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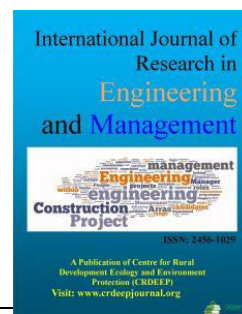
Full Length Research Paper

Determinants of Rural Households' Savings: Smallholder Farmers Level Analysis in Case of Baleegasgaar District, Oromia, Ethiopia

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ARTICLE INFORMATION	ABSTRACT
	Saving is income not spent, or deferred consumption. Savings plays an important role in growth and economic development process; it has been neglected very much in favor of credit in rural communities particularly of smallholder farmers in developing countries. The aim of this study was to examine the determinants of smallholder farmers' savings of the selected gandoota of Baleegasgaar District. In order to get the sufficient data, combinations of both purposive and simple random sampling techniques were employed. To achieve the objectives of the study mainly primary data was collected from 110 sample size from 1009 estimated number of smallholder farmers from three ganda administration of the district in 2019/2020 and some extent secondary data was encompassed. At the study area savings was very low while nationally the domestic savings stood at 22.3 percent in 2018/19.In the analyzing of the collected data, both descriptive and econometric approach were used. The multiple regression model result of the study indicates, among the nine independents variables education level of farmers, type of land owners of smallholder farmers, size of land owned/rented by smallholder farmers at rural area, number of works the farmers participated, ratio of dependency in a household of smallholder farmers, a number of livestock owned by smallholder farm were statistically significant at different probability level in the determination savings of smallholder farmers at the study area. The result of the multiple regression model shows as a smallholder farmer increases his work participation by one through diversifying, his saving amount increases by 9730.318 Birr annually. Therefore, in order to change the traditional of savings of smallholder farmers, the government should motivate the savers and increase the facilitation of the microfinance services and motivate them to support the economy of the rural areas.

Introduction

Household savings are an important determinant of welfare and so promoting savings at the household level is important for economic development. Savings refers to plural (noun) money saved (i.e. money which is not spent) Collin, 2005. Saving is the current income minus its spending on current needs. From a macroeconomic perspective, three important measures of saving are private saving, government saving, and national saving. Economic performance of sub- Saharan Africa is still remained unsatisfactory, under developed, low level of income of the citizens. About 80% of Ethiopia's population of 100 million live in rural areas. Agriculture is the dominant sector in the economy, accounting for 35% of Gross Domestic Product (GDP), 65% of employment, and over 80% of the country's export values (World Bank Report, 2019; Central Statistics Agency, 2017/18). According to the annual report of the Central Statistics Agency (CSA, 2017/18), in the 2010 EFY, over 306

million quintals of crops including cereals (87%), pulses (9.7%) and oil seeds (2.8%) were produced across 12.67 million hectares of cultivated land. The production of vegetables was 7.4 million quintals, contributing about 2% of the total crop production. (EATA, 2019). The ultimate function of financial markets is to increase the financial resources available to the economy and to enable a more efficient use of those resources. Throughout the world, poor people are excluded from formal financial systems. Exclusion ranges from partial exclusion in developed countries to full or nearly full exclusion in lesser developed countries. Absent access to formal financial services, the poor have developed a wide variety of informal, community-based financial arrangements to meet their financial needs. This is typical of developing countries who are trapped in the vicious circle of poverty where low income leads to low savings, low savings results in low investment, and low investment results in low

output. Raising the level of investment is crucial for developing countries to lift themselves out of the vicious circle of poverty.

Saving has always figured prominently both theoretical analysis and policy design in both developed and developing economies. This prominence emanates from its assumed direct theoretical link to future economic growth and current expenditure levels via its link to consumption. Early theories of economic growth emphasized the role of saving as a source of capital accumulation and hence growth. Similarly the aggregate demand based theory of Keynesian economics also focused on aggregate expenditure which has a direct implication to saving. Due to their preoccupation with short-term macroeconomic adjustment and stabilization policies, the emphasis on saving was relatively neglected in the 1980s in many African countries. But the focus on economic growth and hence on saving seems to have resurfaced in the 1990s and after. This interest is partly due to the belief that one of the reasons for slow growth in Sub-Saharan Africa is the low rate of saving relative to other developing regions (Schmidt-Hbbel et al, 1996, Aryeetey and Udry, 1999). This is in particular true when one compares the level of domestic saving and investment.

Developments in gross domestic savings and gross fixed capital formation, investment-saving gap and its financing as well as the structure of investment projects, their capital outlays and contribution to employment creation are the major points that will be discussed in this section. In addition, over the last two decades, an increasing number of formal sector organizations (non-government, government, and private) have been created for the purpose of meeting those same needs. Microfinance is the term that has come to refer generally to such informal and formal arrangements offering financial services to the poor. Development of microfinance in Ethiopia should be viewed as (a) an identification of considerable levels of unrealized demand and potential market growth for financial services and (b) a shift by the NGO sector and government from relief assistance to sustainable development which intersects at the point of institutionalization of microfinance provision (Fiona, 1999). Interventions through the delivery of microfinance services have also been considered as one of the policy instruments of the Government and Non-Government Organizations to enable rural and urban poor increase output and productivity, induce technology adoption, improve input supply, increase income, reduce poverty and attain food security. The establishment of sustainable microfinance institutions that reach a large number of rural and urban poor who are not served by the conventional financial institutions, such as the Commercial Banks, has been a prime component of the new development strategy of Ethiopia.

In addition, savings are the only source of raising wealth and assets of the society. The robust and sustained economic growth recorded over the last 15 years has led to improvements in income inequality and poverty reduction. Accordingly, per capita income has continuously increased and reached USD 985 in 2018/19. Poverty has declined to 22 percent in 2018/19 from 38.7 percent in 2004/05. Positive and sustainable macroeconomic performance depends on investment and it's financing. Saving is primarily used to finance investments. The important question that must be raised here is that whether growing level of investment is financed domestically or foreign capital. Domestic required investment is financed by either

domestic resource mobilization or foreign donation increased to 35.2 percent while that of domestic savings stood at 22.3 percent (NBE, 2019).

Basically aggregate saving regulates the size of capital stock and the main source of standard of living. Saving can increase the total demand by increasing the domestic consumption, level of investment, interest rates, exchange rate as well as the growth rate of the economy. Efficient consumption and mobilization of domestic resources are the main goals today for the self-reliance and sustained growth (Soharwardi and et.al, 2014:Khan, 1993). Because of these reasons, analysis of saving behavior and the knowledge of the determinants of saving is necessary for policy making (Nasir &Khalid 2004). In order to encourage economic growth and welfare of the underdeveloped countries savings is considers an important factor. Moreover the credit and insurance markets has unproductive and underdeveloped in poor countries like Pakistan. Savings are the important source of raising the household wealth and assets through structured financial markets and smooth out the unpredicted difference in their incomes. Abid and Afridi (2010) measured the household savings pattern of urban and rural household in district Muzaffarabad in Pakistan. The Dependent variables was the urban and rural household savings and income, total family size, locality and education of the household on savings form was independent variables. Its limitation is conducting research on saving using the same variables at both rural and urban area, economically and socially the residents were different.

Low domestic saving rates may maintain low-growth levels because low rate of saving lowers capital accumulation which is pillar to economic growth by sacrificing current consumption. Saving is not only important for capital formation but also for consumption smoothing in the future in the face of volatile and unpredictable income, and helping ensure the living standard of poor people whose lives are difficult. Additionally, the issue of saving judgment has short run and long run importance for macroeconomics investigation as concerned.

As explained above different scholars explain the factors or determinants of savings in general and not household level; but practically savings' determinants are not only macroeconomic level but also at family and individual level. On the other hand, if compare the socio-economic life between rural farm households and urban households groups there is high difference. For instance in urban area residents have access financial institutions relative to rural farmers. Asa result the probability of urban area households of saving their income inform of money is higher rather than other assets relatively. However, the rural area households particularly, smallholder farmers save their income inform of others assets by purchasing additional domestic animals or through expansion of the farm activities. At the study area, the smallholder farmers were known by mixed agricultural system. Additionally, the most smallholder farmers produce two times per year depending on the local rain fall: *badheessaa and bona/birraa*. Even though they plough the land farm for many years, the most of farmers life didn't changed from hand to mouth i.e. traditional way of life. In general the above explained facts and research gaps motivate the researcher to focus on the title, because saving is the abs for investment which can change life of smallholder farmers. The major questions answered by the results of the research are the followings:

1. What was the status savings of smallholder farmers at the study area?
2. What were the major factors that affect savings of smallholder farmers' at the study area?

The general objective of the study is to assess the status and determinants of smallholder farmers' savings at *the study area.* And specifically, the study tried to address the following specific objectives:

➢ To examine status of savings of smallholder farmers at the study area.
➢ To identify the determinants that affect smallholder farmers' savings at the study area.

Related Literature Review
Theoretical Literature Review
i. Definition of Saving and Related Terms
As the definition of saving provided by Hicks (1939), suggests, an alternative way of looking at saving is to measure it simply ex post as the increase in the real value of wealth. This can be computed from the national and sectoral estimates of net worth. The measure of saving is defined as *closing net worth ×Opening price level/closing price level – Opening net worth.* The balance sheets provide figures for end of year net worth. We measure the price level using the final consumption deflator. This is computed from public and household consumption taken together.

Empirically, there are several ways saving has traditionally been measured. These differences seem to primarily be a result of the type of data that is being used since researchers are often constrained in variable measurement by the limits of the dataset used. Researches using datasets containing income and expenditure information will typically subtract expenditures from income, as in Bae, Hanna, and Lindamood (1993). Positive differences represent saving while negative differences represent dissaving or borrowing. For researchers using panel studies (Browning & Lusardi, 1996; Chang, 1994), saving can be measured as increases in net worth. Saving can also be measured by household self-reported behavior. This is the most common saving measure for research using the Survey of Consumer Finances (SCF).In the SCF, there are several questions that attempt to measure savings. The most commonly used question asks whether or not household income exceeded expenses (Fisher & Hsu, 2012; Fisher & Montalto, 2011; Rha, Montalto, & Hanna, 2006; Yuh & Hanna, 2010).

ii. Lifetime Income and Permanent Income Hypothesis
In a series of papers written in the 1950s, Franco Modigliani and his collaborators Albert Ando and Richard Brumberg used Fisher's model of consumer behavior to study the consumption function. One of their goals was to solve the consumption puzzle that is, to explain the apparently conflicting pieces of evidence that came to light when Keynes's consumption function was confronted with the data. According to Fisher's model, consumption depends on a person's lifetime income. Modigliani emphasized that income varies systematically over people's lives and that saving allows consumers to move income from those times in life when income is high to those times when it is low (Mankiw,2010). While life cycle theory centers more on the explanation of the relationship between age, saving and the

creation of wealth, permanent income theory is more concerned with the dynamic behavior of consumption, particularly in relation to average or expected incomes. In this framework, consumption is the annuity value of current financial and human wealth. The dynamic features of consumption captured by the Life Cycle Permanent Income hypotheses, framed within the economic theory of the household (Becker 1981; Kooreman and S. Wunderink, 1997), are very useful in understanding the trade-off between current and future benefits or costs, with a special emphasis on the cultural and socio-economic determinants of subjective discount rates.

The relatively stable consumption of farmers in the face of fluctuating incomes, noted in the previous section, can be expressed more formally within the Life Cycle Permanent Income Hypothesis. This can be formulated as an observation that the farmers' marginal propensity to consume is high in relation to the level of permanent income and negligible in relation to the level of transitory income because individuals tend to smooth consumption uniformly during the life cycle. In other words, consumption choices are based on the possibilities available according to the personal income stream and level of wealth expected over the whole life cycle. In general, current consumption is affected by the personal rate of inter-temporal preferences (which leads to anticipated consumption when high), and the interest rate that can be earned from savings (which makes an individual more patient and less prone to consume today rather than tomorrow). The price of consumption tomorrow relative to consumption today is the discount factor, which can also vary subjectively according to the personal degree of impatience.

According to the life cycle theory, saving behavior and the evolution of the stock of assets depends on personal tastes, life cycle needs and the value of lifetime resources, but is not determined by the temporal pattern of life cycle labor income. If young households' income is low, but is anticipated to be higher later, it is not rational to stop higher consumption, because this is facilitated by the ability to borrow. In general, the accumulation of savings is also strongly motivated by precautionary motives (both against ageing and uncertain prospects) and bequest motives (Deaton, 1992).Cautious households tend to save more in early life than would be predicted by the permanent income hypothesis. Economic uncertainty and unanticipated shocks affect the consumption plan of individuals differently depending upon the myopic or forward-looking attitude of consumers and the presence of liquidity constraints (Hall, 1978; Flavin, 1985; Zeldes, 1989). The more binding the borrowing restriction, the closer consumption follows the income path. Younger cohorts especially feel the stringency of this constraint when they are forced to limit borrowing designed to sustain current consumption even when they have the prospect of high future incomes.

For the Life Cycle Permanent Income Hypothesis to work in developing countries, credit markets needs to be sufficiently developed and must function properly. Consumption credit is especially important where access to capital markets is rationed (Eswaran and Kotwal, 1989). The existence of credit rationing that is proportionate to the land endowment of the farm household results in unequal access to the credit market. This fact explains why access to credit can be an important factor both

in determining the levels of permanent incomes and in shaping the process of formation and differentiation of rural classes. These processes manifest themselves differently according to the economic, social and institutional situations specific to each society. For example, in societies where private property is a well-established institution but land redistribution is a central to agrarian reform, such as in many Latin America countries (including Peru).They hypothesised that the income of people varies in a known way over people's lives and that people use savings to move income from high-income periods to low-income periods, known now as the life-cycle hypothesis. The LCH looks at the consumption patterns of individuals over their lifetime. A key assumption of the theory is that people try and avoid fluctuations in their consumption. The implication of this assumption is that people will look at their total lifetime income and then borrow or save to smooth their consumption over time. We can see the basic idea behind the LCH in the following graph:
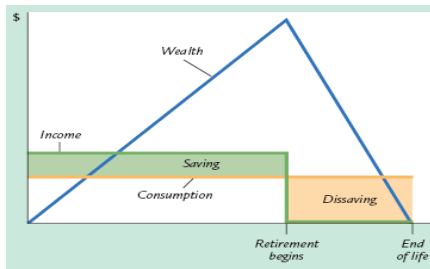

Fig. 1. *Life-cycle Hypothesis Concept*

Under conditions of uncertainty and credit rationing, risk-averse farmers are exposed to a higher volatility of production and household incomes. Farm households need to smooth consumption through time, using consumption credit as a form of insurance to assure the sustainability of the household. They may also use this credit to invest in new technologies that promote the growth of both production and household incomes as a consequence of the fact that production and consumption decisions are not separable within a farm household. The poorest farm households, experiencing difficulties in managing the farm and household risks because of lack of access to consumption credit and, consequently, to new technologies, are often forced to over-exploit local natural resources. These households are often compelled to move towards marginal lands with high ecological vulnerability or to extend the arable frontier at the expense of forest, causing land degradation and other ecological problems.

Interestingly, consumption can be "financed" both through the credit market and the labour market. In the latter case, this takes place through the "lending" of the farmers' time to take advantage of off-farm job opportunities. Since wealth influences the access to the credit market, this in turn affects the participation in the off-farm labour market and investments in the farming business (Serra et al., 2003). Recent evidence shows that off-farm labour can be negatively associated with the accumulation of farm capital and the relative importance of farm incomes in the formation of the permanent income of the household (Ahituv and Kimhi, 2001). Interestingly, more educated farmers are able to work off the farm and still maintain a capital-intensive farm enterprise by enjoying easier access to the credit market.

iii. Household Saving Motives
According to (Andrew, 2016), households save for numerous reasons ranging from house purchases, vacation, college education, etc., to retirement preparations. It is worth noting that, households with same features such as income may have different saving decisions. Motives of saving are as follows:

i) *Precautionary saving motive*
This is saving to safeguard against unanticipated negative shocks in life that could come from unforeseen unemployment, ill-health, accidents, etc., which would demand huge unexpected expenses or possible emergencies. Households with greater income uncertainty as well as risk averse persons will save more during "good times." (Hubbard & Zeldes, 1994; Lusardi, 1998; Carroll, 1996; Carroll & Kimball, 2006).

ii) *Bequest saving motive*
According to Dynan & Zeldes (2002), the bequest saving motive explains that people desire to have their offspring enjoy a much better life than they did, and hence save more to accumulate wealth for the younger generations. The aspiration to leave an endowment behind therefore explain why the elderly do not fully exhaust their wealth, even after retiring.

iii) *Big ticket" saving motive*
This is a short-term saving done to accommodate current income and expenses gap during one's life period. Here, individuals save for 'big-ticket' expenses such as cars and other durable consumer items. Whereas some individuals save in advance due to borrowing constraint, others save in order to avoid borrowing completely. Unlike precautionary where one saves for unforeseen shocks, 'big-ticket' saving is done for specific target (Xiao & Fan, 2002).

iv) *The speculative saving motive*
Mankiw (2000), and Bryant & Zick (2005), explains that from the saving motive identified by Keynes, household consumption and hence savings is not influenced by disposable income alone but other influential reasons come into play. It is argued that, higher interest rates are incentive for saving present consumption in the form of interest bearing assets.
On the other hand, Mankiw (2010), the concept of internal and external balance also help us to illustrate inflow and outflow of capital to finance capital accumulation (investment) in addition to flow of goods and services. For this purpose, once again consider the open economy national income accounting identity.

$$Y=C+I+G+NX$$
$$Y=C+G+I+NX$$

Add and subtract tax (T) to the left hand side of the above equation and rearrange as follow:

$$(Y-C-T)+(T-G)=I+NX$$
$$\underbrace{\quad}_{\text{Private saving}}\quad\underbrace{\quad}_{\text{Public saving}}$$

Saving of the economy(S)

This implies:
$$S=I+NX$$
$$S-I=NX$$
$$S-I=X-M$$

S-I indicates international flow of capital while *X-M* represents the flow of goods and services. According to the equation *(S-I) = (X-M)*, if saving exceeds investment, the excess is used to make

loan abroad or owner of the fund invest in some other country ,that is there is outflow of capital. If saving is less than investment, there is excess demand for fund that it is available in the domestic economy in the form of saving. This excess can be financed through borrowing from other external source, which results in inflow of capital. If saving is in excess of capital depreciation, the economy grows. The volume of consumable output rises over time, as depicted in the last three periods of Figure 2.2. The output of each of the stages of production increases as well. The economy grows at every margin, allowing even for a continual increase in the number of stages. During a period of secular growth, the Hayekian triangle increases in size but not – or not necessarily – in shape. An interesting question, one whose answer serves as a prelude to the Austrian analysis of business cycles, concerns the transition from no growth to a positive rate of growth – or, for that matter, from some initial growth rate to a higher growth rate (Snowdon and Vane, 2005).

Fig 2. *A possible temporal pattern of consumable output, saving*

iv. The Non-income Determinants of Consumption and Saving
There is a vast literature on the macroeconomic determinants of household saving behavior both on an individual country-basis as well as across countries. The amount of disposable income is the basic determinant of the amounts households will consume and save.

But certain determinants other than income might prompt households to consume more or less at each possible level of income and thereby change the locations of the consumption and saving schedules. Those other determinants are wealth, expectations, interest rates, and indebtedness (McConnell and Brue, 2008).

i) *Wealth*: The amount that households spend and save from current income depends partly on the value of the existing wealth they have already accumulated. By "wealth" we mean the value of both real assets (for example, houses, land) and financial assets (for example, cash, savings accounts, stocks, bonds, pensions) that households own. Households save to accumulate wealth. When events boost the value of existing wealth, households increase their spending and reduce their saving. This so-called wealth effect shifts the consumption schedule upward and the saving schedule downward. Examples: In the late 1990s, skyrocketing U.S. stock values expanded the value of household wealth. Predictably, households spent more and saved less. In contrast, a modest *"reverse wealth effect"* occurred in 2000 and 2001, when stock prices sharply fell.

ii) *Expectations:* Household expectations about future prices and income may affect current spending and saving. For example, expectations of rising prices tomorrow may trigger more spending and less saving today. Thus, the current consumption schedule shifts up and the current saving schedule shifts down. Or expectations of a recession

and thus lower income in the future may lead households to reduce consumption and save more today. If so, the consumption schedule will shift down and the saving schedule will shift up.

iii) *Real Interest Rates:* When real interest rates (those adjusted for inflation) fall, households tend to borrow more, consume more, and save less. A lower interest rate, for example, induces consumers to purchase automobiles and other goods bought on credit. A lower interest rate also diminishes the incentive to save because of the reduced interest "payment" to the saver. These effects on consumption and saving, however, are very modest.

iv) *Household Debt:* In drawing a particular consumption schedule, household debt as a percentage of DI is held constant. But when consumers as a group increase their household debt, they can increase current consumption at each level of DI. Increased borrowing shifts the consumption schedule upward. In contrast, reduced borrowing shifts the consumption schedule downward.

The starting point for most studies is the permanent income or life-cycle hypothesis, whereby individuals smooth their consumption profile over their lifetime. According to this framework, household savings should be influenced by current real income (richer households tend to save more), demographic effects (older cohorts are expected to save less or even disserve) and the real rate of return (which changes the opportunity costs of current consumption). More recently, the classic approach has been supplemented by relaxing the assumption of perfect capital markets which has implications for the ability of households to smooth their consumption over time. The state of financial liberalization is often proxied by the extent of loans outstanding (Sarantis and Stewart, 2001; Smith, 2001; Loyaza et al., 2000; Callen and Thimann, 1997). Household income = household consumption expenditure + non-consumption expenditure + savings – net debt (net repayments of principal and interest on decontracted by the household – net repayments of principal and interest on money lent by the household). The magnitudes of the impact are, of course, conditional on the level or degree of the microenterprise service received. Various hypotheses are drawn to measure impact of a micro-enterprise service like micro-finance can generate at the enterprise, household, individual and community levels.

Impacts at the enterprise level: Microenterprise services, particularly credit, are hypothesized to have positive impacts on enterprise revenue, fixed assets, employment, and transaction relationships, thus providing great opportunities for escaping poverty. The causal paths of these impacts include: an increase in microenterprise revenue, an increase in enterprise fixed assets, especially among repeat borrowers, an increase in the paid and unpaid employment generated by the enterprise, as well as improvements in the transaction relationships of the enterprise.

Impacts at the household level: Microenterprise services are also hypothesized to have positive impacts on household-level variables: household income, income diversification, household assets, education, nutrition, and coping strategies. Many of these impacts are hypothesized to be the indirect results of increases in household income generated by microenterprises. However, microfinance services, such as credit and savings, may

also have direct impacts on variables such as income diversification, asset accumulation, education expenditures, food expenditures, and coping strategies. Thus, at the household level, microenterprise services can expand opportunities for escaping poverty, enhance capability (raise human capital) as well as help guard against vulnerability.

Impacts at the individual level: In addition to changes at the household or enterprise level, which should not be assumed to affect all household members equally, the direct program participation of the client may result in specific impacts at the individual level: control over resources and income, savings, self-esteem and respect from others, and future orientation, thus ensuring empowerment. Microenterprise services may have both direct and indirect effects on these individual-level variables. The causal models for several individual level impacts exhibit bi-directional relationships between savings and control over resources and between self-esteem and control over resources. According to Solow Growth Model, immediately after the saving rate rises, investment is higher, but the capital stock and depreciation are unchanged. Therefore, investment exceeds depreciation. The capital stock will gradually rise until the economy reaches the new steady state, which has a .higher capital stock and a higher level of output than the old steady state (Mankiw, 2010). The Solow model shows that the saving rate is a key determinant of the steady-state capital stock. If the saving rate is high, the economy will have a large capital stock and a high level of output in the steady state. If the saving rate is low, the economy will have a small capital stock and a low level of output in the steady state.

Empirical Literature Review
As put forward by the life cycle model, the saving rate should be highest among working adults vis-à-vis individuals at both tails of the age distribution. Since the nexus between saving and age is likely to be concave, age and age squared will enter the equation. Likewise, the old dependency ratio (individuals aged 65 and older to those between 15 and 64 years old) and the young dependency ratio (individuals under 15 to those between 15 and 64 years old) will be part of the control set. The evidence, nevertheless, is not utterly conclusive regarding this prediction.

For instance, Dynan, Skinner and Zeldes (2004) do not find evidence of dissaving among the elderly in the United States, and neither do Gragnolati et al. (2011) for Brazil. Gandelman (2014a) observes that household heads above 60 display higher saving rates than those aged 40-49 in several Latin American countries. Similar finding is shown for Mexico by Sandoval Hernández (2013) for a number of surveys in the 1984-2010 period. An extended version of the life cycle model can accommodate this factual ambiguity, by incorporating longevity and health risks as well as bequest motives among the elderly. In turn, Mody, Ohnsorge and Sandri (2012) argue that the young dependency ratio may not decrease but increase the saving rate whenever parents seek to build a buffer stock to provide for future education and health expenditures for their children.

All in all, the issue must be settled on empirical grounds. By stifling the ability to finance a wedge between desired current consumption and income, borrowing constraints may increase the household saving rate. The presence of financial Gandelman (2014b) argues that just looking at the age of the household

heads, as customary in most studies, and not at that of other income-earning members may distort the analysis of the age-saving relationship. constraints is not easily observable, but some insight can be gained by noticing that people with access to formal lending (including credit cards) or to income sources other than salaries and transfers (such as remittances or rents) are a priori less likely to suffer such constraints. The estimates produced by Sandoval-Hernández (2013) with Mexican data lend support to the above claims, while Butelmann and Gallego (2000) report conflicting findings for different Chilean survey years.

Precautionary saving may appear whenever households decide to build a buffer stock to face a more volatile income in the future (for a given expected future income). Among other possible proxies, self-employment is a priori associated with greater income risk. Receiving government transfers (such as subsidies and pensions) and/or remittances from relatives and friends living overseas would have the opposite effect. Household location may also have to do with saving behavior in this regard. As claimed, among others, by Loayza, Schmidt-Hebbel and Servén (2000), urban households may have a lower saving rate, as consumption opportunities are much broader and accessible than in rural areas. Also, income risks in rural areas are not as diversifiable as in big cities, which may induce a higher saving rate in the former than in the latter. Sandoval-Hernández (2013) obtains results consistent with this hypothesis.

Materials and methods
Description of the Study Area
Baleegasgaar is one of the districts of *Arsi* zone, located in Oromia National Regional State, Ethiopia. *Balee* town is the administrative center of *Baleegasgaa*r district. The district is bordered by Amiinyaa district in the north and northwest, Roobee district in west and southwest, Seeruu District in the south and southeast. According to CSA (2007), the national census reported a total population for *Baleegasgaar* district was of 73,952, of whom 36,419 were men and 37,533 were females; 5,913 or 8% of its population were urban dwellers.

Sampling Technique and Sample Size
The researcher used the mix of purposive and simple random probability sampling techniques; first *gandoota* for the study was purposively selected. Most of *gandoota* in the district have similar characteristics in their structure of farming system, the method of production, temperature and the amount rain fall annually, thus, from the total *gandoota* of the district three of them selected purposively. Secondly, by using simple random sampling technique sample farmers were selected from each *ganda* proportionally. That is, the totally, 110 respondents were selected from three small unit of administration. Simple random sampling was used, because, the most of the smallholder farmers at the study area were economically and socially similar to each other. In the estimation of the sample size depend on the data of CSA (2007), total household head in the selected *gandoota* were estimated as 1009.Then according Yamane (1967) sample estimation formula, the sample size (n) was estimated as below, at 95% confidence level, 9% degree of variability and margin of error (e), that is level of accuracy.

$$n = \frac{N}{1 + N(e^2)}$$

$$n = \frac{1009}{1 + 1009(0.09^2)^2}$$

n=110

Data Source and Method of Data Collection

The researcher has been used both primary and secondary data; mainly primary data source. The data was collected through questionnaire, interview and focus group discussion in order to get more information in detail about the title. The target respondents were mainly smallholder farmers of the selected *gandoota*. And the secondary data was collected from different both published and unpublished documents that concerns with the title.

Research Design

Research design is a backbone of a paper in specifying the method and procedures for collecting and analyzing the information. The quantitative approach involves the generation of data in quantitative form which can be subjected to rigorous quantitative analysis in a formal and rigid fashion. However, qualitative approach to research is concerned with subjective assessment of attitudes, opinions and behavior (Kothari, 2004). Njana (2009) discusses three types of research design, namely; exploratory (this emphasizes discovery of ideas and insights), descriptive (concerned with determining the frequency with which an event occurs or relationship between variables), analytical (this is concerned with determining the cause and effect relationships). The type of research employed under this study was being descriptive and econometrics approach.

Method of Data Analysis

Regarding the econometric model, after conducting all the required hypothesis and make decision, a trans-log functional form simultaneously with one stage estimation procedure of frontier model was used to analyze technical inefficiency variables and multiple regression model was used to identify allocative and economic inefficiency variables. Multiple regression model is mainly used if the inefficiency scores are not truncated or censored for a specific value. If the observation tends to be grouped close to the frontier with only a relatively small number in the extreme range, the error distribution will be highly skewed and the maximum likelihood estimator should be expected to be highly efficient than OLS (Greene, 2012). In the available data set, there was no value of efficiency score of one for some observations that shows the farmers are fully efficient or the value of zero for some observation which shows that they are inefficient.

The research has been planned to examine determinants of smallholder farmers' savings. The study has been assessed the factors using both descriptive approach and econometrics model. The researcher used the amount output of money saved inform cash and others asset annually as dependent variable; and it is a continuous variable in type; thus, the multiple linear regression model is used to study the relationship between a dependent variable and one or more independent variables. One of the most useful aspects of the multiple regression model is its ability to identify the independent effects of a set of variables on a dependent variable (ibid).

Description of Variables

Dependent Variable: the amount of money saved by smallholder farmers. The independent variables used in the model was:
The researcher identifies about eight independent variables. These are:

1. *Age of the farmers* (X_1): it refers to the age of farmer's household head and measured in year. It is measured as continuous variable and expected to affect the saving performance of smallholder farmers negatively, due to as level of age of the farmer increase the participation of their saving performance decrease.

2. *Sex of farmers* (X_2): it refer to the sex of household head of smallholder farmer; and it was a dummy variable. If the household was male it was take 1 value otherwise 0.

3. *Marital status of farmers* (X_3): It refers to a situation that an individual is being married or single. Marital status of household head is also an important factor that has very significant effect on household savings. It is expected that if the famer has husband/ wife saving less while the single save more. After marriage, the farmer has to look after his family, children, relatives, and have more domestic expenditures than past. It was dummy variables, if the farmer has married/non-single it was take1otherwise if he/she single (which includes unmarried, divorce and widow) it was take 0 value.

4. *Education level of head of smallholder farmers* $(X_4$: It was taken as continuous variable in terms of years of schooling. It was expected that there was positive relationship between saving and education level of the farmers, because as a farmer level of education increases, it was supposed that his/her income also rise. It was be taken as dummy variable illiterate or literate variable.

5. *Type of land owners of smallholder farmers* (X_5): it was taken as dummy variable; if a farmer was the owner of the land farm by law, it was take a value of 1 and if the farmer rent the land farm for agricultural production was take 0.

6. *Size of land owned/rented by smallholder farmers at rural area*(X_6): it was defined as the total area of cultivated and covered by a smallholder farmer at the study area which was measured in hectare. Thus, it was continuous variable.

7. *Number of works the farmers participated* (X_7): it refers to the number income earning activities which could done by the farmers addition to on farm activities; and it was continuous variable.

8. *Ratio of dependency in a household of smallholder farmers* (X_8): it refers to the ratio of children whose age were below 15 years and old man/woman number who's their age is greater than 65 years to the number labor force in the household of the smallholder farmer and it was continuous variable.

9. *A number of livestock owned by smallholder farmers* (X_9): it refers a number of domestic animals owned by the smallholder farmer at the selected *gandoota* and it was continuous variable.

The model shows the relationship between the savings of smallholder farmers and its determinants. The researcher used the multiple linear regression models to identify the determinants of independents variables and its concept was taken from Greene (2012).

$S = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \varepsilon$

Where: β_0 = intercept of the model, {β_1, β_2, β_3, β_4, β_5, β_6, β_7, β_8, and β_9} coefficients of the independent variables in the model, S-savings of smallholder farmers at the study area (dependent variable), X-refers to the independent variables used in the model as explained above and ε = error terms

Results and discussion

The process of analysis is done using the descriptive and econometric analysis. Accordingly, the collected data in line with each objective of the study is presented, interpreted and analyzed under its respective session.

Descriptive Analysis

Table 1. The General Characteristics of the Respondents

No	Item		No of respondents	Percentage
1	Sex	Male	98	89%
		Female	12	11%
		Total	110	100 %
2	Marital	Married	81	73.64%
		Un married	22	20%
	Status	Divorced	5	4.54%
		Widowed	2	1.82%
		Total	110	100%
3	Educational	Illiterate	25	23%
		able to write and	75	68%
	Level	Secondary Level and	10	9%
		Total	110	100%

Source: *Computed from the Data Collected, 2020*

At the study area, unmarried, married, divorce and widow of the farmers were 20%, 73.64%, 4.54%, and 1.82% respectively. As explained in the table from the selected farmers 23% were couldn't able to write and read, 68% were able to write and read and primary level, and the others of the respondents 9% of the smallholder farmers had high school and above education level. Among the farmer's respondents, their age was 23 years, 70 years and 42 years of minimum, maximum and average

The collected data was analyzed and interpreted by table's frequencies and percentages was used to identify the main determinants of smallholder farmers' savings at the study area.

As explained in table 1, from the item 1 from the total sample of the farmers selected 89% of the respondents were males and while the left 11% of their of the selected sample were females. The result of the data collected show that the smallholder farmers' household with female heads tend to save less relative to male headed rural households. Here, it doesn't mean that females had contribution in the savings but their role was hidden due to the fact that households were led by males headed mostly.

respectively at the selected *gandoota*. This fact implies it is not only younger labor force, but also the older men whose age is above sixty five years also participate on the production of agricultural output at the study area. Additionally, the result of the study shows that, the propensity to save tends to be smaller (or negative) at young and old ages while those of middle age usually save more.
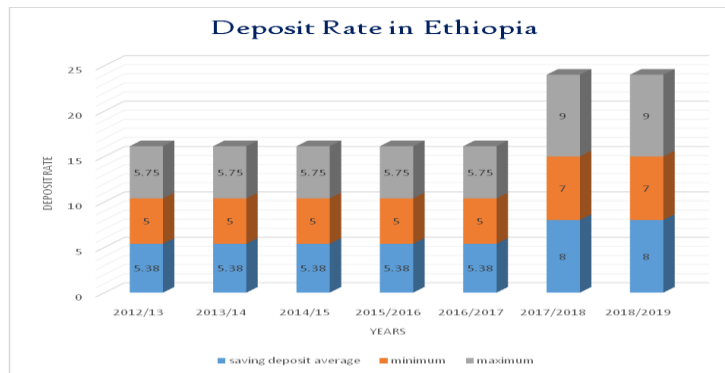
Fig. 3. Deposit Rate in Ethiopia
Source: *Computed from NBE Annual Report, 2020*

Additionally, at the study area the collected data analyzed show that the income and interest rate elasticity of savings was low that inelastic. That the percentage change in saving is less

relative to percentage change in income of smallholder farmers at rural area of the study area. In other words, as their income increases from time to time the amount money save (which

includes cash or other assets) wasn't not increased. Also, the percentage change in saving is less relative to percentage change in interest rate decided by national bank of Ethiopia at rural area of the study area because there others major factors that influence savings of the rural households.

Addition to the above explained factor/determinants of smallholder farmers, the result of the collected data demonstrates others factors. The district is known by comfortable soil, medium temperature and sufficient rain fall, and this means naturally the resources for agricultural product were on the better condition. Despite this, as the respondents and *maanguddoo* of the community, told me that, there were others factors which affects the savings of smallholder farmers: first most farmers themselves had inadequate awareness regarding to savings, they provide their products at the market immediately during harvesting time at lower price and then by selling their oxen or other livestock at lower price in order to purchase the grain for both consumption and sowing purposes at higher prices during summer, mostly. Second, the expectation of the future can influence the savings of smallholder farmers, because if prices of goods and services consumed by a farmer expected to fall in the future, their present consumption is less, and hence saving is more. This principle also acts inversely. Similarly, an expected future increase in income, reduces present saving, and the inverse. Third, the extra expenditure during different social activities like annual celebration, and wedding and in each activities there was competition among each households of the farmers in which extravagancy was mentioned. Finally, the nature of the households: in nature some smallholder farmers were save more while the others save less. As, a result, they didn't have better house for life, even some of he have no oxen or may have only one (oxen were the pillar input (as a force) in smallholder farming system at the study area). Even though they plough the land for many years, they life with absolute poverty. The main problem of these farmers was how systematically use their income, resources and wealth, how to share their income into consumption and saving part.

Econometrics Analysis

The econometrics model of the study's results was analyzed and interpreted. Cross-section data is used to estimate the parameters of the given regression model, linear multiple regression estimation method was applied using STATA 14 version. The model estimation result for farm output presented in the table 2: From the result of multiple regression model estimation the following regression model was obtained.

able 2: The General Multiple Regression Model Result

Linear regression				Number of obs	=	110
				F(9, 100)	=	97.70
				Prob > F	=	0.0000
				R-squared	=	0.8968
				Root MSE	=	12471

amount_money_saved	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf. Interval]	
age_of_farmers	-23.41709	91.98964	-0.25	0.800	-205.9219	159.0877
sex_of_household_head	-5280.801	6770.638	-0.78	0.437	-18713.55	8151.953
marital_status_of_the_farmer	-952.2633	3336.632	-0.29	0.776	-7572.046	5667.52
educ_level_of_farmers_	3197.978	948.1403	3.37	0.001	1316.895	5079.061
type_of_land_farm_owners	-749.4754	3861.111	-0.19	0.846	-8409.81	6910.859
size_of_land_farm	5493.779	1903.139	2.89	0.005	1718.004	9269.553
anumber_of_work_the_farmerpartic	9730.318	2955.821	3.29	0.001	3866.053	15594.58
ratio_of_childrentoadults	-4320.116	2264.359	-1.91	0.059	-8812.539	172.3073
anumber_ofthefarmerslivestock	3059.119	844.2853	3.62	0.000	1384.081	4734.157
_cons	5061.612	10043.63	0.50	0.615	-14864.67	24987.89

Source: *Regressed from the Data Collected, 2020*

From the above result, we can substitute in the multiple regression model, the result become as follows:
Sv=5061.6-23.42aghh-5280.80sxhh-952.26msf+3198elf-749.5tlo + 5493.8sl + 5493.8ls +9730.32nwp -4320.12rd+3059.12nls

Where:
Sv- the amount of money saved by smallholder farmers
aghh - the age of smallholder farmers,
sxhh - sex of household head of stallholder farmers
ms f- marital status of farmers
elf - education level of farmers
tlo - type of land owners of smallholder farmers
sl - size of land owned/rented by smallholder farmers at rural area
nwp - number of works the farmers participated
rd - ratio of dependency in a household of smallholder farmers

nls - a number of livestock owned by smallholder farmers

As explained in the table4. 2 above, nine independent variables were used in order to identify the factors that affect smallholder farmers' savings at the study area. The variables used includes both dummy variables and continuous variables. Among these age of farmers which measured in years, size of land owned by farmer which was measured in hectare, education level of farmers which was measured in years, size of land owned/rented by smallholder farmers at rural area, number of works that the farmers participated which was measured in number, ratio of dependency in a household of smallholder farmers which was measured in numbers, and a number of livestock owned by smallholder farmers were continuous variables. While the left independents variables are variables positively.

Each of the coefficients of the independent variable results explained table 4.2 above, was interpreted. For instance, as age of the education level of smallholder change him/her self from illiterate group to educated group his saving will increases by 3198 Birr per year. Additionally, as a farmer adds one extra to his/her farming activities his/her saving will increases 9730.32 Birr per year. On the other hand, the significances of independent variables in this model, (as demonstrated in the above Table 2), t-statistics test was used to in order to check the significances of each independent variable. For instance, it can be calculated for number of works that farmers participated in order to check if this independent variable was significant in the multiple Regression model as follow:

$$t^* = \frac{b_1 - \beta_1}{se(b_1)} = \frac{b_1}{se(b_1)} = \frac{9730.318}{2464.396}$$

$$t^* = 3.95$$

Thus, value of the t-statistic that corresponds to the 5 % (commonly used) significance level is 1.96 and 3.95> 1.96, so we reject the null hypothesis which was hypothesized as "A number of work of the smallholder farmers participated has on insignificant impact on their saving performance." That means the estimate is significantly different from zero at 5% significant level. The same is true for others independent variables also. Accordingly, five of the independent variables (namely, education level of farmers, size of land owned/rented by smallholder farmers at rural area, number of works the farmers participated, ratio of dependency in a household of smallholder farmers and a number of livestock owned by smallholder farmers) were significant at 1%, 5% and 10% probability level.

Also as explained in the Table 2 above, the regression result in shows that $R^2 = 0.896$, which implies 89.6% of the saving function was explained by the selected nine explanatory variables. In other words 89.6% of variation of the dependent variable is due to the variation of the independent variable which are included in the model and the remaining variation 0.104(10.4%) is explained by the variable which are not included in the model or explained by the error term. Additionally, the adjusted R-squared indicates that about 88.75% of the variability of saving function accounted for by the model, even after taking into account the number of predictor variables in the model; which shows the good-fitness of the model, even though the fitness of an econometric model is not determined only by the size of R^2.

As with the simple regression, we look to the p-value of the F-test to see if the overall model is significant. With a p-value of zero to four decimal places, the model is statistically significant. The presence of multi-collinarity affects the multiple regression model estimators and makes them inefficient and inconsistence. There for the problem of multi-collinarity must be tested (Gujarati, 2009 and Green, 2012). As explain in the Table 3 below, the result multiple regression model of the study, the variance inflation factor (VIF) for the independent variables in was 2.09 is less than 10 for all independent variables that included in the model. From this, the conclusion is that there is no multi-collinearity problem between explanatory variables. As explained correlations result among the independent variables in the regression model has was weak. And some variables has positive medium relationship while others has positive relationship. These correlations are negative, meaning that as the value of one variable goes down, the value of the other variable tends to go up.

**Table 3**: Variance Inflection Factor Result of the Model

Variable	VIF	1/VIF
anumber_of~c	3.42	0.292106
anumber_of~k	3.13	0.319273
size_of_la~m	2.99	0.334024
ratio_of_c~s	2.48	0.403577
educ_level~_	2.37	0.421600
type_of_la~s	1.14	0.880054
marital_st~r	1.10	0.911561
age_of_far~s	1.08	0.922664
sex_of_hou~d	1.05	0.952080
Mean VIF	2.09	

Source: *Regressed from the Data Collected, 2020*

Many researchers believe that multiple regressions require normality. Normality of residuals is only required for valid hypothesis testing, that is, the normality assumption assures that the p-values for the t-tests and F-test will be valid. Normality is not required in order to obtain unbiased estimates of the regression coefficients. Multiple Regression models merely requires that the residuals (errors) be identically and independently distributed (Gujarat, 2009). As explained in the

following Figure 3 below, kernel density estimate result demonstrates that in the model the distribution of residuals was almost normal.
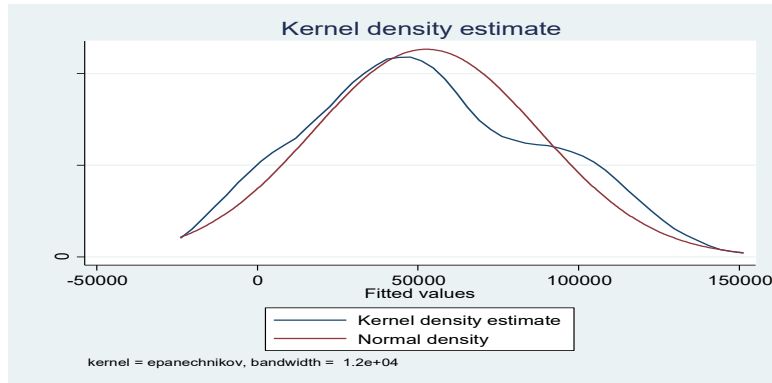
Fig 4: *Kernel Density Estimate of the Model*
Source: *Regressed from the Data Collected, 2020*

Hettest is the Breusch-Pagan test and it performs Cook and Weisberg test for heteroscedasticity, both test the null hypothesis that the variance of the residuals is homogenous. As explain in the following Table 4, if the p-value is very small, which less 5%, thus, the null hypothesis should be rejected the hypothesis and accept the alternative hypothesis that the variance is not homogenous. So in this case, the evidence is against the null hypothesis that the variance is homogeneous. These tests are very sensitive to model assumptions, such as the assumption of normality (Verbeek, 2012).

Table 4: Cook-Weisberg Test for Heteroskedasticity

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance variables: fitted values of amount money saved
chi2(1) = 9.04
Prob > chi2 = 0.0026

Source: *Regressed from the Data Collected, 2020*

The model specification error can occur when one or more relevant variables are omitted from the model one or more irrelevant variables are included in the model. If relevant variables are omitted from the model, the common variance they share with included variables may be wrongly attributed to those variables, and the error term is inflated. On the other hand, if irrelevant variables are included in the model, the common variance they share with included variables may be wrongly attributed to them. Model specification errors can substantially affect the estimate of regression coefficients (Gujarati, 2009). As explained in the table4.4 below, the omitted variable test indicates that there were no omitted variables. So the model was correctly specified.

Table 5: Model specification Error

RESET test using powers of the fitted Ramsey
Ramsey
Ho: model has no omitted variables
F(3, 107) = 2.64
Prob > F = 0.0534

Source: *Regressed from the Data Collected, 2020*

Summary of Smallholder Farmers' Savings Determinants

In general, the determinants identified in both descriptive approach and econometric model can be summarized by the following diagram.
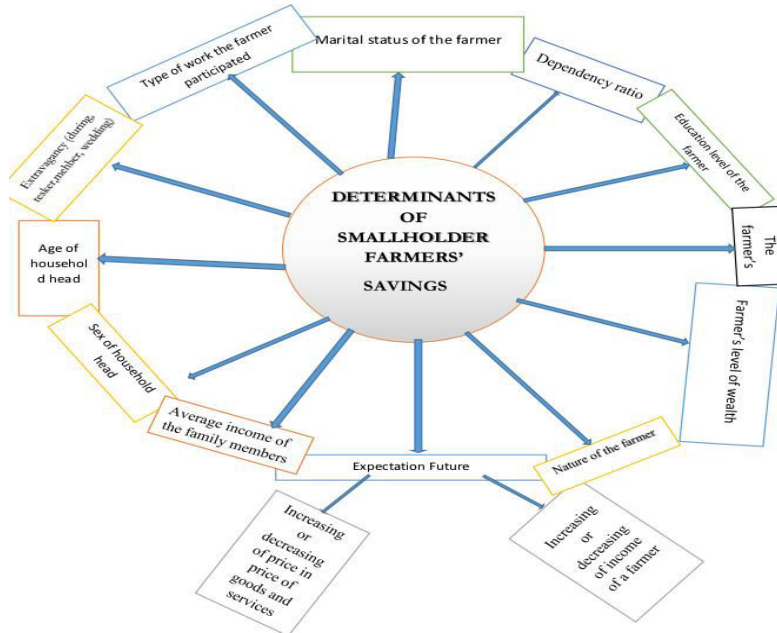
Fig 5: *Summary of Smallholder Farmers' Savings*
Source: *Computed from the Data Collected, 2020*

Conclusion

Income, consumption, saving, and investment are closely interlinked. Consumption, saving, and investment are crucial factors in any country's economic performance (income, output, employment). Investment spending is on the demand side where as saving is on the supply side of investment and finance sectors in the economic activities and its concepts cannot separate from each other. The level of saving is one of the major determinants of the level of investment; that is, investment is determined by the level of supply of the investment resources which is saving. In the process of economic growth and development of a given economy particularly in developing countries like Ethiopian economy, saving has a great role. Because without saving, capital accumulation is impossible, without capital accumulation the expansion of private investment is difficult. And as a result unemployment become one of a serious problems that country addition to inflation problem. Additionally, aggregate saving determines the balance between current and future consumption opportunities available to the economy and for this reason the consumption/saving choice can, along with the work/leisure choice be seen as one of the two key macro-economic choices. Aggregate saving includes saving by the household, corporate and government sectors, since all sectors ultimately serve households today and in the future. Aggregate saving is the sum of small units of saving at household level including the saving of smallholder farmers. Thus, conducting research on such issue was so important.

This study aimed at investigating the status and the key determinants of savings based on the questionnaires and interviewees consisting 110 randomly selected smallholder farmers from three selected small sub-administaration of Baleegasgaar District. In developing countries, economic fluctuations and climate change lead to important income variations and leave the households vulnerable to severe hardship and challenges. As aresult of the the saving status of th etarget group in the study was. There is significant relationship between savings (at household level) and its determinants includes social factors, demographic factors, and economic factors. As aresult of the study, the amount of money saved by smallholder farmers, the age of smallholder farmers, sex of household head of stallholder farmers, marital status of farmers, education level of farmers, type of land owners of smallholder farmers, size of land owned/rented by smallholder farmers at rural area, number of works the farmers participated, ratio of dependency in a household of smallholder farmers, a number of livestock owned by smallholder farmers, expectation future, level of wealth and ndividual nature were the main determinants of small farmers' savings the study area. Among nine selected indepedent variables five of them (this includs:education level of farmers, size of land owned/rented by smallholder farmers at rural area, number of works the farmers participated, ratio of dependency in a household of smallholder farmers, a number of livestock owned by smallholder farmers) were significant determinants. This study also supports presence of Life cycle hypothesis theory.

The findings of this study are expected to be significant for the following important reasons: first, public and private financial institutions particularly, microfinance institutionsmanagers will understand the gap between smallholder farmers and them regarding saving and credit services; secondly, smallholder farmers will be able to know the real problems and then to seek solutions for saving problems; Finally, the study examines the determinants of smallholder farmers; thus, it will help policy makers in improving and motivating private domestic rural household savers. Based on the findings of this study, the researcher found it important to make some recommendations to guide the enterprises, other concerned bodies and researches.

> ➢ Smallholder farmers should be trained by professionals how to develop saving practice and how to minimize the

extra expenditure and how to arise their revenue and minimise the costs.

➢ The government and private financial institutions should improve the quality and accessibility particularly, credit and saving institutions at the rural area (microfinance).

➢ The smallholder farmers of the study are should minimize extra expenditure during different social activities like weeding, and annual festivals.

➢ The smallholder farmers of the study are should save more by minimizing selling of their agricultural product during harvesting season at lower price.

➢ The members of farmers' households should stay single until they have sufficient income for their family to live independently; because the result of the study shows that single/unmarried farmer save more than those non-single/married.

➢ The government should improve its economic policy through increasing interest rate to support farmers (lower income groups), prepare incentives, to motivate the farmers in saving activities.

➢ The government should construct the concrete asphalt which connects to Balee Town to Adaamaa/Asella to support farmers in providing their products in supplying at center market in order to get the balanced price of their outputs; because as income of the smallholder farmers increases they save more.

➢ The farmers should add some income-earning activities which allied to on farm activities.

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