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DETERMINANTS OF RURAL HOUSEHOLD SAVINGS BEHAVIOR: THE CASE OF AMBO DISTRICT, OROMIA NATIONAL REGIONAL STATE, ETHIOPIA

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Abstract

The study was conducted to identify factors affecting household saving behavior of rural households in the district of Ambo district. Data for the study was collected from 370 households from two Kebeles. Both primary and secondary sources were used for this study and multi-stage sampling technique was used to contact with the study units (households). To attain the objectives of the study the researcher used both descriptive and econometric analysis. With descriptive analysis percentages, figures, graphs, charts and tables were used to present determinants of private saving. The results ultimately reveals that the Sex of the head of the household, Family size, land size, Access to credit and annual income are significantly influencing the saving behavior in the entire study area. Based on these findings, we recommend that government policy intervention should focus on increasing the availability and accessibility of financial institutions, awareness creation and education on the importance saving and saving modalities, planning and expenditure controlling habit, socio-cultural saving barriers, increasing interest rate, and inflation and unemployment combating strategies to augment saving capacity, investment and then economic growth.

Key words**:** *household saving, Binary Logit Model, Ambo town, Ethiopia*

INTRODUCTION

Saving is an important instrument to enhance economic growth by providing sufficient funds for investors. The low level of saving is a typical feature of low-income economies such as Ethiopia. It represents a key impediment to development as it limits investment. Development economists have been concerned for decades about the crucial role of mobilization of domestic savings in the sustenance and reinforcement of the savings investment growth chain in developing economies. This is because the growth rate registered in most developing countries is often not commensurate with the level of investment [19].

However, household saving practice and culture in Ethiopia is very low and found at worst level as compared to the saving rate of developed countries households [1]. In addition, no adequate practice has been performed to educate the community about saving behavior. This was happened due to lack of adequate empirical result about the public savings practice and factors hindering the public to save. Even though there is full consideration of domestic savings contribution to economic reform, no adequate researches have been made in this area.

Regarding to empirical studies [1] analyzed the determinants of the saving behaviors among rural households in East Hararghe Zone has investigated the determinants of saving behavior of cooperative member households in Tigray region of Ethiopia. A common characteristic of these empirical studies is their employment of data obtained from rural households and cooperative members only. The saving practices of urban households and non-member of cooperatives were not addressed by these studies. Furthermore [14] assessed the knowledge, practice and factors affecting households saving behavior in North Gondar zone using survey data obtained from three districts and [3] examined households' saving culture in Ethiopia taking households sample from three towns. These empirical researches have similar characteristics of using simple

descriptive statistics analysis. Simple descriptive statistics might fail to find out the complete attributes of households saving behavior due to its complexity.

Therefore this study was conducted t access the factors that affect the household saving situation Ambo district.

The nature and need for financial intermediaries

Finance is one of the most crucial inputs for economic activity, growth and development. If finance through own accumulated resources or equity is neither available, nor sufficient either external debt will assume a major significance or productive investment will be severely restricted. Financial institutions play an important role in this regard by channelling funds from surplus sector (savers) to deficit sectors (investors). However, these institutions do not show much enthusiasm to put their resources in rural and backward areas for the benefit of poor people as these are commercial organizations and are basically interested in profitability and sustainability for two reasons: a) incentive for functioning and b) for safeguarding the interest of stakeholders [19].

Rural cash flows are complex, varied, and heterogeneous. The presence of numerous activities in the farm and non-farm sectors and in households in different stages of life, composition, and level of income, affords a very fertile environment for the financial innovation, experimentation, and intermediation to suit different preferences and needs [18].

Microfinance institutions have emerged as popular mode of finance for the poor and small-scale producers in many countries. Small loan from a microfinance institution generates employment for the poor and women. With an easy access to a microfinance programme, the poor save regularly to build financial and physical capital [13].

Financial services integrate markets, encourage savers to hold larger production of their wealth in the form of financial assets than unproductive inflation hedges, and allocate ingestible resources more efficiently. Financial deepening is achieved by reducing risks and minimizing transaction costs through exploitation of economies of scale and scope, professional portfolio management and diversification, systematic collection of information, and fostering a better lender - borrower relationship [18].

Formal microfinance institutions are regulated by the financial authorities of a country –with special microfinance windows, semi formal microfinance institutions (savings and credit cooperatives, village banks, etc) are under the control of non-financial authorities and informal micro financial institutions are controlled by customary law and peer pressure [12].

The various microfinance institutions differ among themselves in the service they offer to their clientele. Some only offer productive credit while others provide clients with consumer credit and offer deposit services to safeguard savings. In some cases, micro financial institutions also offer services other than savings and credit. Certain microfinance institutions provide consulting services to member entrepreneurs, while others take a more minimalist approach limiting themselves to financial activities. The factors which most distinguish microfinance institutions from each other are without doubt their credit methodologies condition for access, interest rates, types of guarantees, and utilization of credit vary from one microfinance institution to another [4].

Many microfinance programs are involved in both lending and savings mobilization. To be self sufficient, micro finance programs ought to depend on mobilized savings rather than donor resources for on lending. But microfinance programs mostly mobilize involuntary savings from customers

Microfinance borrowing can increase the informal borrowing if the micro credit borrower is unable to repay microfinance loan and take resort to informal sources to repay the micro credit loan. On the other hand, micro credit borrowers may tend to borrow from informal sources if the economic activity demands higher loan than is provided by micro credit organizations. In contrast, informal borrowing is reduced if microfinance

is an effective source of finance for the poor [13].

Rural Savings Mobilization

Funds for investing in agriculture, in developing countries, come from three major sources: public investment, private investment, and foreign aid. The share of public investment would be roughly 70 per cent in a typical developing country, private investment at around 10-15 per cent, and the balance of 10-15 per cent comes from foreign aid [17]. To meet these investment commitments, government mobilizes resource, partly through land revenue agricultural income tax, betterment levies, import/export duties and other income and non-income taxes. Household savings are the major source of private investment. The shortfall in the mobilization of domestic savings, both public and private, is met by foreign aid and investment.

Although the share of these different sources varies from institution to institution and from country to country, two general trends have been visible in the structure of these resources, firstly a heavy reliance on concession funds from central banks or aid agencies and secondly, a relative neglect of savings mobilization from the public [20].

Savings is a mechanism by which economic agents make deliberate choice to allocate a portion of their current income for the purpose of making investment and increasing their future earning capacity. Theory suggests that household total savings depend on the rate of return on savings, on uncertainty of future incomes, on risk aversion of households, on lifetime or permanent income or wealth, on family characteristics, and on the availability of borrowing [7]. In particular, increases in uncertainty in the face of liquidity and borrowing constraint will increase the total volume of household savings and particularly the portion of precautionary savings [8].

Since the definition of savings is not consistent throughout sectors, and according [6] to comprehend what rural savings are, there are two distinct patterns of savings. These are: (a) Savings made from absolute surplus, which the saver can spare beyond his budgetary allotments for fulfilling his day-to-day needs and, (b) savings as temporarily postponed consumption, which cannot be beyond a certain limit and are therefore not real surplus. Instead, these are just protected from a premature alternative use. A saver just imposes a constraining act upon him.

In households and business sector savings represents the difference between income and consumption. Income includes earnings from all sources during a year and is net of all costs incurred in producing that income. Consumption is the total amount of goods and services consumed by the rural household during a year and include expenditure on food, clothing, housing, travel, health care, social ceremonies, etc. Savings may be made in kind such as jewellery, livestock, grain, or some other commodities or may be in the form of currency notes deposited in a bank (or most often hoarded) [5].

Savings in the form of assets has limitations. Grain can deteriorate in storage or be lost to pests, animals require looking after and can die; moreover, when they are held as insurance against crises such as drought, they are often sold at a loss if the crisis occurs, because of deteriorating terms of trade or for a quick sale. Finally, holding a visible and available form of savings, such as grain or assets, can make it hard to resist demands and claims from other relatives [7].

The experience with microfinance all over the world has belied the myths that the poor do not save, and that they are not creditworthy. Despite having low paid jobs, the poor save, and the savings rate among the poor are not as low as one would contemplate. Similarly, contrary to the belief that the poor are bad credit risk, it is now established that the poor can be creditworthy that in some countries, the loan repayment rate is even higher among the poor than the non-poor [9].

A common feature of economic growth theories is the premise that capital accumulation is a prerequisite of economic growth, and that the savings of individual and households are an essential part of the process of capital accumulation. Savings determine, to a large extent, the rate at which productive capacity and income grow. An effective smoothly functioning financial system will

increase the mobilization of savings, lower transaction costs, disperse risks and direct the allocation of resources to the most productive uses [8].

[18] Stated, mobilization of local savings would enlarge the resource base of lending agencies and correspondingly reduce their external dependence. It would also reduce loan defaults, as borrowers would be more careful with neighbors' savings than with government funds.

Evidence suggests that there is far more liquidity in rural areas than is generally assumed. This is partly due to seasonality in agricultural production. Moreover, rural people are responsive to interest rate changes and appropriate financial services. Hence, mobilization of voluntary financial savings in rural areas should be the first priority of financial institutions. Contrary to this, there is another approach, which is stated as follows; in the rural areas a vicious circle of low capital, low productivity, low income, and low savings could be broken through an instrument called credit, if used appropriately.

Determinants of Household Savings

Theory

Economic theory states that savings represents the difference between income and consumption. Income includes earning from all activities during a year and is net of cost incurred in producing that income (imputed costs, however, constitute income of the farm family). In a two sector economy consisting of households and business sector, income is either spent or saved. When this occurs, one can explain the behaviour of savings if one knows about consumption.

Consumption is the total amount of goods and services consumed by the rural household during a year and include expenditures on food, clothing, housing, heat, lighting, travel, education, health care, social ceremonies, and recreations, litigation and charity, etc. Savings may be made in kind, such as jewelry, land, livestock or some other commodities, or may be in the form of currency notes deposited in financial institutions and savings are fundamental to sustainable economic development.

Household savings literature is based on two major hypotheses [9] following the pioneering work of Keynes which defines savings as a linear function of income, the first major breakthrough in savings literature is the permanent income hypothesis of Friedman. This hypothesis differentiates permanent income and transitory income as determinants of savings. Permanent income is defined in terms of the long time income expectation over a planning period and a steady rate of consumption maintained over lifetime given the present value of wealth. Transitory income is the difference between actual and permanent income and since individuals are assumed not to consume out of this income category, marginal propensity to save on transitory income will be unity.

The second major contribution to savings literature comes from Ando and Modigliani's lifecycle hypothesis, whose basic assumption is that individuals spread their lifetime consumption evenly over their lives by accumulating savings during earning years and maintaining consumption levels during retirement.

The life cycle theory suggests that age has an impact on savings. The young and the retired people are dissevering. Therefore the higher the dependency ratio of a nation, the lower will be the saving rate thus implying what is called the level of effect of the life-cycle theory. Macroeconomic and political stability affect expectation and thus, also the saving rate. The services provided by government, such as social security, the availability and the quality of financial services can affect saving rate.

There are two sides of mobilization of rural savings. The supply side- the circumstances under which rural clientele are most likely to entrust their savings to financial institutions- and the demand side- the effort and range of services of financial intermediaries to institutionalize surplus funds.

[18] Stated the extent of monetization in an economy is a crucial factor in deposit mobilization. When farmers produce for market, their ability and willingness to interact with the market, particularly with financial institutions will increase. On the

other, during high inflation and economic instability rural households would prefer physical assets to financial savings.

Confidence is the basis of any financial transaction. Safety, continuity, and secrecy are some of the factors that foster confidence. Some government intervention may help in creating a sense of safety and confidence. When deposits are covered by insurance, it increases savers' confidence [8].

Rural people are rational in their approach to financial matters and they do take advantage of attractive interest incomes on deposits, if offered. In effect, an increase in interest rates makes current consumption more expensive than future consumption, and consequently promotes deferment of consumption.

Accessibility to the financial institutions is an important factor in the promotion of savings. When financial institutions/banks are opened near market centers and operate at convenient hours, rural people opt to institutionalize their surpluses. When they are confident as in its liquidity, they would prefer to earn something on the surplus other than keeping it idle. Stipulating low minimum transaction and balance limits would attract smaller depositors. Provision of financial services like money transfer from one center to another can encourage depositors. Similarly, non-financial services like payment for purchase of crops, payment of bills, etc, can increase deposits. Payment for crops presents an opportunity for intermediation because the buyer could establish an account payable in favour of the farmer. When there is a linkage between savings and lending, rural households will be prompted to hold deposits with a view to availing a loan when needed [10].

Empirical evidences

Household savings in rural areas appear to be difficult variable to measure [15] They are not always quantifiable. Saving methods are practiced according to the need for ensuring a long term security for the households. One must, therefore, differentiate the savings potential of the rural community in cash, kind, or livestock etc.

Empirical evidences of household savings in Pakistan [5] indicated that methods of savings are categorized as savings in cash, saving in bond holding, saving in agricultural products and saving in livestock. Saving in agricultural products is preferably practiced because of its higher flexibility. Saving in livestock represents the most practiced form. It has dual impact on the household economy, firstly, as a source of extra income and, secondly, by acting as cash which is always available at home. Factors that influence the form and extent of saving are divided into four categories. These are: economical, psychological, socio-cultural, and institutional factors. Some of the results from [5] study are presented as follows.

Income determines the extent as well as the form of savings. Landholding, especially the size of citrus orchards, strongly influence the rate of total saving, since the size of land holding influences income and income influences savings positively. A large family size exerts a negative influence on saving in kind. Cash savings remains neutral but livestock keeping is proved to be positively influenced by the availability of household labor.

The age of the household members exerts an uncertain impact on savings; if they are productive, the influence is positive. Underemployed or unemployed members are a burden on the household income and have a negative impact on savings. Empirical evidences proved that education is quite an uncertain factor in the case of savings. In most of the cases, better education gave better exposure which induced a demonstration effect and increased the propensity to consume.

The empirical survey of gender- specific savings aptitude indicated that women are found to be financially conservative and try to hold money for the family's security, whereas men prefer to concentrate upon the accumulation of social capital.

[11] has conducted a study in South Pacific region in an island nation called Fiji in two ethnic groups, the native Fijians and the Indo-Fijians, living side by side but demonstrating contrasting behaviour with respect to savings, investment, and business. Using the Tobit techniques, the result of the analysis revealed that the variable gender, Ethnicity, income

and Bank account were highly significant to the annual savings amounts.

The results of the study conducted by [19] entitled savings habits, needs and priorities in rural Uganda indicated that hindrance of rural savings were: low income level of rural households was the most significant factor; high fee charged by the financial institutions was the second most significant factor; the third most important impediment to savings was low personal interest in savings. Low interest rate paid on savings was a relatively insignificant impediment of savings. Though clients find interest rate too low, they nonetheless remain clients as this is not enough of a disincentive to cause them to exit.

[8] studies indicated that, on average, rapidly growing countries have higher savings rates than slower-growing countries. These rates are influenced by many factors: the level of income per capita, the rate of income growth, the age composition of the population and attitude toward thrift.

The results of the study conducted by [16] indicated that demographic variables such as age groups, birth rates, dependency ratio and financial variables such as interest rates, inflation rates, available financial instruments and initial wealth levels affected the decision of household savings significantly. Similarly, models simulation results of [19] studies revealed that income uncertainty has positive impact on household savings.

MATERIALS AND METHODS

Description of the Study Area

Ambo district is Located in West shewa Zone, Oromiya regional state, Ethiopia.

The District is situated at 8^0 47'N to 9^0 21'N and 3^0 3'E to 37^0 32'E with total area of 83598.69 hectare, out of the total area 46.5% is used Crop production, 34.5% for grazing, 1.05% covered under forest and shrubs and 18% is used for other different purpose [2].

The boundaries of Ambo district are Ilfata and Gindbaret districts from North Wanchi district from South, Dandi district from East and Toke kutaye district from west as well as Mida kenyi in North West. The altitude of the district range from 1,500m to 3,000m masl. Heterogeneity in altitudinal zone causes the area to follow different livelihood strategies and make use of various coping mechanism at the time of food shortage.

Agro ecologically, the district is categorized into three: Dega, Woina-Dega and Kolla constituting 23%, 60% and 17% of the total area of the district, respectively. The major types of soil the district are red soil (36.25%), Black soil (34.37%) and mixed soil type (29.38%). The major crops produced by the local people are *teff*, wheat, Maize, sorghum, and barley are the major food crops grown in the area.

Sampling Technique

A Multistage sampling technique was employed to get the required primary data. At the first stage, Ambo District was selected purposively, in the second stage, 2 kebeles were selected by simple random sampling techniques. A probability proportion to size (PPS) was employed to determine sample size from each kebele. Accordingly 4,900 households were selected through systematic random sampling techniques. In order to collect reliable and representative sample out of the target population the sample size was decided or determined by applying the scientific formula [20] as shown below.

Finally, the following formulas of sample size determination adopted from [20] $n = \frac{N}{1+N(e)^2}$

where:

n = Sample size;

N= Total number of households in the selected Kebeles;

e = precision level or sampling of error 9% (0.09)

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

$$n = \frac{4900}{1 + 4900(0.05)^2} = 370$$

where:

n = number of sample size

N =number of population in sampled *kebeles*

e^2 = is precision level.

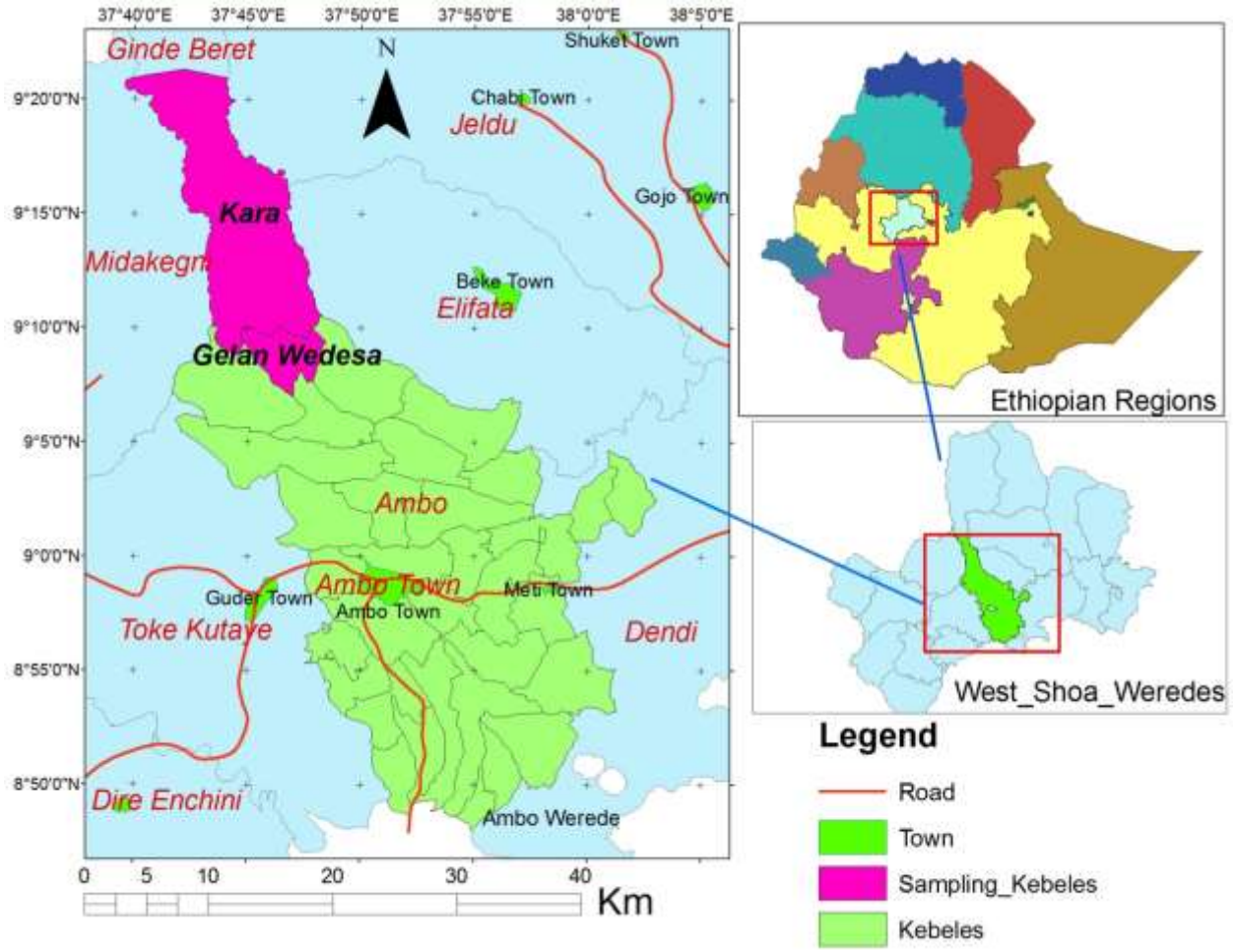

Fig. 1. Map of Ambo district, Ethiopia
Source: Ethio GIS.

Data Sources and Collection Methods

In this study both primary and secondary data were used. The primary data were collected from the sample farmers through structured questionnaire prepared for this purpose. In addition to the structured questionnaire, personal observations and group discussion with the members.

Secondary data were gathered from the different records of Rural Savings, Woreda Cooperatives Promotion Team, and Regional Cooperatives Promotion.

The survey was administered over 8 week period in September and October 2018. A total of 92 households, who were randomly selected were interviewed using the questionnaire.

Method of Data Analysis

To achieve the objectives of the study the researcher employed both descriptive and econometric analysis. Descriptive analysis used percentages, graphs and tabulations to explain different socio economic characteristics of the households and binary logistic regression modal was used to identify the effect of explanatory variables on household saving in the study area. Tools and statistics used in descriptive and econometric are generated with the help of econometric software STATA version

Econometric Model

When the dependant variable in regression is binary the analysis could be conducted by using linear probability and index models i.e. logit or probit. But the result of linear probability model may generate predicted values less than zero or greater than one, which violate the basic principles of probability. However, the index models logit or probit models generate predicted values between 0 and 1, they fit well to the nonlinear relationship between the probabilities and the explanatory variable. Each model has its own strength and weaknesses, but in this study

logit model is preferable to probit model as it has more plausible feature such as simplicity: The equation of the logit is very simple, inverse linearzing transformation for the logit model is directly interpretable as log-odds, while the inverse transformation probit model does not have a direct interpretation (Gujarati, 2009), Hosmer and Leme show (1989) [9]the functional form of logistic model is specified as follows:

$$P(x) = E(y = 1/x) = 1/(1 + e^{-(Bo + BiXi)}) \quad \text{.....(1)}$$

For ease of exposition, we write (1) as:-

$$P(x) = \frac{1}{1+e^{-zi}} \quad \text{.....(2)}$$

where:

P(x) = is a probability of being saving ranges from 0 to 1.
Zi = is a function of n-explanatory variables (x) which is also expressed as:

$$Zi = Bo + B_1X_1 + B_2X_2 + \text{.....} + B_nX_n$$

Bo = is intercept
B_1, B_2 ..... Bn = are slopes of the equation in the model.
This particular study was deal about the probability of saving or not-saving and this expression
expressed in mathematical form as follows: The probability of Saving (an event occurring) as the form:

$$1 - P(x) = \frac{1}{1 + e^{zi}} \quad \text{.....(3)}$$

Therefore we can write:

$$\frac{P(x)}{1-P(x)} = \left[\frac{1+ e^{zi}}{1+ e^{-zi}}\right] = e^{zi} \quad \text{.....(4)}$$

Now P(x) / (1-P(x)) is simply the odds ratio in favor of saving. The ratio of the probability that a household saving to the probability of that it not saving .
Finally, taking the natural log of equation (4) we obtain:

$$Li = \ln \frac{P(x)}{1-P(x)} = Zi \quad \text{.....(5)}$$

$$Zi = Bo + B_1X_1 + B_2X_2 + \text{----------} + BnXn$$

If the disturbance term, (Ui) is introduced the logit model becomes:

$$Zi = Bo + B_1X_1 + B_2X_2 + \text{.....} + BnXn + Ui \quad \text{.....(6).}$$

Li = is log of the odds ratio, which is not only linear in X_i but also linear in the parameters.
Xi = Vector of relevant explanatory variables.
The parameters of the model were estimated using the iterative maximum likelihood estimation procedure. This procedure yields unbiased and asymptotically efficient and consistent parameter estimates [9]. The collected data will be coded and entered into Statistical Package for Social Science (SPSS) version 20.0 software for statistical analysis.

Variable Description and Their Expected Sign

Table 1. Definition of hypothesized explanatory variables

Variables	Types of variables	Description of variables	Expected sign
Size of hh	Continuous	Household size	-
Age hh	Continuous	Age of household head	+
Sex hh	Discrete	Sex of the household head ("1" for male, and"0"	+
Edulv	Continuous	Education level of the household head	-/+
Land size	Continuous	Measured by hect.	+
Annualfi	Continuous	The amount of annual farm household income generated from on-farming activities	+
Total livestock	Continuous	Measured by TLU	+
Access to Credit	Dummy	Whether the household head receives credit, it take 1 if she receives it and 0 otherwise.	+

Source: Own interpretation and summary of definition Variables and their Expected Sign.

Dependent variable: There are two components for dependent variable; the first is the decision to save. It has a dichotomous nature measuring rural households' decision to save which takes a value of 1 if the household decides to save at formal financial institutions and 0 otherwise.

The second dependent variable is the extent or amount of saving by households at formal financial institutions conditional on the decision to save and is of truncated regression.

RESULTS AND DISCUSSIONS

Saving performances of households

House hold savings is value deposited at the time of survey by households. Farmers usually save from their proceeds for consumption smoothing purposes throughout the year, accumulation of wealth, and for contingency purposes in case of bad harvest or accident.

Accordingly, the survey result shows that about 218 (58.9%) of the respondents were saver, whereas the rest 152 (41.00 %) were non saver.

Among surveyed households, the average amount of household savings was 80,430.5 Birr with standard deviation of birr 28,701.6. The lowest saving level among the savers was 150 Birr and the highest reaches 323,050 Birr.

Descriptive Results

Demographic and Socio-economic Characteristics of the Sampled Households

Age of the Sampled Households

The average age of sample rural household was about 36 years with the minimum and maximum ages of 20 and 55 years, respectively. The average number of years during which the respondents carried out agricultural activities independently was about 16 and the average length of time in experience was about 2 years.

Table 2 indicates that of the total sample respondents, 218 were saver, whereas 152 were non-saver. Similarly, the table shows clearly that 43 and 34.59 percent of the sample respondents were within the age brackets of 20-35 and 36-45 years, respectively.

Sex of the Sampled Households

Among the total sampled household, the proportion of male-headed and female-headed households with savings was 78 (35%) and 140 (52%) respectively. This indicates that female headed households were relatively better in their saving status than male headed households. The chi-square test ($\chi 2$=15.898 revealed that there is statistically significant difference between male-headed and female-headed households in their saving (Table 3).

Table 2. Ages of the Sampled Households

Age group	*Saver*		*Non-saver*		Total	
	Number	Percent	Number	Percent	Number	Percent
20-35	90	42	70	46	160	43.24
36-45	72	33	56	36.8	128	34.59
>45	56	25	26	17	82	21.89
Total	218	100.00	152	100.00	370	100.0

Source: Survey results.

Table 3. Sex of the Sampled Households

Description	*Saver*		*Non-saver*		χ^2-value	*Total*	
	Number	Percent	Number	Percent		Number	Percent
Female	140	64.52	52	23.9	15.898***	192	51.89
Male	78	35.48	100	46.1		178	47.9
Total	218	100	152	100		370	100

***Significant at 1% probability level

Source: Survey results.

Family size of respondents

Table 4 shows the family size of the sample respondents. Accordingly, the average family size of the sample borrowers was found to be 6 persons. This was higher than the national average of 5 persons (CSA, 1994). The largest family size was 11 and the smallest was 1.

Table 4. Family size of the respondents

Family Size	*Saver*		*Non-saver*		Total	
	Number	Percent	Number	Percent	Number	Percent
1-5	90	41.4	68	44.73	158	42.7
6-8	75	34.56	52	34.2	127	34.3
>8	53	23.96	32	21	85	22.7
Total	217	100	152	100	370	100

Source: Survey results.

The above table shows that about 42.7 and 34.3 percent of the sample respondents had the family size that ranges from 1-5 and 6-8 respectively.

While the percentage of respondents having more than 8 family size was only 22.7. The corresponding figures for saver and non-saver group were about 41.4, 35.6, and 23.9 and 44.7, 34 and 21 percent, respectively.

Educational status

The survey results revealed that 37.5 percent of the sample respondents were illiterate, whereas only 62.16 percent were able to read and write (Table 5).

Table 5. Education level of respondents by borrower group

Literacy level	*Saver*		*Non-saver*		Total	
	Number	Percent	Number	Percent	Number	Percent
Can read and write	130	59.9	100	65.78	230	62.16
Illiterate	88	40.1	53	34.2	139	37.56
Total	218	100	152	100	370	100

Source: Survey results, 2019.

This result calls for the necessity of basic education for rural women in the area.

Of the total sample respondents, about 40 percent of the Saver and about 34.2 percent of non-saver were illiterate, while only about 59.9 and 34.2 percent of saver and non- saver could read and write.

Farm size

The average land holding of the sample respondents was 0.53 hectare.

Table 6. Distribution of sample respondents by size of holding and borrower group

Land size (ha)	**Saver**		**Non-saver**		**Total**	
	Number	Percent	Number	Percent	Number	Percent
≤ 0.5	97	44.7	60	39.47	157	42.4
>0.5≤1	87	39.6	76	50	163	43.7
>1	34	15.66	16	10.52	50	13.51
Total	218	100	152	100	370	100

Source: Survey results.

The minimum and maximum holding sizes were 0.13 and 6 hectares, respectively. The average farm sizes of the Saver and non saver were 2.54 and 0.51 hectares, respectively.

Livestock situation

Farmers in the study area undertake both crop and livestock production activities. Though the holding size varied among the sampled borrowers and between saver and non saver, 99 percent of the total respondents owned livestock. In the area, livestock are kept for various economic and social reasons. The major economic reasons include provision or supply of draught power, generation of cash income and food. Table 7 shows livestock type held by the sample respondents. It is

evident from the table that respondents in the area keep more goats and cattle than other categories of livestock. Oxen are the most important source of draught power for cultivation of land in the area.

Table 7. Average size of livestock (TLU/household) for sample respondents

Livestock type	Head	TLU	Mean	Average per valid observation
Cattle	358	250.6	3.89	4.16(86)*
Camels	50	50.0	0.54	1.72(29)
Donkeys	64	32.0	0.70	1.23(52)
Sheep	198	19.8	2.15	3.54(56)
Goats	510	51.0	5.54	7.08(72)
Total	1,180	403.4		

* Figures in parenthesis indicate number of valid observations
Source: Survey results.

The total livestock owned by the respondents were 1,180 and 403.4 in number and TLU, respectively (Table 7).

In examining the livestock ownership of respondents group (Table 7), it was found that saver had on the average 5.1, while the non-saver had 3.4 TLU with standard deviation of 3.05 and 2.48, respectively. It is apparent from Table 11 that about 54 percent of the saver had livestock size of greater than 4 TLU whereas only about 26 percent of the non-saver had a livestock size of greater than 4 TLU.

Table 8. Size of livestock holding, by borrowers group

Size (TLU)	*Saver*		*Non-saver*		Total	
	Number	Percent	Number	*Percent*	Number	Percent
≤4	83	38	68	44.7	151	40.8
4.10-7.40	77	35.4	46	30	123	33.24
7.41-9.20	40	18.4	30	19.7	70	18.9
9.21-13.20	18	7.83	8	5.26	26	6.75
Total	218	100	152	100	370	100.0
Average TLU	5.06		3.43		4.38	

Source: Survey results.

Total annual farm income

Livestock, crops and off-farm activities were important income sources for the sampled household. The average income earned by respondent from all crops (mainly, fruits, vegetables, and livestock was 3,337 Birr per annum. Saver reaped more cash from crops and livestock than non saver. The difference between the mean of the two groups was significant at less than 1% probability level (Table 9).

Table 9. Analysis of income sources of Respondent group

Description	*Saver*		*Non-saver*		t-Value	Total	
	Mean	SD	Mean	SD		Mean	SD
Annual Income	4,038	3,224	2,340	1874	-2.915***	3,337	2,862

*** and ** significant at 1% and 5% levels, respectively
Source: Survey results, 2019.

Access to credit

The results of the survey indicate that 52.2 % of the respondents had user, while 47.8 % did not use e credit. GroupWise, 66.7% of the saver and 31.6% of the non saver reported that they had access to credit. The Chi-square value, revealing differences between the two groups, was significant at 1% probability level (Table 10).

Table 10. Distribution of sample borrowers by extension contact

Description	*Saver*		*Non-saver*		χ^2-value	Total	
	Number	Percent	Number	Percent		Number	Percent
User	180	66.7	54	31.6	11.005***	234	63.34
Non-user	38	33.3	98	68.4		136	36.7
Total	218	100	152	100		370	100

*** Significant at 1% probability level
Source: Survey results.

Econometrics results

As outlined in methodology section, this study used the double hurdle model to identify the determinants of household saving. The model analyzed the household's decision to save and their extent of saving independently by using maximum likelihood method of estimation. Before going any further, it is important to present different tests conducted as required by the methodology. First, the Wald chi2 statistics as indicted by statistically significant p-value (P <0.0000) indicates that the model has a strong explanatory power. Second, the likelihood ratio test for Tobit restrictions revealed that the computed values are greater than critical values showing rejection of Tobit model. As a result the decision to save and amount of saving are not based on the same set of decision making process.

Five variables out of the eight potential variables that were entered into the binary logistic regression model were found to be positively and significantly influencing rural house hold saving. The variables which have significant relationship with rural house hold saving were the sex of household head, land size, amount of Annual income, and access to extension contact.

The variables sex of the household head positively related to probability of saving and the coefficient was significantly different from zero at 1 percent level. Keeping other variables constant, change in sex of household head from "female to male" probability of saving increase at about 0.95 percent. Therefore, Male headed households are expected to have better chance of earning income and when income increases saving level of the household increases.

The size of household was negatively related with probability of household saving.

Table 11. The maximum likelihood estimates of binary logit model

VARIABLE	B	S.E.	Wald	Sig.	Exp(B)
AGEHH	0.577	0.536	1.159	0.282	1.781
SEXHH	0.044	0.017	6.438	0.011**	0.957
FAMILY SIZE	-0.632	0.169	14.081	0.000***	0.531
EDUCL	0.749	0.457	2.687	0.101	2.115
ACCESS TO CREDIT	0.400	0.154	6.790	0.009***	1.492
LAND	1.539	0.287	28.820	0.000***	4.659
TLU	0.000	0.000	0.284	0.594	1.000
ANNUAL INCOME	0.001	0.000	2.904	0.088*	1.001
CONST	-6.617	2.112	9.819	0.002	.001

Source: Survey results, 2019.
Note; ***, **, * significant at one, five and ten percent probability level, respectively

Holding all other variables constant at their mean values, when household family size increase by one individual, probability of households saving decrease by about 0.531.

This is result is due to the fact that when family size increases with its existing high rate of fertility, less employment opportunity, weak work habit members of the family become unemployed and coupled with low

rate of payment. Therefore, additional household member shares the limited resources that lead the household to save less.
Land size was one of the factor that affect households saving in the study area. When land size increases by one hectare, Probability of households saving increase at about 4.65 percent other variables remains constant.
In this study annual income of the household was positively related and coefficient is significantly different from zero at 10 percent level. Other things remain constant, when annual income of the household increase by a unit, probability of household saving increase at about 1.001 percent. This is due to the fact that when income increases households' tendency to save increase it means as income increase proportion of income saved also increases which are because share of income consumed decreases.
One of the model variables in this study is households' access to Extension contact . As it was hypothesized the variable is positively related and coefficient is statistically different from zero at less than 5 percent level. Holding other variables constant, when access to extension contact change from "**no access**" to "**access"** probability of saving increases at about 1.492 percent. The result was due to the fact that access to extension contact increase an opportunity to invest and participate in different income generating activity which can enhance income and saving level at the same time.

CONCLUSIONS

The main objective of the study was to assess the determinants of rural household saving among small holders farmers household in Ambo district of West Shewa Zone, Ethiopia. A three-stage sampling technique was utilized to obtain a sample size of 92 rural farm households. Cross sectional data were collected through structured questionnaire, focus group discussion, key informant and field observation. The data were analyzed using descriptive statistics such as mean, standard deviation, percentage and frequency distribution and descriptive statistics, binary logistic regression models were used to identify determinants of rural household food security.
Accordingly, the survey result shows that about 54 (58.7%) of the respondents were saver, whereas the rest 38 (41.3 %) were non saver.
The study examined determinants of rural household food security among small holders farmers household in the study area. The study was conducted using descriptive statistics and binary logistic regression models to identify factors determining household saving status of rural households in Ambo district.
The binary logistic regression model result revealed that from the total nine (9) independent variables, five variables significantly influence saving in the study area. These are Sex of household head, family size in, land cultivated, Annual income and Access to extension contact. In the study area family size negatively influences household saving. On the other hand, land cultivated and Annual income, Access to training, Sex oh household head positively influence saving. This means that a unit increase in these variables Increases the saving of the households in the study area.
On the basis of the findings the results of the study, the following recommendations are made in an attempt to improve the saving status of households.
-The size of household was negatively related with probability of household saving. Therefore Family planning and related measures should be taken to limit household family size.
-Household's probability of saving and can enhance households' information accessibility to the institution, give location advantage and help to save money easily, hence concerned body should establish financial institution in the vicinities of households.

REFERENCES

[1]Abu, G., 2004, Determinants of domestic savings in Ethiopia (Unpublished): Paper presented at the Second International Conference on the Ethiopian economy, organized by Ethiopian Economic Association, Addis Ababa. Pp. 37-52.

[2]Ambo District agricultural rural development, 2019.
[3]Aron, H., Nigus, A., Getnet, B., 2013, Assessment of saving culture among households Ethiopia, Journal of Economics and Sustainable, 4(15).
[4]Azhar, B.A., 1995, Rural savings: Their magnitude, determinations, and mobilization. Journal of Pakistan Development Review. Pp 779-789.
[5]Bartle, P., 2006, Savings Mobilization: http//www.scn.org/ip/cds, Accessed on 11 March 2006.
[6]FAO, 1996, Rural informal credit markets and the effectiveness of policy reforms: Economic and social development paper 134, Rome. Pp. 33-67.
[7]FAO, 2001, Safeguarding deposits: Learning from experience. Agricultural service bulletin 116, Rome. Pp. 13-108.
[8]Griffiths, A., Stuart, W.,1986, Applied Economics: An Introduction Course, 2nd Edition, Longman Singapore Publisher Pte Ltd, New York. Pp 178-194.
[9]Gujarati, P., 2009, Basic Econometrics (Fifth Edition ed.). New York, America: McGrawHill/Irwin.
[10]Johnson, S., Ben, R., 1997, Micro Finance and Poverty Reduction. Hamlyn House, London. Pp. 77-91.
[11]Khalily, M., Imam, M., Kahn, S., 2000, Efficiency and sustainability of formal and quasi-formal micro finance programs: An analysis of Grameen Bank and ASA. Journal of Bangladesh Development Studies. Pp. 103-106.
[12]Khandker, S., 2000, Savings, informal borrowing and micro finance. Journal of Bangladesh studies. Pp 49-78.
[13]Mahendra, R., 2004, Determinants of savings behavior in an emerging economy: Market vs. non market factors: Pacific Institute of Advanced Studies in Development and Governance, University of the South Pacific. Pp. 103-122.
[14]Malik, M.S., 1993, Institutional variations in savings behavior in Pakistan. Pakistan Development Review 32(4). 1993. 1310-1411, CD. Vol.: 77.
[15]Muradoglu, G., Taskin, F., 1996, Difference in household savings behavior: Evidence from Industrial and Developing countries. Developing Economics 34(2), 1996, 138-153, CD Vol. 118.
[16]Padmanabhan, K.P., 1987, Rural Credit: Lessons for rural bankers and policy makers. Intermediate Technology Publications Ltd, Great Britain. Pp. 37-85.
[17]Que, Q., 2003, Determinant of household savings in China and their role in quasi-money supply: Economics of transition Vol. 11(3), 513-537.
[18]Rajaram, D., 2001, Working and impact of rural-self help groups and other forms of micro Finance. Indian Journal of Agricultural economics, Vol.56(3):370-427.
[19]Rich, P., Olive, K., 2005. Savings habits, needs and priorities in rural Uganda: Rural savings promotion and enhancement of enterprise development, A USID-funded project contact no. PCE-1-00-00003-00 TO 826, Uganda. http://www.microfinancegateway.org/contents/article/detail/28149, Accessed on 23 February 2007.
[20]Yemane, T., 1967, Statistics: An Introductory Analysis, 2nd Ed., New York: Harper and Row.