

MACROECONOMIC DETERMINANTS OF PRIVATE
INVESTMENT IN ETHIOPIA:
(TIME SERIES ANALYSIS)



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MACROECONOMIC DETERMINANTS OF PRIVATE INVESTMENT IN ETHIOPIA: (TIME SERIES ANALYSIS)

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The thesis entitled “MACROECONOMIC DETERMINANTS OF PRIVATE INVESTMENT IN ETHIOPIA” by Michael Tadesse is approved for the degree of “Master of Science in Development economics”

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DECLARATION

I, the undersigned, declare that this thesis is my own original work and has not been presented in any other university. All sources of materials used for this thesis have been duly acknowledged.

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LIST OF ACRONYMS

ADF	Augmented Dickey-Fuller Test
DF	Dickey-Fuller Test
ECM	Error Correction Model
EEA	Ethiopian Economics Association
EIA	Ethiopian Investment Agency
EG	Engle-Granger
EPRDF	The Ethiopian People's Revolutionary Democratic Front
GDP	Gross Domestic Product
GNP	Gross National Product
GDS	Gross Domestic Saving
GTP	Growth and transformation Plan
IMF	International Monetary Fund
LDC	Less Developed Countries
MOFED	Ministry of finance and economic development
NBE	National Bank of Ethiopia
OLS	Ordinary least square
PP	Phillips-Perron
SSA	Sub-Sahara Africa
TOT	Terms of trade
VAR	Vector Auto Regressive
WB	World Bank

ABSTRACT

The main objective of this study is to empirically examine the macroeconomic determinants of Private investment in Ethiopia for the period ranging from 1974 - 2014 using the Vector Autoregressive (VAR) of multivariate time series analysis. The result shows that real GDP, interest rate, Government or public investment and real effective Exchange rate as well as inflation are the long run determinants of private investment in Ethiopia for the period under Consideration. Moreover, Real GDP and Real interest rate have significant positive effect on private investment However, Government or Public investment, real effective exchange rate and inflation rate influencing private investment negatively and significantly. In addition, in the short run only Government or Public investment, real effective exchange rate and inflation rate at their difference are statistically significant in determining private investment and has negative sign. Whereas, Real GDP and interest rate have positive effect on private investment of Ethiopia in the short run. The policy implication resulting from the study include, promoting political stability, attracting FDI, enabling a structured public- private dialogue, establishing a well-developed financial sector and promoting government investment in infrastructure development among others.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Private investment is essential for ensuring economic growth, sustainable development and poverty reduction. It increases the productive capacity of an economy, drives job creation, brings innovation and new technologies, and boosts income growth (Fikru 2007).

Private investment plays an important role in developing nations for the same reason that it does in industrial countries: investment determines the rate of accumulations of physical capital and is thus an important factor in the growth of productive capacity.” The view that capital accumulation matter so much in developing countries is also consistent with what is known about the pattern and process of economic development .It is also intuitively plausible that developing countries lack capital and are much less technically advanced. For capital scarce and labor abundant economies providing workers with a little more capital to work with can increase productivity and output very significantly (Agenor & Montiel 1996)

In recent years, emphasis has been put on the development of the private sector in developing countries to boost economic growth and reduce poverty. In this sense, private domestic investment in developing countries needs to be seen not only as a contributor to economic growth and employment but also as a catalyst to attract foreign direct investment. This strategy stems from dissatisfaction with public sector dominated investment programs. It has been generally agreed that the financial performance of public enterprise has been disappointing in most countries despite huge financial resource dispersed to them. More importantly, in developing countries as evidenced by many studies it is private investment that plays a greater role than public investment in determining growth (Salimano, 2008)

Ethiopia has been characterized by very low private investment activities, which led to very low advancement in the economy, even when compared with the standard of Sub-Saharan Africa private investment percent to GDP for period 1970/71-1979/80, 1980/81-1989/90 and 1991/92-1998/99 was 11.5, 9 and 12 percent respectively (Shiferaw 2002).

In Ethiopia however, private investment percent of GDP growth rate at constant market price for the period 1963/1964,1973/74, 1974/75-1990/91 and 1991/92-2013/14 was 10.5, 7.5 and 20.26

respectively and GDP growth rate for the same period was 4.1,2.2 and 4.8 respectively (National Bank of Ethiopia 2014.).

The reason for comparable fair performance of private investment and growth during the Imperial Regime (1960/61-1973/74) were free trade policy, market oriented financial sector policies developing share market, free market where prices were determined purely on supply and demand(Alemayehu and Befekadu, 2002).

The reason for the poor performance of private investment and growth during the socialist regime (1975-1991) were restrictive policies; a constraining business environment (such as credit restriction to private sector) and the general uncertainties about the situation and the future course of economic policies because of the nationalization (Ibid).

Comparatively the country has made a considerable progress in private investment growth since 1992 as a result of policy change. Like many developing countries, Ethiopia also went through the structural adjustment program in an attempt to lifting restriction on private sector, reducing macroeconomic imbalances, realigning the exchange rate and liberalizing the trade system. The removal of preferential interest rate between public and private sector, which is an important measure that has taken place, is also believed to give incentive for the private sector. However the high collateral requirement and the involvement of more businessmen on trade sector continued to shows investment in productive businesses such as manufacturing activities (Alemayhu, 2006).

Theoretical and empirical studies have proved consistent with the idea that economic policy of a nation is crucial in determining the domestic investment behavior. (Shiferaw, 2000 and Badawi, 2003 and 2005).

Therefore, this research is conducted to show the effect of different policy regime that affect investment particularly private investment and to identify the determinate of private investment in Ethiopia during the period 1974- 2014.

1.2 Statement of the Problem

Private investment, in levels and as a percentage of GDP in Ethiopia has shown an inconsistent trend for some periods during imperial period, military Derg regime and the incumbent EPRDF Government. Declining investment ratios and levels are a problem, firstly because investment matters for growth, and secondly because low investment increase vulnerability in the economy. (Mohammed, 2002).

A key challenge facing the country is to come up with policies that would help raise private investment in order to stimulate and sustain economic growth. A significant part of the adjustment effort was directed towards making the private sector take the lead in initiating economic growth and development. The lack of appreciable investment policy measures has now raised serious concern about their long run sustainability (ibid).

Moreover a growing theoretical literatures has focused attention on the impact of risk and uncertainty on investment and growth. They emphasized risks and uncertainties may be large enough to discourage investment decisions. Often, a diverse and complex set of factors determine the timing, scale and quality of investment inflow (Dixit and Pindyck, 2004).

Mapping out other determinants of inward investment flows and identifying appropriate policy response is necessary in order to design an effective investment policy. Thus, if the goal of macroeconomic policy is to stimulate investment over the short to medium term, stability, sustainability and credibility of the policy option adopted may be at least as important as even more than the nominal levels of tax, exchange or interest rates obtainable in the economy.

Even though progress has been recorded, it is not as expected because, such a restrictive policy has the tendency of crowding out private investments it is often accompanied with a reduction in government expenditure on infrastructure, which is complimentary to private investment. In the Ethiopian case however, the policy states expenditure on the basic infrastructure to be one of the goals of the reform. More specifically the following measure has been taken: Tax and duties on export (except coffee) have been abolished. Quantitative ceiling for credit to the central and regional government have been established in order to avoid crowding out of private sector capital formation (Ethiopian investment agency, 2008).

Private investment is a very important factor in bringing economic development, its working or efficiency is determined by different socio economic and political factors. Moreover, these different factors have different effects on private investment either in the negative or positive sense. Therefore, in order to study the effects of private investment on the performance of an economy the study is identifying first, the factors that are affecting it. By doing so, the study is understand why and how changes in private investment occurred and possible remedies to correct prevailing problems of private investment by looking at the current situation of the determinants.

A number of studies have been conducted on the determinants of private investment all over the world especially for the LDC"s. Nevertheless, those studies do not provide clear cut-conclusions. Furthermore, their methodology differ. Some use time series but other use cross-country approach accordingly, they came up with different results and different policy implications. Most of these cross sectional analysis suggests that the impact of factors affecting investment rate vary among countries that pointed out the need for empirical study for individual countries.

Daniel (2001) examines the determinants of determinants of private investment in Ethiopia using time series data for the period 1965-1999. His results indicate that the real GDP, public investment on infrastructure and foreign exchange availability all have positive Effects on private investment. On the contrary, inflation rate and external debt to GDP ratio showed a negative effect on private investment.

Mulubrihan (2006), study on Econometric Analysis of Macroeconomic determinants of private investment in Ethiopia for the period 1971-2006 using VAR model concluded that, public investment, volume of credit, interest rate, output growth, exchange rate and macroeconomic instability were consistently significant determinants of private investment, though the magnitude and direction of each determinants are different.

Previous studies in case of Ethiopia i.e. Mulubirhan (2006) and Daniel (2001) did not include some determinates of private investment variables in the model, which may have significant effect on private investment. There are a number of determinants of private investment which are not still well explained. Besides to above variable gap, studies on determinants of private investment on others country cases have been carried out during 1990s and early 2000s.

Furthermore, Mulubirhan study on the determinants of private investment in Ethiopia has been carried out before the world 2007 financial crisis. These imply there is the time gap in these areas. Therefore, this study also significant by filling the time and variable gap using data's ranging from the year 1974-2014. As a result, the study were motivated by the basic epistemological questions raised in the following section to partially fill in the existing literature, time and variable gap by examining the determinants of private investment from the context of Ethiopia.

Since economic growth is a very important phenomenon, giving due attention to factors that contribute to it is necessary. One of which is investment, particularly private investment. Investment has its own effect on economic growth and thus needs a more vigorous work being done about it. In addition, in the pursuit of studying investment, the core point to be focused will be its determinants.

1.3 Objectives of the Study

The main objective of this study is to identify the macroeconomic determinants of Private investment in Ethiopia context from 1974 to 2014.

More specifically, the study aim: to

- ✓ Examine the pattern of private investment during the period under consideration.
- ✓ Empirically examine the short run and long run effect of determinants of private investment in Ethiopia
- ✓ Test the sensitivity of private investment to those variables that determine it in Ethiopia.
- ✓ Explore the relationship between private and public investment in Ethiopia.
- ✓ Checking the determinants of private investment thereby estimate future prospects and identifying possible policy intervention areas for investment growth.

1.4 Hypothesis

Based on the determinants of private investment conducted in different parts of the world the study is hypothesize that the level of real GDP and Public sector investment (PUBINV) will positively and significantly affect private investment. Whereas, inflation (INF) real interest rate (RIR) as well as the real exchange rate (REER) is expected to be negative.

1.5 Significance of the Study

The study seeks to analyze the major variables that determine private investment. This is on the back of the major concern of any government to foster economic growth. To the extent that private investment is a determinant of long-run growth, a comprehensive assessment of what stimulates it is essential to identify and address related policy issues by the Ethiopian Government.

The study also highlights key economic issues that affect private investment hence informed decisions to be made by potential investors as well as all concerned stakeholders. This study is also assist and may serve as a reference for professionals and others who are interested in the field as a spring board for further study, especially who are interested to look the pulling and pushing factors of private investment in Ethiopia.

1.6 Scope and limitation of the study

The study is focusing on the impact of certain macroeconomic variable on private investment in Ethiopia. This is because, private investment is very important in determining the level of both the real output and total employment. More precisely, the study is also examining the impact of public investment, interest rate, real GDP, inflation and real exchange rate on private investment. The study's period is designed to have coverage on relevant data between the years 1974-2014.

The potential limitation that hindered the success of the study is the problem of inconsistency of data as reported by different institutions. In addition, lack of adequate data, accuracy of data and data aggregation are the challenges that limit the findings of the study.

1.7 Organization of the study

The paper contains five chapters. The first chapter is an introduction of the study. Chapter two deals with both the theoretical as well as empirical literature review of the macroeconomic determinants of private investment. In the third chapter data source and research methodology were reviewed. The forth chapter is about the findings and discussion of both descriptive and econometric analyses finally chapter five presents the conclusions and policy implications.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Theoretical frame work

The study of the determinants of private investment has been afforded extensive detail in formal investment models based on the experiences of developed countries. (Mohammed 2002). Provides some insights into the different forms of some of these theoretical models. According to (Jorgenson 2000) there are four general approaches to modeling investment common in the existing investment literature. These broad categories include the flexible accelerator model, which they associate with Keynes (1936); the neoclassical model, which they associate with Jorgenson (1971); Tobin's Q model, which they associate with Tobin (1969) and the expected profits model, which has a number of variants.

The basic notion behind the flexible accelerator model is that the larger the gap between the existing capital stock and the desired capital stock, the greater a firm's investment (Jorgenson, 2000). The hypothesis is that firms plan to close a fraction of the gap between the desired capital stock K^* , and the actual capital stock K , in each period. Within the framework of the flexible accelerator model, output, internal funds, cost of external financing and other variables may be included as determinants of K^* . In the neoclassical approach, the desired or optimal capital stock is proportional to output and the user cost of capital (which in turn depends on the price of capital goods, the real rate of interest, the rate of depreciation and the tax structure). Therefore an investment equation results from the gap between desired capital and the actual capital stock. (Mohammed 2002).

In the Tobin Q theory of investment, the ratio of the market value of the existing capital stock to its replacement cost (the Q ratio) is the main force driving investment (Jorgenson, 2000). That is to say, enterprises will want to invest if the increase in the market value of an additional unit exceeds the replacement cost.

There are theories hinging on profits or profits earned by business units and industries instead of output. This analysis of profit and investment relationship has several variants, one of which is that investment is affected by current profits, the amount of retained profits, or by other variables like output, price and sales, which reflect the profits (Mohammed 2002).

The profit theory posits that the greater the gross profits, the greater will be the level of internally generated funds and in turn the greater will be the rate of investment (Zebib and Muoghalu, 1998: 101).

In addition there is the dis-equilibrium approach, which views investment as a function of both profitability and demand for output (Jorgenson, 2000). In this instance, investment decisions have two stages: first is the decision to expand the level of productive capacity, and second, is the decision about the capital intensity of the additional capacity (Serven and Solimano, 1992). The first decision depends on the expected degree of capacity utilization in the economy, which provides an indicator of demand conditions, while the second decision depends on relative prices such as the cost of capital and labour. The investment decision takes place in a setting in which firms may be facing current and expected future sales constraints (Serven and Solimano, 1992). Therefore, investment depends both on profitability and on the prevailing sales constraints, which determine the rate of capacity utilization (Serven and Solimano, 1992: 7).

Also, Oshikoya (2001: 23) reports that, it can be deduced from modern theory of investment that the level of investment depends on:

$$I = I(\Delta\gamma, r, q, \mu) \dots\dots\dots (1) \text{ where,}$$

$\Delta\gamma$, is the expectation of future market conditions, r is the financial constraints of the firm, q is the valuation of the firm in the stock market, and μ is economic and political uncertainty.

It is clear from the discussion above that private investment depends on three broad categories of variables: Keynesian, neoclassical, and uncertainty variables. Variables that may be included in the Keynesian tradition include GDP growth, internal funds and capacity use, while the neoclassical determinants of private investment include Tobin’s Q, real interest rate, user cost of capital and public investment (Oshikoya 2001:). The uncertainty variables as referred to in Oshikoya (1994: 585) are the variability of the user-cost of capital, real exchange rate, inflation rate, and the debt/GDP ratio.

2.1.1 Monetary Policy and Private Investment

Many scholars, who studied private investment in developing countries, opted to move away from the traditional theories and give emphasis on the role of financial sector development. The fact that financial markets in developing countries are typically repressed and firms are credit-rationed constraining their ability to adjust capital to a desired level. More specifically, limited access to credit compels firms in developing countries to accumulate enough real balance before initiating investment projects. That is, increase in current consumption at the cost of future consumption as a substitute of financial assets. McKinnon (1973) and Shaw (1973) provided the theoretical and empirical frame work for such analysis and that argued that the level and quality of private investment in developing countries is positively associated with real interest rate on deposits.

Christian (2010), many developing countries have embraced policies of financial reform and liberalization intended to promote capital markets and ensure positive real interest rate. Though the standard economic theory states promoting a negative relation between investment and the rate of interest, the effects of changes in the real rate of interest on private investment in developing countries may depend on the level of financial system. In a financially repressed economy, rise in interest rate may stimulate an increased flow of deposits that enable increased investment to be undertaken. McKinnon (1973) further explained a higher positive interest rate would generate greater rates in saving and investment, which are important in accelerating the rate of economic growth. In developing countries, government intervention in the capital market, such as a fixed interest rate at a low level, imposition of a high reserve ratio, and widespread selective credit policy leads to a reduced saving rate and causes important sectors to use inferior technologies.

In most modern theoretical works, the real exchange rate (RER) is defined as the domestic relative price of tradable goods (PT) to non-tradable goods (PN). This definition summarizes incentives that guide resource allocation across the tradable and non-tradable sectors. An increase in RER (depreciation) will make the production of tradable relatively more profitable inducing resources to move from the non-tradable to the sector. This relative price measures the cost of producing domestically the tradable goods-degree of international competitive. A decline in RER or a real exchange rate appreciation reflects the fact that there has been an increase in the domestic cost of producing tradable goods. If there are no changes in relative prices in the rest of the world, this

decline in RER represents a deterioration of the degree of international competitiveness for the country. So a country now produces tradable goods. If there are no changes in relative prices in the rest of the world, this decline in RER represents a deterioration of the degree of international competitiveness for the country. So a country now produces tradable goods in a relatively less efficient way than before (Agenor 1996).

According to Servedn and Soilimane (1990) and Cardoons (1993) countries that were highly dependent on imported capital and intermediate goods in total investment would face a contraction of investment with real depreciation. The rationales behind this finding include the following. First the adverse real income effect of the real depreciation could reduce the desired capacity of the firm. Second without monetary accumulation, real exchange rate, depreciation may result in higher interest rate and depress invests while a real appreciation would create an unsustainable investment boom. In addition, it would cause an increase in real debt burden and decline in the firm's net worth.

The real exchange rate is perceived to send signals to domestic and external absorption and production. It is important that these signals need be corrected otherwise response would be distorted leading to adverse internal and external balances. Given this premise, the key issue in the deviations of the nominal exchange rate which is directly determined from the equilibrium rate is distorted. The distortions are believed to be explained as either over-valuation or undervaluation of national currencies. Distortions in exchange rates have different impacts on import demand and export supply. Over-valuation has negative effects on export supply, under valuation leads to the opposite effects. In both cases, distortions lead to disequilibrium in the foreign exchange market and in trade balance. Economic theory predicts that countries characterized by extended periods of over-valuation of their domestic currency suffer from severe balance of payments problems. Over valuation imposes an implicit tax on exporters, as exporters receive less when they convert their foreign exchange earnings into local currency at the overvalued rate Cardoons (1993).

2.1.2 Fiscal Policy and Private Investment

In theory, crowding in and crowding out effects of public investment could take place at the same time and hence, the net effect on private investment is indeterminate. The effect of government activity on private sector activity may take two broad sets: complementarity (crowding-in) and substitutability (crowding out) effects.

The complementarities effect asserts that public capital, infrastructure investment is likely to be related in a rather different way to private capital profitability (formation), because the provision of public services that reduce the cost of production of the private sector would have a positive impact on the profitability of private investment to the output produced by the private sector. Moreover, the crowding in effect of public on the marginal productivity of private investment is high when more public capital spending is one education and health, which may enhance the productivity of labor other components of current public spending such as on the informant of property of labor. Other components of current public spending such as on the enforcement of property rights and legal aspects improve the productivity on private investment. Agenor et al. 2005 suggested that expenditure on infrastructure have a large effect in the countries where internal stocks are low and basic infrastructure services (electricity, communication, etc) are lacking.

However to the extent that public investment displaces or crowds out private investment its positive impact on private capital formation can be highly mitigated (for example: Badawi, 2003 in Sudan). The crowding out effect on public investment in developing countries may not be felt through an increase in distortion taxes which may increase incentives for private agents to evade tax, or increased interest rates as in industrial countries (Shiferaw, 2002).

2.1.3 Foreign Trade Policy and Private Investment

The terms of trade are one of the most important indicators of external shocks to the economy and the changes in the economy's terms of trade will influence private investment demand. The permanent TOT changes will affect the profitability of private investment through two mechanisms. The first mechanism operates through the impacts of a change in the terms of trade on the real income and the profitability of the export sector, but also through the extent multiplied if profits are positively corrected across sectors. Deterioration interims of trade reduce real income and have at least a transitory negative effect on investment. A term of trade deterioration also reduces

investment in the export sector because it directly affects the profitability effect of investment in that sector. If profits are positively correlated across sector, bad news for the export sector is bad news for the economy as whole. Conversely, Positive terms of trade shock will spread in the benefit through the economy.

The deterioration in terms of trade also affects the budget adversely either indirectly, by reducing the tax base, or directly, if the government owns the export sector. Budget deterioration will require corrective measures and its deflationary effects will reduce investment when government spends what it earns; reduction taxes automatically will reduce spending. Profits and investment even in the absence of corrective actions Cardson (1993) called this effect Manaus Opera House Effects. The second mechanism operates when deterioration in terms of trade has an impact on the current account and thus induces concretionary measures.

Deterioration in the terms of trade will worsen the current account balance. If the deterioration is perceived as permanent, it will require corrective measures. A transitory deterioration that cannot be financed will also require correctives measures. These measures may include expenditure reducing fiscal and monetary policies that will affect investment adversely. They may also include a devaluation of the exchange rate that can only be transmitted in to over devaluation in the context of tight money; Cardoons called this effect ‘IMF’ effect.

The adverse effect in the terms of trade will increase the cost of imports relative to income and also reduce the purchasing power of exports. Severely terms of trade. Therefore may worsen the ratio of current deficit to GDP ratio an indicator of external balance and macroeconomic instability, with adverse consequence on private investment (Cardson, 1993).

World prices fluctuation will not only induce macroeconomic uncertainty but will also exert an impact on inflation, the real exchange rate, resource allocation, and the overall investment outlook. An increase in the price of an imported good with large weight in the cost of living index will have a direct impact on consumer prices. Depressed export prices .in the agricultural export sub sector will draw resources away from the export sector reducing export and discouraging investment in the sector (Oshokoja, 1994).

2.1.4 Macroeconomic Uncertainty, Instability and Private Investment

Developing economies suffer from a high degree of macroeconomic uncertainty. Growth, Inflation, real exchange rate and other key macroeconomic variables are much more volatility developing in developing countries than industrial economies and the consequences of this excess volatility for aggregate performance in several dimensions growth, investment and trade has attracted some attention in empirical literature (Dixit and pindyck, 1994). In case of investment, this concern has been received by recent theoretical work indentifying several channels though uncertainty can impact on investment such as exchange rate volatility, policy uncertainty, inflation variability (Serven, 1996; Dixit and pindyck, 1994; Dehn, 2000; and Shidraw, 2002). But the effect of uncertainty on investment relation is indeterminate on the theoretical grounds and at the same time some of these effects of uncertainty operate in mutually opposing directions. To get determinate relationship among uncertainties and private investment with in typical country and specified period of time they need to be incorporated as key determinants of investment.

Many economists and theoretical arguments in this line of research focus on the detrimental effects of macroeconomic instability on private investment productivity. Capital accumulation and economic growth. A rise in macroeconomic instability means a rise in one or more policy induced macroeconomic instability adversely affects the rates of productivity and investment mainly by creating uncertainty about current and future macroeconomic environment (Shiferaw, 2002). Instability can lead to low investment as investors postpone investment decision waiting for the resolution of the inflation if they considered it as temporary. Moreover inflation engendered macroeconomic instability can lead to capital flight by substituting domestic currency by foreign currency and investing on foreign countries that have low inflation.

2.1.5 Inflation and Private Investment

Inflation rate also constitute a source of uncertainty in macroeconomic environment, but the direction of the effects of inflation on investment is ambiguous in both the theoretical and empirical literature. The traditional view on the role of inflation on economic growth articulated in the works of Tobin (1969) held that inflation is positively correlated with capital formation. According to Tobin, the substitutability hypothesis views money and capital as substitutes. Since inflation increase the cost of holding money; this will encourage a portfolio shift into capital. The line of

reasoning here is that inflation by encouraging saving reduces the interest rate and therefore leads to increase in investment and economic growth (Atukeren, 2005).

Another mechanism that inflation could affect growth is by distorting the optional choice between consumption and leisure. An increase in the rate of inflation will increase the price of consumption with respect to the price of leisure inducing substitution from consumption to leisure thereby reducing the labor supply (ibid).

In relation to the above fact, that inflation results in macroeconomic instability thus creating uncertainty. This high uncertainty can distort the price mechanism as means of allocating resources efficiently. The study added that periods of macroeconomic instability can lead to low investment as investors postpone investment decision waiting for the resolution of the inflation, if they considered it as temporary. Moreover, inflation engendered macroeconomic instability can lead to capital flight by substituting domestic currency by foreign currency and investing on foreign countries that have low inflation (Ibid).

Inflation may exacerbate informational problems and increase moral hazard problems in the banking sector. This may lead to the inefficiency of financial sectors in allocating resources (lending and saving becomes risky) and more fragile due to high default risk (Sneesens, 1987).

2.2 Empirical Literature

The theoretical models highlighted above were essentially formulated to analyze private capital formation behavior of firms in industrial economies with none of them so far decisively proved to be superior to the other. This calls for analyzing empirical literature of developing countries to paid out the more appropriate model.

Green and Villanueva (1991) attempted to examine the determinants of private investment in 23 developing countries by specifying modified neo-classical flexible accelerator model with panel modeled for the period of post 1974 .The regression results showed that real GDP growth was statistically significant and had positive effect on private investment, negatively relates to real interest rates.

Kamps (2004) used quadrennial panel data and regression analysis for examining private investment in six Latin America countries (Argentina, Brazil, Chile, Colombia, Mexico and Venezuela) The result showed that public investment per GDP had positive and significant effect on private investment.

Amin (1998) had the same argument as Badewi (2003) Cameroon's fiscal policy and economic growth accounting model for the period 1996-1994 using two-stage least square estimation. The paper pointed out that public investment crowds out private investment; real exchange rate had positive coefficients and has highly significant impact on private capital formation.

Harupara (1998) studied macroeconomic determinates of private investment in Namibia for the period 1970 to 1996 using stationary test and co-intergration.the result found that volumes of credit granted to private sector, real output, and public investment have a positive and significant effect both in the short run and long run on private investment; and depreciation of the exchange rate stimulates private investment in the long run model but it has negative impact on the short run. On the other hand, the study revealed that macroeconomic instability, proxies by the variability of the inflating rate deters private investment activity in Namibia in the short run and long run.

Serven (2002) examined real exchange rate uncertainty and private investment in 23 developing countries for the period 1970-1995 using unbalanced panel data and GMM estimating. The regression showed that private investment is statistically and negatively related to real exchange rate uncertainty. And the investment effect of real exchange rate uncertainty is influenced by the

degree of trade openness and financial development. That is higher openness and wealthier financial systems are associated with significantly negative uncertainty investment and vice versa.

Shiferaw (2000) attempted to analyze private investment and public policy in sub-saharan Africa. The study estimated reactive impact of each explanatory variable on private investment using first FGLS estimation and Quintile regression estimation for the period 1979 to 1998. The FGLS result showed that increased in the lagged level of real per capital GDP and its annual rate of growth have a direct impact on private investment and also argue that the relative impact of per capita GDP is stronger than a dollar increase in the level of per capita GDP. Credit to the private sector has a significant and direct relationship with private investment. According to study public investment has crowding in effect on private investment in Sub-Saharan African i.e. there is complementarities' effect between public and private investment. The study also indicated that inflation did not show to as major deterrent of private investment Badawi (2003) on his study, private capital formation and public investment in Sudan for testing the substantiality and co-integrated VAR model for the period 1969-1998. Analyzed that both public and private investment had a significant contribution to economic growth, but the contribution by private investment had a significant contribution to economic growth, but the contribution by private sector is more pronounced than public investment. The result of the study also pointed out that public sector investment had more crowding out effect than crowding in effect and it curtails private investment expansion.

The same conclusion on his, private capital formation and macroeconomic policies in Sudan for the period 1969-1998 using VAR modified neoclassical flexible accelerator investment. Moreover the result of the study further found out that real output, real banking sectors credit have significant and positive impact on private capital formation but the result noted that public sector investment, real interest rate had significant and negative impact on private capital formation. The real exchange rate had significant and positive short real impact on private sector investment but it has negative long run impact on private sector investment in fixed asset i.e. devaluation had negative impact on private investment (ibid).

Daniel (2001) carried out a study on the Macroeconomic determinants of private investment In Ethiopia using time series data for the period 1965-1999. The result from this study indicated That GDP, public investment on infrastructure and foreign exchange availability all have positive Effects

on private investment on the contrary, inflation rate and external debt to GDP ratio Showed a negative effect on private investment.

The data of 1975-1994 showed that real interest rate, growth of per capital GDP public investment and changes in terms of trade did not affect private investment. He further carried out a survey on a number of firms in region 14 and Tigry and the data collected showed that bureaucratic procedures, lack of infrastructure (particularly power) and access to finance, are the leading constraints to entry, operation and expansion of private investment in Ethiopia..

The results also suggest that public investment on infrastructure projects has a Positive externality on private investment. This implies the complementarily nature of private investment and the availability of infrastructure, at least in the long run. Thus, the government can stimulate private investment by investing on infrastructure projects. (Daniel Z. 2001)

Genet (1992) carried out a study on the determinants of private investment in Ethiopia using annual data for the period 1970-1989. Her findings indicated a negative relationship between public investment and private investment. This result demonstrated a crowding out of public investment on private sector activities. However, on estimating a reduced form of the investment equation, public investment turned out to be insignificant. Furthermore, real GNP growth was seen to have a negative effect on private investment.

Atukem (2005) applied a multivariate private model to examine the determinants of the crowding in effects of public investment in sample of 25 developing countries for the cross-section data for the period between 1975 and 2000. The model predicted that the likelihood of crowding-in effects of the public investment was higher in countries with a stable macro environment. It was also found that the likelihood of the public investment to crowd in private investment increased with availability of domestic credit, and as the foreign debt service burden decreased. In addition, as per capital GDP increased the likelihood of crowding in decreases.

Wisdom, A. (1997) carried out a study on the determinants of private investment in Ghana using data spanning from 1970 to 1994. His study identified real GDP, real lending rate, public investment and credit availability to the private sector as the main determinants of private investment in Ghana. The regression result based on OLS revealed that real GDP, and credit availability have a positive impact on private investment. On the contrary, public investment was seen to have a negative effect

on private investment. This negative effect of public investment on the private sector suggests the “crowding out” of public investment on the private sector in Ghana.

Asante, Y. (2008) studied the Determinants of Private Investment Behavior in Ghana using data for the period 1970 to 1992. This study revealed that public investment as a ratio of GDP, growth rate of real credit to the private sector, the real exchange rate, the real interest rate, lagged private investment as a ratio of GDP, all have positive and significant impact on private investment. Public investment, growth rate of real credit to the private sector, the real exchange rate, are all significant at the 1% level. On the contrary, measure of macroeconomic instability, political instability represented by coup dummy, and inflation all have a negative impact on private investment in Ghana. The main strength of this study is that, it incorporated many macroeconomic variables that are expected to affect private investment in the context of a developing country. The only weakness of the study is that it used a short time period coupled with the many explanatory variables. Given the short period of the study and the many explanatory in the model, the degree of freedom will be very low and that may impose constraints in the model estimation process.

Quattara (2005) attempted to analyze modeling the long run determinates of private investment in Senegal over the period of 1970-2000 using modified flexible accelerator model. The model suggested that private investment is positively affected by public investment (complementary), Real GDP and foreign aid whilst the credit to the private sector and terms of trade affect private investment negatively.

Workie (1997), In his study on determinants and constraints of private investment in Ethiopia for the period 1974/75-1994/95 using ordinary least square method concluded that, availability of finance, the real exchange rate and policy variable (dummy) were consistently significant determinants of private investment. The real exchange rate had positive and significant influence on the private investment. This implies that devaluation of domestic currency in 1992 had favored private investment. The same conclusion is reached by (Asmerom.1997) on the study exchange rate policy and economic reform in Ethiopia for the period (1974-1991) used General Chow Structural Model with simultaneous equation model and using two stages least square regression to capture the interrelationship; between public and private external debt, capital accumulation and production.

Tun Wai and Chong Hue Wong (1982) studied the determinants of private investment in developing countries. They adopted their model from a version of the modified flexible-acceleration theory of investment, which they applied on data collected from developing countries. They ran separate ordinary least squares regression models on data collected from Malaysia, Greece, Thailand, Mexico and Korea. The results indicated that private investment is positively related to public sector investment, changes in bank credit to the private sector, net capital inflows and private sector output. The results were all significant for all those countries that data was collected.

Mbugua, T.K. (2000) carried out a study on “The Micro and Macroeconomic Determinants of Private Investment in the Manufacturing Sector in Kenya”. His study identified current and past public expenditure on infrastructure, public expenditure on education, public debt, real interest rates, and real GDP lagged once as the main determinants of private investment in the manufacturing sector of Kenya. He modeled the private investment equation by OLS using data covering the period 1964 to 1998. The result indicated that real interest rate, public expenditure on infrastructure, lagged credit to the private sector, real gross domestic product lagged once and public expenditure on education lagged twice all have positive and significant effect on private investment in the manufacturing sector of Kenya. Public debt, on the contrary, had a negative impact on private investment in the manufacturing sector in Kenya.

Samson (2004) examined the effect of export earnings and capital formation in Ethiopia for the period 1965-2001 and used a modified version the flexible accelerator model for investment. The result pointed out that export earning instability had significant negative impact on aggregate investment in both long run and short run on the contrary domestic; credit availability had stimulus effect in private investment and in the long-run domestic and inflation had curtailed effect on private investment.

CHAPTER THREE

DATA SOURCE AND METHODOLOGY

3.1 Source of Data

Secondary data were employed in carrying out this study. The relevant data were collected from the National Bank of Ethiopia (NBE), Ethiopian Investment Agency (EIA), Ministry of Finance and Economic Development (MoFED). For the purpose of analyzing the country's determinants of private investment growth rate, the data were covered the period from 1974 - 2014.

3.2. Methods of Data Analysis

To show the effect of different factors on private investment, a descriptive analysis is used. Here, in order to make comparison between different effects of these factors under different policy frame works and to show what kind of trend exists between them and private investment. So, Ratios, percentages and graphs are used.

In addition to the descriptive analysis, in order to capture the degree of influence of each of the determinants of private investment, econometric analysis is applied. The methodology employed in this study is based on recent advancements in the theoretical and empirical explanatory variables – private investment relationships. As the data to be used is time series, various tests such as testing for stationary (unit root test) and co-integration tests are performed.

However, most economic variables are not stationary. Models containing non- stationary variables is 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) is invalid (Harris and Sollis 2003). Therefore, it is necessary to test for stationary of time series variables before running any sort of regression 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. This study is used multivariate time series analysis. Multivariate time series analysis is used when one wants to model and explain the interactions and co-movements among a group of time series

variables. This study is used Vector Autoregressive (VAR) of multivariate time series analysis to estimate determinates of private investment in Ethiopia using data 1974 and 2014.

Endogeneity problem or simultaneity bias may also raise special concern in investment investigation. Interaction and interdependence of economic policy variables make it necessary that investment models incorporate a set of equations. Each equation of the system of equations describes the behavior of certain variable, which appears in the other equations as an explanatory variable.

A VAR is a 'K' equation; k-variable linear model in each variable is in turn explained by its own lagged values plus current and past values of remaining k-1 variables. This simple framework provides a systematic way to capture rich dynamics in multiple time series and the statistical tool that come with VAR were easy to use and interpret. The vector Auto regression (VAR) model is one of the most, flexible, and easy to use models for the analysis of multivariate time series (Christian, 2010). The VAR model has proven to be especially useful for describing the dynamic behavior of economic and financial time series and for forecasting. It often provides superior forecasts to those from univariate time series models and elaborate theory-based simultaneous equations models. Forecasts from VAR models are quite flexible because they can be made conditional on the potential future paths of specified variables in the model. In addition to data description and forecasting, the VAR model is also used for structural inference and policy analysis.

The VAR approach has a number of advantages over a single frame work: first in developing countries in general it has proved to be difficult to estimate structural models of private investment. Second, the VAR model approach does not impose any casual links between the variables a priori. Rather, VAR models allow testing whether the casual relationship implied by single structural equations is valid or whether there are feedback effects from outputs to inputs. Third unlike single structural equation approach, the VAR approach allows for indirect links between the models. Finally, unlike single structural equations, the VAR approach does not assume that there is at most one long run (cointegration) relation among specified model variables.

3.3. Model-Specification

In developing an investment model, it is difficult to include all the determinants of private investment because of unavailability of all the data required, unquantifiability of some determinants and small sample size.

Thus this study is adopt a model specification procedure following a variant of the flexible accelerator principle in line with the objective of capturing the main determinants of private investment in Ethiopia.

According to the accelerator principle, the desired capital stock at any time period is Proportional to the expected level of output. Mathematically, this proposition is expressed thus:

$$K_t^* = \alpha Y_t^e \dots\dots\dots (1)$$

Where K_t^* is define as the desired capital stock by the private sector in period t, Y_t^e is the expected level of output in period t, and α is a constant denoting the capital output ratio. At any time period t, the desired level of gross fixed investment can be decomposed into two parts. The first consists of an addition to the existing stock of capital while the second part consists of the replacement of worn out capital known as depreciation.

There are a number of factors that determine investment performance as mentioned in the literature part. Hence, by no means provides an exhaustive list of investment determinants. However, the following major determinant variables are the most important factors that are drawn after extensive reviews of highly related literatures.

$$PINV = f(RGDP, RIR, GINV, REER, INF) \dots\dots\dots (2)$$

Where,

PINV= (Dependent Variable) the level of Private Investment

RGDP=Real Gross Domestic Product

RIR =Real Interest Rate

GINV=Government Investments,

REER=Real Effective Exchange Rate

INF= Annual Inflation

In addition, all variables are expressed in log form and hence log linear form of the model is used for private investment model as opposed to linear model. As Mohammed (2010) pointed out that results obtained from linear form of the model are not significant and consistent; thus, in order to control the size of data and obtain consistent and reliable estimates log linear model is superior to linear model. Additionally, as workie (1997) suggests that log linear model produces better results than linear form of the model.

A VAR model system of equation expressed as:

$$\text{LnPINV}_t = \beta_0 + \beta_1 \text{LnRGDP}_{t-i} + \beta_2 \text{LnRIR}_{t-i} + \beta_3 \text{LnGINV}_{t-i} + \beta_4 \text{LnREER}_{t-i} + \beta_5 \text{LnINF}_{t-i} + \Sigma t \dots (3)$$

Where,

$\beta_0, \beta_1 \dots \beta_6$ are the coefficients of $1 \times K$ matrices to be estimated corresponding to each variables.

$i = 1, 2 \dots K$ the VAR order,

Σt = the error term is based on the assumptions of classical linear regression model.

VARIABLE DESCRIPTION

The Real GDP (RGDP): The coefficient of the term representing real GDP is expected to be positive. This is because as real GDP increases, aggregate demand will increase thereby stimulating an increased production of goods and services through investment undertakings.

The Public/government Investment (PUBINV): This variable is used in this study by obtaining simply the sum total of all public sector investment in Ethiopia. This includes public sector investment on infrastructure, education, transport and communication etc. The coefficient of the variable representing public sector investment (PUBINV) is expected to be positive. This is due to such public investment is geared towards the development of essential infrastructures like roads, electricity, transport and communication etc.

Real rate of interest (RIR): The coefficient of the variable representing the real rate of interest (RIR) is expected to be negative. This is because, a lower rate of interest will induce private Economic agents to undertake investment activities due to the low cost of borrowing investment Funds associated with lower levels of real interest rate.

Real Exchange rate (REER): The coefficient of the real exchange rate (REER) is expected to be negative. This is because a depreciation (devaluation) of the domestic currency will lead to an increase in the cost of imports in terms of the domestic currency. Since the bulk of the investment capital in developing countries constitute of imported machineries, this will increase the cost of investment and hence a reduction in investment activities.

Rate of inflation (INF): The coefficient of the term representing the rate of inflation (INF) is expected to be negative. According to existing theory, it is asserted that high domestic inflation can adversely affect the level of private investment due to the level of risk associated with long-term investment activities as a result of the consequent distortionary effect of information signals on prices in the economy.

It is believed that high inflation rates act as appropriate signals that indicate the level of macroeconomic instability generated by both external and internal shocks in the economy.

3.4. Time Series Properties

3.4.1. Stationary Test

The standard classical methods of estimation are based on the assumption that all variables are stationary which means for time series, both the dependent and explanatory variables have to be stationary over time. Stationary time-series is said to exist if the mean and variance are constant over time while the value of the covariance between two periods depends only on the gap or lag between the two time periods and not the actual time at which the covariance is computed. 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 (Harris and Sollis 2003).Therefore, it is necessary to test for stationary of time series variables

before running any sort of regression 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.

The Augmented Dickey-Fuller (ADF) test for unit root is used in this study this is due to its simplicity and this is because 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; ADF overcome this Problem by using first difference which is one mechanism of removing serial correlation. This can be done as follows:

$$\Delta y_t = \mu + \gamma T + \beta y_{t-1} + \sum \lambda \Delta y_t - i + u_t \dots\dots\dots (4)$$

Where y_t is the variable in equation, T is a time trend, k is lag length and u_t is assumed to be “White noise”. Equation (5) applied to variables LPINV, LRGDP, LRIR, LGINV, LREER, and LINF define as:

- LPINV= Log of Private investment
- LRGDP=Log of Real gross domestic product
- LRIR=Log of real interest rate
- LGINV=Log of government investment
- LREER=Log of real effective exchange rate
- LINF=Log of Inflation

One of the most important steps after stationary test is that how much lag length should be incorporated in the model. The study employ Akaike Information Criteria(AIC), Hannan-Quin (HQ) information criteria and Schwarz Bayesian Criteria (SBC) to determine lag length k in above equation. The two criteria will be produce the same lag length for all variables. The main concern

of running test equation(5) is to estimate the ADF t-statistics $\beta/s.e.(\beta)$ in order to test for all null hypothesis of non stationarity against alternative hypothesis of stationarity.

3.5 Test of 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 if variables are non- stationary at level. So far, there are two major methods of testing co-integration: the Engle-Granger two step procedures (EG) and the Johansen Maximum likelihood procedure. (Guajarati, 2004).

The Johansen maximum likelihood estimators is used to avoid the use of two step estimator. The Johansen maximum likelihood estimators overcome problems associated with the use of two step estimators. Most importantly it will be detect the presence of multiple co integrating vectors. Moreover, the test allows testing restricted versions of the co integrating vector(s) and the speed of adjustment parameters. Hence the study is used the Johansen maximum likelihood for the analysis.

The error correction representation of equation takes this form

$$\begin{aligned} \Delta \ln PINV_t = & \delta_0 + \delta_1 \sum_{k=1}^K \Delta \ln RGD P_{t-k} + \delta_2 \sum_{k=1}^K \Delta \ln RIR_{t-k} + \delta_3 \sum_{k=1}^K \Delta \ln GIN V_{t-k} + \\ & \delta_4 \sum_{k=1}^K \Delta \ln REER_{t-k} + \\ & \delta_5 \sum_{i=1}^K \Delta \ln f_{t-i} + \delta_6 ECM_{t-1} + \Sigma \epsilon_t \dots \dots \dots (5) \end{aligned}$$

Equation (4) shows how long run impacts on variables are incorporated in the short term dynamics. Cointegration analysis is concerned with determining the maximum number of linearly independent relationships in the system. In technical language: determining the rank of the system. While matrix δ holds long run adjustment coefficient matrix β contains coefficient or elasticity's. Hence, the essence of conducting cointegration analysis is to (i) test for the presence of long run stationarity relationship(s) between variables (ii) estimate long turn parameters β (cointegration vector). (iii) Estimate long run coefficients of adjustment (loading coefficient) and (IV) employ long run information to estimate VECMs which describes short run dynamics.

3.6 Specification of Vector Error Correction Model (VECM)

$$\Delta \ln PINV_t = \delta_0 + \delta_1 \sum_{k=1}^K \Delta \ln RGDP_{t-k} + \delta_2 \sum_{k=1}^K \Delta \ln RIR_{t-k} + \delta_3 \sum_{k=1}^K \Delta \ln GINV_{t-k} + \delta_4 \sum_{k=1}^K \Delta \ln REER_{t-k} + \delta_5 \sum_{k=1}^K \Delta \ln INF_{t-k} + \delta_6 ECM_{t-1} + \sum_t \dots \quad (6)$$

Where, $\delta_0, \delta_1 \dots \delta_6$ = are coefficients Δ = is the first difference operator, K = the lag length

ECM-1 = is the lagged error correction term. The ECM-1 shows degree of disequilibrium levels of the variables in the previous period. Thus above specification of the VECM states that change in a variable depends on other variables, on its own past values as well as on the degree of disequilibrium among the variables. The term ECM_{t-1} should be negative and statistically significant in order to have stable long run equilibrium path.

3.7 Diagnostic Tests

Finally, it is necessary to do a diagnostic test (serial correlation, functional misspecification, heteroskedasticity, normality, and stability tests) on the estimated result of the short run equation to make sure that the estimated results are valid enough in order to be used for forecasting or policy purposes.

Residual Normality Test

The Jarque Bera test is used to determine whether the error terms are normally distributed or not. This study uses Jarque Bera test or histogram test for the residual normality and Jarque Bera remains insignificant while histogram should be bell shaped if residuals are normally distributed. Jarque Bera test is a joint asymptotic test whose statistic is calculated from the skewness and kurtosis of the residuals as follows (Guajarati, 2004)

$$JB = \frac{T}{6} [S^2 + (\beta_3 - 3)^2 / 4] \dots \quad (7)$$

Where T is the number of observation; S is the coefficient of skewness, β_3 is a measure of kurtosis; and the test statistic is χ^2 distributed. The null hypothesis of the test is that residuals are normally distributed (i.e. $S=0$ and $\beta_3=3$) and rejection of this null hypothesis indicates non-normality of residuals (Ibid).

Residual Autocorrelation Test

This study uses LM test for residual autocorrelation. Unlike, Durbin Watson test statistics, LM is used to test higher order errors and is applicable whether or not there are lagged dependent variable. The null hypothesis of the LM test is that there is no serial correlation up to lag order p , where p is a pre-specified integer. It can be computed as follows (Ibid)

$$LM = (T - q) R^2 \dots \dots \dots (8)$$

Where, q is the degrees of freedom and R^2 is the coefficient of determination obtained from the auxiliary regression; and the LM test statistic is chi-square distributed, auxiliary regression; and the LM test statistic is chi-square distributed.

Heteroskedasticity Test

The other diagnostic test used in this study is heteroskedasticity test for and it is evaluated using Breusch-Pagan-Godfrey test. This test is a Lagrangian multiplier test of the null hypothesis of no heteroskedasticity against the alternative hypothesis of heteroskedasticity (Ibid)

CHAPTER FOUR

RESULTS AND DISCUSSION OF FINDINGS

4.1 Descriptive Analysis

4.1.1 Trends in Private Investment in Ethiopia

In recent year a broad consensus has emerged among economists that by unleashing competitive forces and enhancing international competitiveness, a wealthy private sector can provide both growth and jobs. They advocate for shifting the role of the public sector towards provision of essential services such as education and health, thereby reducing its intervention in the productive sector of the economy to the extent that maximum private sector development can be realized.

In the last four decades, Ethiopia has undergone major socio-economic and political transformations ranging from a feudal system to socialist and recently an open market-based economy. These changes have been accompanied by various attempts at institutional reform including economic and political structure of the country. Hence private investment is also affected by socio- economic as well as the political set up of their respective regimes.

The growth of investment during the pre-revolution, Imperial Regime (1974/75) period was quite modest. For example during the period 1963/1964-1973/74 the annual growth rate of private investment and private per GDP was 2.65 percent and 12.7 percent respectively (Workie, 1997). It was in the modest way since the investment policy in the imperial period is the somewhat nearest of free market regime where administration was established and the laying of the foundations for basic infrastructure development started (road transport, air transport, banks, power generation etc.) was taking place, private investment was picking and the import substitution was being adopted. Significance process was also made in the area of commercialization of agriculture and industrialization and health sectors. The protection of property right was guaranteed by the civil code and constitution of Ethiopia. In addition, the government guaranteed protection to industrial enterprises by instituting high tariffs and by banning the importation of commodities that might adversely affect production of domestic goods. Both foreign and domestic capital could be invested in many kinds of economic activity the investors sees fit to engage in except foreigners were not

allowed to own land unless there is special approval of the imperial and to fields of investment which were dominated by state enterprises.

During the period 1974/75-1990/91(socialist regime) the average rate of total investment and private investment to GDP during the period 1975 to 1991 was 14.28 % and 7.21% respectively. This ratio is very low even by the standard of Sub Saharan African countries where the average rate of private investment to GDP was 11.5% and 9.5% for the period 1970-79 and 1980-89 respectively (Shiferaw, 2002). This may be explained by the policy that existed during the period. The policy was favorable to public economy (restricting private investment and nationalization of private investment imposed capital ceilings, credit discrimination on them). This was the period of high market concentration and public ownership and monopoly; following the nationalization of production distribution and trading enterprises. The period also hurts the private investment expansion by its discriminatory interest rate, foreign exchange as well as credit allocation; different sectors did face different interest rates.

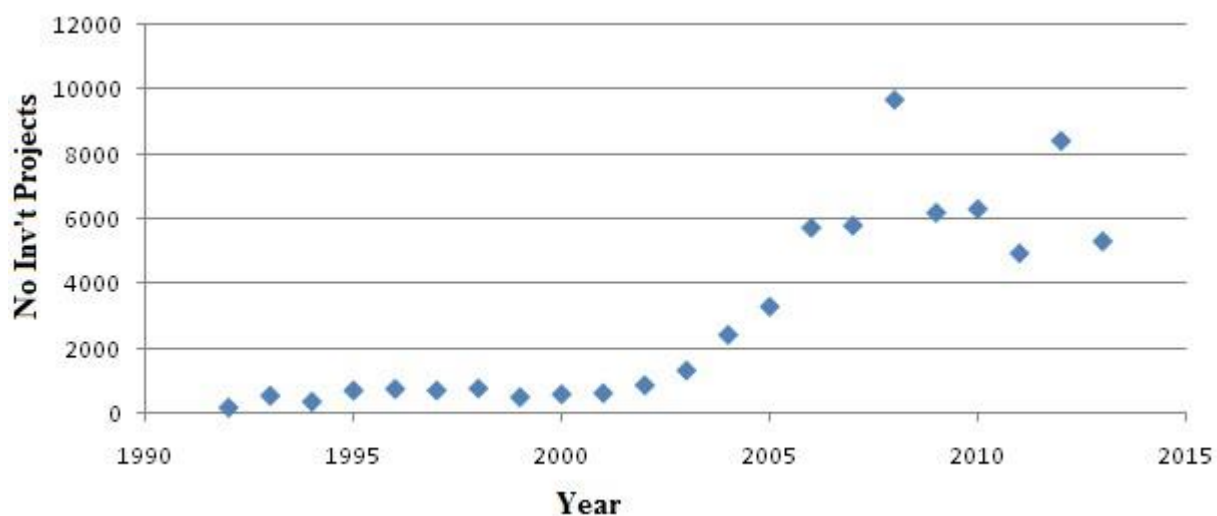
Following the downfall of the Derg regime in 1991, the incumbent government has declared that private sector must be given a more central role both in non-subsistent agriculture and in nonagricultural sector. A plethora of macro-policy reforms have been implemented since 1992. They include: the liberalization of trade policy; privatization of public sector enterprises; financial sector reforms; and deregulation of prices and exchange rate controls.

Understanding the constraint that was imposed during the Derg regime in private sector development, the current ruling government stressed the need for a change of policy to promote capital participation. The policy stated in this regard in order to encourage private capital participation with different incentive packages. In order to encourage and promote private investment and the inflow of capital and technology to the country, the following incentives are granted to both domestic and foreign investors engaged in areas eligible for investment incentives:

- ✓ All investors investing in areas eligible for incentives are granted 100% exemption from the payment of import customs duties and other taxes levied on all capital goods including plant, machinery and equipment as well as spare parts worth up to 15% of the value of imported capital goods;

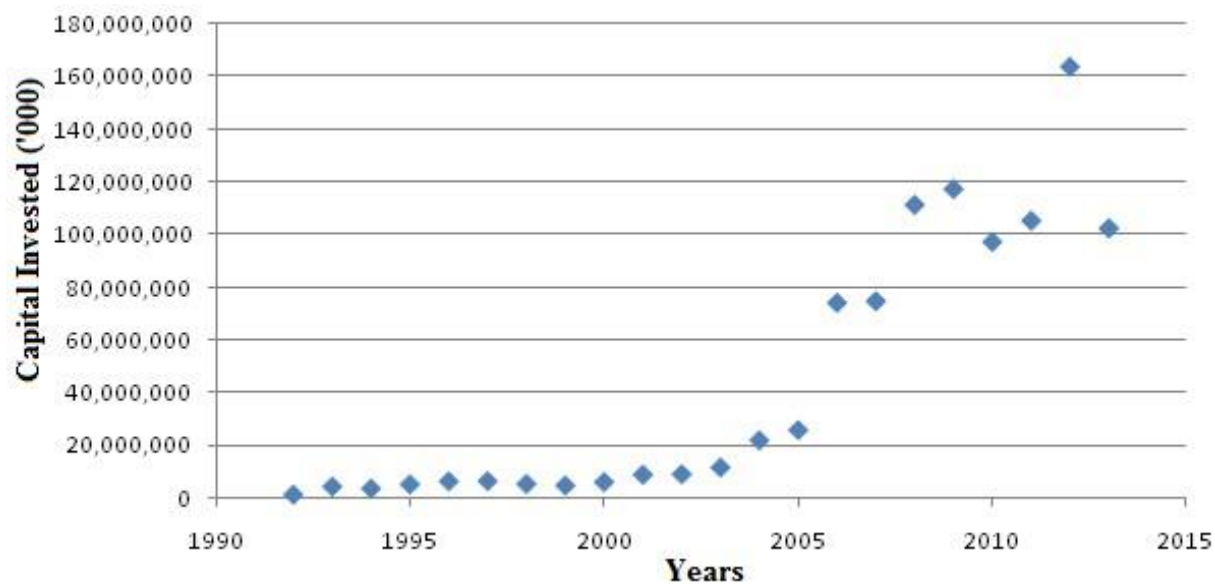
- ✓ Depending on the location and type of investment, an income tax holiday ranging from 1-5 years is granted to investors engaged in new enterprises;
- ✓ Business enterprises that incur losses during the tax holiday period are allowed to carry forward such losses, following the expiry of the income tax holiday period, from 3-5 years depending on the location and type of investment;
- ✓ No restrictions on equity ownership in joint venture (JV) investment;
- ✓ Foreign investors can invest alone or in partnership with domestic investors in areas open for Foreign Direct Investment;
- ✓ Guarantee against expropriation or nationalization (Constitution & Investment Law)
- ✓ Full repatriation of profits, dividends, principal and interest payments on external loan etc. Out of Ethiopia in convertible currency;
- ✓ The right to employ expatriate experts and management staff;

Figure 4.1: Trends of Private Investment from 1992 to March 2015 by number of projects



Source: Own computation from data of EIA, 2015

Figure 4.2: Trends of Private Investment from 1992 to March 2015 by Capital invested ('000 Birr)



Source: Own computation from Data of EIA, 2015

Table 4.1: Summary of Licensed Domestic Investment Projects by Region of Investment and Status, since January 01, 1992 – March 2015.

Region of Investment	Implementation		Operation		Pre-Implementation	
	No of Projects	Capital in '000' Birr	No of Projects	Capital in '000' Birr	No of Projects	Capital in '000' Birr
Addis Ababa	906	8,568,004	1,496	10,211,965	26,657	212,000,281
Afar	54	276,990	34	132,802	294	2,504,006
Amhara	366	2,004,625	727	2,978,799	6,562	64,034,966
B.Gumze	166	565,769	172	989,170	338	1,323,237
Dire Dawa	58	253,858	46	165,834	1,614	9,983,832
Gambella	2	2,760	12	60,845	195	1,056,660
Harari	70	139,201	24	72,591	446	1,270,656
Multiregional	15	3,678,008	26	295,704	104	3,123,986
Oromia	143	7,929,562	723	4,575,628	10,652	106,582,133
SNNPR	363	2,140,731	870	3,169,131	3,404	18,205,213
Somali	6	18,708	22	139,646	373	3,306,011
Tigray	563	5,624,614	1,108	7,541,736	1,990	61,912,186
Grand Total	2,712	31,202,831	5,260	30,333,851	52,629	485,303,168

Source: Ethiopian Investment Agency (EIA), 2015

From the above two tables, we can conclude that private investment increasing by number as well as by amount of capital invested from 1992 to 2009 at increasing rate, whereas in 2009 and 2010 due to the shock of world economic crisis the private investment remains stagnant, and starts grow from 2011 onwards. However in relative term, there is better achievement in investment than the two previous regimes, as a result of relatively the conducive environment created by the current government.

The main drawbacks witnessed in Ethiopian Investment sector is that investors are quite reluctant to start operation in short period of time after handing over investment land. As shown in the above table 4.1, the status of investment in Ethiopia from January 1992- 2014, about 86.8% domestic investment projects are found under pre implementation stage.

The delay in implementations may be due to a number of reasons. Some critics of the government suggest that this low implementation is a result of bureaucratic red tape, which discourages investors in the process of implementing their project particular mention is usually made about the slow process of land allocation and the monopoly price charged by the municipality government in Addis Ababa as the key constraint to private investment in the past twenty four years.

One possible reason may be lack of sufficient foreign exchange. If a foreign exchange component of a project investment capital is possible to infer that the less likely the implementation would be lack of imported raw material, may also be mentioned as another problem that could delay implementation. Such high dependency on imported raw materials these project due to shortage if foreign exchange or importation may take longer than expected.

The implementation process is also affected by limited skill and experience of investors. Most business man lacks adequate skill to undertake investment projects due to the fact that they were experiencing speculative and trade activities, influenced by the policy of past regime. Although individual have some interest to invest in productive business they seems to have faced difficulties in the realization of their ideas and in putting the projects in to effect.

Beside this, the problem with market expectation could also mention. Investment may expect that the domestic effective demand for their output would be low so that they stay in dilemma to implement. Some project which planned for expect market may also expect difficulty to compare with foreign firms, and hence they delay in implementation.

Due to uncertainty in government policies and political stability investors may also suspend the implementation. Due to inconvenient relationship that existed between government policy and private sector during the past regime business man are still hesitate about government polices with this in mind; investors may anticipate policy reversal suspending their implementation.

Among other things, lack of well- developed infrastructure and lack of skilled man power are some factors that can delay implementation. This may be reflected by the fact that high concentration of domestic commenced operation projects in few regions mainly in Addis Ababa, Oromia and Tigray. Table 2, in most years of the period, these regions constitute large share of the number of projects which commenced operations and associates investment capital projects which commenced operation and associated investment capital. The concentration of investment project in these

regions might be associates with the availability of relatively better infrastructure and skilled man power.

Generally, in per capital terms traditionally backward region such as Harari, Somalia Benshangule Gumuz, Afar and Gambella are still have difficulty time in attracting investment and the worst being the Somalia region.

Table 4.2: Summary of Licensed Foreign Direct Investment Projects by Region of Investment and Status since August 22, 1992 – March 2015 G.C

Region of Investment	Implementation		Operation		Pre-Implementation	
	No of Projects	Capital in '000' Birr	No of Projects	Capital in '000' Birr	No of Projects	Capital in '000' Birr
Addis Ababa	404	17,435,071	1,258	41,401,153	1,563	78,995,372
Afar	8	154,770	9	378,338	15	2,328,580
Amhara	58	17,893,609	49	6,621,052	113	33,395,202
B.Gumze	12	1,980,993	3	67,828	44	2,410,766
Dire Dawa	20	17,818,936	6	122,956	28	1,110,719
Gambella	7	4,266,993	4	957,433	25	6,822,626
Harari	2	182,500	1	2,500	7	814,400
Multiregional	85	12,401,279	161	7,220,657	155	4,664,908
Oromia	358	48,714,262	444	28,656,108	901	77,146,095
SNNPR	30	4,829,793	49	2,901,680	90	10,173,290
Somali	7	490,000			21	1,119,732
Tigray	19	1,736,324	26	748,795	34	1,778,570
Grand Total	1,010	127,904,531	2,010	89,078,501	2,996	220,760,261

Source: Ethiopian Investment Agency (EIA), 2015

Table 4.3: Sectoral Distribution of Domestic Investment and FDI from 1992 – March 2015

Sector	Domestic Investment		FDI	
	No of Projects	Capital in '000' Birr	No of Projects	Capital in '000' Birr
Agriculture, hunting and forestry	9,458	65,178,867	1,155	103,784,112
Mining and quarrying	210	1,960,777	33	1,138,152
Fishing	17	32,265	11	231,200
Manufacturing	13,066	136,014,595	2,038	219,785,243
Electricity, gas, steam and water supply	23	223,803	4	452,267
Education	2,120	18,073,848	151	2,369,858
Health and Social work	981	10,197,596	120	7,823,586
Hotels (Including Resort Hotels, Motels and Lodges) and Restaurants	5,397	79,656,339	397	16,920,839
Tour Operation, Transport and Communication	1,038	8,358,697	257	931,793
Real estate, Machinery and Equipment Rental and Consultancy Service	20,048	173,107,233	1,295	33,495,781
Construction Contracting Including Water Well Drilling	6,106	41,127,398	450	49,395,478
Wholesale, retail trade & repair service	1,372	8,704,685	82	1,193,360
Other community, social and personal service activities	765	4,203,746	23	221,623
Grand Total	60,601	546,839,850	6,016	437,743,293

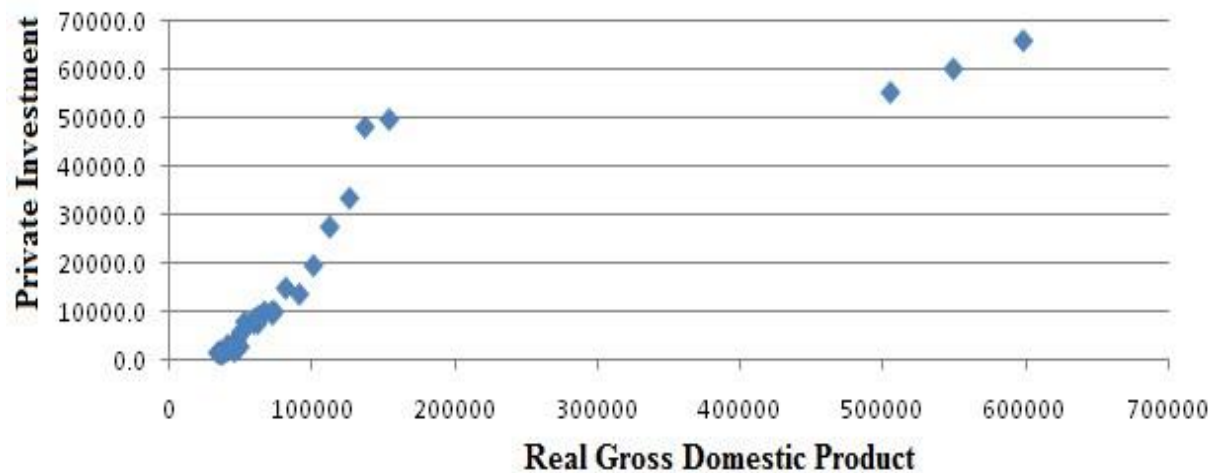
Source: Ethiopian Investment Agency (EIA), 2015

From the above table we can conclude that the sectoral distribution of private investment, Construction (Real estate, Machinery and Equipment Rental and Water Well drilling) and Manufacturing and Agriculture are the leading investment sectors. Like the other developing countries, the service sector in Ethiopia is also at a nascent stage of development when we compare with the other sectors.

4.2 Assessing the Relationship between Private Investment and its Determinants

It appears from different literature reviews that investment determinants are very much multidimensional. Although survey of relevant literature helps in identifying the most important factors that affect investment decision, it by no means provides an exhaustive list of investment determinants. Here below the relationship between private investment and some macroeconomic determinants investigated using scatter plot.

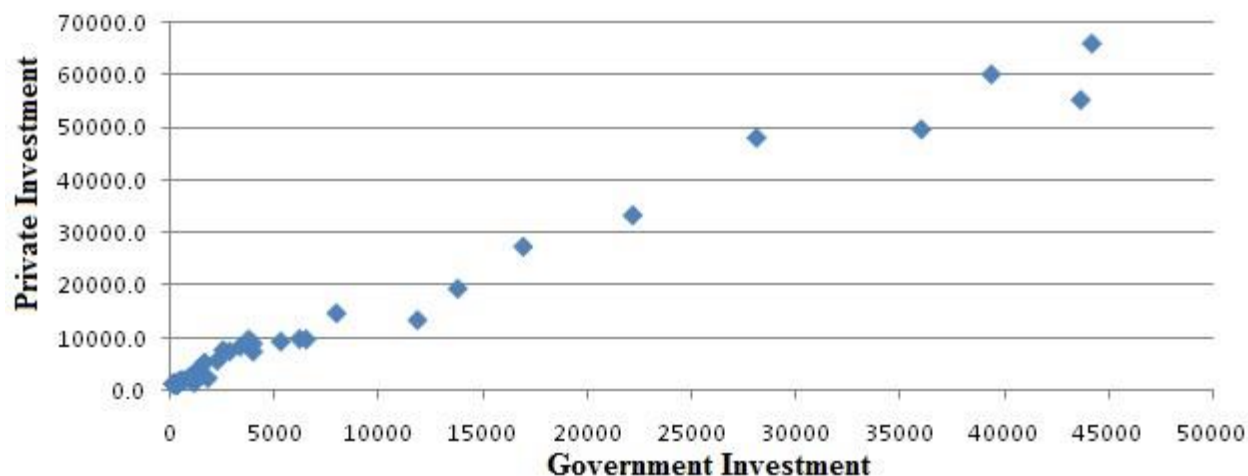
Figure 4.3: Relationship between Private Investment and Real Gross Domestic product



Source: Own computation from data of MOFED and NBE, 2015

From the above scatter plot we can infer that there is positive relationship between real gross domestic product growth and private investment.

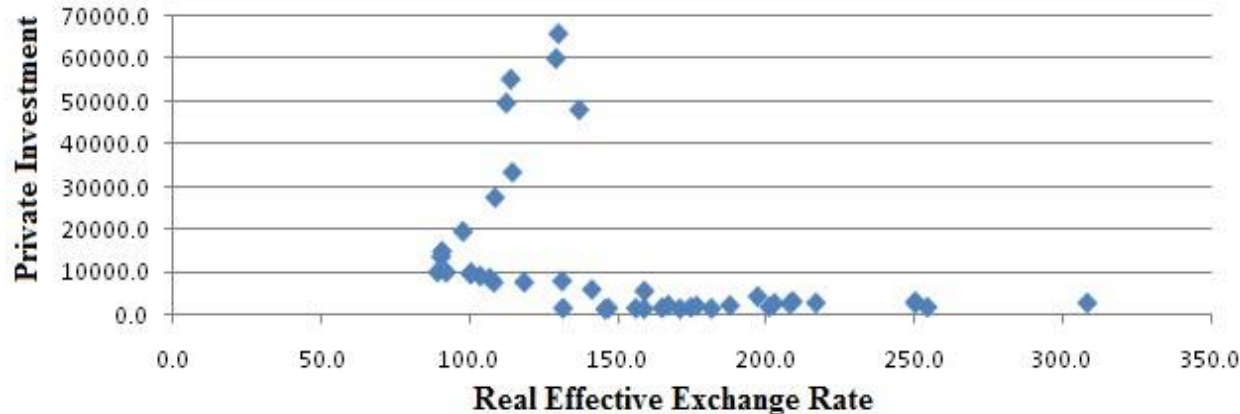
Figure 4.4: Relationship between Private Investment and Government Investment



Source: Own computation from data of MOFED and NBE, 2015

Based on figure 4.4, it is evident that the relationship between private investment and government investment in Ethiopia is positive. The two variables are moving in the same direction.

Figure 4.5. Relationship between Private Investment and Real Effective exchange rate

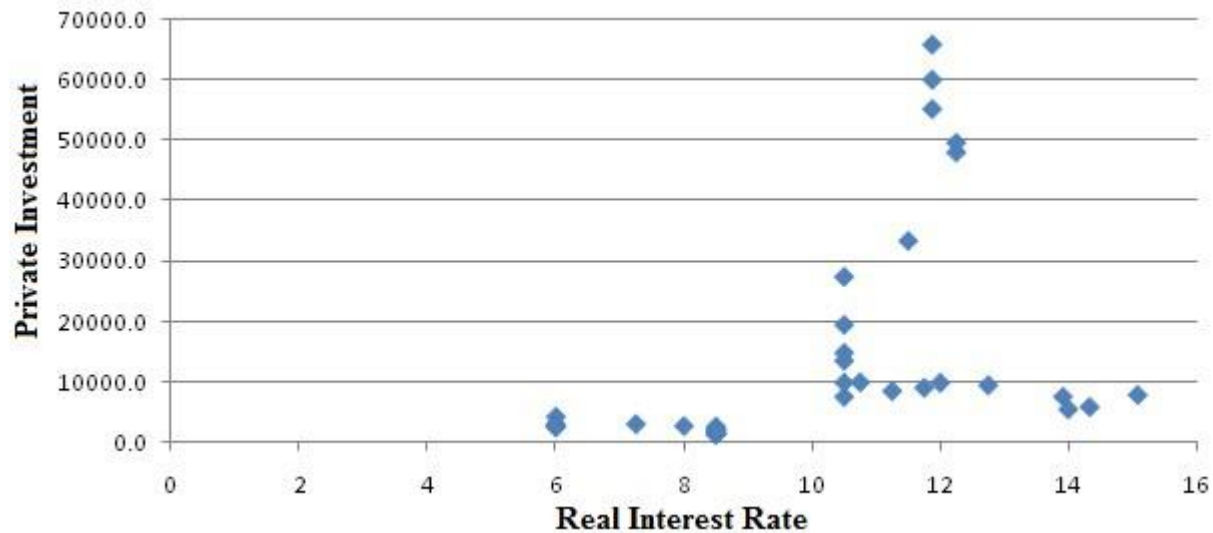


Source: Own computation from data of MOFED and NBE, 2015

The scatter plot depicts negative relationship between private investment and real effective exchange rate. However at lower real effective exchange rate private investment moves in the same direction. But there is negative relationship between higher REER and private investment. Since Ethiopia, like any other developing countries is characterized by high import of intermediate and

capital goods as well as the universality of devaluation in adjustment program, the real exchange rate is often included in investment equation to analyze the net effect of devaluation.

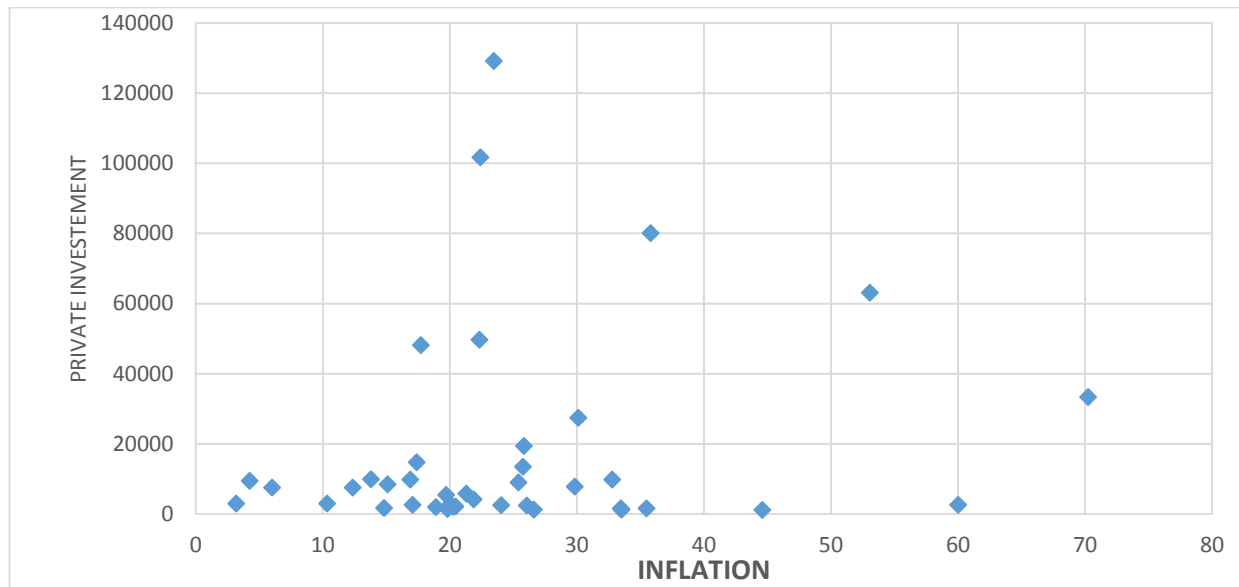
Figure 4.6: Relationship between Private Investment and Real Interest rate



Source: Own computation from data of MOFED and NBE, 2015

From this scatter plot, until 1991 there is positive relation between investment and real interest rate where interest rate somehow moving slowly. Since 1992 there has been a negative relationship compared with that of the Derg regime. It is evident from the figure above that during the Derg regime, there was no such tight relationship between real interest rate and private investment in Ethiopia, whereas from 1993-2000 the relationship is negative and stagnant from 2000 onwards. The effects of changes in real interest rate on private investment in developing countries may depend on the level of financial sophistication.

Figure 4.7: Relationship between Private Investment and Inflation



Source: Own computation from data of MOFED and NBE, 2015

The scatter plot shows that there is a negative relationship between private investment and domestic inflation.

4.2 Econometric Analysis of Determinants of Private Investment

The econometric technique employed in this study is a Vector Autoregressive (VAR) with the hypothesis that private investment is a function of the major determinants. These are real gross domestic product (RGDP), real interest rate (RIR), real effective exchange rate (REER), government investment (GINV) and inflation (INF), which is depicted the above equation.

4.2.1 Unit Root Test

The time series under consideration should be checked for stationary before one can attempt to fit a suitable model. That is, the variables have to be tested for the presence of unit root(s) thereby the order of integration of each series is determined. The stationary of the series can be tested by using an Augmented Dickey-Fuller test. The hypothesis to be tested is;

Ho: the series is non stationary

H1: the series is stationary

The results of ADF test, with intercept but no trend, and with intercept and trend both at level and first difference for each series are presented in Table 4 and 5. The critical values used for the tests are the McKinnon (1996) critical values.

Table 4.4: The ADF Unit Root Test Result for original Series (level)

Variables	With intercept		With intercept & trend		Order of Integration
	Test Statistics	Prob*	Test Statistics	Prob*	
LPINV	1.795435	0.9996	-0.695692	0.9662	I(1)
LRGDP	3.666762	1.0000	0.141248	0.9966	I(1)
LRIR	-5.735451***	0.0000	-5.799802***	0.0001	I(1)
LGINV	0.690094	0.9904	-1.220821	0.8921	I(1)
LREER	-1.945075	0.3090	-2.141893	0.5069	I(1)
LINF	-5.141282***	0.0001	-5.094414***	0.0010	I(1)
Critical Value (5%)	-2.941145		-3.533083		
Critical Value (10%)	-2.609066		-3.198312		

*MacKinnon (1996) one sided P- values

Source: Eviews version 7 outputs

From the result shown in Table 4 the unit root tests on the level and first difference indicate that except for the two variables that indicate (*RIR*, and *INF*), which were stationary even before differencing with intercept and trend; all variables were non-stationary. This is because the null hypothesis of unit roots is not rejected at the 5% level of significance. And all the other variable i.e. *RGDP*, *PINV*, *GINV* and *REER* became stationary with first differencing.

Table 4.5: The ADF Unit Root Test Result for differenced Series (first difference)

Variables	With intercept		With intercept & trend	
	Test Statistics	Prob*	Test Statistics	Prob*
DPINV	-3.676111***	0.0087	-9.436825	0.0000
DRGDP	-4.365876***	0.0013	-5.785633	0.0001
DRIR	-10.57977***	0.0000	-4.30001	0.0007
DGINV	-6.542165***	0.0000	-6.704021	0.0000
DREER	-4.831994***	0.0004	-4.777615	0.0024
DINF	-7.913822***	0.0000	-7.827925	0.0000
Critical value (5%)	-2.943427		-3.536601	

**MacKinnon(1996) one sided P- values*

Source: Eviews version 7 outputs

The results in table 5 indicate that the null hypothesis is rejected for the first differences of the four indices given that p-values less than 5 percent level of significance with intercept and trend in ADF test. Since P-Value of all series in Table 5 is small (<0.05) we reject the null hypothesis and conclude that the series is stationary. This implies that the all-time series are integrated of degree one [I (1)]. Therefore, the ADF test shows that all the series are stationary at the first difference.

4.3.2 VAR Model Specification

4.3.2.1 Estimating for Order of the VAR

For determining the appropriate lag length for the VAR model the Akaike information criterion (AIC), Schwarz information criterion (SC), Hannan-Quin (HQ) information criteria were used. In Table 6 the lag length selection criterion is tabulated. The AIC, SC and HQ test suggest appropriate lag length for the VAR model is one (1). Specifying the lag length has strong implications for subsequent modeling choices. Choosing too few lags could lead to systematic variation in the residuals whereas if too many lags are chosen it comes with the penalty of fewer degrees of freedom (as adding another lag, adds $p \times p$ variables).

In the following table the lag length selection criterion is tabulated. The AIC, SC and HQ test suggest appropriate lag length for the VAR model is one (1). That is, the best fitting model is the one that minimize AIC or SC or HQ.

Table 4.6: VAR lag order selection results (Eviews 7 output)

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-49.56116	NA	8.12e-07	3.003306	3.264536	3.095402
1	115.5832	267.8017*	7.76e-10*	-3.977473*	-2.148863*	-3.332802*
2	143.4013	36.08832	1.42e-09	-3.535206	-0.139217	-2.337961
3	185.0795	40.55170	1.65e-09	-3.842133	1.121236	-2.092313

* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

According to the above table SC criterion, the lags (p) of VAR model, AIC criterion the lags (p) and other criterion the order of VAR is 1. Then the above table proved the absolute value of p^3 (SC) $\leq p^3$ (HQ) $\leq p^3$ (AIC). SC and HQ gave the same results, so the lag (p) of 1 was used in the model as the order of VAR. Therefore, at this step we can precede to Johansen co-integration test.

4.3.3 Cointegration Analysis

In this section the cointegrating rank (rank of matrix Π) is estimated using Johansen's (1995) methodology. If the rank is zero, there is no cointegrating relationship. If the rank is one there is one, if it is two there are two and so on. Based on table 6 since the variables are integrated of order one, we proceed to test for co-integration. Johansen cointegration test is applied at the predetermined lag one. In these tests, Maximum Eigen value statistic or Trace statistic is compared to special critical values.

Table 4.7: Johansen Cointegration Test Result

Ho:	Eigen Value	Trace Statistics (λ_{trace})			Maximum Eigen Value(λ_{max})		
		Johansen's Test statistics	Critical Value (5%)	Prob.**	Johansen's Test statistics	Critical Value (5%)	Prob.**
$r = 0^*$	0.625698	105.1894	95.75366	0.0096	37.34226	40.07757	0.0985
$r \leq 1$	0.582219	67.84713	69.81889	0.0711	33.16633	33.87687	0.0606
$r \leq 2$	0.321075	34.68080	47.85613	0.4650	14.71530	27.58434	0.7703
$r \leq 3$	0.261180	19.96550	29.79707	0.4252	11.50266	21.13162	0.5971
$r \leq 4$	0.187718	8.462837	15.49471	0.4173	7.900479	14.26460	0.3889
$r \leq 5$	0.014690	0.562358	3.841466	0.4533	0.562358	3.841466	0.4533

Source: Eviews version 7 outputs

The results of Cointegration tests for PINV, RGDP, RIR, GINV, REER and INF are revealed in Table 7. The trace statistics indicates there is one cointegrating vector($r=1$) at the 95 percent confidence level. The Trace statistics is greater than the critical value at 5% significance level (estimated LR statistic, $105.1894 > 95.75366$), when the null hypothesis $r=0$ ((None), r is rank) against the alternative hypothesis $r=1$. This helps us to reject the null hypothesis and which in turn

implies that there is no cointegration vector. Therefore, the above result indicates that the variables are cointegrated and there is single cointegrating equation at the 5 percent level of significance.

4.3.4 Long Run Equation

Based on the table 7 the Johansen co-integration test proved the existence of single long-run equilibrium equation. Once the order of co-integration is identified for each variable that enters the specified model of private investment determination, the next step is to estimate the long run relationship between Ethiopia's private investment and its determinants using the Johansen (1988) maximum likelihood method.

The normalized cointegration equation is depicted in a table 8 by changing the signs of the standardized coefficients which indicates that real gross domestic product; real interest rate are positive determinant of private investment in the long run. Since all variables are used in the logarithmic form, the estimated coefficients can directly be interpreted as long term elasticity.

Table 4.8: Normalized cointegrating coefficients (standard error in parentheses)

LPINV	LRGDP	LRIR	LRGINV	LREER	LINF
1.000000	-2.506685 (0.34392)*	-0.388659 (0.10967)*	0.638715 (0.10351)*	0.146083 (0.10421)*	0.309019 (0.11467)*
t-statistics	7.28857	3.54389	2.13139	1.40181	2.69485

* denotes rejection of the hypothesis at the 0.05 level significance

Note: since the table is not in the equation form the real sign of coefficients are changed.

From the Johansen cointegration test, it was determined that the rank of cointegration matrix to be equal to one. Consequently, the cointegrating vector is given by, $\beta = (1, 2.506, 0.388 -0.638, -0.146, \text{ and } -0.309)$

The values correspond to the cointegrating coefficients of PINV (normalized to one), RGDP, RIR, RGINV REER, and INF respectively. Thus, the vector above can be expressed as follows:

$$\text{PINV}_t = 2.506(\text{RGDP}_t) + 0.388(\text{RIR}_t) - 0.638(\text{RGINV}_t) - 0.146(\text{REER}_t) - 0.309(\text{INF}_t)$$

4.4 Discussion and Presentation of the Model Result

4.4.1 Real Output and Private Investment

The real output, represented in terms of real gross domestic product, report a significant direct long run effect on private investment over the period of the study.

The result suggests that there is a direct relationship which means that out of one percent increase in real GDP would increase private investment expenditure by 2.5 percentage. The positive significant relationship between real output and private investment provides evidence for the validity of the accelerator principle hypothesis, which proposes investment is proportional to change in output. Thus, it can be argued that expansion of the production capacity of the economy will stimulate private investment and this can be magnified by exploitation of the economies of scale in the productive sector of the economy in the long run that exerts a positive impact on private investment. This evidence therefore provides a support for the second hypothesis of the study which says-“Private investment in Ethiopia is positively related to real GDP”. This is not surprising since an increase in real GDP, all things being equal, is expected to induce an increase in aggregate demand, thereby providing the market for investors’ products. This finding is similar with the findings of (Badawi, 2003 and 2005 for Sudan, Quattara, 2005 for Senegal; Zerfu,. (2001), for ethiopia and Ellis, 1998 for Namibia; Green and Villanueva, 1991 for developing countries).

4.4.2 Real Interest Rate and Private Investment

The long-run elasticity of investment with respect to real interest rate is found statistically significant and positive with a magnitude of nearly **0.388**. Results for real of interest also appear to be interesting in light of considerable theoretical and empirical evidence. Some researchers made significant empirical contributions to a positive relationship between real interest rate and private investment in developing countries. By the same token in this study real interest rate has exerted positive and significant impact on private investment. This long run relationship between private investment and real interest contradicts neoclassical proposition, where interest rate is treated as user cost of capital negative relationship with investment. However some argues the cost of money to investors is not more important than any other cost such as the cost of labor or capital equipment (Harvey, 1985).

However in developing countries including Ethiopia because of repressed financial markets credit policy (and not interest rate) directly affects the investment level.

4.4.3 Government (Public) Investment and Private Investment

Public investment also showed a negative relationship with private investment, contrary to the expectations of the study. The results shows that public investment crowding (negative relationship) out private investment over the study period. The initial proposition outlined in the study labelled public investment as a catalyst of private investment through government's expenditure on infrastructure (Oshikoya; 1994). However, as asserted by Blejar and Khan (1984), public investment may crowd out private investment if the additional investment is financed by debt or deficit which leads to an increase in the interest rate, credit rationing, and a tax burden. Empirical studies by Chhiber and Wijnbergen (1988) and Rossiter (2002) report a negative effect of public investment on private investment (Ouattarra 2000). Greene & Villanueva (1991) and Serven & Solimano (1991) also arrive at similar conclusions based on multi-country panel data for developing countries.

4.4.4 Real Exchange Rate, Devaluation and Private Investment

The real exchange rate has a negative impact on private investment for the long-run estimates. This is not surprising as the bulk of the capital assets as well as the intermediate inputs are imported. The implication therefore is that, a depreciation (devaluation) of the exchange rate that increases the cost of imported capital assets and intermediate inputs will hence affect the level of private investment through the resultant decline in the demand for both imported capital and intermediate inputs.

This result therefore indicates that a depreciation (devaluation) of the birr will depress the private sector through the resultant decline in investment activities following an increase in the real exchange rate. The empirical evidence by Oshikoya (1994) provided a support for this result. However, studies by Yaw Asante (2000) and Workie (1996) showed a positive relationship between private investment and real exchange rate.

4.4.5 Inflation and Private Investment

Inflation has a negative impact on private investment for the long-run estimates. the environment in which investment decisions takes place must have a minimum of the predictability as to future relative prices and demand conditions, which are inversely related to macroeconomic stability, as revealed in long run equation. The long run elasticity is highly significant with negative magnitude of **0.309**. Thus inflation has a negative long run effects on private investment, indicating that private investment move in opposite direction with inflation. High rates of inflation adversely affect private investment by increasing the riskiness of long term investment projects, distorting the information content of relative prices. In addition a high inflation rate is often considered as indicator of macroeconomic instability and a country's inability to control macroeconomic policy, both of which contribute to an adverse investment climate. This is not surprising as a high domestic inflation will raise the cost of local production for goods and services through the rising cost of resource inputs. This also means that local products will be relatively expensive as compared to their foreign counterparts, thereby affecting the demand for locally produced goods and services, and hence a decline in investment towards their production.

This negative impact of inflation rate on private investment is also confirmed by the work of Oshikoye (1994), Greene and Villanueva (1991), Pfefferman and Mandarassy (1993), Zerfu, (2001) and Harupara (1998) all provided support for this negative Relationship between private investment and inflation as obtained in this study.

4.5 Vector Error Correction Model (VECM) Estimation Result (short run equation)

The unit root and co-integration test conducted in previous section showed the existence of long run and short run relationship among the variables. Thus, having concluded that variables in the VAR model appeared to be cointegrated, we proceed to estimate the short run behavior and the adjustment to the long run models, which is represented by VECM.

Error Correction Method (ECM) is called the speed of adjustment term. This measures the short run adjustments of the deviations of the independent variables from their long- run values. It shows that how much time would be taken by the economy to reach at long run equilibrium. Negative sign of speed of adjustment term shows that the economy will converge towards long run equilibrium and positive shows the economy will not converge to the long run equilibrium. ECM-1 is a residual that is saved while estimating the long-run equation of determinant of private investment in Ethiopia from 1974 to 2014.

Table 4.9. Short run error correction Model D (LPINV)

Variable	Coefficient	Std. error	t-value	p-value
DLPINV_1	0.112024	0.1863	0.601	0.552
DLGINV_1	-0.787673***	0.3709	2.12	0.041
DLREER_1	-1.09679 ***	0.2208	-4.97	0.00
DLINF_1	-1.196288***	0.616119	1.941652	0.0608
C	-0.0437384	0.05043	-0.867	0.392
VECM_1	-0.844762	0.2599	-3.25	0.003

RSS=0.973122053

$R^2 = 0.576427$

$F(6, 34) = 7.712 [0.000] **$

Log-likelihood = 18.5103

DW = 1.75

Number of observations = 39

Var (DLPINV) = 0.0560345

Mean (DLPINV) = 0.0931161

AR 1-2 test: $F(2, 32) = 0.66178 [0.5229]$

ARCH 1-1 test: $F(1, 32) = 1.5627 [0.2203]$

Normality test: $\chi^2(2) = 0.30238 [0.8597]$

Hetero test: $F(12, 21) = 0.45727 [0.9181]$

RESET test: $F(1, 33) = 0.15168 [0.6994]$

Source: Eviews version 7 output

From the short run estimates shown in table 9. Above, the results indicate that there is no significant relationship between real gross domestic products (DLGDP) and private investments in the short run, since the response of output growth cannot be exerted on investment within a specific time span. In addition, real interest rate (DLRIR) has no significant relationship with private investment, because more than interest rate credit policy matters most in determining the availability of money in the short run.

In the short run, government or public investment (DLGINV) shows a negative and statistically significant effect on private investment. This is due to that public investment crowding (negative relationship) out private investment. Public investment may crowd out private investment if the additional investment is financed by debt or deficit which leads to an increase in the interest rate, credit rationing, and a tax burden. This result is also supported by (Ouattarra 2000). Greene & Villanueva (1991) and Servén & Solimano (1991).

Real effective exchange rate (DLREER) has a negative and statistically significant coefficient in the short run. This result therefore indicates that a depreciation (devaluation) of the birr will depress the private sector through the resultant decline in investment activities following an increase in the real exchange rate. The empirical evidence by Oshikoya (1994) provided support for this result. Domestic inflation also reports significant at 5 percent level of significance and has a negative sign, because high rates of inflation adversely affect private investment by increasing the riskiness of long term investment projects, distorting the information content of relative prices. This is not surprising as a high domestic inflation will raise the cost of local production for goods and services through the rising cost of resource inputs. This also means that local products will be relatively

expensive as compared to their foreign counterparts, thereby affecting the demand for locally produced goods and services, and hence a decline in investment towards their production.

The lagged residual (VECM_1) representing the correction term is expected to have negative sign as it captures the process by which agents adjust to the long run equilibrium. The feedback of long run relationship between private investment and correction term shows negative and significant impact at 5 percent level of significance on the change of private investment. The result suggests that agents adjust for errors about the equilibrium relationship in previous period. This is revealed by the elasticity coefficient, which shows that the variable will converge towards long-run equilibrium after taking 84.4 percent annual adjustments in the short-run.

4.5.1 Diagnostic Tests and Model Stability

Based on the result of the Post-estimation tests found in the appendix part that the model is well specified and the residual is normally distributed, free from autocorrelation, serial correlation, and heteroskedasticity.

Beside this, the model stability test is conducted using CUSUM test and CUSUM of squares test. This option plots the cumulative sum together with the 5% critical lines. The test finds parameter instability if the cumulative sum goes outside the area between the two critical lines. As with the CUSUM test, CUSUM of squares test shows movement outside the critical lines as suggestive of parameter or variance instability.

Accordingly the results presented in appendix show that the model and parameters of the model are stable since cumulative sum and cumulative sum of square lie between two critical lines.

CHAPTER FIVE

CONCLUSION AND POLICY IMPLICATIONS

5.1 Conclusion

The study analyzed the determinants of private investment in light of the Ethiopian experience during the period 1974 - 2014. In this study, the researcher found various determinants of private investment in Ethiopia as being real gross domestic product growth, real interest rate, government (public) investment, real effective exchange rate and inflation. And has established their relationship in the long run as well as in the short run.

Firstly, Private investment is positively related to real output in long run, whereas real output has no significant relationship with private investment in the short run. The positive significant relationship between real output in the long run or demand and private investment provides evidence for the validity of the hypothesis that the accelerator principle does explain private sector investment. Real gross domestic product has significant and positive effect with theoretically justifiable positive signs on private investment. The positive long run impact of real output on private investment may be due to the exploitation of economies of scale.

Secondly, Real interest rate reports a positive and significant impact on private investment in the long run, whereas, private investment has no relationship with real interest rate in the short run, because the real interest rate normally is not expected to play a significant role in decision making about credit obtained from financial institutions in most developing countries, since it is set by governmental authorities.

Thirdly, the real exchange rate adversely affect private investment activities in Ethiopia both in the long run as well as in the short run. This is not surprising as rapid real exchange rate fluctuations provide a signal for macroeconomic instability. Since macroeconomic instability triggers business uncertainty, fluctuations in the real exchange rate will therefore adversely affect private investment behavior through the uncertainty element it creates in the economy.

Fourthly, Public investment also showed a negative and significant effect with private investment both in the long run and short run. Contrary to the expectations of the study. The results shows that public investment crowding (negative relationship) out private investment over the study period. Even if the present government try to spend much more fund for infrastructure, this is evident on

the perpetual power outages, poor road states and road networks as well as a failing railway network. Thus the effect of public investment on private investment over the period under study has been negative.

Finally, inflation rate has an adverse effect on private investment in Ethiopia for both the short and long run analysis. Because high rates of inflation adversely affect private investment by increasing the riskiness of long term investment projects, distorting the information content of relative prices. This is not surprising as a high domestic inflation will raise the cost of local production for goods and services through the rising cost of resource inputs. This also means that local products will be relatively expensive as compared to their foreign counterparts, thereby affecting the demand for locally produced goods and services, and hence a decline in investment towards their production.

5.2 Policy Implications

Based on the result found from the descriptive and econometric analysis, the following policy implications are forwarded as alternatives to enhance the performance of the private investment and of course to increase its level, having in mind the contributions it makes to the development of the economy.

- Core efforts may be taken to formulate GDP growth promotion policies which will encourage the capacity of private investment activities. Ethiopia is characterized by low level of GDP growth and consequently low level of private investment. Thus, the target should be to improve economic activity and accelerate growth in GDP through creating conducive investment to the private sector and put the economy on the sustainable path of Growth and financing.
- Macroeconomic stability such as low and predictable inflation has paramount importance to ensure a strong response of private investment to economic incentives. The environment in which investment decisions takes place must have a minimum of the predictability as to future relative prices and demand conditions, which are inversely related to macroeconomic stability. Hence maintaining stable economy with stable domestic inflation will encourage private investment.
- The effect of devaluation found to be negative both in the short and long run. The result suggests that real exchange rate should be depreciated toward a more equilibrium level in order to improve the trade competitiveness of the economy. But supporting this regression result will be suspicious because Ethiopia is one of the highest net importing countries in both capital goods and consumer goods. Therefore, extensive devaluation may have deleterious impact on private investment. To avoid this problem government should follow blend of expansionary monetary policy (consistent with content) and credit; and Contractionary public capital spending. Contraction in capital spending should pay special and cautious attention to the nature of different categories of government capital and their implication or the private sector investment, while cuts in recurrent expenditure should consider any potential plummeting in aggregate Demand and output and their impacts on private investment through the accelerator effect.

- The policy implication of reducing financial constraint on the private sector development should therefore address a credit expansion within a comprehensive frame work that incorporates a complete set of monetary, institutional and prudential objectives and which strikes at the same time an appropriate balance between inflationary forces and expansion in the bank advances to the private sector.
- In addition financial institutions do not seem to provide ‘sufficient’ starting up capital for investment projects and a together with high real lending rates and especially high information costs have inhibited private investment in Ethiopia. Liberalization endeavors may imply efficiency gains by allocating financial resources efficiently to borrowers, thereby inducing productivity growth. However, increasing interest rates and cost of funds may cause a quantitative decline in private investment. A balanced policy action of price liberalization on both deposit rate and lending rate should, therefore be viewed as motivating private investment expansion together with reducing information cost of private investment projects and financial institutions.
- Enable a structured public-private dialogue – bringing together different stakeholders to identify policies and institutional reforms that promote entrepreneurship and help mobilize private investment. It also helps reduce information asymmetries between the public and private sectors on investment-related policies. This addresses the need to move towards more market-based and sustainable approaches to providing support to private firms.
- Attraction of FDI, not only for the extra capital it brings, but because it can lead to technological transfers, better human capital formation, deeper international integration and a more competitive business environment. FDI policies must be transparent as far as the Indigenization Policy is concerned.
- Promoting government investment in infrastructure. It works as a compliment to the private sector as inadequate and insufficient infrastructure is a major obstacle to growth, trade and investment. Investment in transport, energy, water and ICT services are essential to bring improve private investment.

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Appendix

VAR Residual Serial Correlation LM Tests

Null Hypothesis: no serial correlation at lag order h

Date: 04/12/15 Time: 19:08

Sample: 1975 2014

Included observations: 39

Lags	LM-Stat	Prob
1	27.11847	0.8571
2	49.48258	0.0666
3	28.91392	0.7931
4	41.40638	0.2465
5	29.12096	0.7849
6	35.61421	0.4868
7	46.98030	0.1041
8	63.07561	0.0035
9	37.37006	0.4060
10	47.68572	0.0921
11	33.01013	0.6116
12	28.87031	0.7948

VAR Residual Normality Tests

Orthogonalization: Cholesky

(Lutkepohl)

Null Hypothesis: residuals are multivariate normal

Date: 04/12/15 Time: 19:16

Sample: 1975 2014

Included observations: 39

Component	Skewness	Chi-sq	df	Prob.
1	-0.054012	0.018963	1	0.8905
2	-0.792880	4.086279	1	0.0432
3	-0.065510	0.027895	1	0.8674
4	0.222918	0.323000	1	0.5698
5	0.118450	0.091198	1	0.7627
6	-1.998336	25.95675	1	0.0000
Joint		30.50409	6	0.0000

Component	Kurtosis	Chi-sq	df	Prob.
1	4.491582	3.615325	1	0.0572
2	4.777971	5.136918	1	0.0234
3	2.011985	1.586283	1	0.2079
4	3.044496	0.003217	1	0.9548
5	2.600005	0.259994	1	0.6101
6	8.088095	42.06916	1	0.0000
Joint		52.67090	6	0.0000

Component	Jarque-Bera	df	Prob.
1	3.634288	2	0.1625
2	9.223197	2	0.0099
3	1.614178	2	0.4462
4	0.326217	2	0.8495
5	0.351192	2	0.8390
6	68.02591	2	0.0000
Joint	83.17498	12	0.0000

Result of stability test

Roots of Characteristic Polynomial

Endogenous variables: LPINV LINF LREER LRGDP LRGINV

LRIR

Exogenous variables: C

Lag specification: 1 1

Date: 04/12/15 Time: 19:21

Root	Modulus
1.051627	1.051627
0.791530 - 0.008433i	0.791575
0.791530 + 0.008433i	0.791575
0.191319	0.191319
-0.067226 - 0.162684i	0.176026
-0.067226 + 0.162684i	0.176026

VAR Residual Heteroskedasticity Tests: No Cross Terms (only levels and squares)

Date: 04/12/15 Time: 19:18

Sample: 1975 2014

Included observations: 39

Individual components:

Dependent	R-squared	F(12,26)	Prob.	Chi-sq(12)	Prob.
res1*res1	0.615195	3.463886	0.0039	23.99259	0.0204
res2*res2	0.319889	1.019088	0.4606	12.47567	0.4083
res3*res3	0.664190	4.285404	0.0009	25.90343	0.0111
res4*res4	0.423439	1.591245	0.1557	16.51411	0.1688
res5*res5	0.501912	2.183299	0.0465	19.57456	0.0756
res6*res6	0.208671	0.571342	0.8449	8.138158	0.7742
res2*res1	0.348978	1.161435	0.3584	13.61015	0.3263
res3*res1	0.633232	3.740793	0.0024	24.69605	0.0163
res3*res2	0.267554	0.791456	0.6551	10.43459	0.5779
res4*res1	0.408405	1.495746	0.1886	15.92778	0.1946
res4*res2	0.499196	2.159714	0.0488	19.46866	0.0778
res4*res3	0.336756	1.100103	0.4002	13.13347	0.3594
res5*res1	0.779123	7.642695	0.0000	30.38578	0.0024
res5*res2	0.365122	1.246064	0.3064	14.23977	0.2857
res5*res3	0.765042	7.054821	0.0000	29.83662	0.0030
res5*res4	0.547189	2.618257	0.0194	21.34037	0.0456
res6*res1	0.316893	1.005114	0.4716	12.35881	0.4173
res6*res2	0.157072	0.403737	0.9490	6.125789	0.9096
res6*res3	0.383772	1.349345	0.2515	14.96709	0.2432
res6*res4	0.324260	1.039697	0.4447	12.64616	0.3953
res6*res5	0.331249	1.073203	0.4196	12.91871	0.3750

VAR Residual Portmanteau Tests for Autocorrelations

Null Hypothesis: no residual autocorrelations up to lag h

Date: 04/12/15 Time: 19:27

Sample: 1975 2014

Included observations: 39

Lags	Q-Stat	Prob.	Adj Q-Stat	Prob.	df
1	14.74115	NA*	15.12908	NA*	NA*
2	59.02933	0.0091	61.81121	0.0047	36
3	90.21831	0.0720	95.59928	0.0329	72
4	125.4241	0.1206	134.8286	0.0411	108
5	153.9216	0.2707	167.5169	0.0876	144
6	187.7910	0.3300	207.5443	0.0780	180
7	228.4359	0.2679	257.0803	0.0290	216
8	269.5171	0.2141	308.7631	0.0084	252
9	300.8699	0.2891	349.5218	0.0076	288
10	330.9581	0.3830	389.9852	0.0069	324
11	354.9883	0.5647	423.4558	0.0118	360
12	381.6412	0.6889	461.9545	0.0123	396

*The test is valid only for lags larger than the VAR lag order.
df is degrees of freedom for (approximate) chi-square distribution

VAR lag exclusion Wald test

Chi-squared test statistics for lag exclusion:

Numbers in [] are p-values

	LPINV	LINF	LREER	LRGDP	LRGINV	LRIR	Joint
Lag 1	1294.046 [0.000000]	12.92419 [0.044256]	204.4572 [0.000000]	4208.435 [0.000000]	3115.745 [0.000000]	8.670680 [0.192963]	7851.351 [0.000000]
Df	6	6	6	6	6	6	36

*denotes rejection at 5% significant level and DF stands for degree of freedom,

Figure 7: AR Characteristic

Inverse Roots of AR Characteristic Polynomial

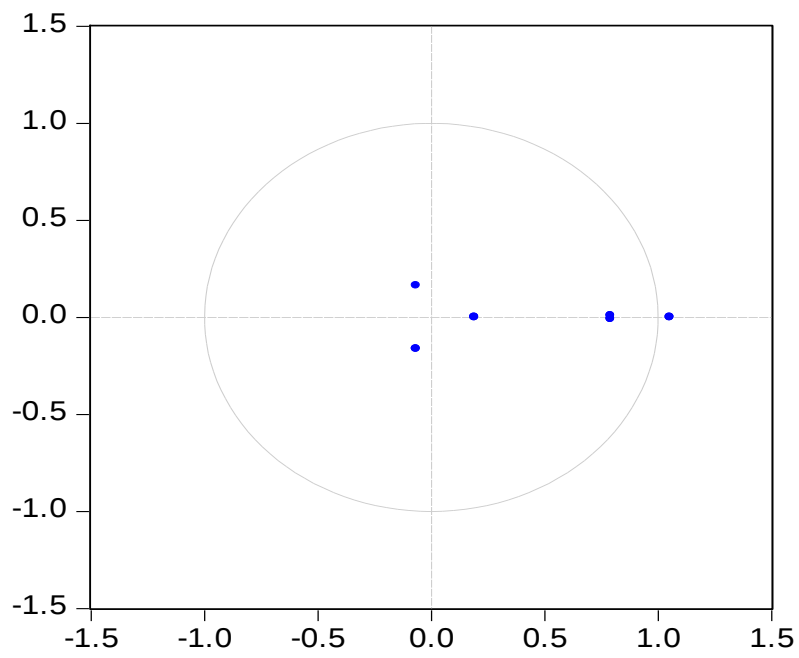


Figure 8: Residual Graphs

