Domestic Resource Mobilization in Ethiopia: How Sustainable is the Current Boom in Domestic Savings?

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Abstract

This study aims to find out if the sequential policy interventions by the government to boost domestic savings are among the main factors for the boom in such savings observed during GTPI in Ethiopia and whether the impact these interventions is permanent or short-lived. In addition, it revisits and explores the determinants of gross domestic savings. The study applies (LM) unit root test with a structural break, an ARDL modeling approach, and it also relies on an analytical review.

The policy shocks applied to domestic savings have changed the long-term growth path of domestic savings permanently. In addition, macroeconomic instability, capital flight income and urbanization are the main variables that affect efforts of mobilizing domestic savings in Ethiopia. However, features of a vibrant financial sector, including secondary financial markets for an efficient use of available resources, reliability and transparency of the housing agency, and an effective demand for housing, are among the main conditions for sustained positive impacts of these policies. Accordingly, some policy recommendations are forwarded.

Key words: Saving, investment, economic policy, Ethiopia,
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1. Introduction

According to neoclassical exogenous growth model (Solow, 1956), economic growth can be achieved in two ways: either by increasing factors of production such as labor and capital or increasing factors of productivity. Capital is among the factors of production that mainly determines the long-term performance of a given economy. Capital accumulation from a series of investments can be financed by domestic or external sources. Thus, savings play a major role in providing the national capacity for investment and production (Deaton & Paxson, 2006).

A serious constraint to sustainable economic growth can be caused by a low rate of savings. Poor countries save less than rich ones because a greater share of their income goes to meeting basic needs such as shelter, clothing, and food. The lower the portion of income saved, the lower the rate of capital accumulation, which in turn leads to poverty (Deaton & Paxson, 2006). In this way, low income repeats itself infinitely.

According to (Shende, 2002), domestic savings remain the biggest source of long-term financing for sustained growth, development and provision of public goods and services. In addition, domestic resources and their use strengthen the governance of fiscal and capital market institutions. Transforming resources into productive investment and using them efficiently depends on the quality of the macroeconomic fundamentals, including fiscal/monetary prudence and the structure of the financial market, the framework of the financial sector and the continuity of a consistent investment policy. However, addressing these necessary conditions are the main areas of challenge for developing countries.

Domestic savings in Ethiopia have been low in different policy regimes (Dawit, 2004; Gebeyehu, 2010); and (Abay, 2009). Between 1960 and 1972/73, Gross Domestic Savings (GDS) oscillated between 10 and 13.3 percent of the GDP. After 1974/75, gross domestic savings decelerated fast and accounted for5 percent of the GDP, and in 1977/78, they constituted only 1.9 percent of the GDP. Gross domestic savings during the current government did not show any improvement up until 2010/11. During the GTP

I planning period, the proportion of gross domestic savings to GDP increased to 22.5 percent in 2013/14, which is comparable to the sub-Saharan African average (EEA, 2015).

Investment during both the imperial and the Derg regimes was never above 14 percent. In spite of the low level of savings, investment has significantly been accelerating during the current government (G. Ramakrishna, 2012). It started from far below 10 percent and reached 40 percent of the GDP in 2013/14. This clearly indicates that the increase in investment must have been achieved mainly through the inflow of external resources (Gebeyehu, 2000; Moges, 2004).

Ethiopia is among the top aid-receiving countries (Weeks, Geda, Ageba, & Degefa, 2004).According to the World Bank, average GDS as a percentage of gross domestic investment over the period 1981 to 2014 was 58.78 percent. This implies that more than 40% of the GDI was financed by external resource inflows.

External debt increased from 25 percent of the GDP in 1981 to 71 percent in 1990 during the Derg regime, mainly due to military-related imports(Weeks et al., 2004). The problem was further aggravated during the current government. Between 1993 and 1998, external debt averaged at 126.4 percent of the GDP. However, external debt decreased over time and fell to below 50 percent after 2005[2]. Thus, Ethiopia is highly dependent on external sources of finance.

There are studies that have tried to explain the low level of domestic savings in Ethiopia. A study by (Gebeyehu, 2010) has extensively examined factors that determine domestic savings in Ethiopia and the causality between savings and investment. According to this study, inflation and government expenditure are detrimental to savings while growth of income has a positive effect. A study worth mentioning (Moges, 2004) found that both fiscal and monetary policy, investment regime, and external factors explain savings in Ethiopia.

[2] This is attributed to debt relief under the HIPC initiative, but debt management has not changed during the current government

Cognizant of this fact, the government of Ethiopia has taken several measures to increase domestic savings. These include issuing the GERD bond (2011), allowing the Diaspora to open an account (Diaspora Account), introducing new private employee pension reforms (2011), launching the Addis Ababa housing scheme (2013), and aggressively expanding branches by government banks (2010) followed by private ones. After such measures were taken, a boost in domestic savings from a meager 7 percent of the GDP in 2010 to 22.2 percent in 2014 was observed (EEA, 2015).

The natural question that follows is: Are these policy interventions the main drivers and have they helped the government to realize the increase in domestic savings over the past four years? If the policy interventions are responsible for the boost of domestic savings observed over the GTP I period, will their impact last long or will it be short-lived? In other words, do government policies have a permanent or temporary impact on the growth and level of domestic savings?

To this researcher's knowledge, no study that explains the boost in savings observed during the past four years in Ethiopia has been conducted. Therefore, the main contribution of this paper is twofold. First, it attempts to find out, both empirically and analytically, if the sequential policy interventions have produced a persistent impact on gross domestic savings, altering their long-term path, or if their impact is short-lived and would disappear in the long run. Second, it revisits and explores the determinants of gross domestic savings in Ethiopia aiming to either consolidate or refute the findings of other studies mentioned in this study.

The rest of this paper is organized as follows: Section 2 reviews the literature and Section 3 discusses methodological and estimation procedures. Section 4 deals with the main findings of the study, and finally, conclusions and recommendations are given in Section 5.

2. Literature Review

2.1 Review of the Theoretical Literature Review

Savings theory is rich in both theoretical and empirical literature. There are a number of macro variables that could potentially affect domestic savings. A number of factors are briefly discussed below although the list is far from being exhaustive.

Income

Savings and income are highly correlated and the former is directly associated with output through investment. The Permanent Income and the Life Cycle Hypothesis imply that savings depend on current income and expectations of future income (Grigoli, Herman, & Schmidt-Hebbel, 2014). 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 of looking at the same issue is to assume that aggregate growth will make forward-looking consumers feel wealthier, thereby encouraging them to consume more and save less. That is to say, the correlation between income growth and savings is negative.

Theoretically, the Life Cycle Hypothesis predicts that growth increases savings because it increases the income of the young compared to that of the elderly (Athukorala & Sen, 2004). The Permanent Income Hypothesis, on the other hand, predicts a negative link between growth and savings because forward-looking consumers who expect their (permanent) income to rise will dissave against future income.

Demographics

This can be derived from a life-cycle model. During childhood and old age, people on average consume more than they produce. During the middle years, people produce more than they consume. The life-cycle theory assumes that when there are too many young people to support, consumption increases and savings decline. The theory distinguishes between dependency ratio and

population growth on its effect on savings ratio. It indicates that although an increase in population growth rate may increase the number of active workers (savers) relative to the number of retired people (dissavers), this may be accompanied by an increase in the number of young people who are not yet active workers (dissevers) in the population . Thus, the net effect of population growth on aggregate savings is theoretically unclear(Athukorala & Sen, 2004).

External factors

The external variables that might be relevant to savings are the current account deficit and terms of trade. It is presumed that an increase in the current account deficit (foreign savings) is associated with a partial decline in private savings, as foreign savings may tend to act as a substitute for domestic savings (Alfaro, Chanda, Kalemli-Ozcan, & Sayek, 2004). On the Other hand, it can be argued that foreign savings can act as a complement to domestic savings. Thus, it may affect savings through its impact on income and wealth.

Macroeconomic instability

Macroeconomic stability is defined broadly in terms of a balance between domestic demand and output, the balance of payments, fiscal revenue and expenditure, and savings and investment. Macroeconomic stability is the corner stone of any effort to bring about growth in savings. Many cross-country and country-specific studies show that macroeconomic stability is associated with high savings (Easterly, 1999; Weerasekera, 1993)

Capital flight

Capital flight occurs through transferring abroad a part of domestic private savings. It is one of the causes of low domestic savings in African countries (Leonce Ndikumana & Boyce, 2008). According to (Léonce Ndikumana, 2014), capital flight affects domestic savings directly through allocation of private wealth in foreign assets as opposed to holding domestic assets, and indirectly through its effects on domestic investment and growth.

According to (Leonce Ndikumana & Boyce, 2008), the main causes of capital flight in developing countries are political upheaval, social instability, bad governance, corruption, low or negative real interest rates, overvalued

exchange rates, inflationary pressure, capital account liberalization, rising external indebtedness, banking undercapitalization, liquidity crisis, institutional weaknesses of the financial system, rise in corporate income taxes, unregulated financial systems, and stock market crisis.

Financial sector development

According to (Abay, 2009) and (Loayza, Schmidt-Hebbel, & Servén, 2000), the degree of financial sector development and the range and availability of financial assets to suit savers represent an important factor in promoting savings. Expanding bank branches and improving accessibility to banking and savings facilities will result in reducing the cost of banking transactions and, thus, motivates individuals' savings. On the other hand, this makes it easier for individuals to borrow, which can result in lower savings.

2.2 Empirical Literature

There are plentiful studies about factors that determine savings both in the developed and developing countries. However, the findings are different. Some factors that might have an impact on some countries may not have an effect on others due to economic, cultural and institutional differences. This study attempted to review some relevant studies on the issue and the results are summarized in the following table.

Table 1: Summary of Some Empirical Results

	Author(s)	Country(ies) studied	Research year	Method applied	Key Findings
1	(Ayalew, 2013)	Ethiopia	2013	ARDL	Income growth, budget deficit and inflation affect savings.
2	(Gebeyehu, 2010)	Ethiopia	1962-2004	*Error Correction Mechanism*	*Export, inflation, government expenditure and income determine savings.*
3	(Moges, 2004)	Ethiopia	1960-203	*VAR*	Fiscal and monetary policies, the investment regime, and external factors.
4	(Ndirangu & Muturi, 2015)	Kenya	2015	*Ordinary Least Square (OLS) technique*	*Gross domestic product (GDP), Inflation (INF) and Age-dependency ratio (ADEPR)*
5	(Khan & Sarker, 2016)	Bangladesh	2016	VEC	Deposit interest rate as well as gross domestic income can explain the major variations in savings in Bangladesh.
6	(Rahman, Ahmed, & Tariq, 2015)	Pakistan	2015	*Dynamic regression model with the ARMA*	*Inflation, interest rate and government expenditures are negatively affecting the national savings*
7	(Samantaraya & Patra, 2014)	India	2014	ARDL	GDP, dependency ratio, interest rate, and inflation have statistically significant influence on household savings in India
8	(Kapingura, Sylvanus, & Asrat, 2015)	SADC region	1980-2009	*panel cointegration method and Dynamic OLS*	*DP, financial sector development and foreign capital have a positive relationship with savings.*
9	(Chaudhry, Riaz, & Farooq, 2014)	Pakistan	1972-2010	ARDL	Deposit rate, government expenditures and M2 significantly affect savings.
10	(Imoughele, 2014)	Nigeria	1981-2012	*Error Correction Mechanism*	*Income per capital, inflation rate, terms of trade and financial deepening are significant determinants of private savings.*

3. Model Specification, Methodology and Data

3.1 Model Specification

Based on both the theoretical and empirical literature, the following framework for the empirical analysis is used. The outline below depicts the relationship.

RDSRGDP = f (MAST, M2RGDP, LPURB, LRGDP, CAB, UST, PDummy)

The dependent variable is Real Domestic Savings to real GDP ratio (rdsgdp), and the independent variables are:

Table 2: Description of the variable

Variables	Description	Expected sign
MAST	Inflation variability obtained by extracting the volatile part from the trend of inflation using Prescott filter method.	(-) Inflation or inflation volatility is a proxy of macroeconomic instability. Higher inflation (volatility) can lead to lower savings by increasing uncertainty and increase spending by households to maintain the real levels of consumption and hence reduces savings(Athukorala & Sen, 2004; Grigoli *et al.*, 2014).
M2GDP	A ratio of broad money (M2) to nominal GDP. It shows monetization of the economy.	(+/-) Financial sector development increases savings. Financial sector development includes the elimination of credit ceilings, interest rate liberalization, easing of entry for foreign financial institutions, enhanced prudential guidelines and supervision, and the development of capital markets. However, (Loayza *et al.*, 2000) found that financial development has enabled the private sector to increase the durable goods component of their assets. Hence, the financial sector may negatively affect savings.
LPURB	The share of urban	(+/-) According to (Loayza *et al.*, 2000),

Variables	Description	Expected sign
	population is measured as the ratio of the number of people living in urban areas to the total population multiplied by 100.	urbanization affects savings in different ways with different impacts. First, urbanization increases the range of consumer products and services and hence decreases savings. Second, rural dwellers (farmers) have high uncertainty and low insurance, so they tend to save more than their urban counterparts. Finally, urban dwellers have higher incomes than their rural counterparts, so they save more. Therefore, the impact is ambiguous.
LRGDP	log of real GDP	(+/-) According to the life-cycle hypothesis, given that income fluctuates over the course of an agent's life, one stage in the lifecycle is an important determinant of savings.
CAB	difference between total export and import	(+/-) The current account deficit used as a proxy for external savings tends to have a negative or positive impact on domestic savings because it can be a substitute or a complement for domestic savings(Ozcan, Gunay, & Ertac, 2003).
UST	United States Treasury bill rate - a proxy for capital flight. It represents all other economy.	(-) Capital flight directly drains private savings. Capital flight also reduces government savings by reducing tax revenue as a result of the reduction of the tax base (private wealth held domestically). Indirectly, it depresses capital accumulation and retards growth and hence lowers savings(Léonce Ndikumana, 2014). This represents other economies and/or price signals in foreign markets.
PDummy	A policy mixes dummy takes 1 from 2010 to 2014 and zero otherwise.	(+) Captures the sequential policy that has been undertaken by the government since 2011.Since saving is growing during the policy interventions we expect those policies have a contribution.

3.2 Estimation procedures

Traditionally, the understanding based on the unit root hypothesis was that current shocks have only a temporary effect but the long run movement of the series remains unchanged. However, this view is challenged after the findings showed that random shocks have permanent effect on the long run level of macroeconomic variables (Glynn, Perera, & Verma, 2007). The main problem with the traditional unit root tests such as ADF, KPSS and others is that in the presence of a structural break, they are biased towards the rejection of the alternative hypothesis.

Accordingly, many unit root tests were developed to test unit root under structural breaks (Nelson & Plosser, 1982). LM unit root test is one of such tests developed to test unit root under structural breaks. The endogenous two-break LM unit root test proposed by (Lee & Strazicich, 2004) is explained using Model A and Model C. Both models are based on alternative assumptions about structural breaks; Model A allows for two shifts in the intercepts and Model C allows two shifts in the intercepts and trend (Kumar & Webber, 2013)[3].

If domestic savings data contains a unit root following policy shocks, domestic savings do not return to their stable long run growth path and the effect of the shock is permanent. However, if a null hypothesis of a unit root in domestic savings is rejected, this is an indication that, following the shock, domestic savings will return to their long run stable growth path and the impact of the shocks will only be transitory. The findings from such tests have important implications for the sustainability and long run impact of government policies (Kumar & Webber, 2013).

A univariate LM unit root test is employed to study the permanent effect of government policy interventions on domestic savings. The rule is to reject the null hypothesis of unit root with breaks if the LM-stat is greater than the critical value (Lee & Strazicich, 2004). Otherwise, we do not have enough evidence to reject the null hypothesis.

[3] For the details on the formulation of the LM test and its application to macroeconomic variables, Webber & Kumar (2000) would be a good reference.

To determine factors that affect domestic savings, the Autoregressive Distributed Lag (ARDL) model is applied. According to (Haug, 2002), the ARDL approach has some advantages over other estimators such as Johanson cointegration. The method is applicable irrespective of whether the regressors are I (0) or I (1) or mutually cointegrated. In addition, endogeneity problems and inability to test hypotheses on the estimated coefficients in the long- run associated with the (Engle & Granger, 1987) method can be avoided. It is also relatively more efficient in the case of small and finite sample data sizes. Finally, the long- and short run parameters of the model in question are determined simultaneously (Pesaran, Shin, & Smith, 2001).

The Dickey-Fuller (ADF) and Philip-Perron (PP) unit root tests are used to check the stationarity and neither of the variables is of order two (i.e. I (2)), which is a precondition to apply the ARDL model (Pesaran *et al.*, 2001). Then, the unrestricted error correction model is followed by appropriate lag length selection procedures. Following the above procedures, a bound test is carried out to see if there is a long-run relationship between the variables. Finally, both the long run and short run equations are estimated simultaneously.

However, because a set of sequential policies are considered all together as a single dummy[4] variable, it is difficult to tell exactly which policies have a long run impact and which are short-lived. To substantiate the above result, an independent analytical review on each policy measure is undertaken to shed light on its long run impact on domestic savings.

[4] All policy measures are lumped together. Because the policies were taken almost at the same time and had the same time span, it was difficult to dismantle the effect of one policy from the others. For example, the new Private Employee Pension Reform, the Ethiopian Grand Renaissance Dam Bond, and the aggressive bank branch expansion were implemented simultaneously in 2011 and all were ongoing until the completion of this study.

3.3 Data and sources

We used data sources including NBE (National Bank of Ethiopia), National Planning Commission, Ethiopian Economic Association (EEA) and Development Indicator database of the World Bank (WB). According to other empirical literatures and theories, there are a number of variables that could affect domestic savings such as access and density of microfinance and other financial institutions, financial capability, financial literacy and wealth. However, due to data unavailability, this study did not manage to include all these in the empirical model used. The data series runs over the period 1971 to 2014.

4. Results and Discussion

4.1 A Statistical approach

The LM unit root test result indicates the absence of sufficient evidence to reject the null hypothesis. This indicates that the intercept and slope of the variable have changed (Lee & Strazicich, 2004). As expected, a structural break in domestic savings data is found in 1984, 1998, 2005 and 2010. The study is more interested in the break after 2010.

Once the policy shocks are introduced, it becomes impossible for domestic savings series to return to its previous long run path. The implication is that government policies undertaken to enhance the level and growth of savings in the recent past have a long run impact and the impact is not dying soon. Therefore, sequential policies, which include bank branch expansion, housing scheme, and private pension reforms, have an undying impact in the long run on domestic savings in Ethiopia.

Table 3: Result from the Structural Break Unit Root (LM) Test

	Model A		Model C	
Variable	**Test statistic** [5]	**break dates**	**Test statistic**	**break dates**
LRGDS	-3.3515	1984 2010	-5.0431	1998 2005

[5] The 1%, 5% and 10%critical values for the minimum LM test for Model A are 4.545, -3.8424 and -3.504 respectively, and for Model C the figures are -5.825, -5.286 and -4.989 (Lee and Strazicich, 2004), respectively.

For the estimation of the econometric model a unit root test is used to ensure that none of the variables is integrated of order two or I (2). The result of the unit root test using ADF and KPP shows that they are of mixed order I(1) and I(0), and none of them is I(2). This is exactly a situation where ARDL modelling should be employed (see the result in Appendix 4.1).

The unrestricted recursive ARDL model is then estimated; a lag length of two is selected based on AIC[6]. Serial independence is checked using residual test (Q-stat) up to 20 lags of the error term and no evidence of serial correlation is found.

4.2 Bound testing for co-integration

Test of the null hypothesis of no co-integration against the alternative is made using the F-test. The F-statistics (6.05) is greater than the upper bound (4.05) at 1% level of significance and hence the null hypothesis of no co-integration is rejected.

Table 4: Bound Co-integration Test Result

Test statistics	value	lag	Significance Level in (%)	I0 bound	I1 bound
F- Statistics	6.05	2	10	1.75	2.87
			5	2.04	3.24
			1	2.66	4.05

After the presence of co-integration is confirmed, both the long- and short run equations are simultaneously estimated. In the long run policy dummy, macroeconomic instability, capital flight and income are found significant in explaining domestic savings in Ethiopia.

The policy dummy is statistically significant in the regression. This indicates that policy interventions by the government have a permanent positive impact

[6]TThe estimates of the ARDL representation are summarized in the Appendix Table A1. The required diagnostic tests of the primary model and robustness checks are also provided. The model has passed all the diagnostics tests.

on the level and growth of domestic savings in Ethiopia. This substantiates and re-affirms the result from the LM test. Therefore, both ARDL model and LM test results confirm that the policy interventions have a permanent positive impact on the level and growth of domestic savings in Ethiopia.

Macroeconomic stability is a center piece of any successful economic policy. Ethiopia has been struggling with major macroeconomic imbalance and instability in the previous decade including balance of payment deficit, galloping inflation, deteriorations of international competitiveness and fiscal imbalance. Macroeconomic instability, as expected, is one of the main determinants of domestic savings in Ethiopia, consistent with the findings of (Ayalew, 2013; Gebeyehu, 2010; Moges, 2004). Macroeconomic instability creates uncertainty and forces households to increase spending during high episodes of inflation to maintain the real level of consumption and, hence, decrease savings (Athukorala & Sen, 2004). Therefore, the macroeconomic instability is compromising the savings mobilization efforts of the government.

Capital flight is considered in the literature as one of the reasons for low domestic savings and economic growth in Africa. A study by (Leonce Ndikumana & Boyce, 2008), using 40 African countries, found that Africa is a net creditor to the rest of the world. According to the same study, the stock of capital flight from Ethiopia as of 2004 was about 23 billion dollars. The net foreign asset, which is the difference between outflow and inflow for the year 2004, was about 16 billion dollars. Taking the capital/GDP ratio, it constitutes 175% (Leonce Ndikumana & Boyce, 2008).

As a proxy for capital flights, treasury bill rate of the United States of America (UST) is used (Lipumba, Osoro, & Nyagetera, 1990) to see if capital flight puts pressure on domestic savings mobilization efforts of Ethiopia. The result confirms capital flight is jeopardizing domestic savings in Ethiopia both in the short and long run.

According to the prediction of the absolute income hypothesis, income is found to increase savings in Ethiopia. This indicates that an increase in savings in the last four years in Ethiopia could have been partly explained by

growth of income. The Ethiopian economy is one of the fastest growing economies in sub-Saharan Africa. The government of Ethiopia was praised for a double-digit growth of GDP in the last decade. This finding is also consistent with(Ayalew, 2013; Gebeyehu, 2010).

Financial sector development (M2/GDP)[7] does not affect domestic savings. This finding is also consistent with that of (Ayalew, 2013). Up until recently, financial sector development is believed to have a positive impact on domestic savings; however, (Loayza *et al.*, 2000) found that financial sector development encourages the private sector to increase the durable goods component of their assets.

Table 5: Long Run Coefficients

Dependent variable Log of Real Domestic Savings (LRGDS)				
Variable	**Coefficient**	**Std.Error**	**t-Statistics**	**Prob.**
MAST	-0.003645	0.000847	-4.305574	0.0001
PCGDP	-0.000110	0.001405	-0.078245	0.9381
LPURB	-0.062866	0.032502	-1.934217	0.0620
LRGDP	0.055544	0.023724	2.341300	0.0256
CAB	0.000001	0.000001	1.521164	0.1380
UST	-0.004871	0.001755	-2.775731	0.0091
PDummy	0.078442	0.026915	2.914480	0.0065

Urbanization affects domestic savings significantly and negatively. Urbanization may affect savings through different channels.The result is consistent with larger consumption opportunities in urban areas and higher precautionary savings in rural areas due to larger uncertainty from volatile agricultural income (Grigoli *et al.*, 2014).

Macroeconomic instability, capital flight, and income have significant impacts in determining the growth of domestic savings in the short run and urbanization is only marginally significant. Consistent with the long run result,

[7] An attempt was made to test the same claim using private sector credit as a proxy of financial sector development. However, the result has not changed.

current account balance and financial sector development have no impact in the short term. The adjustment coefficient is 0.95 with an expected negative sign. Finally, the policy intervention dummy, consistent with the long run result, has impacted savings positively in the short run.This result substantiates and re-affirms the one from the statistical approach (LMunit root test).

Table 6: ARDL Co-integrating and Long Run Form
Selected Model: ARDL (1, 2, 1, 1, 1, 1, 0)

Dependent variable Log of Real Domestic Saving (LRGDS)				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
D(MAST)	-0.001306	0.000355	-3.682567	0.0008
D(MAST(-1)	0.001057	0.000352	3.001612	0.0052
D(PCGDP)	-0.000104	0.001327	-0.078504	0.9379
D(LPURB)	-0.059586	0.035394	-1.683487	0.1020
D(LRGDP)	0.052646	0.026782	1.965717	0.0581
D(CAB)	0.000001	0.000001	1.344794	0.1881
D(UST)	-0.004616	0.001985	-2.325352	0.0266
(PDummy)	0.074349	0.021670	3.431021	0.0017
ECM	-0.947818	0.159581	-5.939420	0.0000

4.4 Review of the Impacts of Individual Policies on Domestic Savings

In the regression analysis, a policy dummy is lumped together due to the fact that they are taken together or one after the other just in less than a year. Therefore, an independent review on each policy and its impact on domestic savings in the long run is necessary.

4.4.1 Pension Reform for New Employees of Private Organizations

Prefunding pensions can also serve important macroeconomic goals such as raising national savings and financial market development (Stewart & Yermo, 2009). Pension system has a relatively long history in Ethiopia. Government employees contribute monthly from their salaries for use in retirement. Though the rate of contribution has not been increasing, the amount of the

pension fund has been rising. This is mainly due to the expansion of the government structure and the resultant increase in the number of employees (Abay, 2009).

In July 2011, under Proclamation no. 715/2011, the government enacted a new legislation that requires employees of private organizations and NGOs to participate in compulsory pension contributions. Accordingly, an organization called Private Organizations' Employee Social Security Agency (POESA) was established to collect and manage the fund.

Pensions may have a positive impact on domestic savings though it is debatable in empirical works(Stewart & Yermo, 2009). For instance, in the previous setup of the provident fund system, an employee can withdraw their savings at any time they wanted to or at least at the time of leaving the organization they work for. However, in the new legislation the person is only entitled to his/her savings after retirement. This will make savings available for long-term investment either for the government or private investors.

Unless the fund is channeled to more productive investments, its contribution to help bring about economic growth will be minimal. The problem, in this regard, is that there is no secondary market that the agency can exploit. Therefore, this forces the agency to buy a government low interest earning bonds just for minimizing risks. This only makes investment by the government cheaper and does not finance the productive investment that would have greater returns due to lack of market forces.

Hence, according to(Abay, 2009; Asaminew, 2010), the long-term impacts of private pension funds on savings will depend on the establishments of secondary markets and whether it is used to finance productive investments that can utilize the fund efficiently.

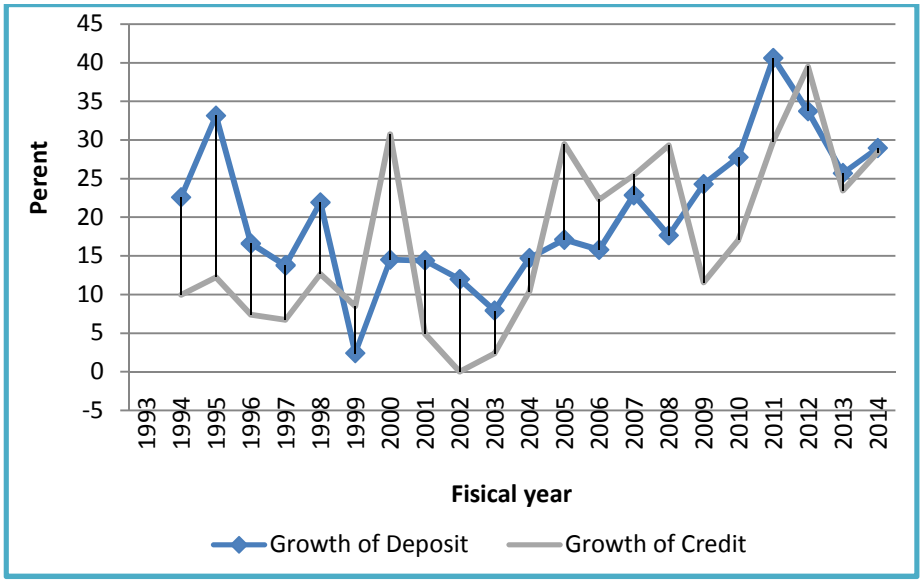
4.4.2 Financial Sector Development

The government has implemented bold policy measures, especially in the last five years, in the financial sector. These include bank branch expansion, introduction of core banking, promotion of savings and introduction and

expansion of different savings tools and the use of technologies such as ATMs, mobile banking, etc. There were less than 500 bank branches all over the country before 2008 for a population of around 80 million at the time. It only took less than 3 years to approximately double the numbers of bank branches in the subsequent years. Starting in 2011, banks aggressively expanded their branches. The biggest and state-owned Commercial Bank of Ethiopia alone doubled its branches in a single fiscal year (in 2011). This has encouraged private banks to follow in CBE's footsteps. As of 2016, there were 3282 bank branches in Ethiopia.

As a consequence of aggressive bank branch expansion, deposits mobilized and credits disbursed by the banking system show a significant rise. In the fiscal year 2012, deposits grew by 40 percent and credits by more than 33.5 percent.

Figure 1: Growth of Deposit and Credit of the Banking System



Despite the rapid branch expansion (more than fourfold since 2010), more than a third of branches are concentrated in the capital Addis Ababa. However, more than 80 percent of the population lives in the rural areas. The population per bank branch remains high (35,957 as of March 2015 (IMF, 2015)).Thus, the majority of the population is still unbanked. Infrastructures such as

telecom, road networking and education, among others, are significantly expanding, which is important for the financial sector to expand. In addition, the expansion of the service and the manufacturing sectors will dictate the expansion of financial services. Therefore the permanent impact of financial sector development depends on these factors.

4.4.3 Housing Scheme

The objective of the housing scheme of Addis Ababa launched in August, 2013 was to solve the acute shortage of housing (UN-Habitat, 2010). However, it also has the objective of savings mobilization. This kind of scheme is exploited successfully by other countries such as Singapore.

The government of Ethiopia has implemented the housing scheme in Addis Ababa on different payment modalities - 10/90, 20/80, 40/60 and housing associations. This study emphasizes on its impact to generate new savings and its long-term impacts on the growth of domestic savings.

The housing scheme may increase savings if the subscribers are able to cut their expenditures and save money to acquire houses under the scheme. However, if subscribers switch their previous savings from other banks to the Commercial Bank of Ethiopia (the eligible government bank assigned to collect for the housing scheme), and within the bank itself (from other accounts to the housing account), the scheme will not generate new or fresh savings. In this case, the impact on domestic savings will be nil. This can be an area for further research.

The long run impacts of the housing scheme on domestic savings depend on a number of factors including the following:

Income and affordability

The income of a household is the main factor to subscribe for the scheme. At macro level, the GDP of the country has been growing by double digits for the last decade. The potential of citizens on average to save for housing may increase. Though data is not available, most of the subscribers are government employees and workers in the informal sector. What is peculiar to these subscribers is that their wages are not flexible enough and the level of their

income is low compared to others. In addition, they have to rent a house to live in and they have to save for the scheme simultaneously, which is very challenging for most of the households. In fact, as estimated by the effective demand for house in Ethiopia is low. Therefore, increasing income levels of these particular households is specifically important if they are to continue saving and stay in the scheme.

Macroeconomic stability is vital for any policy to be successful. Stable price, low government budget deficit, and stable external trade are some indicators of macroeconomic stability. An unstable macroeconomic situation affects savings, including the feasibility of the housing scheme. In the last decade, increased price of goods and services in general has impacted the urban poor and fixed income earners. Nevertheless, as they form the majority of subscribers to the housing scheme, it will impact the scheme by reducing their real income and jeopardizing their ability to save for the scheme. It will also increase the price of the house itself, as already witnessed in 2014/15. The government revised the prices of the houses due to rises in the price of inputs. This is believed to have led some subscribers to withdraw from the scheme.

Urbanization

Ethiopia is the least urbanized country even by African standards. Urbanization is one of the factors that increase demand for housing. Though at this time the demand for housing is acute in Addis Ababa and some major regional cities, its sustainability depends on the rate of urbanization, among other factors. Data from the UN database estimate that doubling time of urbanization for Africa is57 years while for Ethiopia it only needs 30 years from 2000 to 2030. This may imply that, as the rate of urbanization goes faster, demand for urban housing will grow and the housing scheme will still be useful.

Reliability and Capacity of the Housing Agency

It is critical to deliver the houses to the subscribers quickly. This might help the households to save what they are already paying for rent. In conclusion, the housing scheme can impact domestic savings in the long run positively if it is implemented with great care and considering the macroeconomic stability of the economy, the income level of households, the rate of urbanization, and the capacity of the housing agency.

4.4.4 The Ethiopian Grand Renaissance Dam Bond

It is questionable whether the bond has a long run impact on domestic savings or not. However, it has helped the government in the past five years in financing the Dam. For one thing, it is a forced saving (not behavioral) and there are no legal procedures like the ones in the pension fund reform legislation, which forces citizens to continually save (buy) the bond. Hence, people may not buy the bond for at least two reasons. One, a negative real interest rate due to high inflation in the country, and two, due to the absence of secondary financial markets where people can trade their bond holdings. Therefore, the impact of the bond is likely to be temporary.

5. Conclusion and Policy Recommendations

5.1 Conclusion

Ethiopia is among countries with the lowest domestic savings to GDP ratio, which is far below the sub-Saharan African average. Its dependency on foreign aid and other forms of foreign capital is high. However, in the past four years Ethiopia has managed to increase the level of domestic savings significantly to the level comparable to the sub-Saharan African average in 2014. This result was mainly achieved by introducing different policy measures, among other factors. The measures include the introduction of the Ethiopian Grand Renaissance Dam Bond (2011), the new private employees' pension reform (2011,) the Addis Ababa City Housing Scheme (2013), and the aggressive expansion of bank branches that started in2011.

The objective of this paper was twofold. First, it attempted to investigate whether or not the sequential policy mix during GTP I had a permanent or temporary effect on the level of domestic savings. Second, it attempted to identify the main macroeconomic factors that affect domestic savings in Ethiopia.

Univariate LM unit root test with a structural break confirmed that there was a structural break in 2010 in the domestic savings data. The implication is policy shocks introduced by the government have a persistent impact on the level and slope of domestic savings.

An ARDL modeling identified macroeconomic instability; capital flight and urbanization are detrimental to savings mobilization. Income and a policy dummy variable, which accounted for a series of policy interventions during GTPI, were found to increase domestic savings.

To sum up, an explicit analytical review was made on each policy intervention, giving due emphasis to their permanent effect on domestic savings. The author concludes that the new pension fund reform, the housing scheme, and financial sector development could have a positive long lasting impact on savings under certain conditions. These include the establishment of secondary markets for efficient use of the pull of available savings, macroeconomic stability, effective demand for housing (particularly for the low and middle-income group), and reliability and capacity of the housing agency. However, the Ethiopian Grand Renaissance Dam Bond could impact domestic savings only in the short run.

5.2 Policy Recommendations

Macroeconomic instability influences the decision households make on resource allocation. The government needs to control inflation and exchange rate appreciation; it also has to pursue a prudent monetary and fiscal policy. Macroeconomic instability is challenging even the new Addis Ababa Housing Scheme. The government was forced to raise the price of the houses by more than 40 percent.

The housing scheme should be implemented considering the rate of urbanization, income of the urban dwellers and affordability of the houses to the needy. Moreover, the capacity of the housing agency to deliver the houses on time and transparency of the whole process are crucial issues.

In this study, capital flight was found to deter savings. The government can take some measures such as increasing the supervisory capacity of the central bank, controlling under and over invoices of export and import items, and creating a conducive and enabling business environment. These may help the government to reduce capital flight to narrow the investment savings gap.

Though the financial sector in Ethiopia plays a role in domestic resource mobilization, its accessibility is limited. Access to banks and financial services depends on infrastructures such as telecom, urbanization and financial literacy, among others. Innovation of financial products and services and expansion of the current services like mobile banking could help the government to mobilize savings in the future. Establishment of secondary markets is important for alternative investment opportunities and for efficient allocation of resources such as pension funds.

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Annexes

Annex 4.1: Unit root test result of the variables

Variables	Without constant and trend	With constant only	With constant and trend	Order of integration
D(RDSRGDP)	-7.678309*	-7.643154*	-7.940293*	I(1)
D(M2GDP)	-4.971728*	-5.496502*	-5.431349	I(1)
D(LRGDP)	-1.220917	-10.20455*	-12.44113*	-
UST	-0.914237	-0.951360	-3.899487**	-
LPURB	2.202180	0.088581	-6.561510*	-
MAST	-6.538929*	-6.468511*	-6.357008*	I(0)
D(CAB)	-6.392450*	-6.628554*	-6.845924*	I(1)

*- significant at 1% level of significance** -significant at 5% level of significance

Annex 4.2: ARDL Estimations

Variable	Coefficient	t-Statistic	Probability
RDSRGDP(-1)	0.052182	0.326992	0.7458
MAST	-0.001306	-3.682567	0.0008
MAST(-1)	-0.001092	-3.042766	0.0047
MAST(-2)	-0.001057	-3.001612	0.0052
PCGDP	-0.000104	-0.078504	0.9379
LPURB	-0.059586	-1.683487	0.1020
LRGDP	0.052646	1.965717	0.0581
CAB	1.06E-06	1.344794	0.1881
UST	-0.004616	-2.325352	0.0266
DUMMYSB	0.074349	3.431021	0.0017
Diagnostics tests			
Serial correlation	F(2,30)= 0.481 (0.623)		
Heteroscedasticity	F(1,39)= 1.98 (0.1673)		
Normality (CHSQ 2)	(CHSQ 2)= 0.378 (0.827)		
Functional form	F(1, 31)-= 0.205 (0.6537)		

Table 4.2 shows that there was no evidence of autocorrelation in the disturbance of the error term with p-values of 0.623. The study used Breuch-Godfrey Lagrange Multiplier (LM) to test for serial correlation. The ARCH tests suggest the errors were homoskedastic and independent of the regressors as evidenced by the p-values of 0.1673. The model passed the Jarque-Bera normality tests (p-value of 0.6537), suggesting that the errors are normally distributed. The RESET test indicated that the model was correctly specified with p-values of 0.827.