On the Determinants of Domestic Saving in Ethiopia[*]

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Abstract: The domestic saving rate in Ethiopia has been too low to sustain robust capital accumulation and economic growth in the country. The saving rate has also been declining over time with far reaching implications on the growth and poverty reduction prospects of the country. This paper examines the theoretical and empirical issues and forces in the determination of domestic saving in the country. It argues that the fiscal and monetary policies, the investment regime, and external factors interact exerting their respective influence on the behavior of economic agents and the domestic saving performance of the country.

1. Introduction

The behavior of economic agents in the allocation of economic resources is a critical factor that exerts influence on the growth path of a country. One of such allocation issues is concerned with the inter-temporal allocation of income between consumption and saving. The behavior and determinants of such allocation decision are important to understand the mechanisms and interactions across aggregate consumption, saving, capital accumulation and growth processes. In fact, economic policies in most countries are directed to influence the level and growth of these variables so as to achieve growth in productivity and employment, macroeconomic stability and efficient resource allocation.

The efficacy of such policies, however, depends on the nature and degree of influence that policies have on these macroeconomic variables. One of the areas towards which public policies have been directed is improving the domestic saving rate of national economies. The rationale of the policy is that saving serves as a source of capital formation which in turn influences the productivity of labor and its growth over time. The fact that investment would be financed either from current or future saving of a national economy coupled with the imperfect international mobility of capital in general and to developing countries in particular, implies that improving domestic saving rate is an important policy target.

There are a number of hotly contested theoretical and empirical issues in the analysis of aggregate saving. There is no one paradigm that can explain aggregate saving behavior across countries and over time. First, the link between saving decisions at household level and aggregate saving and the accumulation of productive capital is not well established. The behavior of households in their inter-temporal allocation of resources reflects on national consumption and saving through aggregation process. The aggregation process can conceal critical factors and diversities across households creating a less representative picture of the allocation process. Second, the relationship between

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domestic saving and investment is not clear. This has both theoretical and empirical aspects. One aspect of the argument, which traces its roots to Keynesian economics, contends that thrift is a potential threat to the economy as it reduces one important component of aggregate demand, consumption, without systematically and automatically increasing the other component, investment (Modigliani, 1986). This disconnection might lead to inadequate aggregate demand and unemployment of resources in an economy.

The theoretical argument was complemented by empirical observations and analysis. There is a strong correlation between domestic saving and domestic investment, indicating weakness of international capital mobility even among developed countries (Feldstein and Horioka, 1980). The limitations of capital movement to developing countries are even more severe. Moreover, the empirical analysis of the responsiveness of aggregate saving to real interest rate, one of the variables amenable to policy measures, have not found robust results in line with the theoretical predictions. There are also some indications that suggest the behavior of aggregate saving is subject to and influenced by the level of economic development (Ogaki et.al. 1996; Easterly, 1994). Understanding the relationships between policy variables, aggregate saving, investment and growth performance therefore appeal from theoretical, empirical and policy perspectives.

The saving rate, which finances the dominant share of capital accumulation, exhibits remarkable variations across countries and over time and there is a strong association between the saving rate and growth performance. These features raise a number of issues. How do economic agents make their decisions with respect to allocating their income between consumption and saving? Do economic agents respond to incentives and relative prices in their saving decision? What is the role of public policies and incentives in influencing the saving behavior and hence the saving rate? What policies and institutional factors are effective in promoting national saving rate? These are some of the issues that are important in understanding the behavior of aggregate saving rate in a country over time.

The decision of economic agents to save is guided by a set of behavioral, economic, psychological and policy factors. The empirical oriented research on the behavior of domestic saving rate has been dominantly conducted on the basis of cross country analysis of consumption-saving rates. Whereas such an approach is important to draw comparative perspective and necessitated by the nature of information, such exercise on countries with quite different institutional structures, level of economic and financial development, is problematic in a number of ways. This shortcoming suggests the need to a close examination of the factors, dynamics and policies towards saving in a country. Such an approach provides a framework in which to analyze the factors that are relevant to the context and underlying impulse of an economy.

The subject of analysis in this paper is on the determinants of domestic saving in Ethiopia. It examines the issue during the period stretching from 1960/61 to 2002/03. Ethiopia exhibits low and declining rate of national saving. Is this trend a cause for policy concern? What can policymakers do about it? What are the factors behind the low and declining rate of domestic saving? This article addresses the aggregate saving behavior of economic agents in Ethiopia from both theoretical and empirical perspectives.

We develop an argument the central premise of which is that fiscal and monetary policies of the country coupled with poor and prohibitive investment environment exert significant adverse influence on domestic saving endeavors. The tone of the paper is both empirical and policy oriented and sheds light on concerns of resource allocation behavior of economic agents in the country. We argue that the low and declining domestic saving rate in Ethiopia is the reflection of the failure of economic policy reforms to create conducive investment and business environment that appeal to economic agents. The rest of the paper is organized as follows. Section two establishes some of the stylized facts in saving rate behavior in a broad cross-country setting. Section three, reviews the saving rate in Ethiopia. Section four presents an analytical framework to examine the behavior of economic agents in developing countries in the allocation of their income between consumption and saving. Section five examines the empirical issues and estimates the determinants of aggregate saving in Ethiopia. Section six draws concluding remarks and highlights areas that require further policy action.

2. Some Stylized facts about saving rate

The examination of the saving rate in a cross-country setting has revealed several important empirical regularities and stylized facts about the rate of aggregate saving and a number of related economic variables. On the basis of cross-country observation of saving rate across the world, Loayza et. al. (2000) summarized the followed stylized facts of relevance about the rate of saving:

- The saving rate exhibits significant variation across countries and strong persistence over time.
- There is a strong and positive relationship between the national saving rate and the level of income per capita.
- There is positive and robust relationship between the saving rate and the growth rate of income per capita.
- The saving rate and real interest rate have weak quantitative relationship.
- Gross national saving and domestic investment rate are positively and strongly correlated. The correlation between private saving and investment is weaker but still significant.

The rate of saving, from global perspective, has exhibited a downward trend over the past three decades. The average world gross national saving rate was 20.6% for the period 1967-73 and 20.0% during 1974-82. The rate declined sharply to 18.3% for the period 1983-1992 and marginally recovered to 18.5 during 1993-2000. The oil-shocks and the subsequent recessions and declines in the growth rate constitute the main explanations behind such global trends. This global trend, nonetheless, conceals significant regional variations in saving rates. The developing countries registered relatively lower rate of saving than the developed countries and among those developing countries those with fast economic growth rate registered significant increase in domestic saving. Whereas most regional economies either increased or maintained their saving performance, Sub-Saharan African countries lost their ground both in their saving rate as well as economic growth rate performance. The region is unique in a sense that its saving rate has been not only low but also declining over the last three decades.

The saving behavior in national economies exhibits inertia and persistence over time. Countries with higher saving rate tend to remain in the same saving profile whereas those countries with low saving rate find it difficult, if not impossible, to break the low saving rate and growth rate vicious circle. Consumption habit formation and its resistance for change might have an important role in the process. Saving transition, a situation in which a low saving country transforms itself into high saving economy, is a difficult process and takes considerable policy and incentive factors to initiate. Moreover, the transition seems to depend in important ways on the growth performance of an economy (Rodrik, 2000) suggesting the need to pursue policies that promote simultaneously growth, investment and domestic saving.

The relationship between the saving rate and the level and growth rate of income is somewhat complicated by the simultaneous operation of several factors. The relationship between the saving rate and the level of per capita income indicates that saving rate increases with the level of economic development, as indicated by per capita income. There are some indications, however, that suggest the relationship between income level and saving rate in poor countries might be influenced by considerations of subsistence consumption more than inter-temporal consumption smoothing (Easterly, 1994; Ogaki et.al., 1996). In a cross-country setting, countries with higher level of income also exhibit higher saving rate and this relationship is particularly strong as countries move up to the ladder of middle income from low income status. The relationship becomes somewhat weaker when countries achieve high level of income in which wealth effects become increasingly dominant in the process.

There is a positive association between the rate of saving and the growth rate of income. The positive association, however, does not indicate causality and there is a possibility that these variables could be reflections of an underlying omitted third variable. The empirical evidence suggests Granger-causality from economic growth rate to saving rate instead of vise versa (Attanasio, et.al, 2000; Rodrik, 2000). However, there is strong cross-country evidence which supports the hypothesis that long-run growth rate of income is significantly determined by domestic investment rate and domestic saving rate (Levine and Renelt, 1992). It is quite plausible that even in the short-run context domestic saving rate might have indirect effect on the growth performance by improving macroeconomic stability and creating cushion against external shocks. The prevalence of imperfect international capital market and the restricted mobility of capital across countries provide further reasons why domestic investment is largely dictated and constrained by domestic saving. In both contexts, there is a tendency of mutual causation and it becomes necessary for a country to boost its domestic saving to finance domestic investment, achieve sustainable economic growth, and reduce volatility in growth performance in case of external shocks.

A closely related issue is the extent to which changes in real interest rate affects the behavior of saving and the degree of inter-temporal substitution. A number of countries have introduced financial liberalization reform measures that intended to reduce financial repression. These measures often led to increase in real interest rate accompanied by higher lending rate. The effectiveness of such policy measures ultimately rests on the responsiveness of domestic saving and consumption to changes in the real interest rate. The evidence in developing countries is not conclusive enough and

the responsiveness of national saving to higher real interest rates that followed the initial wave of financial sector liberalization has been rather weak. The lack of robust empirical results has led some to examine alternative hypothesis that might explain economic behavior in developing countries (Easterly, 1994; Ogaki et. al, 1996; Rebello, 1992). The necessity to fulfill subsistence consumption before inter-temporal resource allocation decision, the relative dominance of necessities in the household budget, liquidity constraints, the failure of government determined interest rate to reflect the real cost of current consumption in terms of future consumption, and the underdevelopment of the financial system play their influence in shaping the behavior of economic agents in the inter-temporal allocation of economic resources. The weakness of the real interest rate elasticity of aggregate saving might be caused by these factors that are peculiar and dominant in developing countries.

The domestic saving rate and the rate of investment are closely related. Economic agents tend to invest their resources in domestic investment outlets and require premiums to cover the risk involved in making investment in other countries. The international flow of capital has increased over time and yet investors dominantly rely on domestic saving to finance their investment requirements. Even in countries where capital account is liberalized, not all capital inflows improve domestic productive capacity. Short-term capital inflows with considerable volatility and risky reverse flow possibilities are common. In such a setting, countries that fail to improve their domestic saving rate would confront the problem of excessive dependence and risk to external shocks and could not generate enough investment resources that are warranted by their marginal productivity of capital. In practice, countries that have successfully achieved fast and sustained economic growth are also those that achieved high domestic saving rate, introduced policy reforms and institutional mechanisms that provide incentives to engage in productive investment and growth promoting activities (Rodrik, 2000). It is therefore critical for a nation to improve its domestic saving rate to improve and sustain its growth performance.

3. Review of Domestic Saving Rate in Ethiopia

The domestic saving rate in Ethiopia has been very low and has declined over time. As table 1 summarizes, during 1960-2003 the average domestic saving rate has been only 5.4 percent of GDP. Not only was the average saving rate has been low relative to income, it exhibits a declining trend. The average saving rate was about 14 percent of GDP during the period 1960/1- 1974/75 and declined to nearly 7 percent during the Dergue regime and collapsed to about a mere 3.6 percent during the period 1991/2-2002/3. The recent rate of saving is too low by the country's own standard and relative to other developing countries. This is not enough even to finance replacements for capital depreciation let alone to allow net investment. The economy witnessed a downward saving transition in 1974 that reduced the saving rate consistently leading to a collapse of domestic saving rate that has never managed to reverse. The trend has also made the economy increasingly dependent on external financing, with excessive exposure to external shocks, and delaying the necessary reforms to create conducive investment to the private sector and put the economy on the sustainable path of growth and financing.

The declining domestic saving rate in the economy has necessitated increasing reliance on foreign saving and aid to finance the investment requirements of the country. A developing country with a weak saving performance cannot secure enough investment resources to finance its investment requirements. Even if it does, it is running a risk of unsustainable current account deficit. The rate of capital accumulation in the economy is relatively low and remains to be under financed with significant lost opportunities in terms of generating employment and income. The economy is apparently experiencing further capital-shallowing from already shallow capital intensity per worker during the last decade. This suggests the failure of investment to even keep up with depreciation allowances and expansion of the labor force. Domestic saving has been financing a persistently declining share of domestic investment and the gap is being financed by external borrowing.

The relation between domestic saving and investment rates in Ethiopia is weak partly for the increasing dominance of foreign aid and borrowing to finance domestic investment activities. The correlation coefficient for the period 1960/61- 2002/3 was only 0.1419. The correlation coefficient, however, indicates gradual changes over our sub periods of analysis. During the 1960s and early 1970s, the correlation was 0.5049 and it was 0.779 from 1974/5 to 1990/91, and during the period 1991/2-2002/3, the correlation has fallen and reversed its sign to -0.3304. The inflow of capital to poor countries like Ethiopia is constrained by a number of institutional, policy and political risk factors that limit the amount and composition of investment resources that could realize the high marginal productivity of capital in such economies. Moreover, the private sector has limited access to such resource inflows since such inflows are dominated by public sector borrowing. These resource inflows also involve the accumulation of external indebtedness and the burden of debt servicing making the conduct of fiscal policy increasingly difficult. The country has already become member of highly indebted poor countries that reached unsustainable level of external debt and debt service.

The mismatch between domestic saving and the investment rate of the economy has resulted in persistent and widening current account deficits. The economy is

absorbing far beyond its domestic production and foreign saving is increasingly used to bridge the gap. The economy has reached an unsustainable chapter where it is borrowing from the rest of the world to cover consumption expenditure beyond and above the borrowing to finance investment. It is, however, not possible to continue running current account deficit for a developing country without risking serious problems when external lending dries up. Sooner or later, the economy will be confronted with the harsh choices between recession and massive depreciation of the exchange rate to reverse the trend in current account deficits.

The problem of current account deficits is compounded when we examine how the resource inflows impacted the growth rate of GDP in the economy. Despite an increasing rate of investment, it has not improved the capital deepening process and its contribution to growth rate has been weak. Figure 2 depicts the visual relationship and it is evident that the relationship between investment rate and growth rate is weak and turning negative during the 1990s. This partially suggests inefficient allocation of investment resources in the economy in areas that have limited contribution towards growth and its sustainability. The growth rate performance has been low and volatile with high dependence on exogenous factors. Recent studies on the growth performance of the Ethiopian economy suggest that the recovery process of the 1990s was temporary and the permanent component of growth rate was quite low (Easterly, 2002; Alemayehu and Befekadu, 2001). Moreover, the sector contribution of recent growth rate performance indicates the limits to sustainable growth path and misdirected economic policy emphasis.

The main challenge remains to be identifying and explaining the factors behind such outcomes that have kept the economy allocating too little resources for the purpose of capital accumulation. Why do Ethiopians incline to save little? Does the declining trend in saving relate to changes in policy and institutional factors that systematically discouraged thrift and investment? Is it sustainable for a country to save too little and at the same time address the problems of unemployment, chronic poverty and economic stagnation? What does the theory inform us about the determinants of national saving and about the policies that are necessary to improve the saving rate? These are some of the issues we will address from theoretical and empirical perspectives in the following sections.

4. Analytical Framework

Understanding the behavior of economic agents in the allocation of their economic resources requires an analytical framework that connects the dynamic relationship between the underlying processes. Saving involves inter-temporal choices to postpone current consumption with expected increase in future income and consumption. There are a number of reasons and objectives that motivate, encourage, necessitate or facilitate the decision of economic agents to engage in saving activities. The main motivations behind private sector saving broadly include precautionary, the life cycle, the inter-temporal substitution, the enterprise, the independence, the dawn payment, the avarice, the improvement, and the bequest motives. The fundamental driving force behind these motives, however, remains to be our constant desire to improve our life-time standard of living. These objectives have different appeal to different economic agents with different income, wealth, preference and policy environments influencing the

ultimate collective outcome of consumption-saving decisions. In this context, it is relevant to assess how and whether households in developing countries respond to changes in relative prices of saving decision and how such microeconomic decisions shape allocation of resources between consumption and saving at the national level.

In addition to private sector, the public sector is engaged in resource allocation decisions and public sector saving constitute an important share of domestic saving. The behavior of the public sector, whose decision mechanisms are governed by a different set of variables than the private sector, exerts influence directly on domestic saving rate as well as indirectly through its influence on the saving effort of the private sector. Political economy forces influence the behavior of public sector decision making and public saving rate. Countries pursue different approaches and regulatory framework to influence the range within which the public sector can operate in terms of not only saving but also how much to tax, how much to spend and how to finance deficits when they arise. Some of the country experiences reveal that their governments had a free hand to pursue policies that deemed necessary by the politicians and bureaucrats whereas others put parameters to avoid the risk of public sector excessive and irresponsible fiscal policy behavior. The appropriate mix of such policies and the relative emphasis varies over time and across countries depending on political economy considerations.

The public sector determines the allocation of resources at its disposal for consumption and investment purposes. These decisions exert influence and generate reactions in the private sector both on saving and other variables with implications on the overall setting of decision making of the private sector. The reaction of the private sector to the fiscal behavior of the public sector in the allocation of resources has been extensively debated. One line of argument contends that when the public sector is engaged in deficit financing, without increasing current taxation, it is accumulating public debt and this signals to the private sector increases in future taxation and the private sector reacts to such developments by increasing its current saving to caution against anticipated future tax increases. However, the validity of this argument in the context of developing countries, where the capital market is weak and uncertainty originating both from imperfect information and non-transparent fiscal policy stance is significant, is questionable[†]. Moreover, it is the composition of the public sector expenditures, rather than the deficit and its financing mechanism, which influences the nature of reaction by the private sector.

Saving is part of our instinctive nature[‡]. Note that not all postponed consumption constitute saving. Saving is a deliberate action to use resources from postponed consumption for the purpose of investment, which forms the basis for expected increase

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[†] The Ricardian Equivalence Hypothesis assumes a private sector with perfect foresight and without uncertainty of future fiscal developments. It does not, however, make sense to assume that individuals in developing countries, who have little information about current fiscal policy developments let alone future trends, to process information and incorporate them in their decision to determine their current saving rate.

[‡] Human beings share this nature with a number of animal species. Animals store food for future consumption to caution against unexpected shocks. This is largely a behavior of hoarding that both animals and humans practice for different reasons. It is important to note that the fact that we tend to postpone consumption involves a potential cost as well as benefit. The benefits we will discuss more in detail but the potential risk of tempting predators is notable. After all, predators would not target something that does not exist!

in income as well as consumption in the future. It is this deliberate decision that distinguishes the saving process. In an abstract sense, saving is consumption. This decision of postponement of current consumption in favor of allowing other economic agents to consume it in the production process is justified for a price. It is the prospects of and attractiveness of investment that justifies to rational economic agents to engage in saving activities[§].

Saving involves opportunity cost as current consumption does. The opportunity cost of current consumption is the lost opportunity to increase future income and consumption. The decision to save therefore suggests choices by economic agents to trade off current consumption for future consumption. This trade off takes place only when the relative price justifies the decision to save. The relative price of saving relative to current consumption is the real interest rate. Rational economic agents make decisions about saving and consumption on the basis of economic incentives that fetch real returns.

How do the microeconomic factors and decisions interact so as to shape the aggregate saving rate in an economy? There are important considerations to be taken into account to have a clear picture of the collective behavior of the private sector (Deaton and Paxson, 2000). In every society, there are some economic agents that are net savers whereas others are net borrowers or have marginal role in the saving process. The behavior of individual economic agents within the household and households within the national economy is not linear and could complicate the effort to depict the saving process at a national level. Nonetheless, it is fair to contend that economic agents respond to incentives and saving takes place when the risk adjusted real returns justify the decision to save.

There are inherent risks, implicit and explicit, that economic agents face when they are engaged in saving and hence investment. First, there is business risk associated with the uncertainty in engaging in different areas of economic activities. To mitigate this problem, savers choose to allocate their resources for low risk activities or ask for higher risk adjusted returns on their investment. Second, there are public policies that could reduce the net returns to saving and investment activities. These include restrictive investment policy regimes which deprive private sector resources from engaging in the most productive activities. Moreover, fiscal policies and taxation on investment returns influence the final return for investors. It is apparent that without efficient investment allocation and appropriate policies that increase the profitability of investment, it is unlikely to generate sustainable returns to provide incentives for saving endeavors. Third, fiscal and monetary policies can affect the investment decision by creating more uncertainties and introducing taxes that directly affect the returns to investment and saving. In countries where inflation is high and the information about relative prices is weak, economic agents rationally avoid financial savings and instead engage in allocation behaviors that are less susceptible to inflationary erosion of returns.

Having touched some general aspects of the saving process, we now turn to the

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[§] The habit of hoarding might be widespread and yet from economic point of view such a habit makes economic agents face opportunity costs that eventually erode the economic rationale behind such behavior. This holds unless there is significant inflationary pressure, prevalent scarcity economy where second-hand market commands attractive returns to asset-holders.

broad tenet of the theory of saving decision. The life cycle model (LCM) and the permanent income hypothesis (PIH) are the dominant theoretical benchmarks to organize the argument about the consumption and saving behavior of households. The Life cycle model (LCM) assumes that economic agents make sequential decisions to achieve a coherent goal using the currently available information as best they can (Modigliani, 1986; Browning and Crossley, 2001). Utility maximizing agents postpone part of their current consumption and save it for consumption during retirement in a dynamic and uncertain environment. The PIH argues that consumption expenditure closely follows permanent income, instead of current income as hypothesized by Keynesian economics, of economic agents. We focus our discussion on the life cycle framework in this paper for a number of reasons. The LCM considers saving as inter-temporal allocation of economic resources in which decisions are made on the basis of opportunity cost and optimization of returns under budget constraints. This framework is also flexible enough to handle situations in which households, under collective decision making mechanisms, engage in income generating, consumption, and saving activities with the aim of maximizing the welfare of all household members.

The LCM framework argues that the primary motive to save by a utility maximizing representative household is to provide resources for retirement. The agents make decisions to maximize the present value of life time utility subject to budget constraint. Under conditions of perfect capital market and perfect foresight of economic agents about their income generating process, the model predicts that consumption in a period depends on the expectation of life time income. The basic implication of the model is that as current income systematically deviates from life time income, the saving position of economic agents essentially depend on the stage in their life cycle.

The implications of the basic life cycle model are not without shortcomings. The framework was extended over time. However, the application of the model on aggregate data, in contrast to household based survey data, has posed important limitations of the model in answering important theoretical and policy issues (Attanasio, et.al, 2000). Despite these shortcomings, however, the LCM framework has important attributes that capture consumption and saving decision-making processes across economic agents. It is flexible to admit variables and issues relevant in the situation of developing countries where financial development, uncertainty, poverty, and exogenous factors play important role in shaping the saving behavior of economic agents.

From the perspective of national saving, the basic life cycle framework implies that the growth rate of income and the age structure of the population are the main determinants of aggregate consumption and saving rate. The model predicts that the growth rate of income increases the life time resources available for the young-age and net savers in the population, making higher saving rate possible. However, a fast growing economy also has more possibilities of increasing the life-time wealth of the young generation with possible effects on increasing consumption at the expense of saving. The indirect effects of the growth of income on wealth position of economic agents somewhat makes the theoretical relationship between growth rate and aggregate saving rate less precise. However, it is plausible to argue that at least in the context of developing countries, the wealth effect is relatively weaker and we can safely retain the theoretical prediction of faster growth rate leading to higher saving rate.

The other prediction of the life cycle model about aggregate saving is related to the effect of population growth. Population growth increases the share of the economically active population, net savers, relative to those in retirement, net dis-savers. In this sense, it might have positive effect on domestic saving rate. However, this ignores young-age dependency and their possible effect on household consumption and saving decision behavior. Population growth increases the share of economically active population relative to retired age population but not necessarily relative to both young- and old-age dependent population. Population growth in developing countries tends to increase total dependency ratio. Moreover, the fact that demographic factors exhibit slow and gradual transitions suggest that such variables might not be good indicators of changes in the saving rate more than showing long-term trends. The theoretical implication of population growth and aggregate saving becomes ambiguous when such consideration is taken into account.

The life cycle framework also establishes a theoretical relationship between relative prices and saving decision making. Economic agents postpone current consumption in favor of saving, or future consumption, in response to economic incentive captured by future consumption relative to current consumption, or real interest rate. Increase in the real interest rate raises the price of current relative to future consumption and hence, ceteris paribus, induces economic agents to increase their saving through the substitution effect. However, higher real interest rate increases interest income which generates income effect and in the process compromising the substitution effect. The theoretical effect of increase in real interest rate on saving rate hence depends on the relative strength of the substitution and income effects in the saving-consumption decision making process. The theoretical and empirical evidence on the interest rate elasticity of saving is not clearly established and is difficult to gauge (Schmidt-Hebble and Serven, 2002). The interest rate elasticity of saving might also be subject to the development of the financial system, the level of economic development and the extent to which the prevailing interest rate reflect market forces. When governments set interest rate at non-market clearing levels, their relevance to saving decision making is diminished or perhaps remains to have signal value alone. The framework also predicts that wealth has the effect of reducing saving rate since economic agents with accumulated wealth can smooth their consumption by drawing from their wealth and their consumption budget constraint does not necessarily be limited by their current income. Accumulation of wealth would therefore tend to reduce the domestic saving rate.

The benchmark model provides a general framework to address the basic explanations of the behavior of saving rate. However, the framework needs to be extended to capture important and more realistic features of decision making processes in the context of developing countries. We incorporate relevant factors in the model and extend the basic framework from the perspectives of developing countries. The fact that some economic agents in developing countries have income barely enough for subsistence, and often times fall below providing basic subsistence, suggests that the opportunity cost of engaging in saving is too high to consider. Consumption smoothing and inter-temporal substitution could be considered by households only after they secure subsistence consumption (Easterly, 1994; Ogaki et.al. 1996). In other words, inter-temporal substitution is applied to that portion of income beyond the basic subsistence

threshold. Moreover, the consumption basket of poor households tends to be dominated by necessities, which have lower inter-temporal substitution, influencing in effect the decision behavior of such households. These factors suggest that a certain segment of the population does not have the capacity to engage in saving. The absence of information on annual income distribution does not allow us to group households according to such criterion. In such a setting, it is plausible to assume that consumption is strongly influenced by current income and we include the level of income besides the growth rate of income in explaining saving rate.

The reasoning behind subsistence threshold based saving behavior raises yet another controversial issue of whether the rich has higher propensity to save than the poor. There is little evidence that strongly shows the rich in developing countries has higher propensity to save than the poor. The poor, when given investment opportunities, indeed engage in saving activities even with income that barely satisfies basic consumption. This suggests that for poor households saving is not a residual but consumption is. Poor households, with investment opportunities and no access to credit services, tend to adjust their consumption expenditure and innovate adaptation mechanisms so as to squeeze positive saving out of their meager income[**]. This behavior of poor economic agents might not apply for all poor households who have no information and knowledge of investment opportunities. And yet, it suggests the importance of realistic and suitable investment opportunities in order to encourage rational economic agents to engage in saving and capital accumulation processes.

An important issue in the context of developing countries is concerned with the assumption that economic agents could smooth their consumption over their life time by borrowing against their future income. This assumption is not valid in economies where the financial sector is underdeveloped. Most economic agents in developing countries face liquidity constraints and have limited access to financial resources to smooth their consumption and in most cases consumption closely follows their current disposable income instead of life time earnings or permanent income (Deaton, 1991). Borrowing constraints also force some economic agents to increase their current saving to finance lump-sum expenditures such as purchase of house, car, and other consumer durables. With the development of the financial system and financial liberalization, the limitation would be gradually relaxed and the access to financial services improves. This practice

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[**] To provide a flavor from our own home front, I would like to recount a specific case in point. The author was personally informed by several insiders in the shoe-polishers ("the Least Row") community in Addis Ababa about an interesting saving behavior. This community as a group perhaps has the highest saving rate in the country. The individuals, who volunteered to disclose their regular saving contributions to weekly "Iqub", revealed that their saving was not only higher than their consumption but also ranged from 50 to 60 percent of their monthly income. The response was cross-checked by asking individuals to provide information about their friends or community members. And yet the information is not representative of the whole community except to serve as tentative indicator in place of systematic data collection and analysis. For these economic agents, income is unpredictable and highly volatile and so does consumption. The technique of adjustment of consumption expenditure to volatile income is innovative and necessitated by commitment towards accumulating enough funds for initial investment and dawn payments to lump sum investment costs in time- tested ventures among members of the community. Whatever stable component weekly or monthly income flows have is tied to saving contributions in informal circulating credit schemes. This rate of saving might not be sustainable even at micro-level and yet it shows what is achievable. All the same, the saving behavior suggests how saving effort is closely driven by investment opportunities and its message is unmistakably clear and informative.

also affects the influence of the interest rate on the saving behavior of economic agents. The lack of competition, inefficiency in the banking and financial system, the prevalence of various regulations, and problems to accurately gauge credit risk contribute towards higher interest rate spread between deposit and lending rates. The implication is that financial liberalization and increased access to credit market might relax liquidity constraints, for a given time preference of households, and can adversely affect the saving rate whereas its effect on efficient financial resource allocation can improve economic growth performance and the long term saving rate of the economy.

Does inflation rate affect the behavior of aggregate saving rate? The life cycle model suggests that inflation rate affects saving rate through its impact on the real interest rate and changing the relative price of future as compared to current consumption. There are, however, other channels through which inflationary tendency and unanticipated inflation might influence the saving rate. Inflationary pressure increases uncertainty of income and forces economic agents to save more as a precautionary measure. Moreover, unexpected inflation involves delay in adjustments and in the process economic agents tend to restrain their consumption influencing the saving rate to increase (Loayza, et.al. 2000). Inflationary pressure therefore can affect the aggregate saving rate either way depending on which factor dominates to influence the behavior of economic agents.

The public sector influences the domestic saving rate in various ways and mechanisms (Corbo, et.al, 1989). The public sector has considerable and concentrated economic power in poor countries relative to the rest of the economy. Its behavior in terms of deriving its revenue through taxation and non-tax revenue sources directly affects the way economic agents prefer to hold their wealth and their incentive to engage in production and investment activities. Moreover, the way the public sector allocates its revenue in terms of recurrent consumption relative to investment activities coupled with the policy towards the private sector exerts influence on how resources are allocated in the economy. A public sector that expands its consumption expenditure far beyond the growth of national income, government revenue, and the growth of investment sooner or later confronts unsustainable path that endangers the stable economic performance of the country.

In a small open economy setting, the terms of trade and its dynamics influence the capacity of the domestic economy to command goods and services. The terms of trade by measuring what the economy can acquire in terms of goods and services from the rest of the world in exchange for its exports, influences the macroeconomic stability and the saving rate of an economy. Terms of trade shocks and their duration influence the capacity of the economy to purchase goods and services. Moreover, if domestic investment has relatively high import intensity, it would affect the domestic production process, growth rate performance and the macroeconomic stability of the system. The impact of terms of trade shock on the aggregate saving behavior also depends on whether economic agents perceive the shock as permanent or temporary. A temporary improvement in the terms of trade might improve the saving rate whereas shocks that are perceived to last long may not affect the saving rate significantly as agents adjust their consumption and saving behavior taking into account their new circumstances. There are inter-temporal and intra-temporal effects that arise from terms of trade shocks because domestic economic agents respond by adjusting their consumption over time and

changing the composition of their consumption basket between domestic and imported goods and services. The theoretical effect of terms of trade shocks on aggregate domestic saving therefore remains imprecise as long as there are simultaneous effects that influence the decision behavior of domestic economic agents.

Openness to international trade also opens the mechanism by which a country generates financial resources and assistance from the rest of the world that allows domestic economic agents relax their current collective budget constraints. Countries can partially finance their domestic consumption and investment by running current account deficits or foreign saving. This channel allows an economy to borrow from or lend to other countries provided that the imbalance is sustainable and does not pose threat to macroeconomic stability. The effect of foreign saving on domestic saving behavior, especially when capital account is not liberalized, ultimately depends on how such resources are allocated and to what extent they influence the behavior of domestic economic agents. The availability of foreign financing helps the domestic economy maintain consumption and investment expenditure growth that would have been unlikely in a closed economy setting. Foreign saving might substitute domestic saving if the economy resorts to expanding its absorption beyond its aggregate domestic output (Masson, et.at. 1998). However, the substitution might not be perfect since part of the resource inflow might be directed to finance investment expenditure.

Uncertainty is a recurrent factor that complicates the decision behavior of economic agents. Uncertainty in the flow of real income can emerge from numerous sources including dependency on exogenous factors, such as climatic conditions and external shocks, or policy induced factors such as unexpected inflationary pressure and macroeconomic instability. Uncertainty in future income might increase the necessity to save more whenever there are opportunities. However, such causes of uncertainty might increase macroeconomic instability and erode the cushion that precautionary saving provides.

5. Quantitative Estimation: Results and Interpretations

The previous section dealt with the theoretical issues with respect to the behavior of domestic saving in developing countries. It provided the framework to establish the various connections that could exert influence on the collective behavior of economic agents in their inter-temporal allocation of resources. This is partly expressed in terms of domestic saving rate relative to GDP. The exercise to quantify the theoretical relationships and test the hypotheses that are derived from the theoretical discussion is the main focus of this section.

The properties of the domestic saving rate of Ethiopia during our period of analysis reveal important features. The rate of saving and its dynamics is influenced by the conventional factors that are derived from consumption function models as well as factors that are peculiar to the economy. In a macroeconomic setting, the domestic saving rate is strongly associated with the growth rate of the economy, investment performance, and the path dependence of these variables.

The short-run dynamics of the relationship across the domestic saving rate, the

growth rate of real GDP per capita, and investment rate is examined by VAR analysis using annual data and lag length of two years. The result is reported in table 2. The dynamic relationship between the saving rate and the growth rate, VAR[1], indicates that saving has a significant and high degree of inertia in a sense that its current rate is predicated by its past value. Moreover, past growth rate of real per capita income has a strong and robust prediction power on current saving rate performance. However, growth rate does not seem to be predictable by past domestic saving performance and it has weaker inertia. Apparently, the growth rate inertia seems to be significant with two year lag reflecting perhaps the erratic nature and lack of sustainability in growth rate. The weak short-run dynamic relationship between past saving rate and current growth performance might suggest weaknesses in allocation of saving to their most productive uses that can sustain and attract further saving efforts.

The estimation on the dynamic relationship between domestic saving and investment, VAR[2], indicates that whereas the investment rate and domestic saving rate have strong and statistically robust inertia, investment rate is not strongly predicated on past domestic saving rate. The estimated coefficients are not statistically significant and yet their signs suggest that past saving rate is positively associated with current investment rate but past investment rate is negatively associated with current saving rate. This is partly attributable to the weakness of short-term relationship between investment rate and growth performance. When investment fails to generate fast growth rate, saving is adversely affected and so does domestic investment. The negative and weak link between past investment and current saving is perhaps related to the disincentive effect misallocated investment creates among savers and their reaction to seek alternative areas of allocating their resources.

The dynamic relationship between the growth rate and the investment rate, VAR[3], also indicates important features of the growth process in the country. There is no strong short-run relationship between the current growth rate and past investment rate in the economy. If anything, the result seems to suggest that whereas past growth has positive relationship with current investment rate, even if it is statistically not significant, past investment rate has negative prediction with respect to current growth rate. This result seems to be against common intuitions. However, a closer scrutiny of the relation suggests one plausible explanation that weak and erratic growth rate may discourage economic agents to make investment on the expectation that unsustainable growth increases the risk of investment making stronger growth more unlikely. This short term relationship between economic growth and investment might hold and yet the long run relationship between growth rate and investment rate is robust and strong (Levine and Renhelt, 1992). This could perhaps be explained by and consistent with the fact that longer gestation period of investment is required in such a developing country where investment takes several years to make its effect felt on the generation of output and employment in the economy.

It is important to note that domestic investment rate in Ethiopia has recovered despite the collapse of domestic saving. Whereas higher investment rate and its judicious allocation for most productive uses has positive effect on the long-run growth prospects of the economy, the current practice of financing is not sustainable and might invite serious problems. Increase in domestic investment in the context of Ethiopia suggests

increase in external borrowing and deterioration in the balance of trade. Moreover, the deterioration in the trade balance is also reflected in the relative decline in the demand for domestic goods as expenditure on imports has increased significantly because of the high import-intensity of investment. This suggests that investment might have long term positive effect on the growth rate and yet in the short term, increasing investment rate implies, through the increase in demand for foreign goods and services, limited increase in domestic demand for domestic goods and services.

The historical trend of the domestic saving rate of Ethiopia also reveals quantitatively significant transition that deserves a proper explanation and what does it take to reverse the situation. I conducted a procedure on sustained saving rate transition[††] (see Rodrik (2000) for further explanation). The data indicates that 1974/5 as the year in which the economy shifted from moderately high saving rate to low saving rate equilibrium. The transition in saving rate was persistent in that the rate remained low after 11 years beyond the 5 percent moving average threshold level. The economy has not yet broken the low saving rate equilibrium, despite some signs during the 1980s, and the current situation is almost certainly more precarious that invites serious problems to the economy. The result is robust and the explanation behind such a phenomenon rests on the policy choice of the Dergue government and the apparent continuation of such policy stance, with cosmetic changes, by the current regime. The military regime established a hostile economic policy regime to the private sector and actively discouraged the private sector in the economy. Investment opportunities were either reserved to the exclusive use of state owned entities or regulatory and procedural obstacles were created to weaken meaningful participation of the private sector.

Investment outlets for the private sector dried up and so did the aggregate saving rate. Economic agents came to realize that making profit in such a setting requires creating influence and securing privileged positions through corrupt practices instead of engaging in productive, employment and growth generating endeavors. The prevalent scarcity economics that emerged in the process secured lucrative returns from rent seeking for those engaged in trading and distribution activities while the productive sectors were starved of investment resources. The failure of the saving rate to recover during the last decade or so makes the issue yet to be addressed. Despite the rhetoric and in the context of evolving global investment environment, the investment regime is not yet conducive enough for doing business for both domestic and foreign investors. The lesson is still relevant in that aggregate saving cannot increase without removing all obstacles for economic agents to exert their effort fully in all areas of investment activities.

I also searched in the data departure points of transition in investment rate and growth rate of real GDP. The data indicates that there is no transition in the investment rate that fulfills our filtering criteria. Reducing the threshold rate to 4 percentage change in the moving average enables us to detect 1993/94 as a positive investment transition year. The procedure detects growth rate transition in 1992/93 and the result is quite robust for changes in the threshold rate. The five-year moving average growth rate of real GDP

[††] A country is said to experience a saving transition at year T if the three year moving average of its saving rate over a nice-year period starting at year T exceeds by more than 5 percent over the five-year moving average of its growth prior to year T. In the case of growth rate transition, a 2.5 percent threshold is used.

increased from -4.56 percent prior to 1992/3 to 5.64 percent after the transition, but the five-year average growth rate from the fifth to the ninth year after the transition declined again to -0.8 percent. The fact that the growth recovery came after a sustained decline in the growth performance of the country coupled with the recent reversal of growth indicate the unsustainable nature of growth rate performance.

In order to trace the time precedence of the three variables, I conducted a formal pair wise Granger causality test. The result is reported in Table 3. It is clear from the results that we could not reject the null hypotheses in all cases except one. The result rejects the hypothesis that investment Granger causes saving. It suggests that causality flows from domestic saving to investment rate. The coefficient takes negative value with implication that the investment rate increased despite the adverse time precedence of saving rate. It is therefore clear that the short-run relationship, as expressed by the Granger causality test, does not exhibit robust relationship among saving, investment and growth rate variables.

We have examined the quantitative properties of the domestic saving rate in Ethiopia and several closely related variables. We now turn to the issue of what explanatory variables are quantitatively robust in explaining the saving rate in the country. The first procedure in conducting such an estimation exercise is to check the time-series properties of the variables under consideration. I conducted an augmented Dickey-Fuller (ADF) unit-root test the result of which is reported in table 4. The results indicate that the variables do not have the same order of integration. To handle both short term and long term processes, estimation of the equation retaining both the short-term as well as long term relationship is conducted by differenced and lagged variables. This takes an error correction model of the saving equation and the diagnostic tests ensure the statistical validity of the estimated coefficients.

The quantitative results, as reported in table 5, suggest that the behavior of the domestic saving rate in Ethiopia could be explained by a number of policy, economic, and external variables. Column 2 shows the basic estimation of a variant of the life cycle hypothesis. The result confirms the importance of economic growth in the saving processes, a result that supports our earlier observation about the relationship between economic growth and saving rate. The estimates on the population growth are not statistically significant hence maintaining the controversy as to the role of demographic factors in the saving process. Changing the measurement of the demographic factors from population growth to labor force growth or dependency ratio has not changed the result. However, one should bear in mind the quality of demographic data in Ethiopia and its reliability to reflect the proportion of the population by the stage of their life cycle.

The empirical relationship between real interest rate and the aggregate saving rate is somewhat complicated due to measurement problems and the simultaneous interaction of several factors. Interest rates in Ethiopia have been set by the government and significantly deviate from market clearing rate. This led to the emergence of credit rationing and various licensing and regulations in the financial system. The data on nominal interest rate for different forms of deposit instruments exhibits the failure of the interest rate regime to take account of inflationary pressures let alone to keep positive real interest returns for savers. The interest rates contain little information for decision making

by economic agents. Moreover, fiscal and monetary policy measures further erode the information that is contained in the nominal interest rate increasing the disincentive to save by the private sector. Estimates of the interest rate elasticity of saving, for the period for which there is data, indicates positive but with no significant effect of the real interest rate on the aggregate saving rate which implies that the interest rate elasticity of aggregate saving is not statistically different from zero.

In a cross country sample of low and middle income countries, Ogaki et. al (1996) reported a point estimate interest rate sensitivity of saving for Ethiopia of 0.05. They also found that the level of interest rate sensitivity of saving increases with the level of development. There are different explanations that might give rise to such weak relationship. The fact that the financial sector of Ethiopia is weak, highly regulated and imperfect suggest that the administered interest rates in Ethiopia indicate nominal returns on limited forms of financial instruments that do not reflect the return to investment or the true scarcity of capital in the system. As far as the interest rate fails to reflect the opportunity cost of current consumption relative to future consumption, it has limited information on the basis of which economic agents adjust their decisions. Changes in the nominal and real interest rate would influence the decision making process of economic agents only when the changes reflect the relative scarcity and productivity of such resources. Economic agents do respond to changes in interest rate and net returns from saving. There were also further measures that discourage saving through banking regulations and practices and taxation of interest income to the already weak environment for saving and investment (Abu, 2001). It is therefore very important that consistent financial sector policies and reforms are taken to reflect the relative price of resources, establish credibility in the financial system and instruments, and ensure the allocation of such resources for productive uses that can generate returns attractive enough for both current and potential savers in the economy.

I extended the variables in line with the theoretical suggestions that we discussed earlier. The variables could be grouped as income and growth variables, fiscal variables, monetary variables, external factors, and exogenous shocks. First, the income and its growth variables indicate robust influence on the aggregate saving rate. Both increase in growth rate and the lagged growth rate have positive and robust influence on the change of the saving rate. This result indeed confirms the need to pursue growth promoting policies that have direct and indirect impact on the sustainability of growth itself and macroeconomic stabilization through its effect on saving rate performance. Moreover, the level of current income positively and significantly influences the behavior of aggregate saving rate. This result supports the absolute income hypothesis in that the level of per capita income is an important determinant of the capacity of a country to save. This variable plays a crucial role in the saving processes and yet in the aggregate data its characteristics are washed away with aggregation exercises and elimination of its distributional attributes. We have no accurate annual data that could help us trace the proportion of the population for whom basic subsistence considerations exclude them from saving processes. The core attribute of the estimation result is that the level and growth of income is an important force that influences the capacity and attractiveness of saving activities.

Second, the aggregate saving rate and the rate of domestic investment have robust

relationship. The results indicate that changes in the investment rate leads to a direct change in the saving rate. We need to observe this result with what the short-term relationship suggested in our causality tests. Efforts to increase the investment rate and improving its allocation in productive uses improve the capacity of the economy to generate more resources to ensure sustainable investment finance from domestic sources. This is consistent with our earlier discussion in that increase in investment rate improves the growth prospects of the economy which in turn increases the capacity and willingness of domestic economic agents to engage in saving endeavors. This process of self enforcing dynamics could be initiated and sustained provided that saved resources are effectively allocated for the most productive and growth generating investment purposes and appropriate incentives are provided to domestic economic agents to engage in saving activities that sustain the investment process.

Third, the saving rate is adversely affected by the behavior of the public sector in terms of its consumption expenditure. The result suggests that increase in public consumption expenditure relative to GDP adversely and significantly affects the aggregate saving rate. A percentage increase in government consumption contributes to about 0.33 to 0.35 percentage decline in the saving rate. This result is in contrast to the findings that the private sector values public consumption expenditure positively in African economies (Elbadawi and Mwega, 2000). The adverse effect of unsustainable increase in public consumption expenditure has several channels in which it transmits its effects in domestic saving. The increase in government consumption expenditure adversely influences the public sector saving so long as the government faces a budget constraint. The increase in the government consumption, unless accompanied by an even faster growth in government revenue, suggests allocating a lower share of revenue for public saving and investment purposes. Unfortunately, our data set does not have information on disaggregated public saving that would allow us to examine the behavior of the public sector in the allocation of its revenue flows to consumption and saving purposes. However, public consumption expenditure behavior, especially when allocation decision power is relatively concentrated, creates an important demonstration effect on the consumption behavior of some segments of the private sector.

The openness of an economy to the rest of the world presents opportunities as well as challenges to a poor and small economy. Whereas openness to international trade, measured by the ratio of external trade to GDP, partially indicates the opportunities the economy could exploit from interactions with trading partners and generate investment resources, it can also become a way for national economies to breach their collective budget constraint and engage in decisions that might have adverse effect on their long term economic performance. A country might pursue unsustainable policies that run on persistent current account deficits and expenditure behavior beyond their means of production and financing. This process might open the route for a nation to consume beyond its means and postpone reform measures that could have eliminated barriers to investment opportunities and make saving an attractive and rewarding decision by economic agents. The quantitative result has negative and statistically significant coefficient that lends support to the argument that by relaxing the collective budget constraint and running persistent current account deficits, openness and import intensity depress the domestic saving rate.

The effect of foreign saving on domestic saving behavior is examined to assess the impact of the availability of foreign financing for domestic consumption and investment expenditure purposes. The relationship is captured by a somewhat imprecise variable, measured in terms of current account deficit, that captures what trade partners and donors are willing to bridge the gap between what the economy saves and invests mainly through development aid and soft loan arrangements. This resource is channeled predominantly through the public sector and has kept the aggregate absorption increasing far beyond the domestic production capacity of the economy. Since this form of financing creates debt service obligations, its sustainability highly depends on the extent to which such resources are allocated to the most productive and growth generating and sustaining activities. The quantitative estimate indicates positive and statistically significant effect of the availability of foreign financing on domestic saving rate. This result is in contrast to cross-country studies that indicate adverse and yet partial effect on domestic private saving rate (Masson, et.al. 1998; Hadjimichael and Ghura, 1995). The estimated coefficient suggests that the availability of foreign financing, perhaps because it comes with some conditionality especially to the public sector, encourages domestic saving as well as domestic consumption. A percentage increase in the availability of foreign saving increases domestic saving by about 60 to 70 basis points and increases domestic consumption expenditure by a 30 to 40 basis points.

The influence of the inflation rate on the aggregate saving rate has several channels and is not easily amenable to interpretation. Inflation is an implicit tax on saving and yet it also indicates the level of uncertainty that economic agents confront due to unexpected inflation. In such a setting, economic agents react to the erosion in their net real returns from saving at the same time increase their saving in response to the uncertainties that inflationary pressure entails. The inflation rate indicates positive and statistically significant coefficient. The attempt to measure overall uncertainty by the share of agriculture in GDP, however, is not successful and the coefficient, not reported in the table, is not different statistically different from zero. Perhaps alternative measure of uncertainty indicator in the economy might be necessary to capture such an important and appealing factor in the saving behavior of economic agents.

The international terms of trade exerts influence on the macroeconomic performance of a country and its saving rate. Terms of trade shocks, coupled with a high dependency of the country on a few primary commodities for export earnings and the increasing intensity of expenditure on imports, have complicated the policy choices and private sector responsiveness. The impact of the terms of trade shock, as figure 3 visually depicts, on the real income of the country has increased with the increase in import intensity of domestic absorption and stagnating export performance. In recent years, even modest terms of trade deterioration results in significant loss in purchasing power of the economy and the policy response has been resorting to external borrowing to bridge the gap. The response to aggregate consumption smoothing by borrowing would have been prudent provided the terms of trade deterioration were temporary. The long term observation of terms of trade of the country indicates down-ward trend with short-term fluctuations around the trend. This is bound to continue unless the export sector diversifies into relatively competitive and activities with improving terms of trade. The terms of trade shock has an adverse effect on domestic saving rate and yet it is not statistically significant. Perhaps the effect of terms of trade shock operates through its

impact on reducing the real purchasing power of the economy from the rest of the world and its capacity to save.

The role of the financial sector and its development in influencing the aggregate saving behavior of an economy is a widely contested issue. Efficient financial sector by channeling economic resources to sectors that could employ them for the most productive purposes improves growth performance, optimizes investment allocation and provides appropriate rewards to savers, and promotes further financial development. The financial sector plays an important role by increasing financial saving and improving the stability of the economy through domestic generation of investment resources and attracting foreign investment. We approximate the financial depth of the economy by the ratio of broad money supply, M2, to the GDP and the ratio of quasi-money to broad money supply. As figure 4 below depicts, the magnitude of broad money supply and its share relative to GDP has been increasing steadily over time. The relative importance of quasi-money in broad money supply also indicates moderate improvements from quite low initial conditions. However, the money supply has been largely dominated by notes in circulation and quasi money is not widely acceptable and is used by a limited group of public enterprises, government agencies and the business community.

There is still considerable limitation in the diversity and efficiency of financial instruments that are available for the majority of the population limiting financial deepening and the development of the financial sector. Various restrictions and regulations have kept the sector from delivering efficient services to the economy and the reluctance to undertake basic reforms allowed the continuation of inefficient and outdated institutional practices. Our quantitative estimates suggest that financial depth is an important determinant of domestic saving rate with a third to a half percentage effect for a percentage rise in financial depth. Public policies can have important bearings on the stability and growth of the financial sector. It is necessary to explore policies that encourage a large segment of the population to engage in voluntary saving through insurance schemes, pension and social security contributions and promotion of long–term saving instruments that appeal for potential savers. The success and sustainability of such schemes depends not only in encouraging those who are already participants in the voluntary saving but more importantly attracting the majority of households with moderate income to participate in the mobilization of financial resources and be beneficiaries of the financial system.

Access to financial resources and credit to the private sector is an important variable that could shape the saving behavior of economic agents. When credit is rationed and the majority of the private sector has little or no access to credit services from the formal financial institutions, it becomes inevitable to increase own saving or resort to informal credit markets to finance investment as well as lump-sum consumption expenditures. The limitation of access, failure to generate collaterals, and the costly procedure of securing investment resources exerts considerable hurdle for the realization of investment potentials. Measuring credit constraints requires a thorough analysis of the whole process and procedure that entrepreneurs encounter in securing resources for investment. We attempt to capture the degree of access to credit by the share of credit resource allocation to the private sector by all lending financial institutions.

The estimation result suggests that increase in the relative share of credit allocated to the private sector, by relaxing the financing constraints, encourages the private sector to borrow for investment as well as consumption purposes (though at a very limited scale) without necessarily generating the funds from own saving. This might have an adverse impact on the aggregate saving rate and the result indicates a negative and statistically strong coefficient. The implication is that further measures to relax access to credit for the private sector, especially access to consumer credit services, might dent further private and aggregate saving rates. This adverse effect might be partially compensated if improved access to credit allows more efficient inter-temporal allocation of economic resources and enables those entrepreneurs that have been denied investment resources to realize their potentials. However, the experience of credit allocation in recent years has been dominated by short-term and trade related commercial lending that has not significantly improved the availability of resources for long term investment undertakings. In this context, it is vital to promote financial sector policies that would encourage the emergence of private sector investment banks and financial instruments that can provide funds for long term investment activities.

6. Concluding Remarks

This paper addresses issues on the determinants of domestic saving in Ethiopia. It identified the main explanatory factors of the saving rate in the country and explored the factors behind the recent collapse in the saving rate. The low level of income in the country exerts considerable constraint in achieving high aggregate saving rate. However, the level of income does not compellingly explain why the country exhibited declining rate of saving. The collapse in the domestic saving rate is attributable to several factors ranging from unsustainable expansion of public sector consumption expenditure, the disincentive effects of monetary and fiscal policy measures, adverse terms of trade and lack of sustained economic growth performance, and most critically the hurdles to investment activities that could have provided the motivations and the rewards to increased financial savings.

Reversing the collapse in the domestic saving rate takes a truly investment enhancing, growth promoting, and prudent fiscal and monetary policy environment in Ethiopia. A country cannot finance its investment activities by external borrowing alone on a sustainable manner. It is necessary to ensure appropriate incentive schemes and financial instruments that appeal and suitable to the majority of the local private sector to engage in saving efforts. In this regard, financial policies should address the problems of limited and poor financial instruments in the system to encourage the private sector participate in the saving schemes of their choice. Moreover, the public sector must exercise responsible fiscal and monetary policies to avoid the erosion of returns to saving as well as maintain its consumption and saving behavior consistent with its budget constraint.

There are several policy measures that could directly contribute towards improving the domestic saving performance of the country. First, it is prudent to pursue monetary policies that identify and appropriately adjust the interest rate on various forms of saving instruments so as to reflect the situations in the financial market and the economy. This improves the efficiency as well as the development of the financial sector.

Policy measures to improve the financial system might induce further deterioration of the saving rate performance in the short term and yet improve the sustainable capacity of the economy to generate saving and investment resources. This in turn requires conducting monetary policy on independent and transparent manner so that it does not become ineffective due to rampant political interventions. Second, in fiscal policy areas, it is important to assess the feasibility of providing saving incentive mechanisms such as tax exemptions for defined saving programs. There are significant potential benefits to be realized that could offset the short run lost revenue flows to the government. Third, sustainable improvement in the saving rate is dependent on fast and sustained economic growth performance with macroeconomic stability. It is therefore critically important to pursue policies that improve the investment environment, eliminate policy induced hurdles to investment in all sectors so that the economy generates the capability and motivation for higher and sustainable improvement in the domestic saving rate.

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Table 1: Ethiopia: Indicators of saving and macroeconomic performance

Period	Average growth rate of real output per capita (%)	Average domestic saving rate (%)	Average investment rate (%)	Average Private Consumption to GDP ratio
1960/61-1974/75	1.5159	13.753	15.537	0.7746
1960/61-1966/67	2.8933	14.235	16.712	0.7758
1967/68-1974/75	0.7192	13.488	14.889	0.7739
1975/76-1990/91	-0.8064	7.342	13.835	0.7656
1975/76-1984/85	-0.9868	6.001	12.362	0.7916
1985/86-1990/91	0.3602	9.094	15.761	0.7315
1991/92-2002/03	1.6060	3.642	17.019	0.7951
1991/92-1997/98	3.4034	6.336	15.292	0.8170
1998/99-2002/03	-1.8449	1.045	18.683	0.7740
1960/61-2002/03	**0.0403**	**5.408**	**16.153**	**0.7865**

Source: Ministry of Finance and Economic Development of Ethiopia.

Table 2: Ethiopia: Saving rate, Investment rate and Growth

VAR Estimation Results for 1960/1-2002/3

	[VAR1]		[VAR2]		[VAR3]	
	saving	growth	Saving	investment	growth	investment
saving(-1)	0.5881***	0.0551	0.9276***	0.0041		
	(0.1703)	(0.3766)	(0.229)	(0.2072)		
saving (-2)	0.3417**	0.0238	-0.0066	-0.2376		
	(0.16339)	(0.3613)	(0.2489)	(0.2252)		
Growth(-1)	0.1646**	0.1939			0.2444	0.095
	(0.07439)	(0.1645)			(0.1627)	(0.0736)
Growth (-2)	0.0021	-0.507***			-0.4868***	-0.0611
	(0.0779)	(0.1722)			(0.1726)	(0.07804)
Investment (-1)			-0.2928	0.5684***	-0.2647	0.6108***
			(0.2295)	(0.2076)	(0.3626)	(0.16398)
Investment (-2)			0.3128	0.5821*	0.3027	0.3991**
			(0.2515)	(0.2276)	(0.3625)	(0.16392)
R-Square	0.7685	0.2203	0.7556	0.5144	0.2260	0.4584
observations	40	40	40	40	40	40

Note: The numbers in parenthesis are standard errors for the corresponding coefficients. *,**,*** refer to significance levels at 10, 5 and 1 percent, respectively. Saving is the ratio of gross domestic saving to GDP, investment is the ratio of gross capital formation to GDP, whereas growth is the growth rate of real GDP per capita.

Table 3: Pair-wise Granger Causality test: Saving, Investment and Growth rates
(1960/1-2002/3)

Null Hypothesis	Observation	F-Statistic	Probability
Growth does not Granger cause investment	39	1.38467	0.26524
Investment does not Granger cause growth		1.38697	0.26456
Growth does not Granger cause saving	39	1.94617	0.14200
Saving does not Granger cause growth		0.10927	0.95406
Investment does not Granger cause saving	40	5.40375	0.00389
Saving does not Granger cause Investment		1.92860	0.14414

Note: The numbers in parenthesis are probability values for the corresponding coefficients. The lag-length of 3 years is used.

Table 4: Augmented Dickey-Fuller (ADF) Unit-Root Tests

Variables	Levels	First-Difference
gdsgdp	-2.9362	-4.2976***
Log rgdpc	-2.5663	-3.2811*
Growth rate	-5.8292***	-9.1131***
Inflation	-2.7726*	-3.8825***
Financial depth	-2.5970	-4.3023***
Private credit share	-1.9272	-4.5050***
Pubic consumption	-2.4839	-4.0536***
Population growth	-4.1099***	-5.7449***
Agro-share	-2.2199	-4.0248**
Real deposit interest rate[1]	-2.1271	-5.1809***
Openness	-1.0694	-3.6304**
TOT	-1.2380	-4.0407***
Import Intensity	-1.4770	-3.4443*
Foreign saving	-2.2467	-5.1418***

Note: Phillips-Perron test is used for unit root test. The tests were conducted with a constant and a time trend for all variables except growth rate (grgdpc), inflation (inffwd), population growth (popgr), real interest rate (rir) and terms of trade (TOT) variables. McKinnon critical values are used to test the null hypothesis of unit-root. The lag length in the equations is chosen by minimizing the AK information and Schwatz information criteria. ***, **,* refer to 1, 5, and 10 percent level of statistical significance, respectively.

Table 5: Regression Estimation results on domestic saving rate

Dependent variable: Change in the domestic saving rate [△gdsgdp]

Variable/Coefficient	[1]	[2]	[3]	[4]
Growth $_{(t-1)}$	0.2901***	0.164283*	0.1548**	0.1341**
	(0.0951)	(0.0815)	(0.067)	(0.0533)
△growth	0.158**	0.212081***	0.1271***	0.2049***
	(0.0650)	(0.0717)	(0.0455)	(0.0561)
△population growth	0.2058			
	(0.407)			
Population growth $_{(t-1)}$	-0.0887			
	(0.5929)			
△gdsgdp$_{(t-1)}$	-0.285*		-0.0444	
	(0.1614)		(0.0976)	
Gdsgdp$_{(t-1)}$	-0.1032		-0.0102	
	(0.0825)		(0.0773)	
RGDP per capita $_{(t-1)}$		0.130632***	0.1040**	0.1059***
		(0.03839)	(0.0417)	(0.0351)
△investment		0.843107***	0.8223***	0.7739***
		(0.1136)	(0.1061)	(0.0988)
Government consumption $_{(t-1)}$		-0.356914***	-0.3309***	-0.431***
		(0.0759)	(0.0794)	(0.0792)
Openness$_{(t-1)}$		-0.224736***	-0.2382***	-0.2040***
		(0.0543)	(0.0497)	(0.0480)
△import Intensity		-0.618927	-0.6820***	-0.6829***
		(0.1168)	(0.0973)	(0.095)
Foreign Saving $_{(t-1)}$		0.692179***	0.6186***	0.7116***
		(0.1153)	(0.1261)	(0.1079)
Inflation$_{(t-1)}$		0.114482**	0.0746	0.1205**
		(0.0517)	(0.0414)	(0.0535)
△financial depth		0.514267***	0.2775***	0.3727***
		(0.15515)	(0.0969)	(0.1048)
△Private sector credit ratio			-0.0217	-0.1649
			(0.0203)	(0.1236)
TOT$_{(t-1)}$		-0.000112		
		(0.00011)		
TOT-shock				-0.000368
				(0.000247)
Constant term	0.0056	-0.6709***	-0.5122**	0.5293**
	(0.0181)	(0.2083)	(0.2307)	(0.1894)
Adjusted R-Squared	0.3224	0.8199	0.8451	0.8697
F-Statistic (p-value)	2.697(0.029)	20.688(0.000)	19.0(0.000)	22.7(0.00)
Observations	41	40	41	40

Note: △, delta, is the first difference in the variable under consideration. In variables measured in natural logarithm, it indicates growth rate whereas in others it shows absolute changes. The figures in parenthesis are standard error of the corresponding coefficient. ***, **,* refer to 1, 5, and 10 percent level of statistical significance, respectively.
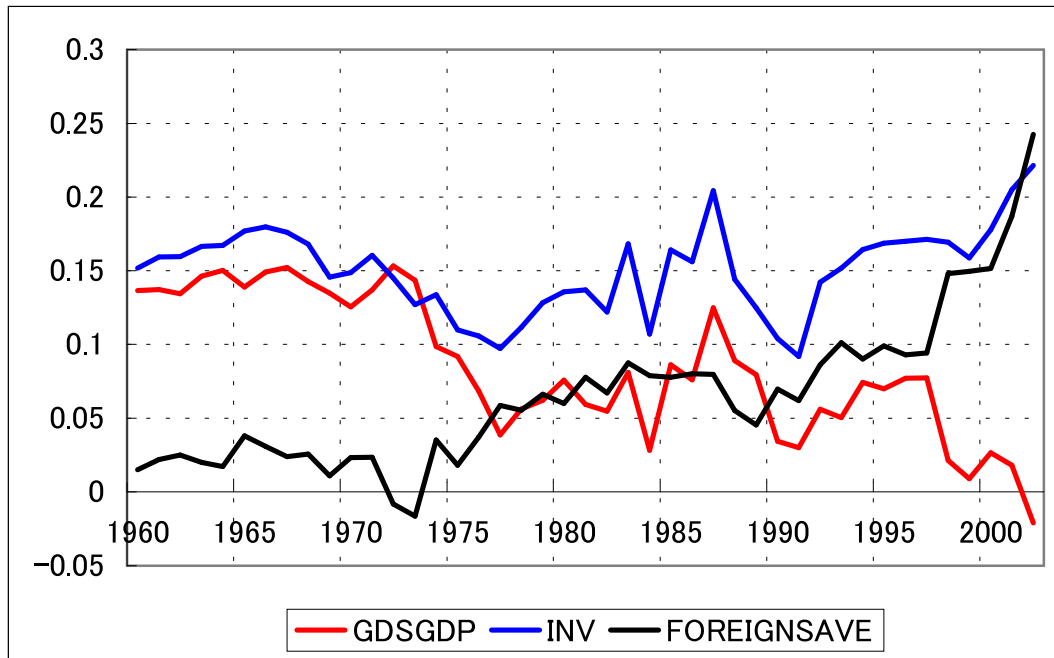
Figure 1: The profile of domestic saving rate and investment rate and foreign saving rate relative to GDP in Ethiopia 1960/1-2002/03. The overall domestic saving and investment ratios have weak relationship as is indicated by the overall correlation coefficient is 0.141924.
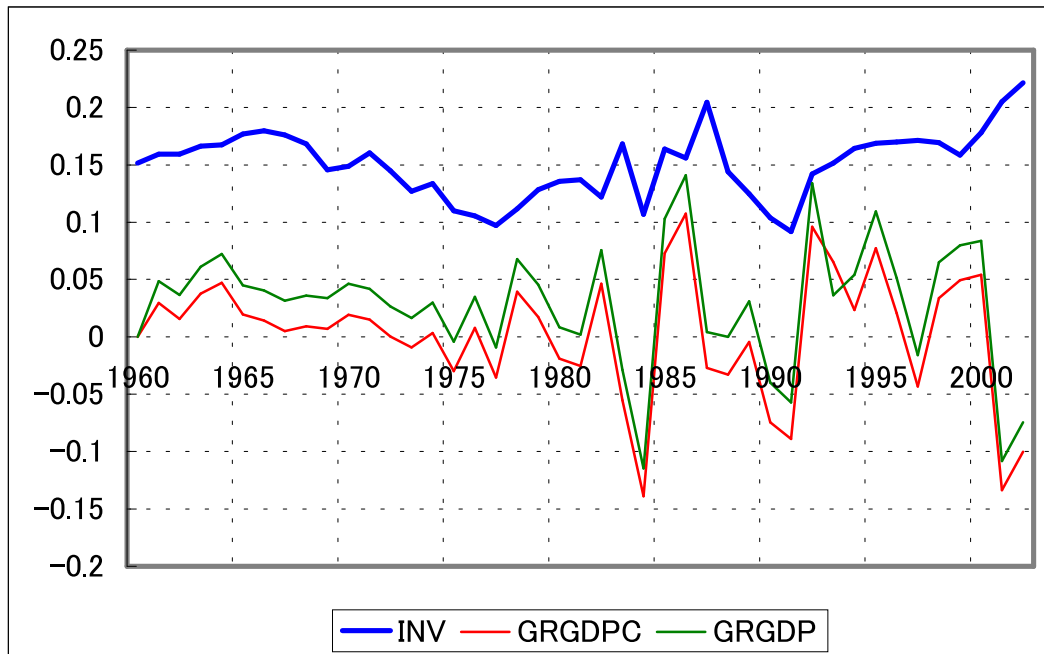

Figure 2: Ethiopia-the profile of investment rate, annual growth rate of real GDP (growth rate1) and annual growth rate of real GDP per capita.
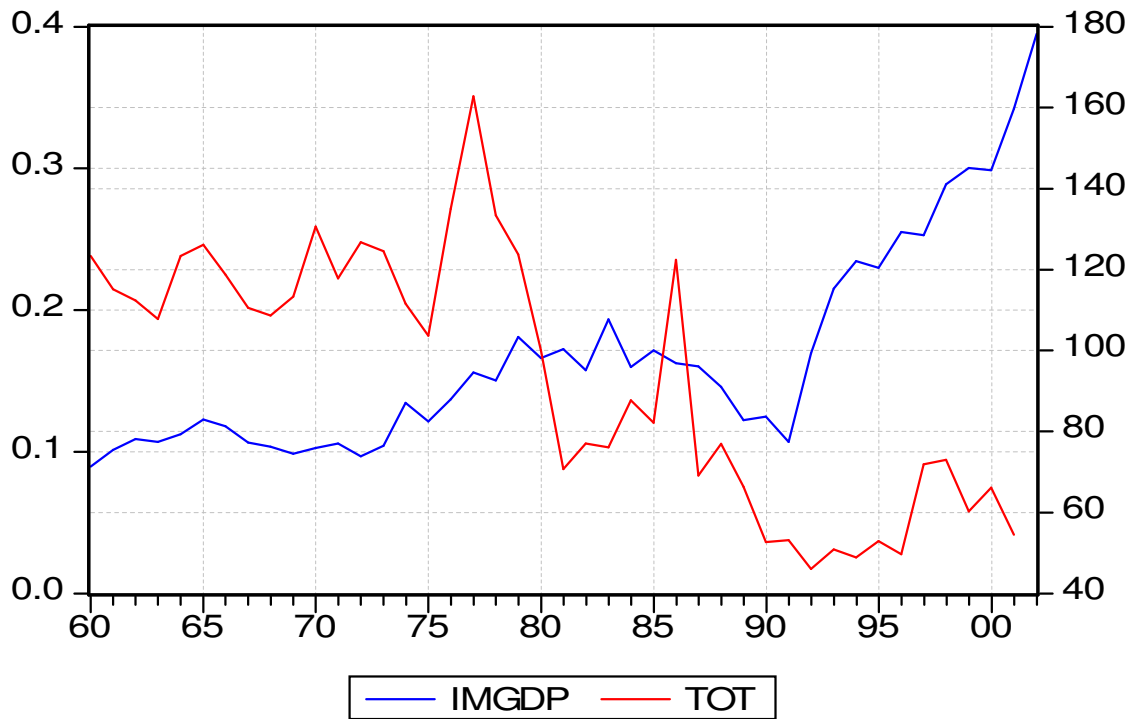
Figure 3: Import-Intensity and TOT of Ethiopia: Import-Intensity (left scale) measures the share of imports in GDP and TOT indicates the International Terms of Trade (1980=100) (right scale).
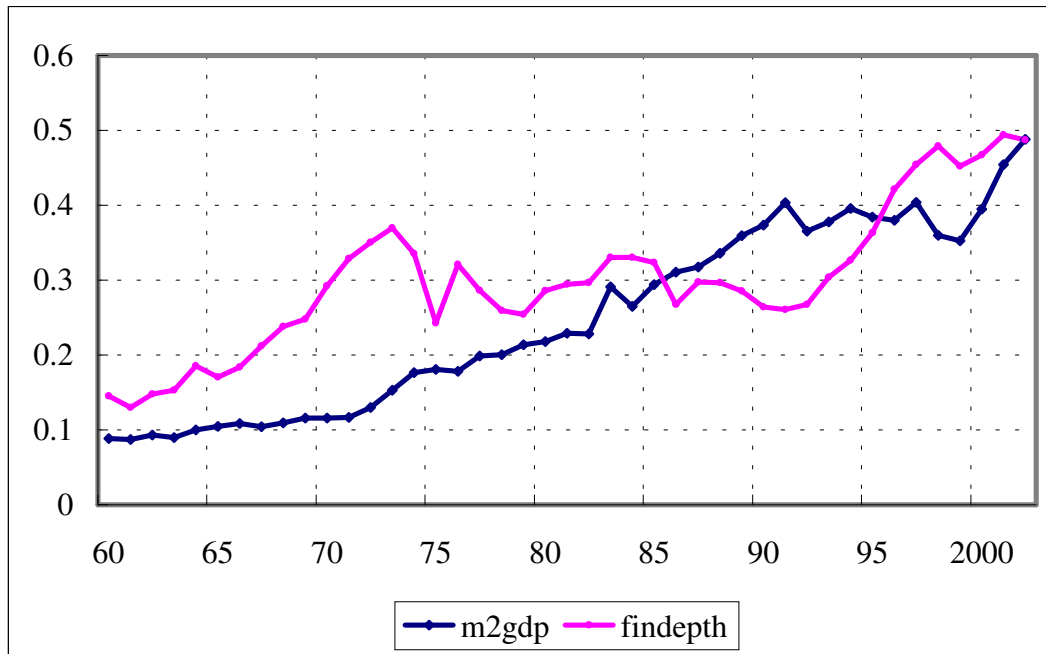

Figure 4: Indicator of Financial Depth in Ethiopia: Findepth (Quasi-M2) measures the ratio of quasi-money to broad money supply. M2GDP is the ratio of broad money relative to GDP.