

Analysis on the Determinants of Private Investment in Ethiopia A Time Series Analysis (1992-2016)

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Abstract

This study investigates the determinants of private investment in Ethiopia for the period 1992-2016. The ARDL (Autoregressive Distributed Lag) approach to co integration is employed to test the existence of a long run relationship, as well as to study the short run dynamics of private investment in Ethiopia. To that end, demand for private investment is estimated as a function of public investment, lending interest rate, saving interest rate, foreign aid, external debt, trade openness, business tax, and inflation rate. The original problem focuses on the assessment of factors that have either stimulated or dampened private sector investment in Ethiopia during the study period. The results of this study confirm some results found elsewhere in the empirical literature. Further, the study employed the variance decomposition and impulse response functions to investigate the dynamic simulations of the variables included in the estimated model. Econometric evidence indicates that private investment is positively related to real saving interest rate and trade openness but negatively related to public investment, foreign aid, external debt, and business tax. Further the variance decomposition results show that innovations in business tax highly contributed to the forecast error of Ethiopia's trade balance as compared to other explanatory variables. The study finally recommends that countries should seriously work in creating enabling environment for private investment.

Keywords: Private Investment, ARDL, Ethiopia

1 INTRODUCTION

The idea of developing the private sector as an alternative development strategy in order to enhance economic activities in developing countries to help boost economic growth and reduce poverty began to gain credibility and substance as far back as the 1980s (Ouattara 2004). In recent times, there is broad base consensus that private sector led growth has a stronger positive impact on economic growth than public sector due to the fact that private investment is relatively more efficient than public sector (investment) (Frimpong & Marbuah 2010).

The OECD(2006) states that private sector has a leading and significant role to play in the war on poverty as far as Sub-Saharan countries are concern. In effect private investment is identified as imperative for promoting broad-based and sustained growth that will help drive poverty reduction. A study by Khan & Reinhart (1990) observes the rate of economic growth is largely a function of the level of investment. As a consequence countries in which investment remains sluggish over a prolonged period of time face endangered growth prospect due to the lack of capital accumulation (Chirinko 1993). The flows of private investment into developing economies have been impressive over the last two decades. The IMF attributes the surge in inflow to two factors which it sees as driving force for private investment toward emerging markets investors' desire for portfolio diversification and higher profits, and macroeconomic and structural reforms in developing countries. Investors have become increasingly discriminating and show a marked preference for countries with sound policies.

Thus, as mentioned above, investment plays a vital role for economic growth and development and for improving the welfare of the society. As recent study (Ndikumana, and Herndeze-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 Derg 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 private 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 eight years starting from 2007 (which is around 10% according to official reports). However, according to WB (2017), as of 2016, the annual per capita income is still very low (which is 487.69 at constant 2005 US\$).

1.1 Statement of the Problem

Econometric evidence (Ghura and Hadjimichael 1996) indicates that private investment has a stronger, more favorable effect on growth rather than public investment, probably because private investment is more efficient and is not closely associated with corruption.

Private 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 for 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 the 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 frameworks to support private business (Economic Brief, 2010).

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 an increase in public investment is associated with an increase in private investment. This may arise because public infrastructure provision affects the return on private investment positively, hence enhancing the incentive to carry out such private investment.

Therefore, the researchers support that this is a mixed effect case. And, according to Ashebir Tsegaye (2012) the determinants of private investment in Ethiopia were: inflation rate, RGDP growth rate, government expenditure, and real effective exchange rate. Given the above facts, 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 public investment, lending interest rate, saving interest rate, foreign aid, external debt, trade openness, business tax and inflation rate. On the other hand, most of the papers done in this area; in the past, do not include recent data (2013-2016) and assessing the response of private investment to the shock in its determinant. 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.

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:

- ✓ Investigate the nature and strengths of the relationships between Ethiopian private investment and its macro determinants.
- ✓ To investigate how Ethiopian's private investment responds to innovations (shocks) in its determinants.

2 RELATED REVIEWS

2.1 Theories of Private Investment

The theories of investment date back to Keynes (1936), who first called attention to the existence of an independent investment function in the economy. A central feature of the Keynesian analysis is the observation that although savings and investment must be identical ex-post, savings and investment decisions are, in general, taken by different decision makers and there is no reason why ex-ante savings should equal ex-ante investment. The next phase in the evolution of investment theory gave rise to the accelerator theory, which makes investment a linear proportion of changes in output. In the accelerator model, expectations, profitability and capital costs

play no role. Keynesian theory has traditionally favored the accelerator theory of investment while disregarding the role of factor costs. A more general form of the accelerator model is the flexible accelerator model. The basic notion behind this model is that the larger the gap between the existing capital stock and the desired capital stock, the greater a firm's rate of investment. The 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. This gives rise to a net investment equation of the form of:

$$I = \delta (K^* - K_{-1}) \dots \dots \dots (1)$$

Where I = net investment, K^* = desired capital stock, K_{-1} = last period's capital stock, and δ = partial adjustment coefficient. 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^* . The flexible accelerator mechanism may be transformed into a theory of investment behavior by adding a specification of K^* and a theory of replacement investment. Alternative econometric models of investment behavior differ in the determinants of K^* , the characterization of the time structure of the investment process and the treatment of replacement investment. In the flexible accelerator model, K^* is proportional to output, but in alternative models, K^* depends on capacity utilization, internal funds, the cost of external finance and other variables.

Jorgenson (1971) and others have formulated the neoclassical approach, which is a version of the flexible accelerator model. In this 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). In the "Q" theory of investment (which is also in the neoclassical framework) associated with Tobin (1969), the ratio of the market value of the existing capital stock to its replacement cost (the "Q" ratio) is the main force driving investment. Tobin argues that delivery lags and increasing marginal cost of investment are the reasons why Q would differ from unity. Another approach known as "neoliberal" emphasizes the importance of financial deepening and high interest rates in stimulating growth. The proponents of this approach are McKinnon (1973). The core of his argument rests on the claim that developing countries suffer from financial repression (which is generally equated with controls on interest rates in a downward direction) and that if these countries were liberated from their repressive conditions, this would induce savings, investment and growth. Not only will liberalization increase savings and loanable funds, it will result in a more efficient allocation of these funds, both contributing to a higher economic growth. In the neoliberal view, investment is positively related to the real rate of interest in contrast with the neoclassical theory. The reason for this is that a rise in interest rates increases the volume of financial savings through financial intermediaries and thereby raises investible funds, a phenomenon that McKinnon (1973) calls the "conduit effect". Thus, while it may be true that demand for investment declines with the rise in the real rate of interest, realized investment actually increases because of the greater availability of funds. This conclusion applies only when the capital market is in disequilibrium with the demand for funds exceeding supply.

It is clear from the discussion in this section 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 growth rate of GDP, internal funds and capacity utilization. The neoclassical determinants of private investment include Tobin's Q, real interest rate, user cost of capital and public investment ratio. There are three uncertainty variables. The first is variability (variance, moving standard deviation or moving coefficient of variation) of the user cost of capital, real exchange rate, inflation rate, distortions in the foreign exchange market (proxied by the black market premium) and real GDP. The second uncertainty variable is the debt/GDP ratio and the third is debt service as a ratio of exports of goods and services.

2.2 Determinants of Private investment

There is a finite limit for domestic savings, public investment would in some cases pose a severe constraint for private investment and would crowd out private investment. Balassa (1988) in his study of 30 countries showed the presence of a negative relationship between private investment and public investment. Duncan et al. (1999) is of the opinion that such a negative relationship might not exist in the case of Pacific islands, which have no difficulties accessing foreign savings. The literature is fairly settled on the factors that constrained or otherwise determine private investment. Authors like Greene & Villanueva (1991); Duncan et al. (1999) have carried out empirical and stochastic investigations on the determinants of private Investment. Most of them discovered that Private investment behavior is primarily influenced by the profit motive in addition to other factors such as wage rate, real exchange rate policies, and raw material costs, rate of inflation and appropriate pricing of capital, labor and land.

Aside from the factors listed above, private investment would flourish in a supportive environment of cost reductions in power, transport and communications, which are often provided through public investment. For instance, Greene & Villanueva (1991) carried out an Empirical studies on 23 countries and found that public investment in physical infrastructure is complementary to private investment. However, as there is a finite limit for domestic savings, public investment would, in some cases, poses a severe constraint for private investment

and would crowd out private investment. Balassa (1988) in his study of 30 countries concluded that the presence of a negative relationship between private investment and public investment. In corroborating of these findings, Duncan et al. (1999) pointed out that such a negative relationship might not exist in the case of Pacific Islands, which have no difficulties accessing foreign savings.

According to Duncan et al. (1999), user cost of capital is an important factor in any investment decision by the private sector. When the user cost of capital is increased by raising the cost of bank credit or by increasing the cost of retained earnings, which is the main source of financing investment, there is a decline in investment. Whereas there is a consensus in the literature on the factors discussed so far, findings of various empirical studies are not, however, consistent on the relationship between interest rates and investment. While certain studies such as Green & Villanueva (1991), have confirmed the negative relationship between interest rates and investment, study by others have shown that in repressed financial markets, credit policy affects investment in a distorted manner.

Thomas, (1997) in his study of 86 developing countries examined data on terms of trade, real exchange rates, property rights and civil liberties and concluded that while factors including credit, availability and the quality of physical and human infrastructure are important influences, uncertainty in the investment environment was negatively related to private investment in sub-Saharan countries. Employing the variability in real exchange rates as an explanatory variable in regression analysis, in his cross-country study on the macroeconomic environment and private investment in six Pacific Island countries observed a statistically significant negative relationship between the variability in the real exchange rate and private investment.

Duncan et al. (1999) argued that although variability in the real exchange rate is a reasonable proxy for instability in major economic variables as fluctuations in inflation and productivity. Generally, fiscal and monetary management are reflected in the real exchange rate, which is not a good measure of the uncertainty attached to policy or the insecurity of property rights and enforcement of contracts or the level of corruption. It has been observed that these non-economic factors appear to have significant influence on investment in the Pacific Island countries. However, Duncan et al. (1999) admitted that no quantitative or qualitative evidence is available of their size or their impact. In the absence of such evidence, any study on private investment is to be necessarily restricted to the conventional variables.

It has been observed by many researchers that monetary, fiscal and exchange rate policies for correcting unsustainable macroeconomic imbalances are bound to affect private investment. There are two ways by which restrictive monetary and credit policies included in stabilization packages affect investment. These are the rise in the real cost of bank credit and the opportunity cost of retained earnings from higher interest rates. The user cost of capital is increased by both mechanisms, leading to a reduction in investment. Van Wijnbergen (1982) however noted that credit policy affects investment directly, because credit is allocated to firms with access to preferential interest rates rather than through the indirect interest rate channel. Thus the effect of monetary and credit policy on investment and the means of transmission depend on the institutional structure of financial markets.

A formal framework for studying private investment in developing countries was developed by Blejer & Khan (1984). Tun Wai & Wong (1982) incorporated features of the neoclassical model into investment models for developing countries. Their approaches take into account the relevant data problems and structural features that caused a gap between the modern theory of investment and the models that were specified for developing countries. Blejer & Khan (1984) focused on the role of government policy and derived an explicit functional relationship between the principal policy instruments and private capital formation. Using the model they were able to assess the extent of any "crowding out". The second extension that Blejer & Khan (1984) did was to make a distinction between government investment that is related to the development of infrastructure and government investment of other kinds. Blejer & Khan (1984) found a positive relationship between the share of private investment in total investment and the ratio of total investment to income. They also found that the larger the share of private investment, the higher the average growth rate of the economy. These patterns indicate the relevance of private investment behaviour in developing countries and call for the testing of formal models of private capital formation in individual countries.

Two principal conclusions emerged from Blejer & Khan's (1984) tests of formal model for 24 developing countries. The first was the possibility of identifying well behaved empirical function for private investment in developing countries. This challenged the traditional view that standard investment theory is not relevant for developing countries. The second conclusion was the establishment of a direct empirical link between government policy variables and private capital formation. Asante (2000) estimated a private investment equation that tried to assess the determinants of private investment in Ghana. Among the independent variables were the incremental capital output ratio, the lending rate, the exchange rate, credit to the private sector and public investment. His preliminary results showed among other things a "crowding out" effect of public investment.

3. METHODOLOGY

3.1 Data Type and Date Source

The study uses the annual (secondary) time series data covering the period between 1992-2016. This period has chosen because data to be used in the trade balance function has been available. All the data has drawn from the National Bank of Ethiopia (NBE) and Ministry of Finance and Economic Development (MoFED) and Ethiopia Investment Commission (EIC).

3.2 Model specification

The benchmark model to be tested here is the modification of flexible accelerator model of investment for a developing economy and focuses on the hypothesized determinants of private investment in Ethiopia. The, general private investment equation is given as

$$PI = f(PB, LI, INF, EXD, AID, SI, OP, COTAX) \dots\dots\dots (3.1)$$

Where,

PI= Private investment; AID = Foreign Aid; LI= lending interest rate; EXD = External debt burden; OP= Trade openness; PB=Public investment; SI= saving interest rate; COTAX= Business tax and INF= inflation. Econometrically, to include the random error term, the explicit econometric model is formulated as:

$$InPI_t = \beta_0 + \beta_1PB_t + \beta_2LI_t + \beta_3INF_t + \beta_4EXD_t + \beta_5AID_t + \beta_6OP_t + \beta_7COTAX_t + \beta_8SI_t + \epsilon_i \dots\dots\dots(3.2)$$

Where, t time, i=1...n, ϵ_i = Error term

3.3 Data Analysis

After the data has collected following the researcher analyzed by using regression method of analysis. The study adopts ARDL model in order to assess the short run and long-run relationship between the dependent and independent variables. Multiple regression analysis was also applied to test the association of among Variables and the extent of variance in the dependent variable as a result of a unit change in independent variables. Eviews-10 used for the analysis of the data.

3.4 Estimation Strategy

Regarding the estimation strategy, the study follows three steps: i) the test of stationarity of the individual series in the regression model or otherwise to determine the order of integration of the variables, ii) the test of the existence of a stable long-run equilibrium relationship among the variables in the model and iii) the estimation of the parameters of the model in equation 3.11.

4 RESULTS AND DISCUSSION

4.1 Unit Root Test Results

In analyzing the determinants of Ethiopian's private investment, the study first tests for the presence of unit root in the series before proceeding to cointegration analysis. In order to ensure that there is a strong no evidence of unit root or otherwise having stationarity in individual series; the study employs the Augmented Dickey-Fuller (ADF) tests.

Table 4.1 Augmented Dickey-Fuller test

variable	Stationary at Level		Stationary at First Difference	
	Constant	Constant+trend	constant	Constant+trend
PI	-2.448163	-3.994577	-7.363150***	-7.067917***
PB	-1.663331	-1.743353	-3.933337***	-3.853428**
LI	-4.462090***	-5.404451***		
SI	-1.692781	-2.516930	-7.345997***	-7.485924***
INF	-4.054887***	-4.509022***		
EXD	-1.656188	-1.976596	-4.793776***	-4.680775***
COTAX	-2.6032	-5.10008***	-4.4329***	-3.3351
AID	-1.2204	-0.3008	-3.6016**	-3.7672**
OP	3.593932	-1.608695	-3.397935**	-4.063811**

Not e: *** and ** denotes significance at 1% and 5% respectively

Source: Author's own construction.

The ADF test result (see Table 4.1) shows that, for the model with only constant and no trend, lending interest rate and inflation rate are integrated zero at 1% level of significant i.e. I (0) level of significance. At first difference and with regards to the same model (constant and no trend), private investment, public investment, saving interest rate and external debt, business tax are integrated zero at 1% level of significant i.e. I (0) level of significance but foreign aid and trade openness are integrated zero at 5% level of significant i.e. I (0) level of

significance.

Again, for the model with both constant and trend at the levels lending interest rate, business tax and inflation rate are integrated zero at 1% level of significant i.e. I (0) level of significance. At first difference; private investment, saving interest rate and external debt are integrated zero at 1% level of significant i.e. I (0) level of significance but foreign aid, business tax and trade openness are integrated zero at 5% level of significant i.e. I (0) level of significance. The results obtained in Augmented Dickey Fuller tests (ADF tests) show mix results in terms of the order of integration of the variables. In other words the underlying series of the variables in the study are integrated of order zero I(0) and order one I(1) hence offering support for the use of ARDL bounds test to cointegration. This implies that all the variables were found to be mean reverting.

4.2 Cointegration Test Results

In order to determine the possible presence of cointegration thus a long-run equilibrium among the variables included in equation 3.2 the study adopts the bounds testing approach within the ARDL framework to test for cointegration. The results are presented in Table 4.2.

The ARDL model (1, 1, 0, 1, 0, 0, 0, 0, 1) selection was based on the Schwarz information criterion (SIC). The result in Table 4.2 shows that there exists a stable long-run relationship among the variables included in equation 3.2. The computed F-statistics of the bound test 6.863 is larger than the upper bound critical value of 4.1 at 1% level of significance. In this case the null hypothesis of no cointegration is rejected implying that there is a stable long-run equilibrium relationship among the variables (cointegration) in equation 3.2. This implies that there is a long-run relationship among the variables included in estimated model.

Table 4. 2: Results of Cointegration relationship (Bound test)

Critical Values		
Computed F-statistic	99% Lower Bound	99% Upper Bound
6.863 ***	2.79	4.1

Note: *** means that the null hypothesis of no long-run equilibrium (no cointegration) is rejected at 1% level of significance.

Source: Author's own construction

4.3 Long-run Relationship between Macroeconomic Variable determinants and Private Investment in Ethiopia

The first objective was set to determine the impact of other macroeconomic variables including public investment, lending interest rate, and inflation rate, external debt burden, saving rate, business tax, foreign aid and trade openness. To achieve this, the aforementioned variables were included in equation 3.2.

Table 4. 3 Estimated Long-run

ARDL (1, 1, 0, 1, 0, 0, 0, 0, 1) selected based on SIC Dependent Variable: PI

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PB	-0.099060	0.022864	-4.332519	0.0012
LI	-0.000298	0.000610	-0.489026	0.6344
OP	0.051845	0.013413	3.865147	0.0026
SI	0.001319	0.000440	2.996738	0.0122
INF	-2.06E-05	2.87E-05	-0.718804	0.4873
EDT	-0.028894	0.011069	2.610431	0.0242
COTAX	-0.499995	0.130728	-3.824699	0.0028
AID	-0.120548	0.046161	-2.611447	0.0242

EC = PI - (-0.0991*PB - 0.0003*LI + 0.0518*OP + 0.0013*SI - 0.0000*INF + 0.0289*EDT - 0.5000*COTAX - 0.1205*AID)

Source: Author's own construction

Public investment has a negative and significant relationship with the private investment in the long-run. The result shows that a one percent increase in Public investment causes a decline in the private investment. More, specifically in the long-run a unit increase in the Public investment causes deterioration of private investment by approximately 0.099 percent.

The coefficient of trade openness has a negative and statistically significant relationship with the private investment in the long-run. That is, in the long-run a one percent increase in trade openness causes deterioration in the country's private investment. Specifically, a one percent increase in trade openness causes approximately deterioration in Ethiopia's private investment by 0.052 percent at 1 % level of significance.

Regarding the long-run coefficient of saving interest rate, the result shows a positive and significant relationship between saving interest and private investment. This implies that a one percent increase in saving interest leads to deterioration in the private investment by approximately 0.0013 percent at five percent

significance level in the long-run.

Regarding the long-run coefficient of external debt burden, the result shows a negative and significant relationship between external debt burden and private investment. This implies that a one percent increase in external debt burden leads to deteriorate in private investment by approximately 0.0288 units at five percent significance level in the long-run.

The coefficient of the business tax indicated a negative relationship with the private investment in the long-run and it affects significantly. A one percent increase in business tax causes deteriorate of Ethiopia's private investment by 0.4999 percent in the long-run at 1% level of significant.

Long-run coefficient of foreign aid, the result shows a negative and significant relationship between foreign aid and private investment. This implies that a one percent increase in foreign aid leads to deteriorate in private investment by approximately 0.1205 units at five percent significance level in the long-run.

4.4 Short-run Relationship between Macroeconomic determinants and Private Investment in Ethiopia

The previous section has analyzed the long-run (cointegration) relationship among the variables included in equation 3.2. In this section, and in order to achieve the first objectives, focuses on the short-run relationship among variables included in equation 3.2. To achieve this equation the error correction model was estimated. The results are presented in Table 4.4.

Table 4.4 Estimated Short -run

ARDL (1, 1, 0, 1, 0, 0, 0, 0, 1) selected based on SIC Dependent Variable: PI

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.000535	0.000318	-1.682277	0.1207
D(PB)	-0.079448	0.018051	-4.401276	0.0011
D(OP)	0.025287	0.008168	3.095716	0.0102
D(AID)	0.060425	0.048456	1.247002	0.2383
CointEq(-1)*	-1.355341	0.131213	-10.32936	0.0000

Source: Author's own construction

The results show that the coefficient of public investment causes deteriorations on Ethiopia's private investment in the short run. A one percent increase in public investment causes private investment decrease by 0.0794 percent and it have statistically significant effect on Ethiopian private investment.

The short run coefficient of trade openness causes improvement in Ethiopian private investment in the short run. A one percent increase in trade openness leads to improve Ethiopian private investment by 0.025 percent and it affect statistical significantly Ethiopian private investment at five percent significant level.

Finally from economic intuition, the error correction term (ECT-1) in the ECM measures is the speed at which an endogenous variable adjusts to shocks in an explanatory variable in order to converge to its long run equilibrium. The estimated ECT-1 coefficient must be negative and statistically significant at one percent error level. The negative and significant coefficient of the ECT-1 confirms the cointegration results discussed in section 4.4. The ECT-1 explains the extent to which public investment, lending interest rate, inflation rate, external debt burden, saving rate, business tax, foreign aid and trade openness returns to the equilibrium in the long-run after a short-run shock. The result shows a high speed of adjustment of convergence to the long run equilibrium every year after a short run shock. In other words, the coefficient -1.35 indicates high rate of convergence to equilibrium, which implies that the deviation from long-term equilibrium is corrected by 1.35 percent over each year, this show the equilibrium is reached before one year as a results of its high rate of adjustment to the equilibrium.

4.5 Ethiopian's private investment responds to innovations (shocks)

In order to achieve the second objective, we study the VDF and IRF. To do this we examine the forecast error variance in one variable explained by its own innovations (shocks) or innovations in other variables, and trace the directional response of one variable to a one standard-deviation in shocks in other variables. The study conducts the generalized VDF and generalized IRF within an unrestricted VAR model as proposed by Koop et al (1996) and Pesaran and Shin (1998). Discussions on the VDF are first presented after which discussions on IRF are also presented.

From an estimated VAR model and in order to convey a sense of dynamics, Table 4.5 presents the VDF of the variables included in equation 3.2 in a ten year horizon. From a quick look at the results presented in Table 4.5, it is evident that within the ten year horizon, the forecast error variance of trade balance is as a result of its own shocks.

In terms of innovations in the explanatory variables, innovations in business tax contributed the most to the forecast error variance of private investment as compared to the other variables over the horizon. In the same vain innovations in saving interest rate, trade openness, lending interest rate, public investment, external debt burden, inflation rate and foreign aid contributed sequentially to the forecast error variance of trade balance over

the specified time horizon.

Table 4.5 Variance Decomposition Result

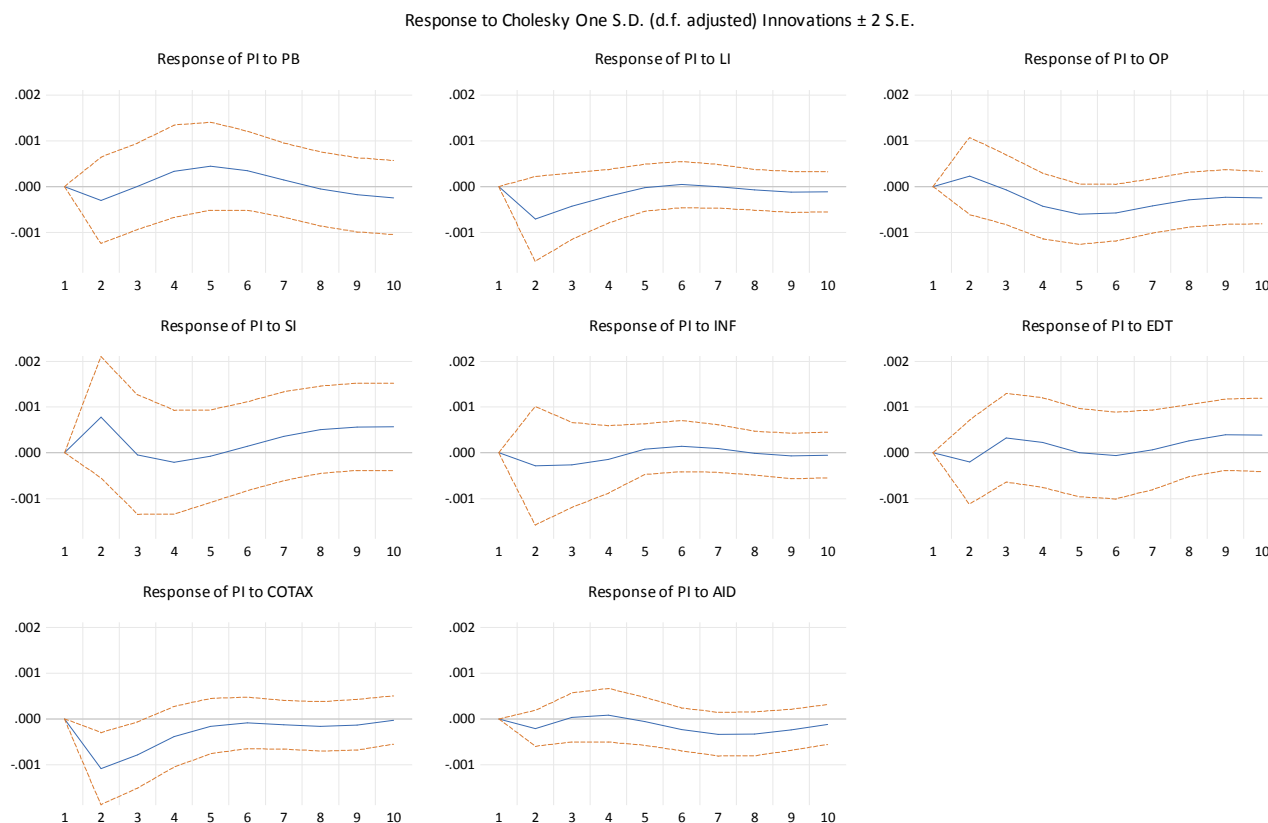
Period	S.E.	PI	PB	LI	OP	SI	INF	EDT	COTAX	AID
1	0.002605	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.003245	75.56751	0.843830	4.710762	0.501449	5.717003	0.749399	0.374879	11.12903	0.406133
3	0.003540	71.59476	0.709940	5.427441	0.460258	4.817518	1.192784	1.169180	14.27532	0.352791
4	0.003654	68.77667	1.509659	5.423888	1.800464	4.831098	1.278387	1.475419	14.52210	0.382310
5	0.003737	65.84336	2.860565	5.189742	4.326935	4.657577	1.268474	1.410749	14.05603	0.386567
6	0.003824	63.62739	3.557088	4.967966	6.343218	4.589284	1.358544	1.370248	13.46756	0.718700
7	0.003898	61.89101	3.558679	4.783279	7.285082	5.283461	1.364623	1.348499	13.06973	1.415644
8	0.003972	59.82692	3.444982	4.638121	7.542793	6.701727	1.314784	1.744039	12.75279	2.033844
9	0.004054	57.48522	3.500882	4.532519	7.563606	8.375713	1.289793	2.629074	12.33529	2.287902
10	0.004133	55.41397	3.709114	4.438051	7.618353	9.980714	1.256034	3.421667	11.87565	2.286449

Cholesky Ordering: PI PB LI OP SI INF EDT COTAX AID

From the above explanations, it is clear that the VDF substantiate that the significant role played by business tax, saving interest rate, trade openness, lending interest rate, public investment, external debt burden, inflation rate and foreign aid in accounting for fluctuations in forecast error variance of Ethiopia's private investment over the time horizon within the sample period considered. In terms of explanatory power, innovations in foreign aid explained very little of the forecast error variance of private investment as compared to other variables. The implication is that foreign aid contributed very little to trends in Ethiopia's private investment over the sample period. Nevertheless the portion of private investment variations accounted for by most of the explanatory variables increased continuously over the time horizon of which the percentage of forecast error variance in private investment is highly accounted for by innovations in business tax followed by saving interest rate as it maintains the highest percentage than the other variables. This also implies that changes in the country's private investment are highly attributed to shocks from business tax and saving interest rate.

Furthermore the results of the IRF are presented. Figure 1 show plots of the generalized IRF of trade balance with respect to innovations in public investment, lending interest rate, trade openness, saving interest rate, inflation rate, external debt burden, business tax and foreign aid as proposed by Pesaran and Shin (1998) and Koop et al (1996) within a ten-year horizon. This approach reveals insight into the dynamic relationships between the variables as it portrays the response of a variable to an unexpected shock in another variable over a specified time horizon. The horizontal axis in each graph shows the number of years after the impulse has been initialized while the vertical axis shows the responses of the appropriate variable.

Figure 1 Impulse Response Function



5 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusion

The main aim of this paper was to investigate the factors that influence the levels of private investment within the context of Ethiopia over the period 1992- 2016. In order to achieve this, the study examines the impact of other macro-economic variables on the country's private investment and the study analyses the innovations (shock) of the variables included in the estimations. In other words, it investigates how innovations in the explanatory variables and own shocks contribute to the forecast error variance of Ethiopia private investment and also traces the directional response of the Ethiopia private investment to a one standard-deviation in own shocks or shocks in explanatory variables. The study employed the ARDL bounds test to cointegration as its estimation strategy. It also employs the VDF and IRF to analyze the dynamic simulations of the variables.

The study finds evidence of both long-run relationship and short-run dynamics among the variables understudy, thus private investment, business tax, saving interest rate, trade openness, lending interest rate, public investment, external debt burden, inflation rate and foreign aid. Again, the VDF showed that business tax followed by saving interest rate highly contributed to the forecast error variance of private investment and trade openness contributed least to the forecast error variance of trade balance in Ethiopian foreign aid.

5.2 Recommendations

It is evident that public investment impedes private investment. This deleterious effect of public investment on private investment can be rectified by moderating the degree of public investment whiles increasing the role of private investment in the provision of social goods. Furthermore, public investments should be made on areas that complement private investment rather than hamper private investment.

Lending interest rate has had no impact on Ethiopian private investment, and then the amount of credit to private sector should be encouraged by providing incentives to financial institutions. Appropriate policies should be pursued to ensure considerable and sustainable credit to entrepreneurs to lend more to private businesses.

Trade openness has had a significant positive impact on private investment at a 1% critical value. As it can be observed from long run regression results, a one unit increase in trade openness leads to improve private investment. The study shows that the country can open itself for external economy or apply free trade to promote its private investment.

The study shows that there is positive relationship between saving interest rate and private investment. In other word a unit increase in saving interest rate can improve a country's private investment. The policy maker must create favorable condition for saver in order to save more; to facilitate private investment.

Inflation has had no impact on private investment in Ethiopia for the period under study. The economic policies aimed at sustaining moderate rate of inflation which may have a positive impact on private investment, furthermore, government should always ensure that the inflation rate is kept at a single digit so as to avoid the negative impacts the may be associated with it.

External debts has significant negative impact on private investment at 5% critical value that is a one unit increase in external debt leads to deteriorate in private investment. The Ethiopia's external debt has been accumulating over the years and this means that there is debt overhang problem in Ethiopia while debt servicing has crowding out effect. Thus the study supports the need for Ethiopia to be considered for debt relief measures, Bardsall and Williamson argue that "an assured dollar of debt relief is probably more efficient in generating development than a promise of a new aid"(Bardsall and Williamson, 2002). The government should also reduce borrowing from other countries so as to reduce the future burdening of debt servicing by its people.

Business tax does influence private investment negatively in the long run. This depicts that whenever business tax increase in one unit leads to deteriorate a country's private investment. Policies aimed at improving private investment, will be to reduce taxes and also to reduce public borrowing by the government that is aimed at diverting resources from private sector to public sector.

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