ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

DETERMINANTS OF PRIVATE SAVING IN ETHIOPIA

BY: AYELE WODAMO

JUNE 2016

ADDIS ABABA

ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

DETERMINANTS OF PRIVATE SAVING IN ETHIOPIA

BY: AYELE WODAMO

A project submitted to the School of Graduate Studies of Addis Ababa University in Partial fulfillment of the requirements for the Degree of Master of Arts in Applied Economic Modeling and Forecasting

JUNE 2016

ADDIS ABABA

ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

DETERMINANTS OF PRIVATE SAVING IN ETHIOPIA

This is to certify that the paper prepared by Ayele Wodamo entitled: Determinants of private saving in Ethiopia and submitted in partial fulfillment of the requirements of the Degree of Masters of Art in Applied Economic Modeling and Forecasting complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

Approved **Signature……. Date……. …….**

BY: AlemuMekonnen (phD)

Advisor

JUNE 2016

ADDIS ABABA

DECLARATION

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

Declared by	**Confirmed by Advisor**
Name:AyeleWodamo	**Name: AlemuMekonnen (PhD)**
Signature: ……..	**Signature: …….**
Date: ……..	**Date:……**

JUNE 2016

ADDIS ABABA

Acknowledgement

Foremost, I am grateful to God for seeing me through my years of university education.His Grace and Mercy has brought me thus far and I am grateful.

My deepest gratitude and appreciation go to my advisor, Alemu Mekonnen(PhD) for his constructive comments and guidance in improving this research work. I would also like to thank him and be grateful for his respectful approach.

Finally, I would like to thank and appreciate the National Bank of Ethiopia management for allowing me to take part in this MA program.

Abstract

Saving is an important instrument to enhance economic growth by providing sufficient funds for investors. However, empirical literature that relates to mobilizing savings in Ethiopia is in broad aggregate forms and almost no work is conducted on determinants of private savings in Ethiopia.

For this reason this study empirically investigates the determinants of private saving in Ethiopia by using annual data over the period 1980-2015. Accordingly to identify the factors that affect private savings in Ethiopia the researcher employs ordinary least squaresand error correction models fitted for time series data. The variables examined are real gross domestic product, inflation, government fiscal balance, real deposit rates, current account deficit and financial development indicators. The results indicate that private saving in Ethiopia is a response for variables, real gross domestic product, government fiscal balances, real deposit rate and financial developments but it is not responsive to inflation and current account deficit in the long run.

In addition to this granger causality tests indicate that economic growth causes privates savings in Ethiopia which is in line with Keynesian theory, that it is higher economic growth that leads to higher saving.Finally, the study recommends that policy makers or government work to improve income levels of society to address adverse effects on private saving. Likewise the study suggests that fiscal policy should be designed and implemented in a prudent way such that it cannot lead to crowding out private saving.

LISTS of TABLES

LISTS of Figures

LISTS of Acronyms and Abbreviation

ADF	Augmented Dickey Fuller test
CA	Current Account Deficit
CPI	Consumer Price Index
ECM	Error Correction Model
FB	Fiscal Balance
FD	Financial Development
NBE	National Bank of Ethiopia
OLS	Ordinary Least Square
RR	Real Interest rate
RGDP	Real Gross Domestic Production
MOFEC	Ministry of Finance and Economic Cooperation
VAR	Vector Auto Regressive Model

Table of Contents

CHAPTER ONE

1 INTRODUCTION

1.1 Background of the Study

The low level of saving is a typical feature of low income economies such as Ethiopia. It represents a key impediment to development as it limits investment.Development economists have been concerned for decades about the crucial role of mobilization of domestic savings in the sustenance and reinforcement of the savings investment growth chain in developing economies. This is because the growth rate registered in most developing countries is often not commensurate with the level of investment Tiriongo (2005). Saving is primarily used to finance investment. The most important issues in development economics are how to stimulate investment and how to bring about an increase in the level of savings to facilitate increased investment.

Investment funds may originate from both domestic and foreign sources. Domestic sources include public and private savings. The latter include savings by households and private firms while the former are the government saving or dissaving. When domestic resources are not enough to finance investment requirements, external sources are allowed to fill in this gap. While depending on foreign savings makes the country highly sensitive to external shocks since foreign capital is something exogenous. This is because countries, especially developing countries, will face a serious domestic capital shortage whenever a decline in foreign capital inflow happens. As a result, domestic savings will continue to be a priority source of investment financing in order to minimize vulnerability to international economic fluctuations.

There is no doubt that in developed and developing countries, savings play a key role in economic growth and development by accelerating the pace of investments in the economy. This argument has been supported empirically and theoretically by the work of various scholars. Harrod (1939) and Domar (1946) argued that national savings accelerate growth via investment

The empirical evidence for example by Levine and Renelt (1992), found that higher rates of savings have translated into higher investment and higher growth rates. This result is consistent with the work of Romme (2003) who did a study on South Africa and found that private savings rate has a direct effect on economic growth through private investment. However, the extent to which the higher rate of savings in a country is translated into higher investment depends on well-connected financial structure in form of financial institutions, assets and markets that link savers and investors by bridging the information gap and the transaction costs that may be involved.

In Sub-Saharan African Countries, the rate of economic growth has been impeded by the low level of savings mobilization making them depend much on foreign assistance in form of loans and aid to cover their current account deficits. This scenario is evident in the work of Mwega andElbadawi (1998) who revealed that the rate of private savings in SSA declined from 11.4% to 7.5% of disposable income during the 1970s to 1980s. However, the decline was later recovered though partially to less than 9% in the 1990s.

All this empirical evidences suggest that for one countries development mobilizing sufficient domestic savings both in terms of public and private saving play a crucial roles by stimulating investments in the economy. Therefore, understanding the dynamics behind private saving and the possible policy options to increase the national savings rate is one of the main interests for both researchers and policy makers. Therefore, the main purpose of this study is tries to identify

the determinants of private savings in the Ethiopia economy by using time series data for period 1980-2015.

1.2 Statement of the problem

Savings is an issue of fundamental importance in the economy and hence of interest for both academics and policy makers. While for an individual, saving is essentially a way to move resources over time (postpone consumption), for the economy as a whole the supply of savings represents an important source of financing investment.

Ethiopia registers ups and downs in saving rates throughout the study period. Now a daycountry registers double digit economic growth for last ten consecutive years around 10.9 percent. Following this special attention is given by the central government of Ethiopia to mobilizing domestic resources for investment, because government is a leading actor to makes the economic policies which govern the savings and investment behavior of other sectors, because they are responsible for raising a large volume of revenue to finance investment expenditure in the economy.

For instance, during those periods domestic saving as a percent of GDP in Ethiopia shows improvements compared with earlier periods. For example, domestic saving to GDP in 1990's is 9.9 percent which is rise in to 11.2 percent in 2000's; it reaches 23.5 percent in 2015. In generally saving trends indicates improvements but their growth is not consistent. It is also not impressive even when compared with in sub-Sahara African countries.

This information clearly support the need for improvement in domestic resource mobilization in the form of private savings in order to reduce foreign dependence since we know that private

savings cover the biggest proportion of the total savings. In Ethiopia different empirical work is done by different researchers like Abu (2004), Kidane (2009), and Worku (2010) to mobilize domestic resources. But all those previous studies concentrated on analyzing the determinants of total savings without separating public from private savings. Despite the fact that private savings play the key role in growth and development, little is known about the determinants of private savings in Ethiopia. Therefore this study will seek to fill this gap. The study relies mostly on empirical studies that focus on other countries to provide possible explanatory variables in a private savings equation as well as broad guidelines for the expected sign of the coefficients estimated.

1.3 Objective of the study

The main objective of this study is to identify the major determinants of private saving in Ethiopia. In addition to this the study tries to determine the direction of causality between private saving and real GDP growth rate and tries to suggest some policy recommendation that could be used to increase the rate of private saving in Ethiopia

1.4 Scope of the study

This study aimsto investigate the major determinants of private saving in Ethiopia by using time series data forthe period 1980 to 2015.

5 Significances of the study

In Ethiopia this is one of the areas that little have been documented by previous researchers on thedeterminants of private saving. Therefore,thisstudy tries to aware the main determinants of

private saving in Ethiopia and it also helps for policy makers to make informed decisions on the area.Additionally, it will be used for researchers who conduct on related issue as reference.

CHAPTER TWO

2 LITERATURE REVIEW

2.1 Theoretical Literature review

Economic literature has several theories of savings and its determinants,some of those theories are reviewed below:

2.1.1 Theories of saving

2.1.1.1 Keynesian theory of Absolute Income Hypothesis.

This theory focuses on current income to explain changes in savings and consumption behavior of economic agents. The income that is considered in this theory is the absolute/disposable income which is themain determinant of consumption and saving. Keynes postulates that consumption will increase at a decreasing rate as the income increases other things being constant, which means that average propensity to consume decreases as income rises. In other words this indicates that a larger fraction of the income is saved as disposable income increases. Therefore consumption and savings are functions of disposable income. However, other things being constant, it is assumed that households with higher incomes will consume more and save more than poor households (Keynes 1936).

In generally, the Keynesian saving function takes the linear form with constant MPS. Therefore we can express the saving function as follows: $S \quad \alpha + bY + cY^2$ Where; b is the constant MPS, this function assumes that $a < 0,\ 0 < b < 1$ and $c > 0$ implying that as the level of income rises, the average propensity to save also rises. However with $Y \quad 0$, savings is negative or low (, Mikesell and Zinser 1973).

2.1.1.2 Milton Friedman's Permanent Income Hypothesis

The permanent income hypothesis views current income Y consists of two components which is permanent income Y^P(average income, which people expect to persist in the future from physical and human assets that he /she possesses) and transitory income Y^T(temporary deviations from average income which means that the difference between actual income and permanent income over a specified period of time).Thus, Current income: $Y = Y^P + Y^T$

Friedman argued that, permanent income should be considered when studying the saving and consumption behavior of economic agents, not absolute income as Keynes suggested. That being the case, permanent income is related to permanent savings implying that thehigher the permanent income, the higher the savings rate other things being constant. It further assumes that economic agents are rational and they seek to maximize utility through consumption decisions. According to permanent income hypothesis optimal consumption is constant over time, which implies that consumption is insensitive to the time distribution of income while, Savings are sensitive to changes in income this implies that savings display variability over a person's life time compared with consumption. For example, when we compare with Keynesian consumption function$C_t = C + cY_t$ a temporary increase in income increases consumption byΔC_t.However, in PIH, the same increase in income increases consumption by$\Delta \frac{C}{Y}$.This shows that past behavior will determine the consumption spending in permanent income hypothesis. However, changes in transitory income will lead to changes in savings, that is, the higher the transitory income, the higher the saving rate (Mikesell and Zinser 1973).

2.1.1.3 Life-Cycle Hypothesis

Franco Modigliani (1963) hypothesis explains the consumption pattern of an individual in a specified period of time. According to this hypothesis, individuals seek to maintain their standard of consumption throughout their lifetime period which implies that income varies systematically over the phases of the consumer's "life cycle,"To achieve that, a proportion of their income earned during their working years has to be saved in order to meet their consumption needs after retirement (i.e. saving allows the consumer to achieve smooth consumption). According to this hypothesis consumption determined by lifetime income as a result consumption increases with initial assets and lifetime income (permanent income). For example,if all individuals retire at some time $t^r < T$, then an increase in T (longer life length) will imply lower level of consumption today, or higher level of saving today.

Furthermore, other things being equal, if there is no change in population and income, then the total savings will be zero since savings accumulated during the earning years will be offset by dis-savings that occur after retirement. However, with an upward change in population and income, the total savings will be positive since the working class is assumed to be larger than the dependent class, ceteris paribus.

2.1.2 Determinants of Private Saving

Theoretically, there are many factors that determine the saving performance of a country. The most important factors as shown in many studies are those related to income, real interest rate, fiscal policy, macroeconomic stability, the extent of financial sector development, and external variables. Accordingly same of the theoretical frameworks of those determinants are analyzed as follows;

2.1.2.1 Income growth

The theoretical foundation regarding the relationship between economic growth and the savings rate is relatively vast; however, it offers no general conclusion about the relationship between economic growth and the savings rate. The relationship can be traced back to the growth models of Harod and Domar. Their simplest model implies that the growth rate in the economy is proportional to the savings rate. It has then been further developed in the Solow model and in the endogenous growth model (Romer 1996). However, Agrawal (2001) argues that the work on the issue of causality between the savings rate and growth is an area which has not been examined thoroughly.

On the other hand, the Permanent Income and the Life Cycle Hypotheses imply that savings depend on current income and expectations of future income. The simplest version of the Life Cycle Hypothesis implies a positive relation between savings and income growth. Assuming no income or population growth in such a model implies that the dissaving of the old exactly matches the savings of the young making aggregate savings zero. With income growth, the young will be richer than the old, resulting in a positive correlation between savings and growth. Another way to view the same issue is to assume that aggregate growth will make forward-looking consumers feel wealthier and thereby consume more and save less. That is to say the correlation between income growth and savings is negative. As can be seen, the theory is ambiguous about the relation between income growth and the savings rate (Ohrstrom, 2008).

2.1.2.2 Macroeconomic uncertainty

Uncertainty and risks about the future give rise to precautionary saving motives for risk-averse agents. In order to safeguard against future unexpected negative income shocks, individuals prefer saving today. Since the instability of the economy is synonymous to more frequent income

shocks, it exacerbates the saving motive. Instability in an economy may be proxied by several variables but in this paper, the inflation rate is used as a proxy for the instability of the economy.

Serres and Pelegrin (2003) argue that inflation can influence savings independently from its influence via the real interest rate. There is often a correlation between the level and the variance of inflation, and the variance of inflation may capture the effect of uncertainty on savings. Uncertainty in the form of inflation should rise saving since risk averse consumers tend to set some resources aside as a precaution against possible adverse changes in future income. In which case, individuals will limit their present consumption and save more in order to consume more in future. Thus, it is argued that there is a positive relation between variation in inflation and savings where people tend to save more in an unstable environment.

2.1.2.3 Real interest rates

The life cycle theory proposes that the net effect of the real interest rates on saving is ambiguous. This why because its net effects on saving rate are decomposed in to substitution and income effects. Substitution effects imply that higher interest rates increase the current prices of consumption relative to future price, thus it leads to increases in saving. While income effects implies that, if the household is a net lender, an increase in the interest rate will increase lifetime income, and so increase consumption and reduce saving.Thus, saving will have a positive relationship with interest rate only when the substitution effect surpasses the income effect.

Some authors, including McKinnon (1973), Shaw (1973) and Athukorala and Sen (2004) have argued that the relationship between real interest rate and saving is positive for a developing economy. They hinge their argument on the fact that the financial markets of these countries are not well developed. In an environment where self-financing and bank loans make up the bulk of

investment funds, accumulation of financial saving is determined more by the desire to invest than the desire to live on interest income. As a result, the greater part of household saving will be in the form of cash and near-money assets. Thus, the substitution effect will usually be much greater than the income effect of an interest rate.

2.1.2.4 Fiscal policy variable

The Ricardian Equivalence hypothesis states that it does not matter whether government finances its expenditure through taxes or by borrowing. Therefore, only the time path of government expenditure affects the economy and not the time path of taxes that finance such expenditure. The hypothesis combines the inter-temporal budget constraints of both the consumer and government and derives permanent income as net of the discounted value of government spending (Barro, 1974). The implication is that under certain assumptions, a permanent increase in public saving will be completely offset by a corresponding fall in private saving, thus leaving national saving unchanged. The RicardianEquivalence is predicated on the assumption that saving behaviour does not experience anyuncertainty and that capital markets are perfect. Empirical evidence however rejects full Ricardian Equivalence (See Lopez, Schmidt-Hebbel, and Serven, 2000)3. This means that public and private saving are not perfect substitutes.

2.1.2.5 External variable

Most of the empirical literature indicates that when a country rely much on external capital inflow to fund its short and long term development projects, then the rate of domestic savings will go down. That is the case, because the government will not put much effort to mobilize domestic savings due to external finances. In literature different scholars uses current account deficit and terms of trade to represents external variables because it might be relevant to saving. It is supposed that an increase in the current account deficit or foreign saving is associated to a

partial decline in private saving, as foreign saving may tend to act as a substitute to domestic saving (Özcan et al, 2003).

2.1.2.6 Financial Development

The degree of financial sector development and the range and availability of financial assets to suit savers represents another important factor in promoting savings. The expansion of bank branches and improving the accessibility to banking facilities will result in reducing the cost of banking transactions, and thus motivate individuals' savings. On the other hand, if financial institutions are not well organized and stable, savings will be kept in non-monetary terms such as jewelry and real estate, and this may defeat the main purpose of saving. Therefore, the potential positive effect between the development of the consumer's credit market and household financial saving depends also on the degree of substitution between financial saving and other forms of savings in the household asset portfolio. As a result of that, the potential impact of financial development on private savings seems to be ambiguous (Athukorala and Sen, 2004).

2.1 Empirical Literature

Empirically, many studies have been examined both in developed and developing countries that trying to point out the key variables that should be considered when studying the private saving behavior. Following are some of the reviewed studies on private savings behavior.

AduLarbi (2013) explored the long run determinants of private savings in Ghana using the Phillips and Ouliaris (1990) residual-based tests for cointegration and a fully modified OLS to determine the long run relationship between private savings and its determinants using data from 1970-2010. He found that financial liberalization, per capita income and inflation were found to have a positive and significant relationship with private savings. The positive and significant

coefficient of the fiscal deficit variable confirmed the Ricardian Equivalence hypothesis in Ghana. There is a strong willingness to save but the capacity to save is not very robust. He recommended financial liberalization is to be deepened to give financial institutions room for improved financial environment, hence people's capacity to save. In spite of the results for fiscal deficits, government must keep its spending within sustainable limits and invest appropriately.

David Tesha (2013) empirically investigates the determinants of private saving in Tanzania using secondary annual time series data for the period 1980 – 2012 using OLS and Error correction model. The results indicate that real GDP per capita and external savings are the long-run determinants of private saving in Tanzania. However, in the short-run, only external savings was found to affect private saving. In addition, it was found that economic growth in Tanzania causes private savings. Policies geared towards real per capita GDP, external savings and real GDP growth rate should be given first priority, if the private saving trend is to be improved over time. Therefore, the study recommended the improvement in economic base as well as export promotion as a measure of reducing the current account deficit that has an adverse effect on private saving in Tanzania.

Claudio et al (2003) provides an empirical analysis of the determinants of private saving in Brazil during 1965-2000 by using Engle – Granger co-integration approach. They estimate a reduced form equation to model the behavior of private saving in Brazil using Engle Granger co-integration approach. Their estimates indicate that the degree of offset between private and public saving is relatively high, although it may have started to decline in recent years. In any case, fiscal policy is identified as one of the main instruments to promote the much needed increase in national saving in the country. The study also found that increasing financial deepening has a positive impact on the saving rate. Additional support to private (and national)

savings could come from external terms of trade which is indirectly influenced by trade diversification. So, the government's effort in opening markets for Brazilian exports and fighting industrialized countries' subsidies to agriculture is very important and could favor national saving and economic growth in the long run.

Aasim M. Husain (1996) examines the long-run behavior of saving in Pakistan for the period 1970 – 1992 by using Engle – Granger cointegration test. The rates of private saving in Pakistan remain low compared to many of the developing economies in Asia, despite a gradual increase over the past twenty years. Empirical analysis of the long-run behavior of saving in Pakistan suggests that financial deepening, though still at a relatively early stage of development, accounted for much of the rise in private saving. In contrast to the experience in the economies of Southeast Asia, where the demographic structure of the population significantly changed over the past two decades, high rates of population growth have kept the age structure of Pakistan's population virtually unchanged and appear to account for the disparity between the saving rates in Pakistan and Southeast Asia. Other factors, such as wealth and public sector indebtedness may have also influenced the long-run evolution of saving in Pakistan. The study emphasizes that an increase in the long-run rate of private saving will likely require further financial development and a decline in the growth rate of the population

Tiriongo Samuel. K (2005) studied the determinants of aggregate domestic private savings in Kenya capturing the reform period 1980 to 2003 using Engle – Granger residual based test. The results of the estimations showed that aggregate private savings in Kenya is significantly determined by the current account deficit, the ratio of M2 money to GDP, real gross per capita income growth, deposit rate and the old age dependency ratio. Financial sector development is also found to influence aggregate private savings significantly. The study recommends that the

country should continue to focus on export promotion strategies to increase exports and encourage reduction of non-essential imports. Adoption of a strict monetary policy to maintain money supply within manageable levels and ensure stable and low inflation rates will help improve real incomes and will also cause development in the financial sector and hence improve private savings in the economy.

Gobna and Nurudeen (2009) employed error correction analysis to ascertain the long run determinants of savings in Nigeria during the period 1981 to 2007. The findings showed that financial deepening, bank density, real interest rate inflation and real income per capital are the major determinants of savings in Nigeria.Orji (2012)investigated the determinants of bank savings in Nigeria as well as examined the impact of bank savings and bank credits on Nigeria's economic growth from 1970- 2006. He adopted two impact models; Distributed Lag-Error Correction Model (DL-ECM) and Distributed Model. The empirical results showed a positive influence of values of GDP per capita, Financial Deepening, Interest Rate Spread and negative influence of Real Interest Rate and Inflation Rate on the size of private domestic savings. Wafure (2012) used co-integration and Error Correction Mechanism to determine the relationship between financial sector reforms and private savings. The estimated results showed that lagged value of private savings, consumer price index, savings deposit rate, Income per capita showed a significant and inverse impact on private savings while financial liberalization and income growth have direct and significant impact on private savings but wage rate and foreign savings were insignificant. Olayemi and Jolaosho (2013) empirically assessed the impact of real interest rate on savings mobilization in Nigeria. The Vector- Auto Regression (VAR) was employed, using the time series data from 1980 to 2008. The author reported that real interest rate has negatively impacted on the level of savings mobilization in Nigeria. They concluded that there is

need for government in Nigeria to bridge the existing gap between the lending and savings rates and increase per capita income level of the populace, to stimulate savings for investment and economic growth and also efforts should be geared towards reducing domestic inflation rate to arrest its negative impact on real rates in Nigeria.

Sajid and Sarfraz (2008) adopted co-integration and vector error correction model for the time series data running over 1973-2003. The aim of the paper was to investigate the causal relationship between savings and economic growth in Pakistan. From the study, it comes out clearly that the direction of causality between public savings and output level (i.e GDP and GNP) is not certain as it may take any direction. Private savings influenceon GNP is not clearly observed as well. However, in the long-run the view that savings drives economic growth holds while Keynesian view that growth is the main enginetowards increased savings holds in the short-run for the case of Pakistan. Therefore, improvements on policies geared to increase further the rate of savings in Pakistan would result to an increase in growth rate as the empirical results supports the capital fundamental view that savings precede growth in the long-run for the case of Pakistan.

Ayalew (2013) investigated the determinants of domestic saving in Ethiopia using time series annual data form 1970/71-2010/11.Using an ARDL bounds testing Approach and Error correction model (ECM) to capture both short run and long run relationship. The Estimated results revealed that growth rate of income, budget deficit ratio and inflation rate were statistically significant in short run and long run determinants of domestic saving. But, depositing interest rate, current account deficit ratio and financial depth were found to be statistically insignificant determinants in the long run. The overall findings of the study underlined the importance of raising the level of income in a sustainable manner, minimizing the

adverse impacts of budget deficit and inflation rate and creating competitive environment in the financial sector.

We can conclude from the previous literatures that the determinants of private saving are diverse both in developed and developing countries. Most empirical studies emphasized the significant and negative influence of government savings on the saving rates, confirming the claim that government savings tend to crowd out private savings. Moreover, direct positive association between GDP growth rate, GDP per capita growth rate and private savings, indicates that these variables represent the most important determinants of private savings. Interest rate, inflation rate and current account deficit appear to have an ambiguous impact on saving levels. Moreover, demographic factors such as dependency ratio and urbanization rate seem to have a negative effect on private saving rates; however, the significance of these variables was mixed between studies.

From the reviewed literatures, there has been no research done to investigate the behavior of private saving in Ethiopia separately. Therefore, examining the macroeconomic factors that determine the private savings rate in Ethiopia by including the possible explanatory variables will provide policy makers to formulate policies that enhance private savings rate in Ethiopia. In addition to this identifying the direction of causality between growths and saving is importantbecause it indicate direction for policy makers to make decision easily.

CHAPTER THREE

3 METHODOLOGY

3.1 Data types and sources

The study used time series data, annually from 1980/81 to 2014/15. Other periods were not covered in this study due to data problem for some variables. The data used in this study was secondary data obtained from the National Bank of Ethiopia (NBE) and Ministry of Finance and Economic cooperation (MOFEC).

3.2 Descriptions of variables

The description of the variables and their expected results for the variables used in our model is presented as follows:-

Private Saving rate: - as there is no officially published time series data from the national income accounts on private saving for Ethiopia, private saving is taken as the difference between total savings and public savings.

Real gross domestic production: - there is a general belief from the literature that higher real GDP growth would result to higher saving rates and positive sign is expected.

Inflation Rate – This is represented by consumer price index and used as a proxy of macroeconomic uncertainty. Positive sign is expected

Current Account Deficit: – here current account deficit used as a proxy for external saving. This variable is included to see whether the foreign savings act as a compliment or substitute to private savings. Negative sign is expected.

Fiscal Balance: - is defined as overall surplus or deficit of the government. This variable will enable us to evaluate the Ricardian equivalence. This implies that, private savings and public savings moves in opposite direction and are substitutes, so a negative relationship between private and public savings is expected.

Financial Development: - It is proxied by the ratio of broad money supply (M2) to GDP. This is to see the role of financial instruments in stimulating private sector saving. Positive sign is expected.

Real Deposit Rate: – is the difference between nominal rate on bank deposits and inflation rate. Positive relationship between real interest rate and private savings is expected as Mackinnon-Shaw (1973) revealed that below market interest rate will hinder efforts to mobilize savings for investments.

3.3 Model Specification

Here on the basis of the above theoretical and empirical frameworks made by different authors for different countries for example on similar study on private saving in Tanzania by Mwega et.al (2013), in Ghana by Abdu Larbi (2013), E.Nwachukwu (2011) in Nigeria and other similar studies conducted in the area . In view of that, attempts were made to formulate the model that explains private saving in Ethiopia as follows:-

$$PS \quad \partial_0 + \partial_1 RGDP + \partial_2 CPI + \partial_3 FB + \partial_4 RR + \partial_5 CA + \partial_6 FD + \varepsilon_t \text{..... ....1}$$

Where: - PS is the private saving rate, RGDP is real gross domestic production, CPI is consumer price index that represents inflation rate,FB is the government fiscal balance, RR is real interest rate, CA is the current account deficit used as proxie for external saving, FD is financial development indicators and ε_t *is error terms that captures the potential explanatory*

variable which is excluded from the model. ∂_0 *is intercept while* $\partial_1 \ldots\ldots\ldots \partial_6$ *represents the regression coefficients to be estimated.*

In all, equation one indicates that private saving as a dependent variable is influenced by independent variables those are real GDP, macro-economic uncertainty which is proxied by inflation, Government fiscal balance, Real interest rate, Current account deficit and financial development indicator which is proxied by broad money to GDP ratio.

The analytical procedure employed in this study isOLS regression analysis technique for the reason that OLS is relevant for time series data.A time-series technique of co-integration is employed to examine the long-run relationship among the variables. The study tests for the time series properties of the variables as most economic variables have been shown to be non-stationary. In other words, the Means and Variances are not constant. For valid estimation and inference to be made, a set of non-stationary variables must be co-integrated, which means that a linear combination of these variables must be stationary. The commonly used augmented Dickey-Fuller (ADF) unit root tests for determining the variables' orders of integration was applied. Finally, to test for the direction of causality between private saving and real GDP growth rate the VAR model is applied simply because it is more suitable for the analysis as the direction of the causal relationship is unknown and it is also expected that past values of both variables could have a significant impact on their current values.

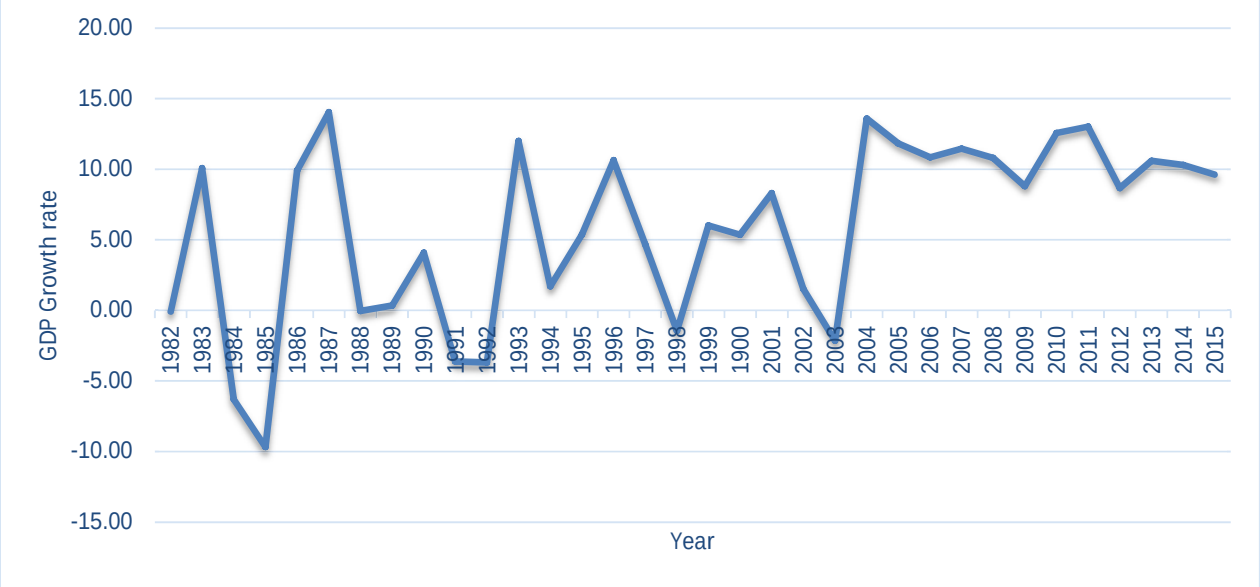
CHAPTER FOUR

4 EMPIRICAL ANALYSIS AND RESULTS

4.1 Descriptive Analysis

Descriptive analysis is the term given to the analysis of data that helps to describe, show or summarize data in a meaningful way. This is because it allows us to make conclusions beyond the data we have analyzed or to reach conclusions regarding any hypotheses we might have made. For this reason it was conducted by using graphs for each variable to detect the movements in the value of each variable over time and to analyze the causes of such movements.

Figure 4.1 Trends of real GDP growth rate



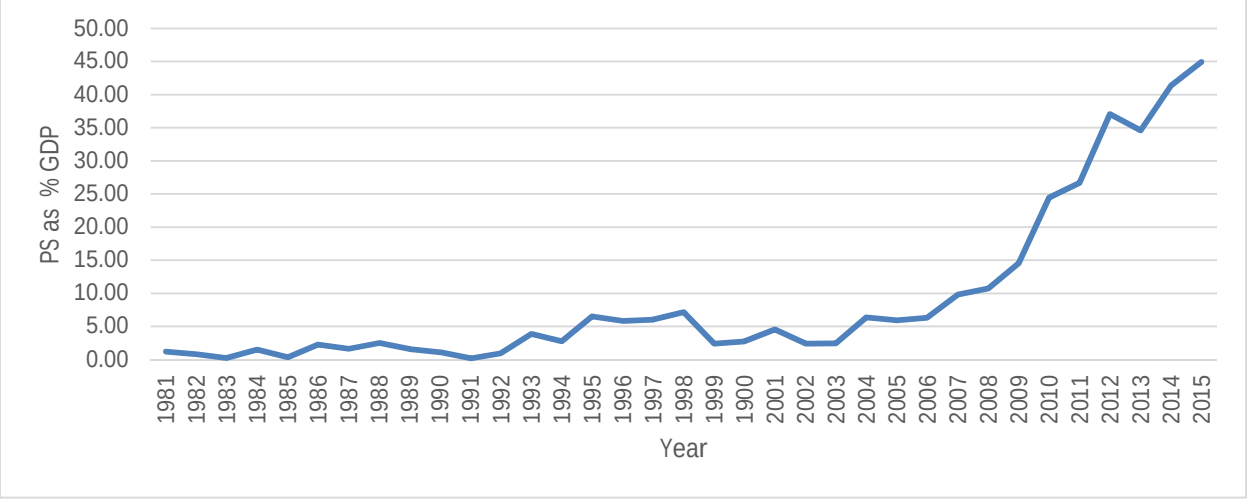
Source: own computation based on NBE data base

Figure 4.1 depicts that real GDP growth rate in Ethiopia registers many ups and downs during the sample periods, as figure indicates that there is a Sharpe decline in growth rates during 1984 and 1985 by 6.3 and 9.7 percent respectively this because during this period there was a wide spread famine in Gojjam, Hararghe, Tigray, and Wollo caused by shortage of rain fall, after this

period it starts to show a little improvements but it show a decline in 1991 and 1992 following the regime changes in the countries, also it shows a decline by 1.4 percent in 1998 following war with Eritrea on a border dispute case which affected the economy negatively.

In 2003, the country was under fire due to the wide spread drought that led to food insecurity for over more than 14 million persons (United States Agency for International Development, 2003). As the country's economy is highly dependent on agriculture, the real GDP growth rate at that time has fallen to 2.1%. It is worth mentioning in this regard that much of the fluctuations in real GDP growth rate have been due to variation in rainfall and climatic condition that affects agricultural production as the economy is highly dependent on agriculture. From 2004 onwards, the economy has continued to grow with an average growth rate of 10.9 percent.

Figure 4.2 Trends of private saving as a percent of real GDP

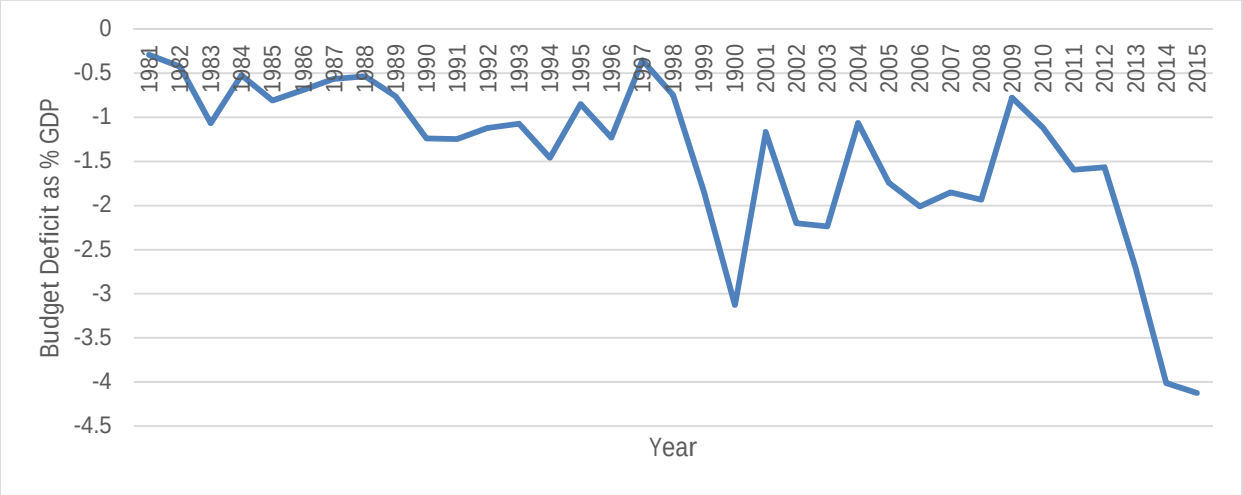


Source: own computation based on NBE data base

The poor performance of the private saving rate as a percentage of GDP, as shown in figure 4.2, was mainly due to the exclusive control of economic activity by the government until early 1990s while,following the regime change in 1992 many macroeconomic reforms have been taken place; of which adoption of market economic policy, privatization of public enterprises,

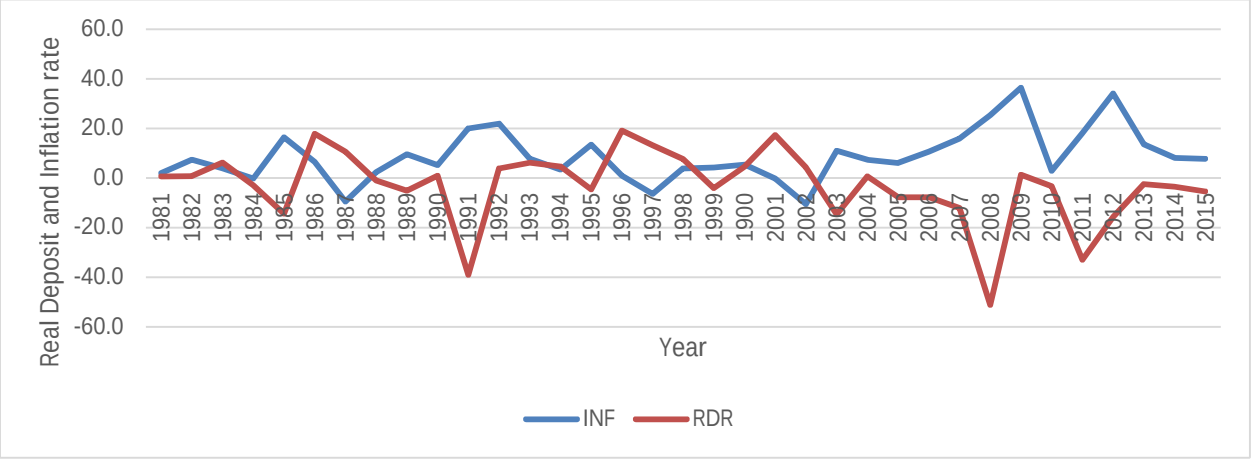
financial sector reforms including the opening of private banks, insurance companies and microfinance institutions are among the majors. As a result, the private saving rate increased on average by 32.2 percent from 1994 to 2015 and showed continuous rise, especially from 2011 onwards.

Figure 4.3 Trends of government budget deficits as a percent of GDP



Source: own computation based on NBE data base

Figure 4.4 Trends in Real Deposit rate and Inflation rate



Source: National Bank of Ethiopia (NBE)

Figure 4.4 above shows that the real deposit rate is negative in most of the study period. It also shows that trends in real deposit rate of interest and inflation rate have been a mixture of high and low movements in opposite direction for the entire study period. It also shows that the years when the real interest rate reach its least, coincided with those of the highest double-digit inflation rates. For instance, the sharpest decline of real interest rate (51.2 percent) occurred when inflation rate reached the highest (25.3 percent) in 2008. The nominal interest rate was fixed at 6 percent during the dergue regime and becomes double digit for the next five consecutive years leading real deposit rate to be positive reach (19 percent) in 1996. Thereafter, the real deposit rate shows ups and downs and it becomes almost negative in the past ten years following the rise in inflation rate during the period besides the lowest nominal rate. In general, the movement of the real deposit rate follows the opposite movement of the inflation rate may imply that the nominal interest rate was institutionally determined by the monetary authorities throughout the study period.

4.2 Estimation Techniques

4.2.1 Stationary Test

Since the data set is a time series, stationary of the variables is important because a regression based on non-stationary time series explains the relationship during the study period only. This means that it is impossible to infer about the long run relationship of the variables. In addition, regression of non-stationary time series on another non-stationary time series may lead to spurious regression. In order to avoid these problems stationary test has been conducted on the variables by using Eviews software. Augmented Dickey Fuller (ADF) test has been chosen to test for the existence of unit root because it accounts for correlation and also it is widely used in unit root tests. The results are depicted below:-

Table 4.1Unit root test of variables at level

Variable at the level	Augmented dickey fuller statistics (ADF) without trend	Critical value at 5%	Augmented dickey fuller statistics (ADF) with trend	Critical value at 5%
LPS	-0.722139	-2.948404	-3.580223	-2.672461
RGDP	2.488790	-2.948404	-0.517787	-3.544284
RFB	-0.947172	-2.948404	-3.895165	-3.544284
LCPI	1.208006	-2.948404	-0.878197	-3.544284
LCA	2.495748	-2.954021	-1.562384	-3.574244
LRR	-4.912763	-2.948404	-5.292475	-3.544284
LFD	0.134232	-2.948404	-1.387369	-3.544284

Table 4.2 Unit root test of variables at first difference

Variable at the first difference	Augmented dickey fuller statistics (ADF) without trend	Critical value at 5%	Augmented dickey fuller statistics (ADF) with trend	Critical value at 5%
LPS	-8.517123	-2.951125	-8.576044	-3.548490
RGD	-4.255099	-2.951125	-5.636688	-3.548490
RFGD	-7.756422	-2.951125	-7.664183	-3.548490
LCPI	-5.207545	-2.951125	-5.503065	-3.548490
LCAD	-5.312466	-2.951125	-6.552912	-3.552973
LFD	-4.592330	-2.951125	-4.559085	-3.548490

As presented in table 3.1 above all variables are not stationary at level with and without of trend except real interest rates. Therefore, other transformation remedy should take place to changeall variables incorporated in the model in to stationary. Thus, by differencing the variables in order

of oneall variables become stationary as indicated in table 3.2. As result, spurious regression that disturbs true relationship between variables doesn't occur at the time of regression.

4.2.2 Testing for Co-integration

In order to check for the existence of long run relationship, in the model a unit root test on the residuals from the regression has been conducted by using Augmented Dickey Fuller (ADF) test.

Table 4.3 co integration test

Null Hypothesis: RESID01 has a unit root Exogenous: Constant Lag Length: 0 (Automatic - based on SIC, maxlag=9)			
		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.851816	0.0000
Test critical values:	1% level	-3.632900	
	5% level	-2.948404	
	10% level	-2.612874	

The results from the test gives an ADF test statistics of -5.85 and the ADF 5 percent critical value is -2.94 since the computed t_{cal} is greater than the critical value in absolute terms in all level of critical value. There for variables in the long run model has a meaning full economic relationship.

4.2.3 Long Run Model

The long run relationship between dependent variable (private saving) and independent variables (real GDP, consumer price index, government fiscal balance, current account deficit, real interest rate and financial development is presented below.Equation 1 rewrite as the log or logarithm form for the normalization purpose to see the correct figure of variables:-

LPS = -27.7 + 3.33LRGDP +0.18LCPI-0.78LFB-0.93LCA +0.01LRR+0.95LFD

(-2.69) (3.05) (0.29) (-3.75) (-0.31) (2.71) (2.15)

R^2=0.94 Adjusted R^2=0.93, DW=2.0

***Note**: the value in the bracket represents t-statistics for respective coefficients including constant.*

The coefficient for real GDP is expected positive sign and statistically significant which implying that real GDP growth is an important determinant for private saving in Ethiopia. The result suggests that an increase in real GDP by 1% increases private saving by 3.3%. There for this findings in Ethiopia are support for the argument that "for countries in the initial stages of development, the level of income is an important determinant of the capacity to save". Thus, the real GDP of Ethiopia has been showing double digit growth for the past decade and this will be promissory for the private saving to rise as real GDP rises. Thisfinding is consistent with the results of Tiriongo (2005) for Kenya, Tesha (2011) for Tanzania as well as simple Keynesian saving theory.

Inflation rates, which is used to show the impact of macroeconomic uncertainty on private saving, it has expected positive sign but insignificant. As many empirical works argues due to the precautionary motive for savings, individuals save more in the increased uncertainty in the economic environment. This argument will not hold in Ethiopia for the period as no private individual or business firms react in such away from the reality.

Government fiscal balance has expected negative and statistically significant coefficient. The result indicates that a 1% increases in public saving decreases private saving by 0.78% in the long run. This is due to the reason that when government save, taxes are not likely to increases in the future to finance government budget shortages, therefore, people's fear for future government

taxes decreases this provides incentives for individuals or households to increases consumption at the expenses of saving in the long run. The result is consistent with the Ricardian view individuals are far-sighted and rational and understands that government spending must be paid for now or later and adjust their private savings rate accordingly. It also consistent with empirical findings of Mwega and Elbadawi (1998) stressed that, with borrowing constraints, government dissaving is directly offset by private savings since individuals will save more as they fear that the government dissaving will results to future increases in taxes.

The estimation result indicates that a financial development indicator proxied by money supply to GDP ratio is positive and statistically significant. This result suggests that to achieve maximum benefit and to promote private saving, financial sector development is an essential instrument. In Ethiopia financial sector development associated with current bank branch expansion and other microfinance institution will have positive long run effect on private saving rate.

In generally, as empirical finding in long run, indicates that private saving in Ethiopia is response for changes in real GDP growth, government fiscal balance, real deposit rate and financial development but is not responsive for inflation rate and external saving.

4.2.4 Short Run Dynamics

$$DLPS \quad \partial_0 + \partial_1 DLFB + \partial_2 DLCA + \partial_3 DLCPI + \partial_4 DLGDP + \partial_5 DLFD + \partial_6 DLRR + \gamma ECM(-1) + \varepsilon_t \ldots\ldots 2$$

Error correction model is a dynamical system which has been used to find out short run dynamics.it is important to recognize that error correction model is perfectly appropriate for stationary time series. The term ‘error correction models’ applies to any model that directly estimates the rate at which changes in dependent variable return to equilibrium after a change in

independent variable. The ECM model has a nice behavioral justification in that it implies that the behavior of dependent variable is tied to independent variable in the long run and that short run changes in dependent variable respond to deviations from that long run equilibrium.

In the above discussion, the long run relationship between the variables was discussed, under consideration for the specified time period; while, the short run dynamics measure any dynamic adjustments between the first differences of the variables at a single point in time. The results of short run dynamics of the variables are reported in table 4.4. According to these results all variables are significant at 5% and 10% critical values except government fiscal balance and current account deficits.

Table 4.4 short run model out put

Dependent Variable: DLPS
Method: Least Squares
Date: 05/30/16 Time: 23:14
Sample (adjusted): 1981 2013
Included observations: 33 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.004291	0.236340	0.018157	0.9857
DLBDF	-0.828994	0.182187	-4.550233	0.0001
DLCAD(2)	-0.646798	0.323724	-1.997989	0.0567
DLCPI(2)	-0.613199	0.822718	-0.745333	0.4630
DLGDP(1)	4.675054	2.058519	2.271077	0.0320
DLM2(1)	1.677919	1.810108	0.926972	0.3628
DRIR	0.010118	0.005489	1.843424	0.0772
ECM(-1)	-0.956538	0.198396	-4.821354	0.0001

R-squared	0.712513	Mean dependent var	0.156214
Adjusted R-squared	0.632017	S.D. dependent var	0.866317
S.E. of regression	0.525522	Akaike info criterion	1.758368
Sum squared resid	6.904341	Schwarz criterion	2.121158
Log likelihood	-21.01308	Hannan-Quinn criter.	1.880436
F-statistic	8.851491	Durbin-Watson stat	2.119199
Prob(F-statistic)	0.000018		

Error correction model of our short run model indicates that all variables in the model are entered in to first difference form. In this equation, (ECMt-1) is the lagged error correction factor, given by the residuals from the static co-integration long run equation.The results show that the coefficient of the error term (ECMt-1) has a negative sign, which is significant at one percent level of significance. This is in line with theory, which expects it to be between -1 and 0 (or negative and less than unity in absolute terms). Thus this significant negative sign on the ECM ensures that all the explanatory variables in ECM work together for private saving to get to equilibrium in the short run. In absolute terms the coefficient of ECMt-1 approaches to one,indicates a high speed of convergence towards the equilibrium.

4.2.5 Model fitness

R- Square (correlation coefficient) the measure of correlation between dependent and independent variable with 0.71values well explained the model. Therefore the regressor and the regressond are highly correlated which shows the strength of the model.

Adjusted R-squared (coefficient of determination) measures the proportion or percentage of the total variation in dependent variable explained by the regression model. Which is the most commonly used measure of the goodness of fit of a regression. The value 0.63 depicts that 63 percent of private saving variation is explained by the explanatory variables which is nice explanation.

Durbin Watson statistics is the most celebrating tests for detecting the existences of serial correlation. If there is no serial correlation (of the first order), d is expected to be about 2. Therefore, the value of Durbin Watson statistics is in this model is 2.1 which shows there is no a serial correlationproblem.

4.2.6 Diagnostic checking

We applied the necessary diagnostic tests on our model to check the problems of normality, heteroskedasticityand serial correlation. The results of this test are presented below in table 4.5.

Table 4.5 results of diagnostic checking

Test	Test Statistics	Probability
Breusch-Godfrey serial correlation LM test	0.37	0.69
Breusch-Pagan-Godfrey Heteroskedasticity Test	0.16	0.99
Jarque-Bera Normality test	3.4	0.18

Breusch-Pagan-Godfrey test for heteroskedasticitywas conducted based on the null hypothesis of homoscedasticity, against the alternative of heteroskedasticity. The result in the table 4.5 shows that the residuals of the model are homoscedastic at the levels of significance, as indicated by the probability value.

Breusch-Godfrey Test for Serial Correlation a test for serial correlation was conducted by using the Breusch-Godfrey LM Test and the null hypothesis of no serial correlation was tested against the alternative hypothesis of serial correlation.The result in table 4.5 indicates that the residuals of the model have no serial correlation, as indicated by the given probability value at all levels of significance.

Jarque-Bera Normality test - from table 4.5 tests the null hypothesis that the residuals of the estimated model are normal against an alternative that the residuals are not normal, depicts a

probability of 0.18.This is an indication that the null hypothesis is not rejected and that the residuals are normal.

4.2.7 Granger causality test

If two variables are co-integrated in the long run, one of the tests, which are applied to determine the direction of causality,is Granger Causality test. This is because the presence of co-integration leads to the existence of at least unidirectional causality between the variables.Identifying the direction of causality between growth and savings is important as there is no consensus on the relationship between savings and economic growth. Therefore, it was important to determine the direction of causality between private savings and economic growth in Ethiopia for policy purposes.

Table 4.6 Granger causality test

Pairwise Granger Causality Tests Date: 06/01/16 Time: 14:41 Sample: 1980 2015 Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
LGDP does not Granger Cause LPS	34	3.50600	0.0433
LPS does not Granger Cause LGDP		0.99100	0.3834

As result indicates in table 4.6 we fail to reject the null hypothesis that private saving does not Granger Cause economic growth. However, we reject the null hypotheses that economic growth does not granger causes private saving. That means, real GDP growth causes private saving but private saving does not cause real GDP growth. This result is consistent with the results of Mwega and Kabando (2013) for Tanzania but contradicts to the Solow's claim that saving precedes economic growth, and accepts the Keynesian theory, that it is higher economic growth

that leads to higher saving. This result might explain that Ethiopia is of a consumption society and has fewer propensities to save at micro and macro level for national investment or the society lacks sufficient income to save.

CHAPTER FIVE

5CONCLUSION AND POLICY RECOMMENDATION

Saving is an important instrument to enhance economic growths by providing sufficient funds for investors. However, empirical literature that relates to mobilizing savings in Ethiopia is in broad aggregate forms and almost no work is conducted on determinants of privates saving in Ethiopia. For this reason this paper examines the determinants of private saving in Ethiopia over the period 1980-2015.

To do this the researcher employs OLS regression analysis because literature suggests that OLS analysis is more convenient for time series analysis. In addition to this the stationary properties of the variables are checked by using Augmented Dickey Fuller (ADF) test. Accordingly all variables are non-stationary at the level except real interest rates are stationary at the level but all variables are became stationary after first differencing. The empirical analysis in the model suggests that existence of long run dynamic relationship among variables considered in the models (the co-integration test done on the residuals (table 4.3).

The variables incorporated in the model are real gross domestic product, consumer price index, real deposit rate, current account deficit, government fiscal balances and financial development as explanatory variables for private saving. The estimation results indicate that private saving in Ethiopia respondsto variables, real gross domestic production, government fiscal balances, real

deposit rate and financial developments but it is not responsive for inflation and current account deficit variable in the long run.

Furthermore, the study intended to establish the direction of causality between private saving and economic growth in Ethiopia. The results suggest that economic growth affects private savings that means the direction of causality is from economic growth to private saving but there is no response from the opposite side in the Ethiopian context.

Finally, based on the findings of the study the following recommendation is forwarded. As results indicates that economic growth is an important variable to improve private saving levels policy makershouldgives attention to increase in the income level of individuals by taking different policy measures. For example, in Ethiopia majority of the society are dependents on agriculture; so policy makers must take actions to improve the method of production by modernizing subsistent farming and other agricultural activities and also provide a technological support for farmers to increaselabor productivity.This is expected create surplus output for domestic as well as external market and boosts sufficient income for consumption and saving.

The other variables in the study that affect private savingsinclude a government fiscal balance, which suggests that public savings crowd out private savings in Ethiopia. Therefore, fiscal policy should be designed and implemented in a prudent way such that it cannot lead to crowding out private saving.

Financial indicator variables in this study show promising results to increases private saving levels in Ethiopia due to this policy makers should give especial attentions to increases financial access throughout the country by further expanding bank branches and services because most of the bank branches concentrated on the urban area while majority of the population lives in rural

areas with limited access to financial institutions. In addition to this increasing micro financing institutions is an important instrument to increase private saving because it easily reaches poor societies and enhances their saving behavior.

References

Aasim M. Husain (1996), "Private Saving and Its Determinants: The Case of Pakistan." The Pakistan Development Review Vol.35, No1.

Abu G (2004).On the Determinants of Domestic Saving in Ethiopia. Paper Prepared for the second international Conference on the economy.Ethiopian Economics association, June 3-5, 2004.

Athukorala, P. and K. Sen (2004), "The Determinants of Private Saving in India." Research School of Pacific and Asian Studies and School of Development Studies.

Ayalew (2013), "Determinants of domestic saving in Ethiopia: An autoregressive distributed lag (ARDL) bounds testing approach." Journal of Economics and International Finance Vol. 5(6), pp.248 – 257, September.

Barro, Robert. 1974. "Are Government Bonds Net Wealth?" Journal of Political Economy 82(6): 1095-1117.

Claudio Pavia and SarwatJahan (2003), "An Empirical Study of Private Saving in Brazil." Brazilian Journal of Political Economy, vol. 23, No. 1 (89).

David Romer (1996) "Advanced Macroeconomics."

Davis AduLarbi (2013), "The Long Run Determinants of Private Domestic Savings in Ghana: A Cointegration Approach." Journal of Economics and Sustainable Development Vol.4, No.4, 2013.

Domar, E 1946, 'Capital Expansion, Rate of Growth and Employment', Econometrica, Vol. 14, pp 137-147

Harrod, RF 1939,' "An Essay in Dynamic Theory",Economic Journal, Vol. 49, pp 14-33

Keynes, JM 1936. The General Theory of Employment, Interest and Money, Macmillan, London

Kidane B (2009). Still up in the air. Determinants of Gross Domestic Savings in Ethiopia: A Time Series Analysis. Working Paper Series, November 28, 2010, Addis Ababa.

Levine R and Renelt, D 1992, 'A sensitivity analysis of cross-country growth regression', American Economic Review, vol. 82, pp. 942-63

McKinnon, R. 1973. "Money and Capital in economic development." Washington, D.C: The Brooking Institute.

Mikesell, RF and Zinser, JE 1973, 'The nature of the savings function in developing countries: A survey of the theoretical and empirical literature', Journal of Economic Literature, Vol. XI, pp. 1-26.

Modigliani, F and Ando, A 1963, 'The life-cycle hypothesis of saving, aggregate implications and tests', American Economic Review, Vol. 53

Mwega, F. 1997. "Saving in sub-Saharan Africa: A comparative analysis." Journal of African Economies, 6(3) (Supplement): 199228.

Özcan, K. (2000), "Determinants of Private Savings in the Arab Countries, Iran and Turkey." World Bank MDF3 Conference, Cairo, The World Bank.

Romme, AT 2003, The relationship between saving and growth in South Africa: An empirical study, Unpublished PhD thesis, University of the Witwatersand

Sajid, GM and Safraz, M 2008, 'Savings and Economic Growth in Pakistan: An issue of Causality', Pakistan Economic and Social Review, Vol. 46, no. 1, pp 17-36

Serres, A. and Pelegrin, F. (2003), "The Decline in Private Saving Rates in the 1990s in OECD Countries: How Much Can Be Explained By Non-Wealth Determinants?" OECD Economic Studies, No. 36, 117-153University Press, Cambridge.

TiriongoKiplang (2005), "Determinants of Aggregate Domestic Private Savings in Kenya." 1980-2003 Kenyatta University Economics Department.

Worku G (2010). Causal Links among Saving, Investment and Growth and Determinants of Saving in Sub-Saharan Africa: Evidence from Ethiopia. Ethiopian J. Econ. 12(2):1-34.