms. The concept of cointegration is very powerful because it allows us to detect the existence of

an equilibrium, stationary, relationship among two or more time series, each of which are individually non-stationary.

The economic interpretation of cointegration is that if two or more series are linked to form an equilibrium relationship spanning for long run, then even though the series themselves may contain stochastic trends (non-stationary). They, nevertheless, move closely together overtime and the difference between them is constant. This long run relationship among variables may be lost when differencing the series for stationery purpose. Therefore, the remedy to address the problem is incorporation of error correction mechanisms (ECM), which enables to reject the spurious regression series and accept the correlation between the non-stationary variables where the correlation is structural rather than spurious. Consider two times series y and xt, which both are I (d). Any linear combination of the two is I (d): for instance the residuals obtained from regressing y_t on x_t is I (d). If however, there exist a vector () refutes such that the disturbance term from regression ($U_t = Y_t - \beta Y_{t-1}$) contain a lower order of integration

I (d-b), where b>0, then the Engle and Granger (1987) postulated Y_t and X_t are co integrated order of (d-b). Thus if y_t and x_t are I (1) and the residual is I(0), then the two series are co integrated of order CI (1,1). When cointegration is rejected, then there is no long run relationship between the non-stationery series; hence there is no information in the coefficient of the equation.

Actually, the result from cointegration analysis, from Granger and Engle representation theorem, which asserted that if Y_t and X_t are cointegrated and then the series are represented by the error correction specification and the co efficient estimated in a static regression model. In addition the ECM will take care of any other dynamic specification that is the partial adjustment mechanism or the common factor model (refer Adam, 1992). The ECM takes the form:

$$Y = \alpha_0 + \alpha_1 X + \alpha_2 \Delta X - \alpha_3 (Y - KX) + \varepsilon_t$$

Where

K is long run coefficient of the regression between x and y.

The ECM thus relates the short run change in x to the in x to the short run change in y (the impact effect) but ties the change in long run proportionality between x and y. (long run effect) through feed back mechanisms.

CHAPTER FOUR

EMPIRICAL RESULTS AND ANALYSIS MODEL

4.1 INTRODUCTION

This section analyses the tests results, for unit root, cointegration and the regression model. In previous chapter, theoretical econometric background is given in view that it would give a complete picture for the econometric regression analysis in this chapter. Besides, the results of the empirical findings would be reconciled with theoretical expectation.

4.2 Unit root test result

As results shown in table 1 below, most of the variables (except Inf, R.G.GDP, and Inf^2 are non-stationary. This happened due to the fact that the calculated DF and ADF values for the variables (TOT, RER, CrGDP, dtGDP, CrGDP, dtGDP, dsGDP, pubGDP, PIGDP) are greater than the critical ADF and DF values. As a result, there is need to difference the variables so as to make them stationary series.

TABLE 1, UNIT ROOT TEST

Variables	DF	ADF(1)	ORDER OF INTEGRATION
dt/GDP	0.92911	1.3171	I(>0)
PI/GDP	0.80036	-0.86143	I(>0)
PU/GDP	1.1992	-1.6161	I(>0)
DS/XGS	1.4640	-1.1782	I(>0)
INF	4.1382**	-3.4763*	I(0)
Inf^2	4.9234**	-3.7778**	I(0)
TOT	2.1630	-1.7272	I(>0)
RER	0.56263	-1.0136	I(>0)
R.G.GDP	4.5248**	-5.2523**	I(0)
CR/GDP	0.051117	-1.0764	I(>0)

Critical values: **DF-TEST 5%=-2.985 1%=-3.72**
ADF-TEST 5%=-2.997 1%=-3.75

Source:PC-Give output

NOTE: - * -Implies that the variable is significant at1%level

- ** - Significant at 5% level
- ***-Significant at 10 %level

As unit root test summarized in Table 2 below, all non-stationary variables are I (1) except crGDP, which is I (2). The test was carried out after differencing those variables whose order of integration greater than I (0) using Augmented Dickey Fuller and Dickey Fuller test. Before proceeding to regression, we have to carry out the cointegration test.

TABLE 2: UNIT ROOT TEST FOR FIRST DIFFERENCE

VARRIABLES	DF	ADF	ORDER OF INTEGRATION
DPI/GDP	-3.6603*	-2.8823	I(0)
Ddt/GDP	-10.146**	-5.4544**	I(0)
DPU/GDP	-3.3956*	-2.4457	I(0)
DDS/XGS	-6.0945**	-2.8470	I(0)
DTOT	-5.6129**	-4.0526**	I(0)
DRER	-3.4551*	-3.6207*	I(0)
DCR/GDP	-2.7382	-2.6145	I(1)
DDCR/GDP	-6.5721**	-4.5679**	I(0)

Critical values:DF-Test 5%=-2.997 1%=-3.75;

ADF-Test5%=-3.011 1%=-3.785

Source:PC-Give output

As results shown above, most of the variables (except inf, R.G.GDP, and inf^2) are non-stationary. This happened due to the fact that the calculated DF and ADF values for the variables (TOT, RER, CrGDP, dtGDP, CrGDP, dtGDP, dsGDP, pubGDP, PIGDP) are greater than the critical ADF and DF values. As a result, there is need to difference the variables so as to make them stationary series.

As unit root test summarized in Table 2, all non-stationary variables are I (1), except crGDP, which has to be differenced two times to make it stationary. The test was carried out after differencing those variables whose order of integration greater than I (0) using Augmented Dickey Fuller and Dickey Fuller test. Before proceeding to regression, we have to carry out the cointegration test

4.3 Cointegration test

The first stage to test the presence of cointegration is to regress the non-stationary explanatory variables on dependent variable in levels. Specifically, the test for cointegration is done on residuals in levels. This entails testing for stationary of the error term. As Adam (1992) discussed, the test on the error term was done to test whether there is cointegration of variables of order zero so as to enable us to utilize the error correction mechanism (ECM). In this paper as shown below with the equation, the test on the residual confirmed that the coefficient of ECM is stationary with the Dickey Fuller test, which implies that there is cointegration. This is because the calculated value of DF (/-3.1131/) is less than the critical value of the DF at 5% level. However, ADF test showed that ECM is non-stationary, which implied that there is no long run relationship between variables.

Table 3: Regression result in levels

Variable	Coefficient	Std.Error	t-alue	t-prob	PartRý
Constant	3.8942	3.2307	1.205	0.2429	0.0710
dt/GDP	0.016368	0.011975	1.367	0.1876	0.0895
PU/GDP	-0.32432	0.11414	-.841	0.0104	0.2982
DS/XGS	0.019609	0.020042	0.978	0.3402	0.0480

TOT	-.0011133	0.0077327	-.144	0.8870	0.0011
RER	0.25479	0.76537	0.333	0.7429	0.0058
CR/GDP	0.22042	0.17171	1.284	0.2147	0.0798

R^2 = 0.81591 F(6, 19) = 14.035 [0.0000] σ = 1.53143 DW = 1.01

TABLE 4: COINTEGRATION TEST

TEST	ECM	DECISION
DF	-3.1131*	Reject H_0:(THERE IS CIOINTEGRATION)
ADF (1)	-2.5662	AcceptH_1 :(THERE IS NO COINTEGRATION)

Critical values:ADF-TEST, 5%=-2.997 1%=-3.75;
DF-TEST, 5%=-2.985 1%=-3.72;

NOTE: * means significance at 1% level

Source:Pc-Give output.

Therefore, due to fact that unreliable information is found from the two tests, the ultimate proof has to be conducted to decide on ECM in this regression. As Mwega (1993) commented to address this problem, he said that if the results of the tests are ambiguous, ECM is included in the regression assuming that there is cointegration.

In the regression result, if the coefficient of error correction term is non significant, it meant that there is no real cointegration relationship among the variables. Thus the error correction term will be dropped from the regression. Hence, based on the above discussion, the error correction term is dropped.

4.4 REGRESSION RESULT

The main statistics reported for goodness of fit, such as R^2, t-value, DW (Durbin Watson) and F-test are standard and need no discussion. However, the programme also reports a number of information criteria measures, they are not statistics but provide a measure of

the parsimony of a model. The information criteria are used to guide the general to specific reduction. The criteria are increasing the equation standard error and in number of parameters of the variables, thus a fall in the value of static can be read as an increase in the efficiency of the model. The following tests are the main diagnostic test, which presents stastical results that prove the model used in regression is correct (See Appendix 1 D)

The LM autocorrelation test:

This test is a general test for error autocorrelation allowing for the case where the higher order or more complex form of the error correlation exists .A significant value is for the test implies that the null of zero autocorrelation is rejected.In our study, the diagnostic test(AR) shows that the calculated F-values(0.14597) is less than the critical F-Values(3.98) at 5 % level .Thus, the AR result confirmed that there is no error autocorrelation in the model.

ARCH test (autoregressive-conditional heteroscedasticity)

This test is designed as a very specific hetroscedastic test to see whether the error process follows, and the squares of the residuals are auto correlated. In other words, the ARCH test is used to test the exisistence of heteroscedasticity in the model.

The ARCH test showed that the calculated F-values (0.1303) is less than the critical F – values (4.84) at 5 % level. Thus, the test revealed that the heteroscedasticity does not exist in the model.

Jarque –Bera (normality) test

The assumption of normality is necessary for conducting the statistical test of

significance of the parameter estimates and for constructing confidence levels (koutsoyiannis, 1977). If the assumption is violated, the parameter estimates can still be unbiased. However, one cannot assess their statistical reliability by the classical tests of significance because the latter are based on normal distributions. This test provides information on the structure of the equation residuals. It specified that as test against the null that the error term is well behaved, in other words that is normally distributed, time independent, and homoscedastic.

The test is designed to ascertain the distribution of the error terms or to confirm that the blue property of OLS. It uses the first four moments of the distribution (mean, standard deviation, skewness and excess kurtosis) of the series. The results are compared to with the critical value i.e. the one which is already obtained from the standard normal distribution. This is necessary complement test to analyze the residuals .The difference is distributed as X^2. For our model to be efficient and consistent, the X^2 (2) has to be less than the critical.

In our model the calculated X^2 (2), which is 5.9189, is less than the critical X^2 (5.99) at 5%. Therefore, in our model the residuals are distributed normally so that the result confirmed that our model is consistent and efficient.

RESET

The RESET (regression specification test) is used to detect misspecification due to non-linear ties in the model.

In our model specification test, the calculated F-value, which is 1.095, is less than the

critical F-values (4.75) at 5 % level. Hence the result from this diagnostic test ascertained that the model is correctly specified.

As it is shown table 4 and 5 below, the explanatory variables account for 96 % of variation of the private investment. It meant that the model accommodated important macro economic variables, which have considerable impact on private investment in Ethiopia. However, the degree of each variable affects private investment positively or negatively varies correspondingly as it is shown in the models below.

TABLE4: THE PREFFERD MODELS OF THE REGRESSION RESULTS

Variable	MODEL 1	MODEL 2	MODEL 3	MODEL 4
Constant	-0.17641 (-1.714)	-0.19309 (-1.953)	0.20728 (-2.066)	-0.21989 (-2.192)
Ddt/GDP	-0.02097 (-5.887)	-0.020744 (-5.949)	-0.022844 (-7.349)	-0.022760 (-7.274)
DPU/GDP_1	-0.30163 (-4.859)	-0.28486 (-4.980)	-0.33232 (-7.685)	-0.32172 (-7.585)
DDS/XGS_1	0.065628 (6.742)	0.065015 (6.823)	0.072059 (9.246)	0.070944 (9.121)
DTOT_1	0.0010685 (0.782)	-	-	-
DRER_1	-0.29001 (-1.757)	-.30449 (-.890)	-0.36999 (-2.381)	-0.39126 (-2.521)
DDCR/GDP	0.086431 (2.667)	0.090869 (2.900)	0.033873 (2.665)	0.078068 (2.50)
INF_1	0.025406 (1.414)	0.022536 (1.305)	-.0022343 (2.267)	0.026532 (1.978)
Inf^2_1	-0.0021710 (-3.333)	-.002061 (-3.30)	-0.0022343 (-3.592)	-0.0019829 (-3.412)
R.G.GDP	-0.0090390 (-0.602)	-.005089 (-0.367)	-0.013436 (-1.086)	-

D1	2.4592 (9.708)	2.4835 10.058)	2.3736 (10.090)	2.3875 (10.094)
D3	-2.2016 (-8.299)	-2.2235 (-8.581)	-2.0756 (-8.846)	-2.1354 (-9.299)
ECM_1	-0.15037 (-1.136)	-0.15975 (-1.234)	-	-
R^2 =	0.97	0.96	0.96	0.96
F-VALUES	(12,10)=28.1	(11,11)=31.8	F(10,12)=33.	F(9,13)=36.4
σ	0.285	0.280	0.286	0.28
DW	1.81	1.93	1.99	1.90

NOTE: Values in curly brackets are t-values.
DW means DURBIN WATSON test for autocorrelation.
F-TEST means significance of each model.
σ-Sigma that shows the progress of the model

Source:PC-GIVE OUTPUT

TABLE 5, the most significant regression model

Variable	Coefficient	Std.Error	t-value	t-prob	PartRý
Constant	-0.21989	0.10033	-2.192	0.0472	0.2698
Ddt/GDP	-0.022760	0.0031289	-7.274	0.0000	0.8028
DPU/GDP_1	-0.32172	0.042413	-7.585	0.0000	0.8157
DDS/XGS_1	0.070944	0.0077783	9.121	0.0000	0.8648
DRER_1	-0.39126	0.15521	-2.521	0.0256	0.3283
DDCR/GDP	0.078068	0.031233	2.500	0.0266	0.3246
INF_1	0.026532	0.013412	1.978	0.0695	0.2314
Inf^2_1	-0.0019829	0.00058125	-3.412	0.0046	0.4724
D1	2.3875	0.23652	10.094	0.0000	0.8869
D3	-2.1354	0.22964	-9.299	0.0000	0.8693

R^2 = 0.9619 F(9, 13) = 36.468 [0.0000] σ = 0.288117 DW = 1.90

Source:PC-GIVE OUTPUT

In the regression results above, the t-value of the error correction term confirmed that there is no cointegration. Therefore, the insignificant value implied that there is no long

run relationship among the variables.

The country's stock of external debt to GDP is negative and significant at 1 % level in the most significant model shown above. It is revealed that the debt stock adversely affected the private sector. Specifically, our result indicates that at 1% increase in the lagged debt to GDP ratio decrease private investment by 0.02%. This would imply that private investors in Ethiopia could see that an increase in stock of debt as an indication of either increase in macroeconomic uncertainty or the likelihood of increased future taxation to finance debt service.

In regression result shown above, the lagged public investment is found to be negative and highly significant at 1% level, and this result rejects the complementarities between private investment and public investment in Ethiopia. A considerable part of public investment was controlled by parastatals, which in most cases tend to be in direct competition with private sector.

Thus, it is possible that much of the public investment has been taken at the expense of private investment. The results show that at 1% increase in public investment decreases private investment by 0.32%. This elasticity reasonably high, suggesting that if the government were to continue investing in areas where private investment actively involve, then definitely the private investment would decline significantly.

The lagged TOT variable, though positive as it is expected, it is found to be insignificant as is indicated I in model (1) table 4. It explains that even though the export market is in favor of private sector, probably the country 's output, which used for export is very limited.

The coefficient of lagged real exchange rate variable is negative and significant at 5% level in most significant model (model 4). It is implied that private investments appear to be negatively influenced by the real exchange rate. The results show that a 1% depreciation of real exchange rate resulting in 0.39% decline in private investment. This suggests that depreciation of real exchange rate impacts more adversely on the non-tradable sector than it increases the profitability of the tradable sectors mainly coffee, tea, skin, hides, and some industrial processed products. Thus, it results in a decline in private investment.

In the most significant model shown in table 4,the credit disbursed to private sector is positively related with rate of private investment, as it is expected, and significant at 5% level. The increase of the availability of credit to private sector at 1% results to the increase of private investment by 0.07 %. This is as expected because for most period of the sample interest rates were controlled and therefore credit was rationed as it was discussed in chapter two. Generally, the result implies that policies that increase the availability of credit to private sector would be increased.

As it is shown in model (1), (2), and (3) of table 4,real growth of GDP is negative and

insignificant .It implies that the real growth of GDP does not elicit a significant coefficient, with the result that the impact of macroeconomic instability does not exert a significant influence on private investment. Therefore, in model 4,which is the most significant model, real growth of GDP is dropped so as to improve the accuracy of the model.

The dummy variable D1 has positive impact on private investment and is highly significant at 1% level, which confirmed that the economic reforms that were undertaken in Ethiopia have promoted the private sector positively. The result is consistent with the preliminary expectation. The existences of permissive policies (e.g. lifting the capital limit, permission of engaging in more than one business by an individual etc.) have contributed to the increment of private investment, moreover, the financial liberalization reform has promoted the investment on private financial institution, which increases the availability of credits to private sectors.

The dummy variable D2 that captures the war with Eritrea, has the expected sign, and is highly significant at 1% level. According to the World Bank report the two years war has estimated to cost 10.3% of GDP of the public expenditure, and its share of over all government expenditure soared from an average of 12% in 1992, to 30% in 1998. Definitely, based on the regression result given above, the momentum of reform seems to have been adversely affected by the 1998-2000 intermittent boarder war. Thus, it has certainly diverted the attention of policymakers from issues of long-term development.

CHAPTER FIVE

CONCLUSION AND POLICY RECOMMENDATIONS

5.1. General conclusion

This thesis had the objective of finding out the main factors affecting private investment in Ethiopia. The result of the study provided some support for the hypothesis that private investment rate in Ethiopia influenced by the following economic factors; credit disbursed to private sector, public investment, debt service, debt over hang, real exchange rate, genuine economic liberalization, dummy variables that captured the war fought within and outside the country. The econometric test carried out confirmed the view that these variables have considerable impact on private investment in Ethiopia.

These findings provide some support on the view that those countries with higher growth rates, higher income levels, better macroeconomic stability, genuine economic liberalization, low inflation rate, smaller debt burdens, low rates of public expenditure and higher amount of credit available to private sector experience high growth rate in private sector investment and hence have high growth and development.

The study also showed the impacts of credit availability on private investment in Ethiopia. Both the theoretical hypothesis and empirical findings suggest that when the private sector is squeezed for credit, there is likely to be a reduction in the levels of

private investment with adverse impacts on the long term productive capacity of the private sector.

5.2 Policy implication

The policy implication of this research is clear. The study reveals that tightening of monetary policy, which is advocated in stabilization programme, would be expected to have adverse impact on the levels of private sector investment thereby resulting in reduction of economic growth .To avoid this, the authority should be careful to ensure that the flow of real credit to the private sector is not reduced.

These empirical findings therefore have paramount policy implications necessary for the refinement of the structural adjustment programmes being undertaken by the Ethiopian government .In most cases such programmes have advocated for measures resulting in reduction of absorption capacity, that is, restrictive fiscal and monetary polices which may have adverse consequences on private investment that resulted to the initial slow down in economic activity and a decline in growth and development In respect of this, the economic liberalization programmes need to be scrutinized thoroughly before they are effected so that they do not have negative impact on private investment.

Generally, further polices to mitigate uncertainty in the overall environment for investment decision-making is required. In this regard, the government should follow policy that supports to lessen or minimize uncertainty. First, the study points to the need to reduce fiscal deficits and ascertaining fiscal stability. Large fiscal deficits signal the

unsustainable government polices. They also crowed out financing of private investment. Measures are necessary in order to ensure fiscal stability, which include stabilizing revenue resources and streamlining expenditures. Public investment expenditures that substitute for private productive activity need to be phased out completely. In the past this has been justified on the grounds that there was insufficient private investment or that private investment would lead to the establishment of enterprises that are engines of exploitation .In practice, the outcome has been inefficient and uncompetitive public sector production and a discouragement of private investment. With limited resources, public investment would be better spent on public goods that would leverage greater private capital formation. It has also been realized that the attempt by the public sector to absorb large share of the domestic financial resources would tend to crowed-out private investment to some extent. In the same way, if the total supply of foreign financing to Ethiopia were limited, the amount available to the private sector would tend to grow smaller as the public sector borrowing increases. Despite the fact that the latter means of crowding out may be small in relation to domestic financial crowding out, nevertheless policy makers must be conscious of the possibility.

The depreciation of the real exchange rate should be accompanied by other more concrete measures to boost private investment in exports so as to guarantee the optimal transfer of resources from non-tradable sector. These measures may include adequate and efficient infrastructure, high levels of social capital, low levels of corruption and specific export development activities. This finding raises concern over potential private investment

impact of the gradual opening up of the country's external accounts to speculators, because this opening up, together with the liberalized foreign exchange markets, is likely to make the Ethiopian currency (i.e. 1 US dollar = 8.56 Birr,2002) more susceptible to expectations with undesirable consequences on private investment.

As it is shown in the result table, the level of foreign debt signals both the extent of future macroeconomic instability and relative price changes when policy uncertainty is prevalent and the more direct debt incentive effect on investment stemming from the expectation of higher future taxes to service the debt. Ethiopia's high foreign debt increases uncertainty perceived by domestic investors. Thus, a prudent and consistent debt transformation and servicing policy could overcome the negative disincentive effects of debt on private investment. A debt and debt service reduction agreement between Ethiopia and its creditors would help considerably to reduce uncertainty stemming from the debt overhang.

The estimated results also confirmed that the positive impact of lower inflation rates on private investment behavior in Ethiopia but the impact is different for long run. Therefore, in this case macroeconomic polices aimed at sustaining moderate rate of inflation, which may have a positive impact on private investment, and promote long-term growth. However polices that result in erratic and unpredictable inflation rates may compound macroeconomic instability with consequential adverse effects on private investment activity. Overall, the creation and preservation of a consistent, credible and

stable policy environment is a key factor in the promotion of private investment in the economy.

The empirical findings also indicated that political instability with in and outside the country does affect private investment negatively in Ethiopia. It is therefore highly recommended that the country before plunged to war as a way of solving the problem, the government is expected to endeavor much effort to investigate the causes of the conflict and address the problem in peaceful manner .In other words, if the causes of the political instability is ascertained, then it becomes possible to device polices that aim to reduce the occurrence of the political instability or conflict.

Finally, foreign private investment faces multiple barriers in Ethiopia, most of them related to investment are: lease policy, beaureacratisation, regionalization, lack of policy implementation, and a monopolistic behavior of the current government by owning a large number of enterprises in the name of individuals amongst others. These stumbling blocks have to be either reformed or stopped in order to stimulate private investment and to generate investment inflows in the country.

5.3 Limitation of the study

The main limitation of the study is the use of secondary data. In Ethiopia ,data particularly on private investment is not available. Besides, some of government offices who have access to particular variables are not willing to release the data. As a matter of

fact , secondary data has a problem of inconsistency where various authors have reported different data for the same variable and for the same period. Most of the time , secondary data is collected with out considering for what purposes it will be used but only suitable to the author. Thus ,its reliability cannot be gurranted.The method which has been used here also does not capture all the important variables which might affect the dependent variables such as :social and political stability, investment opportunities, and tribal affiliated regional administration. As the result , the data is not sufficiently wide to capture all the important factors. Nonetheless, it is hoped that these limitations are not great significance to invalidate the results of the analysis.

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Appendix A

Table 1A Over parameterized model

Variable	Coefficient	Std.Error	t.Value	t.Prob	PartRý
Constant	-0.21424	0.37609	-0.570	0.6704	0.2450
Ddt/GDP	-0.01839	0.029073	-0.633	0.6409	0.2858
Ddt/GDP_1	0.004266	0.042160	0.101	0.9358	0.0101
DPU/GDP	0.046936	0.21232	0.221	0.8615	0.0466
DPU/GDP_1	-0.51887	0.65313	-0.794	0.5726	0.3869
DDS/XGS	0.030543	0.053108	0.575	0.6677	0.2485
DDS/XGS_1	0.073278	0.042433	1.727	0.3342	0.7489
DTOT	-.00373	0.00569	-0.657	0.6301	0.3013
DTOT_1	0.00153	0.00549	0.280	0.8262	0.0727
DRER	-0.15207	2.5822	-0.059	0.9626	0.0035
DRER_1	0.20356	0.64844	0.314	0.8064	0.0897
DDCR/GDP	0.012472	0.10266	0.121	0.9230	0.0145
DDCR/GDP_1	-0.10986	0.13854	-0.793	0.5732	0.3861
INF	0.019921	0.10055	0.198	0.8755	0.0378
INF_1	0.086506	0.13669	0.633	0.6408	0.2860
Inf2	-0.00198	0.00406	-0.488	0.7111	0.1922
Inf^2_1	-0.0044	0.00493	-0.888	0.5378	0.4407
R.G.GDP	-0.0467	0.14820	-0.315	0.8056	0.0903
R.G.GDP_1	0.017460	0.057926	0.301	0.8136	0.0833
D1	2.5972	1.1190	2.321	0.2590	0.8434
D2	-2.8941	1.0124	-2.859	0.2142	0.8910
ECM_1	-0.15718	1.5872	-0.099	0.9372	0.0097

R^2 = 0.989 F(21, 1)= 4.44 [0.3599] σ = 0.548004 DW =3.37

Source: PC-GIVE OUTPUT

APPENDIX:B

Table 1 B : Data set used in the model

Years	dt/GDP	PI/GDP	PU/GDP	DS/XGS	INF	Inf^2
1975	9.2	6.8	10.4	11.8	6.6	43.56
1976	10.3	3.6	8.5	9.8	28.5	812.25
1977	10.5	3.1	8.2	8.6	16.7	278.89
1978	11.2	3.1	7.5	9.3	14.3	204.49
1979	12.4	2.9	8.7	6.3	16	256
1980	13.1	2.7	10	8.1	4.5	20.25
1981	12.5	2.5	10.4	10.7	6.1	37.21
1982	16.4	2.6	11.8	13.8	5.9	34.81
1983	18.7	2.5	11.2	18.3	-0.7	0.49
1984	21.4	2.7	12.8	19.3	8.4	70.56
1985	20.5	2.2	14	38.6	19.1	364.81
1986	23.3	2	12.7	38	-9.8	96.04
1987	24.4	2	14.6	51.4	-2.4	5.76
1988	26.2	2	15.6	62.9	7.1	50.41
1989	29.3	1.9	14.4	67.5	7.8	60.84
1990	35.2	2.4	9.9	55.17	5.2	27.04
1991	35.5	2.8	7.6	74.72	35.7	1274.49
1992	21.4	6	3.2	76.9	10.5	110.25
1993	68.4	9.2	5	48.6	3.5	12.25
1994	89.2	8	7.1	44	7.6	57.76
1995	82.3	9	7.5	19	2.8	7.84
1996	71.4	9.4	7.5	42	0.1	0.01
1997	157	10.8	8.3	10	8.1	65.61
1998	71.4	9.8	7.4	11.3	11.2	125.44
1999	154.9	8.2	7.9	16.8	16.4	268.96
2000	158.86	8.3	5.8	13.9	13.9	193.21

Source: *IFS ,African development indicators2001, Ethiopian economic association journals (various issues)*,CD ROM-World Bank Data Base 2002.

APPENDIX:C

Table 1C: Data set used in the model

Years	TOT	RER	RGGDP	Cr/GDP	D1	D2
1975	205.12	5.6	4.2	10.3	0	0
1976	226.97	5.8	3.1	9.5	0	0
1977	142.38	5.1	2.52	8.4	0	0
1978	133.89	4.5	1.39	10.1	0	0
1979	230.78	3.9	-0.013	5.1	0	0
1980	321.59	3.9	1.96	3.83	0	0
1981	214.07	4.1	1.063	3.8	0	0
1982	214.80	4.3	-1.68	3.7	0	0
1983	162.46	4.1	6.63	3.29	0	0
1984	114.82	3.9	5.1	3.4	0	0
1985	125.10	4.1	5.3	2.89	0	0
1986	123.67	3.4	10.2	2.77	0	0
1987	142.53	3.2	-6.3	3.59	0	0
1988	133.46	3.6	-9.73	2.58	0	0
1989	198.83	3.8	9.88	2.47	0	0
1990	112.19	3.5	14.01	2.43	0	0
1991	125.03	3.6	-0.01	2.14	0	0
1992	107.79	2.9	0.35	3	1	0
1993	89.659	3.4	4.07	5.03	1	0
1994	89.435	5.4	-4.33	7.01	1	0
1995	139.48	5.8	-3.69	11.4	1	0
1996	108.30	6	12	17	1	0
1997	83.757	6.6	1.69	19.31	1	0
1998	100	7	5.39	19.3	1	1
1999	89.144	6.9	10.61	19.3	1	1
2000	76.059	6.8	5.19	17.5	1	1

SOURCE: *IFS,African development indicator s 2001 , Ethiopian economic association journals (various issues)*,CD ROM-World Bank Data Base 2002.

APPENDIX D

Table1 D: Result for diagnostic Test

AR 1- 2F(2, 11)	0.14597 [0.8658]
ARCH1 F(1,11)	0.13032 [0.7249]
Normality $X^2(2)$	5.9189 [0.0518]
RESET F(1, 12)	1.0954 [0.3159

Source: PC-GIVE OUTPUT