

**Determinants of Private Investment in Ethiopia: Time Series
Analysis**

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Abstract

Ethiopia has recently embarked on policies that aim at rebalancing the role of public and private sector in the economy. To do so, the country has been giving a due emphasis on the development of private sector. This paradigm shift is basically to encourage private investment and ultimately make private sector the engine of growth. Taking this policy shift in to account, these study conduct as time series analysis of private investment in Ethiopia covering annual dataset from 1980-2014. It systematically examines the major determinants of private investment by undertaking various techniques of tests such as multicollinearity, autocorrelation, normality and model specification test. As the finding indicates that real GDP growth rate, real lending interest rate, inflation and gross fixed capital formation have a significant effect on private investment; whereas real effective exchange rate has insignificant effect on private investment. Regarding the results, the study provides evidence that real GDP growth rate, inflation, real lending interest rate, real effective exchange, and gross fixed capital formation both in a short-run and long-run significantly affect the level of private investment. Hence, to promote the performance of private sector to a higher level, it is essential to take measures that can improve real GDP in general and real income of people in particular, and make public investment in basic infrastructures (gross fixed capital formation) and institutions that are crucial to attract private investment. Besides, ensuring stable Investment environment (such as consistent investment policy and requirements/regulatory frameworks/, and macroeconomic and political stability), and addressing bureaucratic inefficient and poor governance problems are necessary to build lasting confidence of private investors.

Keywords: private investment, public investment, economic growth, Ethiopia

1. Introduction

Private investment is playing a great role in country's development especially in developing countries whose capital is scarce and their government lacks enough capacity to cover all constraints and bring economic change for development. Thus, if private investment (sectors) involved in investment, the output and growth domestic product (GDP) of a country will increase. Investment is a critical determinant of a long-run economic performance it involves the formation of capital; fixed (tangible) capital, such as reputation or technical knowledge; human capital such as skills or education (Bond and Jankinson; 1996).

The private investment is the main engine of growth in market economics. It thrives and delivers sustained growth when number of factors combines to produce conducive environment for the private sectors to develop. Private investment is crucial pre-requisite for economic growth because it allows entrepreneurs to set economic activity in motion by bringing resources together to produce goods and services (IBID).

Thus, as mentioned above, investment plays a vital role for economic growth and development and for improving the welfare of the society. As recent studies (Collier and Gunning, 1999; Ndikumana, and Herndez-Cata, 2000) conducted in Africa, Asia and Latin America has established the critical linkage between investment and the rate of economic growth. Our country Ethiopia is not exceptional to the above deep rooted problem of investment growth. After the 1992 reform, the government has taken various measures to attract private investment particularly FDI and investment codes has been revised many times to make private investment more attractive. Moreover; the Ethiopia Investment Commission has been established to cater efficient and effective techniques and services as well as to promote private investment in a country (EEA, 2005/06). Private investment is relevant to economic growth in developing countries like Ethiopia. It has been argued that the marginal productivity of investment is much higher and those plays more important role in the growth process than public investment (Khan and Rinehart; 1996).

Regarding trends of private investment performance in Ethiopia, the overall performance in a country since the era emperor's regime shows

allow rate of growth, which fluctuation through time. In the regime emperor Haileselassie (pre-1975) investment had shown a progress there both domestic and foreign investors growing at good pace. But during the Derge period (1975-1991) reduced the development of investment.

Then after, Ethiopia people's revolutionary democratic front (EPRDF), during its stage of transition reformed and formulated the first investment code in 1992 based on the mixed economic policy amendment of derg. Since Ethiopia started a free market economic policy and the investment activity started reviving parallel to the reformed policies of investment (Asmelashe, 2007). Thus, the level of privet investment in the country during the last two decades (1975-1994) was fluctuating.

.With regard to economic performance, Ethiopia has been registering a remarkable GDP growth rate over the past seven years starting from 2004(which is around 11% according to official reports). However, according to WB (2013), as of 2012, the annual per capital income is still very low (which is 255.69 at constant 2005 US\$).

1.1 Statement of the Problem

Privet investment is an engine for creating innovation, economic growth and poverty reduction. Domestic investment in Ethiopia shows progressive trends with speedy starting from announcement of liberal policy in 1992. Nevertheless, the gap between domestic investment and saving has remained wide thereby reinforcing the need foreign direct investment in development of the economy (UNCTAD, 2002). Although the investment climate has improved greatly in recent years, there are still many aspects of investment promotion where improvements are urgently needed. In other words, even if the situations or investment has improved from the previous period, the participation of private sector is not satisfactory.

In recent years, the government has adopted a robust growth and poverty reduction strategy, focusing on infrastructure development, commercialization of agriculture, improvements in access to basic services, as well as on private sector development, including the creation of appropriate regulatory and institutional frame works to support private business (Economic Brief, 2010).

A November 2012 publication by the World Bank, Ethiopia Economic Update, shows on average the share of total national investment from

its GDP in the years between 2004-2010 was 22.9%. Growth and Transformation Plan (GTP), Ethiopia's latest lead economic development plan, aspires to make investment contribute some 31.5% to the nation's GDP by the end of 2015. In line with this, and following the government's incentives in the form of various investment policies and trade laws and regulations, many sectors are now seeing new foreign entrants with new innovation and technology. Ethiopia's public investment rate is the third highest in the world, but private investment rate is the sixth lowest. The current 'big push' of public investment-led development has delivered positive results in the past but the development of a strong, vibrant private sector is needed to sustain high growth. (World Bank, 2013). A more difficult relationship to discern is that between public and private investment. Crowding in of private investment is defined to occur when increase public investment is associated with increase private investment. This may arise because of public infrastructure provision affects return on private investment positively, hence enhancing the incentive to carry out such private investment. Therefore the researchers support that this mixed effect case. And; according to, Ashebir Tsegaye (2012) the determinants of private investment in Ethiopia case were: inflation rate, RGDP growth rate, government expenditure, and real effective exchange rate.

Given the above fact; researchers were initiated to conduct a study by considering the gap between determinants of private investment and the available good climate. That means there are other basic factors that determine private investment; like Gross fixed capital formation and real lending interest rate. On the other hand, most of the paper done in this area; in the past, does not include recent data (2013/14). The researcher believes that even if the overall prevailing determinants of private investments are diverse and complex, it's necessary to identify the major one and to investigate them properly to achieve the expected growth of investment or to fill the gap and suggest measures to be taken to promote private investment in the economy.

The researcher is eager to answer the following questions, in order to meet the research objectives;

- ✓ What are the factors that determine private investment in Ethiopia?
- ✓ How policy changes affect private investment growth in Ethiopia?

✓ How is the private investment distributed across regions of Ethiopia?

1.2 Objectives

1.2.1 General Objectives

The main objective of this study is to investigate the determinants of private investment in Ethiopia.

1.2.2 Specific Objectives

The researchers want to identify the following specific objectives:

- To examine factors that determines private investment in Ethiopia.
- To analyze the effect of policy changes on private investment
- To examine the regional private investment share in Ethiopia.

2. Methodology

2.1 Source and Types of Data

The study would conduct basically using secondary data. An attempt would make to gather a 35-years data (i.e. from 1980 to 2014, since there is poor performance of investment GDP growth rate in the year 1980.) on some important variables. The data would gather from various sources such as National Bank of Ethiopia (NBE), MOFED, EIA, CSA of Ethiopia, and WB data basis, and from other relevant and reliable sources.

2.2 Method of Data Analysis

The methodology would uses in an attempt to learn more about the determinants of private investment activities in the country, is econometric regression using OLS method over the period 1980 o 20114. This model is select for its simplicity, and is also expect to fulfill the assumptions of efficiency, consistency and unbiased and the researcher will employ descriptive analysis; after collecting secondary data the researchers would summarize using tables, charts and other appropriate statistical tools.

As the literature proposed, there are key macroeconomic variables that play an important role in explaining private investment behavior in Ethiopia. “Factors that influence the ability and motives of private investors to implement their project or to investment equally determine

the speed with which private investors respond to the gap between planned and actual investment” (Getachew, 1997). In our case these determinants are RGDP growth rate, real lending interest rate, inflation rate, real effective exchange rate; and gross fixed capital formation. In addition to this the purpose of including the explanatory variables which affect private investment and which are not included here;

2.3 Description of Variables

Private investment is the proxy for the performance of private sector in the economy, and it is dependent variable, which depend on some explanatory variables for our case.

Real GDP growth rate is one of the most commonly used variable as explanatory variable, to measure its effect on private investment. According to Fielding (1997), explain that private investments positively related to real GDP growth rate of a given country. This is because countries with higher income level inclined to allocate more of their wealth to domestic saving, which could be then used to help in financing private investment.

Real lending interest rate is a proxy for cost of capital. The perceived negative relationship between real lending interest rates and private investment is a long debated issue which pulls in a number of prior studies. Pablo et al, (nd) notes that, the rate of return of an investment – approached by literature through a real lending interest rate as a representative of the cost of capital is a possible determinant of private investment. Here, its worth to make two distinctions: the interest rate would have a negative impact in the level of private investment made by domestic agents if the investment is financed in the local credit market. However, an increment in interest rate could have a positive effect in the capital flow from abroad, like it usually happens in emergent markets.

Inflation is the third variable that the researcher uses in the study as a proxy to measure macro economics stability of the country. Models like the Tobin-Mundell model argues that higher anticipated inflation lower the real interest rate which then causes to be made portfolio adjustment away from real money balance to real capital which then expected higher inflation to raises real investment (Ghura & Goodwin, 2000).

Real effective exchange rate is another explanatory variable, is also used as a proxy to measure macro-economic stability. In most literatures the effect of real effective exchange rate, either devaluation or appreciation of local currency on private investment is ambiguous. Branson & Buffy (1986) discusses that real depreciation of local currency increases domestic goods relative to the real cost of new capital goods which then increase the investment in non-tradable activities; and it makes exportable product more competitive in the World market.

Last the researchers use **gross fixed capital formation** as a % of GDP to see the role of infrastructure on private investment of the country, though there are not sufficient empirical evidences on the role of GFCF is promoting private investment of the developing countries.

2.4 Hypothesis of the Study

The study would test the following hypothesis in order to analyses the determinants of private investment.

H1: Inflation rate has a negative impact on private investment.

H2: Real lending interest rate has a negative impact on private investment.

H3: Real effective exchange rate has a negative impact on private investment.

H4: RGDP growth rate has a positive impact on private investment; and

H5: Gross fixed capital formation has a positive impact on private investment.

3. Discussion and Data Analysis

3.1 Descriptive Analysis

Ethiopia's economy continue to register strong and robust growth the real GDP grew by 10.3 percent in 2013/14, showing growth acceleration compared to 9.7 in 2012/13 and 8.8 percent in 2011/12. The share of services and industry sectors in the economy is increasing in contrast to that of agriculture which is declining. For example, in 2013/14 the shares of services, agriculture and industry stand at 46 percent, 40 percent and 14 percent, respectively, in contrast to 45percent, 43 percent and 12 percent, respectively, in the preceding year.

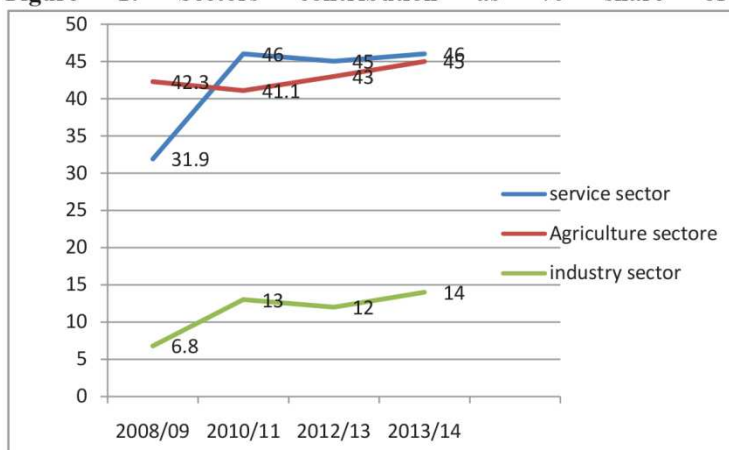
With regard to sources of the growth, the economy still depends on very few subsectors. For instance, 64 percent of the real GDP growth is contributed by three sub-sectors, namely, crop production, construction and wholesale and retail trade. The share of manufacturing sector in total GDP remains low at 4.4 percent. This indicates that the structural transformation is very slow; agriculture still takes the lion's share (73 percent) in terms of employment followed by service sector (20 percent) and industry (7 percent). The employment in the service sector increased from 13.3 percent in 2005 and to 20 percent in 2013, while the share of the sector in total production increased from 38 percent to 45 percent in the same period.

On the expenditure side, the share of private consumption expenditure has declined from 72.5 percent in 2012/13 to 69.5 percent resulting in the increase of the share of gross domestic savings from 19.2 percent to 22.5 percent in the same period. This could be attributable to the efforts geared towards introducing different saving instruments such as bonds and savings for housing scheme. Average saving interest rate remained unchanged at around 5.4 percent just a little above 5 percent the minimum (floor) rate set by the central bank while average Lending rate was 11.8 percent. Bond yields and Treasury bill rates remained low at 3.67 percent and 1.26 percent respectively. Inflation continued to be contained in single digit range. By end of the first quarter of 2014/15 inflation was lowest since April 2013. Year-on-year Inflation was 5.4 by at the end of October 2014 which is a significant decline compared to its level in the same period last year of 8.5 percent.

The major decline in inflation is observed in food and non-alcoholic beverages category which decreased from 7.8 percent to 2.9 percent over the same period. Non-food inflation decreased only moderately from 9.1 percent in October 2013 to 8.3 percent in October 2014. Inflation in Ethiopia is mainly determined by the agricultural production, as food and beverage category takes 53 percent of the household expenditure. In addition, the high import dependence of the economy that Ethiopia is importing essential intermediate inputs, capital goods, fuel and raw material made the country prone to imported inflation. Accordingly, good harvest and favorable price conditions mainly in Ethiopia's trading partners have helped the

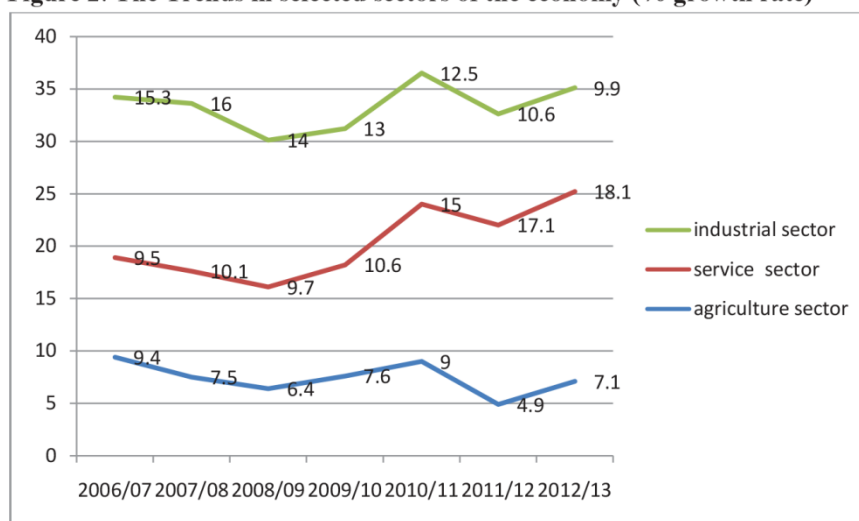
inflation to remain in single digit, besides the coordinated fiscal and monetary policy effort.

Figure 1: Sectors contribution as % share of GDP (2008-2014)



Source: MOFED (National Accounts), 2013/14

Figure 2: The Trends in selected sectors of the economy (% growth rate)



Source: MOFED (National Account), 2012/13

3.1.1 Performance Requirements and Investment Incentives

Ethiopia does not formally impose performance requirements on foreign investors. The 2003 amendment to the Investment Proclamation outlines investment incentives for investors in specific areas. New investors engaged in manufacturing, agro-processing activities, or the production of certain agricultural products, who export at least 50% of their products or supply at least 75% of their product to an exporter as production inputs, are exempt from income tax for five years. An

investor who exports less than 50% of his product or supplies his product only to the domestic market is income tax exempt for two years. Investors who expand or upgrade existing enterprises and export at least 50% of their output or increase production by 25% are eligible for income tax exemption for two years. An investor who invests in the "developing regions" of Gambella, Benishangul Gumuz, South Omo, Afar or Somali Region will be eligible for an additional one-year income tax exemption. An investor who exports hides and skins after processing only up to crust level will not be entitled to the income tax incentive. A special loan fund through the Development Bank of Ethiopia (DBE) provides land at low lease rates for priority export areas such as floriculture, leather goods, textiles and garments, and agro-processing related products. An investor can borrow up to 70% of the cost of the project from this special fund without collateral upon presenting a viable business plan and 30% personal equity.

Investors are allowed to import duty-free capital goods and construction materials necessary for the establishment of a new enterprise or for the expansion of an existing enterprise. In addition, spare parts worth 15% of the value of the capital goods can be imported duty-free. This privilege may not be granted if comparable capital goods or construction materials can be produced locally and have competitive prices, quality, and quantity. Imported duty free capital goods can no longer be used as loan collateral. Travel agencies/tour companies have increased duty-free privileges for the importation of goods such as vehicles, provided they are used solely in tourism activities.

The Ministry of Agriculture's (MOA) Agricultural Investment Support Directorate offers grace periods of up to seven years on land rents. The Directorate is currently focused on land deals in the remote regions of Gambella, Benishangul Gumuz, Southern Nations, and Afar.

3.1.2 The Private Sector in Investment

We have seen earlier that the GDP share of the private sector was 84.8 per cent in nominal terms in 2008/09, of which agriculture accounts for 49.9 per cent. Excluding agriculture, the private sector share in GDP is 34.9 percent, with a 6 percent share of GDP coming from industry and the balance of 28.9 per cent from service sectors. Within industry, the private sector share from manufacturing and construction is 2.7 per cent and 2.6 per cent, respectively. In the service sectors, private sector has a

share of 14.6 per cent from trade, 3.2 per cent from hotels and restaurants and 6.9 per cent from real estate, and business services. At constant prices, however, the GDP share of the private sector was 80.1 per cent in 2008-09, of which the share coming from agriculture was 42.3 per cent. This leaves the share of GDP coming from private industry at 6.8 per cent and services at 31.8 per cent. These shares are higher than those at current prices. Within industry, the private sector share comes mainly from manufacturing (3.3%) and construction (2.8%). On the other hand, the private share in GDP from services is mainly from the activities of trade (13.6%), hotels and restaurants (3.4%) and real estate and business services (8.2%).

The sectors composition of gross fixed capital formation²⁵ (GFCF) in Ethiopia during the 5 years ending in 2008-09; as data on investment are available only at current prices, these are presented here. The table shows that the bulk of investment made in 2008-09 was in private corporations, with a share of 40.5 per cent. In fact, general government, which had been the leading investor until 2007-08 with a share of 35.9 per cent, was overtaken by private corporations in 2008-09 as the largest investor among the institutional sectors in Ethiopia. However, if we consider the public sector in totality, it is still the main sector of investment, at 53.9 per cent in 2008-09, though its share has fallen from a high of 66.3 per cent in 2006-07. The private sector share in total investment in Ethiopia during 2008-09 was 46.1 per cent, of which the investment share of household sector was a mere 5.6 per cent. In terms of rates of investment²⁶ too, the picture of investment among institutional sectors remains the same. The rate of investment of private corporations in 2008-09 was 9.1 per cent, as against the investment rate of 8.5 per cent for general government. The public and private sectors' rates of investment in 2008-09 were 12.1 per cent and 10.3 per cent, respectively. Between 2007-08 and 2008-09, the investment rate of public sector fell from 14.2 per cent to 12.1 per cent, while in the same period, private sector investment rate rose from 8.3 per cent to 10.3 per cent of GDP.

The steepest fall in investment rate in this two-year period was in public corporations, which declined from 6.1 per cent to 3.6 per cent. Private sector investment grew at an average annual rate of 34.7 per cent between 2004-05 and 2008-09; this compares with average annual growth of 30.7 per cent in the public sector. The average annual growth

was highest in private corporations' at 35.4 percent, followed by general government with a growth rate of 33.2 percent.

3.1.3 Foreign Direct Investment

It is an undeniable fact that Ethiopia has made a considerable progress in economic and social development since 1992 as a result of the implementation of favorable policies and strategies that are instrumental in improving the national economy. The Rural Development Policy and Strategy, the Industrial Development Strategy, and other sectors policies and strategies have initiated a new push towards creating frameworks conducive to economic and social development. The Rural Development Policy and Strategy, which is under implementation in the country, underlines that agriculture-centered development will bring about fast economic growth, enable its people become beneficiary of economic growth, and lay solid foundation for industrial development.

The Industrial Development Strategy focuses on export manufacturing with priority given to textile and garments, leather and leather products, agro-processing, and small and micro-enterprises. The Government of Ethiopia in recognition of the role of the private sector in the economy has revised over four times the Investment Code over the last twenty one years (1992-2013) to make it more transparent, attractive and competitive. Major positive changes regarding foreign investments have been introduced through Investment Proclamation No.769/2012.

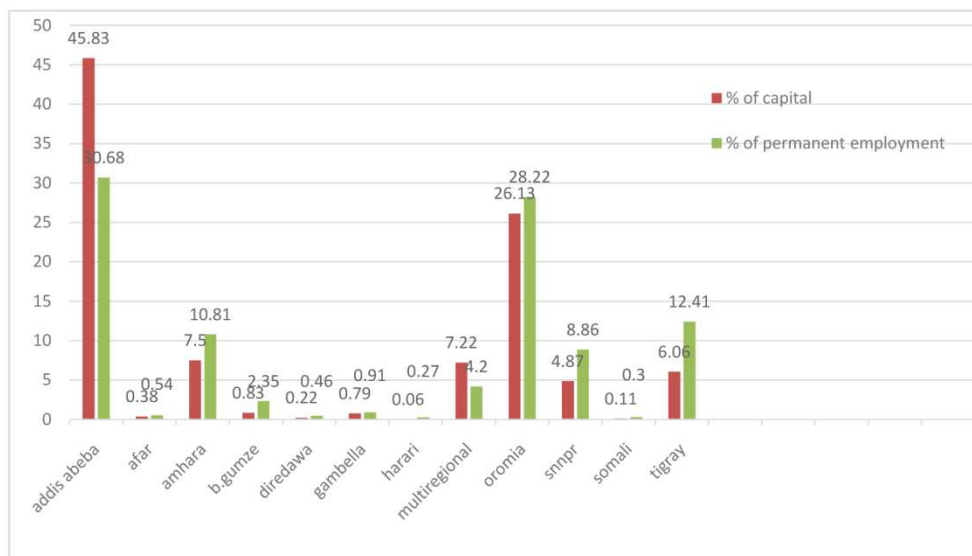
As a result of the implementation of the above mentioned policies and strategies, agricultural and industrial production, investment and export trade are growing steadily from year to year both in terms of variety and volume. Export earnings from gold (64.1 percent), fruits and vegetables (0.1 percent), live animals (63.0 percent), chat (13.7 percent), pulses (6.0 percent), coffee (59.3 percent), flower (3.0 percent), meat (86.2 percent), oil seeds (-8.9 percent) , leather and leather products (84.1 percent) and other (94.7 percent) have been increased in 2010/11. The World Bank has also witnessed the double-digit economic growth registered in the last several years. This achievement is the highest among the non-oil producing economies of Africa.

Due to the investment-friendly environment created in the country, the inflow of foreign direct investment (FDI) has been increasing over the last twenty one years. Accordingly, out of the total investment projects licensed between 1992- 2012, FDI's share is about 15.80 percent. However, the overall trend of investment in 2012 both the total number of projects and capital invested have shown slight increase.

3.1.4 Regional Share of Private Investment in Ethiopia

This section presents the summary of regional share of investment by region during the last 22 years period of incumbent government, Ethiopian People Revolutionary Democratic Front (EPRDF). Nearly half of the capital investment is in Addis Ababa (45.8%) followed by Oromia (26.1%), Amhara (7.5%), Multiregional (7.2%), Tigray (6%) and SNNPR (4.87%). This distribution portrays that around 70% of the investment is concentrated in Addis Ababa and Oromia region.

Figure 3: Summary of Investment Projects by Region from 1992 to 2013 (in millions birr)



Source: Computed from Ethiopian Investment agency (2013)

Spatial economics have various justifications why such agglomeration happens. *Firstly*, though, there is cheap rent land in regions, investors prefer Addis Ababa to minimize the transportation cost. The outermost ring investment would consist of either land-intensive or cheaply transported items (Von Thunen cited in Paul Krugman, 1998). The import-export in Djibouti route, cargo airport and domestic market is very favorable in Addis Ababa and Oromia special zones, which is very

applicable in the context of *location theory*. *Secondly*, most of the wealthier persons are concentrated in Addis Ababa, which create high nearby demand. The 1995/96 to 2004/05 consumption and expenditure survey of Ethiopia portrays that only Addis Ababa, Harari and Dire Dawa persistently show high levels of income at all times (MOFED 2005). *Thirdly*, there happens small cost of production in the presence of educated and uneducated labor market pooling that can favor technology spillover. Alfred Marshall sets this as one of the external economies that agglomerated firms create. Studies also show that agglomerations are minimal or nonexistent in small towns

3.1.5 Challenges of the Investment

Investment is increasing across period in the country. However, there are basic hindering challenges which some of them are presented in this paper. *Firstly*, some of the investors are nominal and do not invest trust-worthily. Some others start building and stop after a certain period; and others fence and rent the land: other than the intended purpose, which the case is getting worse as the concerned authority did not took immediate measure for such occurrences. As presented on Reporter Magazine Amharic Version, 2006 E.C, based on the assessment made by Urban Renewal and Land Bank Office, long period fenced 109 investment plot of lands were found in *Arada, Bole, Yeka, Nifas Silk Lafto, Gulele and Lideta* sub-city administrations. However, its macroeconomic level detail cause and effect analysis needs further research. *Secondly*, one of the basic factors for development is the favorability of investment environment. The Federal Anticorruption Commission conducted a study through “*Selam Development*” research organization. The study was on Foreign Direct Investors to Ethiopia about their corruption experience in government services. The survey finds out that, most of the investors do not have trust on government for the reason that offices are corrupted. Except Latin America and Antarctica, the sample contains 350 companies representing 42 countries. The finding from the 350 companies shows that: 20% of them stated government procurement contracts are made non-transparently 71% of them believe it is difficult to run business in the country because of corruption and very complex and procedural procurement 67.4% of them stated in order to break the bureaucratic

problems, they give corruption for government top officials and workers thinking as there is no other alternative solution.

These investors were asked to rank the top corrupted government offices and it was found that 18.9% put Ethiopian Revenue and Customs Agency 8.3% Transport Authority 7.4 % Land Administration 6.5% Ethiopian Electric Power Corporation (IBID).

This is a big homework for the country, which is an obstacle for attracting FDI. Of course, as compared to previous periods, there is a good start from the government in capturing corruption particularly in the Ethiopian Revenue and Customs Agency officials. *Thirdly*, for sustainable development domestic mobilization of saving for investment is critical. In this regard, MOFED (2005) reported that though the government has increased capital expenditure to public investment, the growth rate of private investment is relatively small which it is not stimulated as expected. Moreover, the investment is surrounded with problems such as:

The private sector investment is favoring the service sector investment, rather than agriculture and industry and fails to make sector-wise link in the economy per capital saving is very small as compared to the per capital income growth. However, still it is very challenging because the economy is dominated by the hand to mouth subsistence agriculture. As a result, there is large gap between domestic saving and investment which it makes to need foreign finance. The high inflation rate is discouraging the amount of income (interest) that can be obtained through saving. The private investment is largely dominated by the FDI, but not the domestic investment.

3.1.6 Policy Discussion

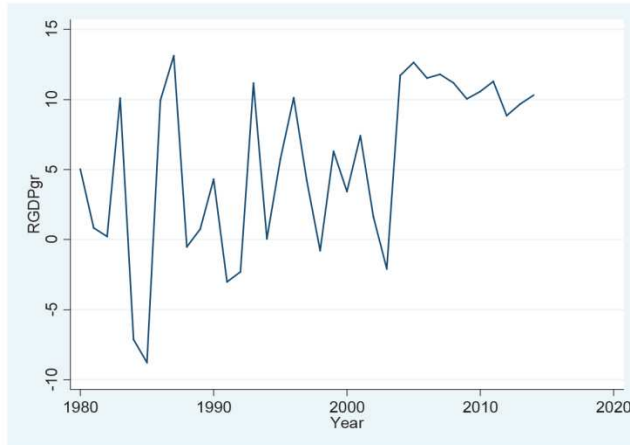
Ethiopia has achieved considerable success in implementing its development strategy, but in sustaining it is increasingly challenging. Recent macroeconomic stability, with robust economic growth and single digit inflation, is not fully entrenched in the presence of negative real interest rates, an overvalued exchange rate, and low reserve coverage. Growth has also fluctuated in the context of global and domestic shocks and the country remains vulnerable to terms of trade shocks. Export diversification and competitiveness lag behind those of other African countries.

Achieving high growth rates set out in the GTP requires continued investments and resource mobilization. The GTP envisages a significant part of investment to be undertaken by public enterprises with average annual borrowing over the five year period of some 15 percent of GDP, of which some two-thirds is to be borrowed externally. With binding external financing constraints, critical investments need to be financed increasingly from domestic sources, implying a need to mobilize substantial domestic savings. The current level of domestic savings is insufficient to finance the high public investment. The in the short run is limited. At the same time, the government's policy of keeping the real interest rates negative is not conducive to saving and distorts financial intermediation.

Experience in the first three years of the GTP suggests that large scale public investment financed domestically squeezes the availability of credit for the rest of the economy. Thus, an adjustment in policies to establish better balance between the public and private sectors is warranted. There is also a risk that the investment levels envisaged under the development strategy may run up against the absorptive capacity of the economy.

Policy discussions focused on sustaining high economic growth while preserving macroeconomic stability and debt sustainability. Key recommendations include (i) rationalizing and prioritizing public sector investment, especially for state-owned enterprises; (ii) real and external sector reforms to support structural transformation; (iii) strengthening financial sector policies to promote inclusiveness and market development, bringing real interest rates to positive levels, and ensuring more flexible exchange rates and higher exchange reserves; and (iv) improving the business environment and expanding the private sector's role in the economy. The implementation of these recommendations would facilitate financial development that should enable less discretionary financing of the GTP that is consistent with debt sustainability.

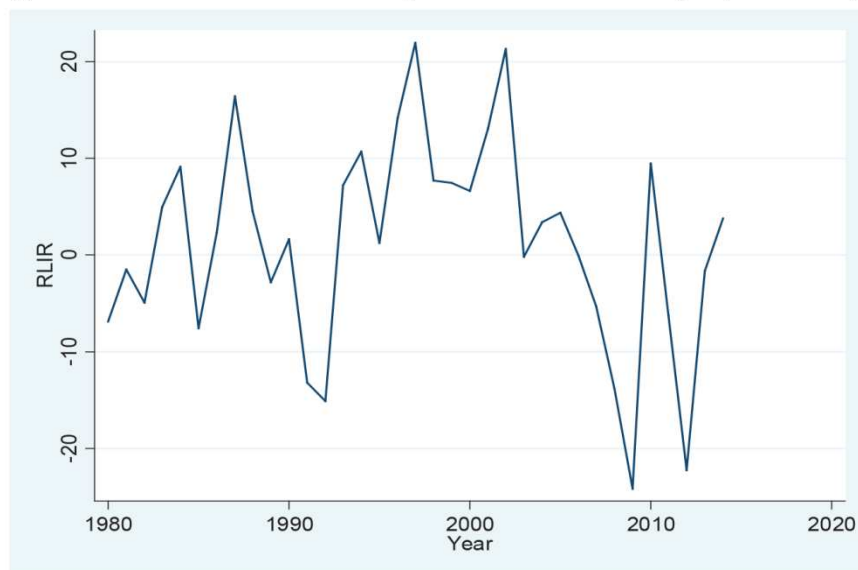
Figure4: The trends of real GDP growth rate in Ethiopia (1980-2014)



Source: STATA time series plot

The above time series plot shows that after 2004 the real GDP growth rate of Ethiopia is some extent seen an improvement. But before these year there is up and down movement of real GDP growth rate of the country's economy.

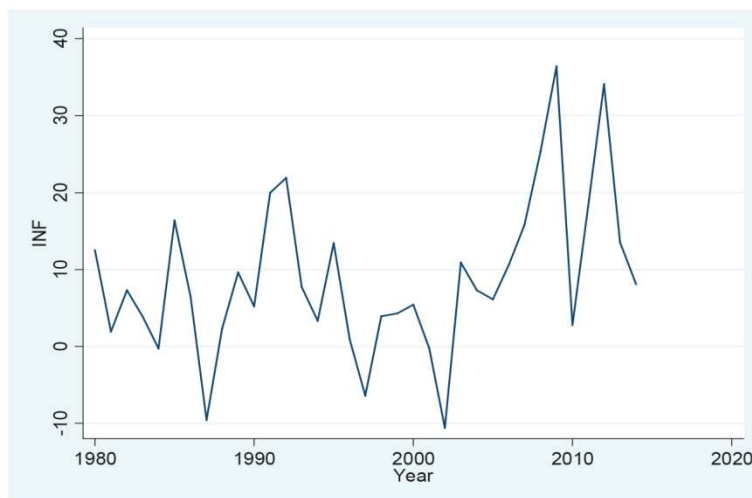
Figure .5: The trend of real lending interest rate in Ethiopia (1980-2014)



Source: STATA result of time series plot

In a recent time the real lending rate of Ethiopia is improved which shows that the government of Ethiopia is starting to create a good environment for private investors of the country.

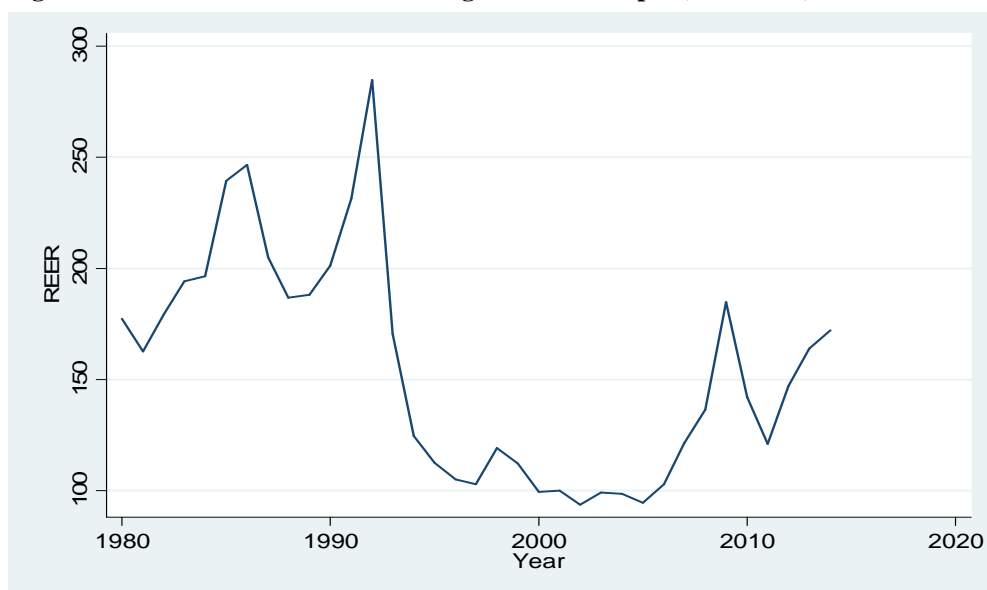
Figure 6: the trend of inflation in Ethiopia (1980-2014)



Source: STATA result of time series plot

The above time series plot shows that the government of Ethiopia starts to reduce macroeconomic instabilities (inflation) now a day to improve the welfare of the societies of the country; since as the time series plot shows that inflation become decline now a days.

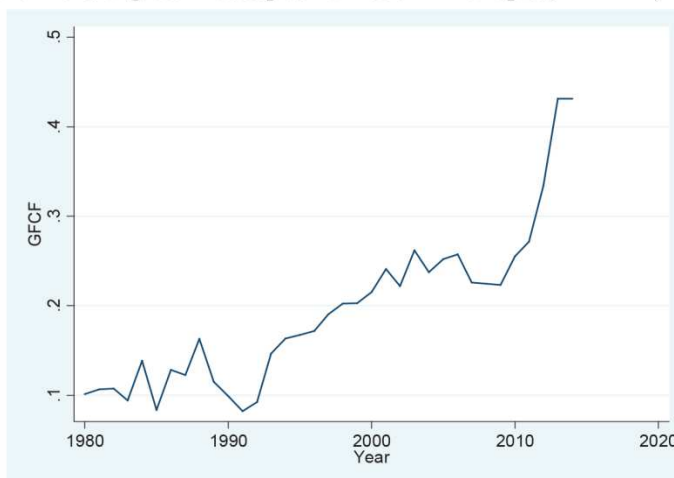
Fig.7: The trend of real effective exchange rate in Ethiopia (1980-2014)



Source: STATA result of time series plot

As per the time series plot above shows that the real exchange rate of Ethiopia in recent year is increased which means that, the local currency Ethiopia is devaluated which results the competency of the commodity of Ethiopia private investors in the world market.

Figure 8: Trend of gross fixed capital formation in Ethiopia (1980-2014)



Source: STATA result of time series plot

After the year 2010, in the above time series plot shows that an increase in gross fixed capital formation which is proxy for infrastructure (road, electricity, health labor workers, availability of capital equipments and the like).Which Initiates private investors in the country.

3.2 Econometrics Analysis

3.2.1 Estimation Technique

The researchers stressed on ordinary least square methods which used to point the time series data in the good path. Even the above is clear guarantee, the introduction of different techniques become necessary to test those of the above are in the normal track or not. To get those of consistent estimation of relationship between this dependent variable, private investment with their own respective explanatory variables; the data series must be tested for stationary or non stationary. In doing so the non stationary conditions should be changed to stationary condition. This is because, if a time series is non stationary, we can study its behavior only for the time period under consideration. Each set of time series data will be for a particular episode. As a consequence, it is not possible to generalize it to other time periods (Gugarati, 2004).

3.2.2 Stationary Test

This section reports the stationary test of the study. The source of all data used here are national bank of Ethiopia, World Development Indicators and Ethiopian Investment Agency. The series econometrics study is not complete without performing stationary test on the variable

used study. The regression runs on non stationary time series variables produce spurious result, which are meaningless. Therefore, it is important to make sure that variables are stationary. This means that a stationary time series has three characteristics mainly finite mean, variance and auto covariance over time (Gujarati, 1995). Unit root test method is used for stationary test of this study. For this purpose ADF tests for unit root are applied for each variables used in the analysis.

Table 1: ADF Unit Root Test, Sample; 1980-2014

| Variable s | Null hypothesis | ADF- test state at level | ADF- test at 1 st difference | pro>t | Critically value | | | Decisi on rule |
|------------|----------------------------------|--------------------------|---|--------|------------------|--------|---------|-------------------------|
| | | | | | 1% | 5% | 10% | |
| d_logPI | d_logPI has a unit root | 1.078 | -7.40405 | 0.9950 | -3.689 | -2.975 | - 2.619 | Reject Ho |
| RGDPgr | RGDPgr at lag(1) has a unit root | -3.735 | -3.735 | 0.0037 | -3.696 | -2.978 | -2.620 | Reject Ho |
| RLIR | RLIR has a unit root | -3.945 | -3.945 | 0.0017 | -3.689 | -2.975 | -2.619 | Reject Ho |
| INF | INF has a unit root | -3.978 | -3.978 | 0.0015 | -3.689 | -2.975 | -2.619 | Reject Ho |
| d_REE R | d_RLIR has an unit root | -1.776 | -5.1252 | 0.3922 | -3.689 | -2.975 | -2.619 | Reject Ho |
| d_GFCF | d_GFCF has a unit root | 0.635 | -6.15705 | 0.9884 | -3.689 | -2.975 | -2.619 | Reject H ₀ * |

MacKinnon approximate p-value for Z (t) Reject H₀*_ at d_ is 1st difference stationary test

Regression Analysis

OLS regression

Number of obs = 35

F (5, 29) = 62.32

Prob > F = 0.0000

R-squared = 0.9149

Adj R-squared = 0.9002

Root MSE = 0.47727

Table 2: Regression Analysis

| | logPI | Coef | Std. Err | t | P> t | [95% Conf. Interval] |
|--|--------|-----------|-----------|-------|-------|-------------------------|
| | RGDPgr | 0.0371586 | 0.0155926 | 2.38 | 0.024 | 0.0052683 0.069049 |
| | RLIR | 0.0623502 | 0.0305405 | 2.04 | 0.050 | -0.000112 0.1248125 |
| | INF | 0.0956734 | 0.0309254 | 3.09 | 0.004 | 0.0324237 0.158923 |
| | REER | 0.0026681 | 0.0022187 | 1.20 | 0.239 | -0.0018696 0.0072058 |
| | GFCF | 13.17751 | 1.241064 | 10.62 | 0.000 | 10.63925 15.71577 |
| | _cons | 5.032945 | 0.588949 | 8.55 | 0.000 | 3.828409 6.237481 |

Source from own STATA regression

The model summarized as follows:

$$\text{Log PI} = 5.032945 + 0.0371586\text{RGDPgr} + 0.0623502\text{RLIL} + 0.095674\text{INF} + 0.0026681\text{REER} + 13.17751\text{GFCF} + u_i$$

SE (0.58894) (0.155926) (0.0305405) (0.0309254) (0.0022187) (1.241064)

The result analysis based on economic criteria as shown the above specified model can be seen as follows:

❖ Determinant factor which have significant positive effect on private investment (PI) is real GDP growth rate. A 1% increase in RGDP results in a 0.0371586 percent increase in private investment. In the context of Ethiopia, this significant positive effect is expected as RGDP has nearly doubled during the period under consideration (so it is very low in absolute term). This increase in RGDP is believed to have raised the effective demand in the economy through increased disposable income. Such increased in effective demands for goods and services have stimulated more private investment in the economy over the period under study.

❖ From our findings, there is a positive relationship between real lending interest rate and private investment, the coefficient of real lending interest rate is 0.0623502 which implies that a one percent increase in real interest rate will increase PI by 0.0623502 percent.

❖ Inflation is the other variable that the researchers find significant with positive sign. The positive sign on the coefficient of inflation is an indication of stable economic environment (macroeconomic stability on the economy of Ethiopia).

❖ From our findings, there is a positive relationship between gross fixed capital formation and private investment, the coefficient of GFCF is 13.17751 which imply that a one percent increase in gross fixed capital formation (GFCF) will increase PI by 13.17751 percent. I.e. government increases infrastructural facilities.

❖ **The F – Statistics Test:** the test is conducted to determine if the independent variables in the model are simultaneously significant or not.

$$k - 1 = 5 - 1 = 4$$

$$n - k = 35 - 5 = 30$$

From the result, since $F_{cal} > F_{tab}$ i.e. $62.35 > F_{tab}$

Therefore we reject the null hypothesis H_0 and accept the alternative hypothesis H_1 and conclude that all slope coefficients are not simultaneously equal to zero i.e. the independent variables are simultaneously significant.

❖ **T-test** is used to determine of the significance of the individual parameter stimulated t-value in the regression result with the t-tabulated at n-k degree of freedom (df) and at 5% significance level.

$H_0: \beta_i = 0$ (not significant).

$H_1: \beta_i = 0$ (statistically significant).

Note: The null hypothesis assumes equality of each of the coefficients of the parameter (β_i) to be zero (0) which means that each of the variables does not have significance impact on economic growth, but the alternate hypothesis (H_1) assumes none of the coefficients of parameter (β_i) to be zero which means that each of the variables has significant impact on economic growth.

Decision Rule

Reject H_0 , if $T_{cal} > T_{tab}$ and accept, if otherwise

From our data, $n = 35$ and $k = 5$

$df = n - k = 30$ at 1%, 5% , and 10% significance level are show below.

The result of the analysis is summarized in **table 3 below**:

| Variable | T calculated | 1% | 5% | 10% | Decision rule | Conclusion |
|----------|-----------------|------|------|------|------------------|---------------|
| RGDPgr | 2.38 | 2.58 | 1.96 | 1.62 | Reject H_0 | Significant |
| RLIR | 2.04 | 2.58 | 1.96 | 1.62 | Reject H_0 | Significant |
| INF | 3.09 | 2.58 | 1.96 | 1.62 | Reject H_0 | Significant |
| REER | 1.20 | 2.58 | 1.96 | 1.62 | Accept H_0 | Insignificant |
| GFCF | 10.62 | 2.58 | 1.96 | 1.62 | Reject H_0 | Significant |

Significant at 5% and 10% significant levels

From results obtained in the regression, the result is expected to follow a prior expectation of magnitude and sign. Thus, table 4.4 below, analyses the outcome of the parameters

| Variable | Expected | Obtained | Correlation |
|----------|----------|----------|-------------|
| RGDPgr | Positive | Positive | Conform |
| RLIR | Negative | Positive | Not conform |
| INF | Negative | Positive | Not conform |
| d_REER | Negative | Positive | Not Conform |
| d_GFCF | Positive | Positive | Conform |

R^2 is used to test the goodness of fit from the regression results, the value of R^2 is 0.9149 implies that in the long run, 91.49% of the variations in private investment is explained by the independent variables (real GDP growth rate , real lending interest rate, inflation, real effective exchange rate and gross fixed capital formation).

Here after the researchers try to test whether the given model are free from major estimation problem that is multicollinearity, autocorrelation and test like normality and model specification.

A. Multicollinearity

Multicollinearity is the term which is used in order to show the linear relationship between the explanatory variables not the dependent and independent variables. Multicollinearity problem arises from the use of large values of explanatory variables in the model, when the numbers of variables exceed the number of observation.

The decision rule is when the mean of variance inflation factor is below ten (10), then the presence of multicollinearity problem become less and less.

Table 4.5 Variance Inflation Factor (VIF) for Testing Multicollinearity

| Variable | VIF | 1/VIF |
|----------|-------|----------|
| RGDP | 1.33 | 0.754573 |
| RLIR | 16.34 | 0.061185 |
| INF | 15.41 | 0.064874 |
| REER | 1.89 | 0.529512 |
| GFCF | 1.79 | 0.559276 |
| Mean VIF | 7.35 | |

Source: STATA results

Test for Correlation Matrix

It is other test to avoid the problem of multicollinearity on the model specification of this specific study. The correlation between each independent variable should be less than one and the correlation along each variables are exactly equals to one, since they are correlated correctly and which shows that there is no multicollinearity problem in our model specification. See the result from the appendix part.

B. Autocorrelation Test

“If the residual are correlated among them (this correlation is called autocorrelation), one has to look for the pattern of this correlation. One statistics that is often used is the Durban Watson statistics” (Gujarati, 2006).

C. Test for Normality

Test for normality means that determining whether the data is measured by normal distribution or not. This test of normal distribution may take place by non graphical (Shapiro-Wilk W test for normal data.) the stated table, shows that, the p-value (0.57049) is greater than 0.05. As a result the researchers conclude that the error term of the specified model, are found to be normally distributed.

Shapiro-Wilk W test for normal data

Shapiro-Wilk W = 0.973701, with p-value 0.57049

Source: own computation of Gretel results

D. Test for Model Specification

Testing the model is very important to check out whether one or more relevant variables are omitted from the model irrelevant variables are included in the model. There are different methods to detect specification error of the model. The link test and Ramsey rest test for omitted variables are commonly used methods in the test. The researchers use the link test for this purpose.

Table 4.6: link test for model specification

| logPI | Coef. | Std. Err. | t | P> t | [95% Conf. Interval] | |
|-------------|---------|-----------|-------|--------|----------------------|---------|
| -----+----- | | | | | | |
| _hat | 0.72631 | 0.60265 | 1.205 | 0.2370 | -0.50125 | 1.95388 |
| _hatsq | 0.01407 | 0.03086 | 0.456 | 0.6515 | -0.04879 | 0.07693 |
| _cons | 1.29718 | 2.88787 | 0.449 | 0.6563 | -4.58522 | 7.17958 |

4. Conclusion

The existence of economic growth which is the objective of every society is achieved with the efficient allocation of the existing resource in appropriate manner. One of the important factor for such economic growth and efficient allocations of resource is the development of private investment.

Private investment in the Derg regime was not that of much attractive. Many structural and economic problems were relevant during due to the shift in resources ownership from private hand to government. This implies private sector was discouraged during the regime. The current government of Ethiopia; however, developed a policy in contrast with that of the Derg regime. That is encouraging private investment and liberalizing the market through the appropriate policy is the main concern of the government. Moreover, many policy instruments to encourage investors to participate in the diversified sector of the economy (service, agriculture, manufacture ...) are also the main concern of the current government. Even if the private investment is encouraged by the current government of Ethiopia, its distribution is

not equitable. The descriptive result shows that private investment in Ethiopia is mainly distributed in one city administration Addis Ababa and the two regions Amhara and Tigray holds 63% of private investment some periods. The study offers an econometric analysis of macroeconomic factors that can be potentially affect or determine private investment in the short run and long run perspectives. Both theoretical and econometrics analysis are taken to identify a private investment function for the last 35 years (1980-2014).

Accordingly, the result of econometrics OLS regression analysis shows that gross fixed capital formation is one unit of public investment in basic infrastructure and social overheads are essential for private investment in countries like Ethiopia were such basics are in serious shortage, and were private sectors do not usually dare to go for.

5. Recommendations

In the light of the finding above, the researcher has developed the following recommendation:

The government should give attention to the growth of real GDP. This is because real GDP is a great significant factor which determines private investment, a mere development or growth of investment should not be the concern of the government. But it should also look and do for the equitable distribution of private investment among all regional states of Ethiopia rather than concentrating those plants in a single place, Low value of local currency constrained private investment. The positive relationship of real effective exchange rate and private investment suggests that the real effective exchange rate encourages private investment or vice versa. So this finding may suggests that the government decision of devaluating of the local currency should be continue. Since depreciation of local currency attracts private investment in the country,

Enhance the real GDP growth rate through rising the per capital income of people by creating various employment opportunities and income generating means, the government should create a fertile investment environment by ensuring consistent investment policies and requirements, by creating clear and efficient bureaucracy and good governance at all levels, and by opening more investment opportunities for private investors,

Lastly, the researchers suggest the need to conduct a comprehensive study on private investment in Ethiopia by adequately accommodating the essential qualitative and quantitative factors or determinants of private investment for proper policy actions and decisions.

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