

## **Factors Affecting households' decision to save at Household Level: Evidence from Small holder Farmers' of Ambo District**

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### **Abstract**

Saving is an important macro-economic variable to be studied under the purview of the economic arena on an individual as well as household basis. In a country like Ethiopia, the income standard is almost uncertain and leads to more consumption rather than saving which has now been a central problem. The study is based on the survey of a total of 130 farmers which particularly covering three kebeles of Toke Kutaye district, Ethiopia with the objectives identifying factor affecting households' decision to save. The data were collected from both primary and secondary sources in 2018/19. Binary logit model was used to analyze the factors affecting households' decision to save. The results indicated that the significant variables included in the model such as education of the household head, income of the household and land holding size were positively and significantly affect households' households' decision to save while distance from MFIs were negatively and significantly affect households' decision to save in the study area. This study recommends that in order to make macro-economic successful these factors and problems are taken into consideration by policy makers to participate in saving. Our results have important implications for the management and future of farmers, as well as for the assessment of their development impacts.

**Keywords:** Decision to save, Logit Model, Smallholder, Study Area

## 1. Introduction

Ethiopia is a developing country where, there has been a consistent increase in the national saving rate after the independence period, though with considerable fluctuations from year to year. The present study tries to analyze the determinants and pattern of saving behavior in rural household in Ethiopia (Nayak, 2013). Saving is an important variable for every country to be studied for the economic growth and development of any country. Saving is an important macroeconomic variable to be studied under the purview of the economic arena on an individual as well as household basis.

Saving is among important variables for economic growth of any country. Saving is about income that is not consumed by immediately buying goods and services. Saving constitutes the basis for capital formation, investment and growth of a country. Serious problem confronting poor countries including Ethiopia is the savings and investment gap. Because of this gap, these countries find it difficult to finance investments needed for growth from domestic saving (Soneye, 2014).

The saving level in Ethiopia particularly in rural areas is very low and little is known empirically about its patterns and determinants. Savings in rural Ethiopia is mainly made out of the income from agricultural activities (Soneye, 2014). However; rural households do indeed save in the form of tangible assets and/or in financial forms which can be potentially utilized by savings institutions and for investments which is very essential for both households and nation.

Although there is controversy regarding the relation between savings and economic growth, it is generally agreed that once savings start to rise-perhaps due to increases in income-they enhance the potential to finance investment, and lead to the creation of more opportunities in the economy. Household saving could be accumulating in real assets or financial assets. Large part of saving accumulation in developing countries is in the form of real assets. These include livestock, precious metals, or food stocks. However, these real assets less useful for industrial activities since it does not liquid. The weakness saving in real assets is important reason for household in developing countries to save in financial assets. They could save in banks or non-

bank financial institutions in cash form. In this respect, access to financial institution that meets liquidity needs is crucial.

The present study can be a relevant one to know the reason of lower saving patterns of households and what are the determinants which are responsible for saving. Aggregate saving in any economy is dependent on a number of variables (Girma, 2012). For effective economic planning, the planners should have an idea regarding the volume of saving of different groups of people and the method by which saving can be improved more over in a better way. In Ethiopia especially at shewa zone in Toke Ambo district there is a very poor access to the saving and credit institution and lack of motivation of households to develop their habits of saving. The study tried to fill the gap by providing insight in to the households in the improvement of the habits of saving of households in the study area. Therefore, the objective of the study is to identify Factors Affecting households' decision to save at Household Level in the study areas.

## **2. Methodology**

### **Description of the study area**

Ambo town is located in the western Oromia regional state and it is the zonal town of the west shoa zone. It is located at a distance of 112km from Addis Ababa on the main road that leads to western region of Ethiopia. Ambo town was established in 1889 and covers of 8587 hectares of land. It is one of the oldest towns in Ethiopia. The name Ambo town is related with offspring called "Ambo Tseble"(Ambo town city administration,2012).

The name of the town has changed to Hagerhiwot during the Haile sellasie regime and gained its original name in 1974 when the Derg came to power. The town is one of the few favored towns of its name as it had much capital administration and master plan in 1931. Owing its strategy, its location has been serving as administration, transportation and commercial center of west shoa zone. Ambo town has three kebele's and now the town is expanding outwards and included a certain farmers kebele's such as Awwaro and Illamumuja in the east direction, sankallefarise in west, Gosukora in the south and Libankisose in the north direction( Ambo town city administration, 2012).

Geographical location of Ambo town is 08 59' E longitudes. The average elevation of the town is 2090 meters above sea level and it varies from 2060 meters to 2140 meters above sea level. The town and its surrounding have meant annual precipitation of 912 millimeters and the mean annual temperature of the town is about 17.6 centigrade. The town is an administrative capital for west shewa zone. The master plan covers different aspects such as development plans road network plans, drainage and land use plan etc. (Ambo town city administration, 2019).

**Sources of Data**

The study used both primary and secondary types of data. The primary data was collected from population using structured questionnaires prepared and distributed to those respondents who are selected as a sample of study area. The secondary data on the other hand also gathered from different brochure, Ambo town investment office monthly, quarterly and annual reports, newspapers and different publications.

**Sampling Techniques**

In this study, Two-stage samplings were employed. At first stage, three kebeles were selected from all kebeles of the district by simple random sampling of lottery method. At the second stages, households were selected from the selected kebeles using systematic random sampling. The summary of sampling design is displayed as follows.

$$n = \frac{N}{1+N(e)^2} = 130 \dots\dots\dots (1)$$

- Where: n = Sample size for the research use
- N = Population size (total number of household in the woreda)
- e = Level of precision 5 (=0.05) and
- Z= 95 confidence level

Table 1, Sample size determination

No.	Name of kebeles	THH	Percent (%)	Sample size
1	Awaro	651	0.36	47
2	Sankale	710	0.39	51
3	Gosa Kora	438	0.25	32
Total		17,99	1.0	130

Source: Ambo district Agricultural Office, 2019

### Data Collection Method

Both quantitative and qualitative data types were collected for the study. In order to generate these data types, both secondary and primary data sources were used. Primary data sources were smallholder farmer's three purposely-selected kebeles. The data collection methods used includes survey using structured questionnaire. The structured questionnaires was pre-tested with similar households operating within the study area, but not included in the final survey. Using the questionnaire data were collected on household characteristics, socioeconomic and demographic characteristics, farm information, input utilization, and access to services such as extension, credit and market information. Experienced enumerators were recruited and well trained for actual field data collection. The data were collected in January 2018/19.

### Methods of Data Analysis

Descriptive statistics such as mean, standard deviation and percentage, were used to describe characteristics that can influence participation in saving which was presented by tabular form. In addition, mean comparison tools were applied between the characteristics of credit participants and non-participants using t-test for continuous variables and chi-square test for dummy variables respectively. To identifying factor affecting household decision to save at the individual household level, Binary logit model model was used. This method was chosen because it is a standard method of analysis when the outcome variable is dichotomous (Hosmer and Lemeshow, 2000), measured as having a value of 1 or 0, where 1 = participant and 0 = non participant. Generally, the Binary logit model can be written as:

Therefore, the cumulative logistic probability model is econometrically specified as follows:

$$P_i = F(z_i) = F(\alpha + \sum \beta_i x_i) = \frac{1}{1 + e^{-z_i}} \dots\dots\dots 1$$

Where,  $P_i$  is the probability that an individual will participate in formal credit or does not participate given  $X_i$ ;

$e$  denotes the base of natural logarithms, which is approximately equal to 2.718;

$X_i$  represents the  $i^{th}$  explanatory variables; and  $\alpha$  and  $\beta_i$  are parameters to be estimated

Logit model could be written in terms of the odds and log of odds, which enables one to understand the interpretation of the coefficients. The coefficient of the logit model therefore

represents the change in the log of the odds associated with a change in the explanatory variables. The odds ratio implies the ratio of the probability ( $P_i$ ) that an individual would choose an alternative to the probability ( $1-P_i$ ) that he/she would not choose it.

$$1-p_i = \frac{1}{1+e^{z_i}} \dots\dots\dots 2$$

$$\frac{p_i}{1-p_i} = \frac{1+e^{z_i}}{1+e^{-z_i}} = e^{z_i} \dots\dots\dots 3$$

Or

Therefore, to get linearity, we take the natural logarithms of odds ratio equation (4), which results in the logit.

$$\frac{p_i}{1-p_i} = \frac{1+e^{z_i}}{1+e^{-z_i}} = e^{(\alpha + \sum \beta_i x_i)} \dots\dots\dots 4$$

$$z_i = \ln\left(\frac{p_i}{1-p_i}\right) = \alpha + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \dots\dots\dots + \beta_m x_m \dots\dots\dots 5$$

If the disturbance term ( $u_i$ ) is taken in to account, the logit model becomes

$$Z_i = \alpha + \sum_{i=1}^m \beta_i x_i + u_i \dots\dots\dots 6$$

The data covered information necessary to make household level indices of social, economic, demographic and institutional indicators comparable across different categories of identifying factor affecting access to credit service at the individual household level. In order to identify factors affecting access to credit service at the household level, both continuous and discrete variables were identified based on economic theories and empirical studies as follows.

**Decision to save:** This is dependent variable for household participation in saving that takes value ‘1’ if households participate in saving; otherwise ‘0’. It indicated as dependent variable that households’ participation in saving for agricultural activities can be affected by socio-economic factors, demographic factors, institutional and other factors.

**Age of household head:** is continuous variable used for the age of household head. The life-cycle model suggests that there exists a relationship between ages and saving rate. Therefore we expect the is direct relationship between age of household head and households’ saving habit

**Sex of household head:** A Dummy variable that represent the sex of household head. It takes values 1, if the household is male and 0, if female. Sex of household is also considered as an important variable to determine the saving of a behavior

**Level of Education household head:** This variable is measured using formal schooling of the household head and hypothesized to affect decision to use saving positively. It has taken dummy values 1 if the household attended any formal education of any level and 0 otherwise. This variable was necessary to improve the understanding of formal financial institution by individual and hence their choice of services in the formal financial institutions.

**Marital status:** Is the condition when the two opposite partners are joint together with agreement. It is one of the determinant variables that influence the saving habits of households.

**Income of the household:** a continuous variable used for total income household in birr. Total is computed as aggregation of the monetary income derived from agricultural and non-agricultural activities, including the monetary values of agricultural items produced and consumed by the household. The ability to save of household depends on the income of the household and household is considered as the most important explanatory variable of the saving of the household.

**Family size:** When the number of family size of the household increases their saving performance is declined. They consume more rather than to save. The most probable explanation could be more family size could mean they consume more and decrease their Income and they do not motivate to save. In addition, when family size increases, their income also increases

**Land size:** A continuous variable measured in hectare variable used for land holding of the household. The land holding signifies the economic system as an economic system as it acts as an economic unit for any physical asset to be considered. Land is considered as the biggest asset for rural household as it can be accumulated in terms of money and productive asset at the time of financial emergency. Therefore, we expect a direct relationship land owned by households and households' saving habit.

**Distance:** A continuous variable used for distance to nearest formal financial institution measured in kilometer from residence of households and is as for saving access and different financial institutions. Household nearby the financial institution have a location advantage and can save more from their income which obtained from different sources than those live in more

distant locations. Therefore, we expect a negative relationship between distance to the nearest financial institution from households’ residence and households’ saving habit.

**Occupation:** Is a task or an employment whether governmentally or privately in order to safeguard the life time of oneself. It is one of the determinant factors in the saving habits of the community. This variable is a dummy variable having 1 for government 0 or private and affect positively for both status of and participation of saving, Nayak (2013).

### 3. Results and Discussions

The survey has collected a wide range of information which is essential to the interpretation of the findings and the understanding of the results of the study on factor affecting rural house hold rural saving participation .The background characteristics of respondents interviewed in the study area such as age, sex, income, education, marital status, size of land holding, family size, occupation, distance from saving are presented in this section using tables.

As table 2 shows as from the total respondents the non-participant age of rural household with mean and standard deviation of 37.53 and 11.68 years respectively whereas the average and standard deviation of participant 40.20 and 1.48 respectively. The result of two -tailed test (T=0.906) shows that age was statically insignificant at 1% between mean of participant and that of non-participant of household.

Table 2, Summary of descriptive statistical results for continuous variables and t-value

Variable	Participants		Non-participants		Total		t- value
	Mean	SD	Mean	SD	Mean	SD	
AGE	40.20	1.48	37.53	11.68	39.58	14.13	0.906
FAMSIZE	45.5	1.56	39.8	13.6	46.75	16.25	0.975
INCOME	25570	10729.2	15903.3	16084.9	23339.2	12775.9	3.8216***
DISTANCE	4.955	2.10	10.03	2.60	6.13	3.08	10.98***
LAND	1.80	1.003	0.715	0.695447	1.55	1.044	5.51***

Source: Computed from the field survey data, 2019



Table 2 indicated that as from the total respondent non-participant family size of rural household with average and standard deviation 39.8 and 13.6 respectively, whereas mean and standard deviation participant family 45.5 and 1.56 birr respectively. The result of two -tailed test ( $T=0.975$ ) shows that family size was statically insignificant at 1% between mean of participant and that of non-participant of household habit of saving.

From the total respondents, the mean and standard deviation of participant 1.80 and 1.003 hectares respectively, whereas the average and standard deviation of non-participant 0.715 and 0.69544 respectively. The land reflects the accumulated saving, capital transfer and revaluation of assets. Land is considered as the biggest asset for the rural households as it can be accumulated in terms of money and productive asset at the time of financial emergency. Most of the rural households do not possess any land which can be used as a liquid asset at the time of emergency and earning the livelihood. The result of two -tailed test ( $T= 5.51***$ ) shows that size of land holding was statically significant between mean of participants and that of non-participants inhabits of saving.

The respondents who have higher income save more than respondents that has less income. Table 1 indicated that from 130 of total respondents, the average and standard deviation of non-participant household 15903.3 and 16084.9birr respectively whereas the average and standard deviation of participant households 25570 and 10729.2 respectively. The result of two -tailed test ( $T = 3.8216$ ) shows that income was statically significant between mean of participant and that of non-participant in habit of household saving

Table 3, Summary of descriptive statistical results for dummy variables and chi-squares

Variable	Category	Participant		Non Participant		Chi-squares
		N	%	N	%	
Sex	Male	51	78.46	14	21.54	0.82NS
	Female	49	75.38	16	24.62	
Occupation	Government	20	83.33	4	16.67	0.409NS
	Private	80	75.47	26	24.53	
Marital Status	Married	82	77.36	24	22.64	0.804NS

	Unmarried	18	75.00	6	25.00	
Education	Literate	66	70.25	18	19.52	17.2470
	Illiterate	34	35.4	12	13.23	

Source: Computed from the field survey data, 2019

From 130 of respondents 51(78.46%) of males are participate in saving. The same to that, among 130 of respondents 49(75.38%) females are participating in the saving whereas 16(24.62%) are not participating in saving and 14(21.54%) of the male nonparticipant as shown in table 2. The sex of the head of the household emphasizes the impact of saving as it is shown that the male population are more and suppose to involve themselves in the different occupational status are inclined to save. As shown in the table 2. ( $X^2=0.82$ ) shows as sex is statically insignificant indicates that participate to saving is the same as who do not participate to saving. That means there is not a significance difference between participant and non-participant or homogeneity between them.

As shown from the table 3, from the total respondents from those 18 (75.00%) are unmarried and 82(77.36%) are married. Among 130 of respondents, 6(25.00%) of unmarried respondents are not participate in habit of saving whereas 18(75.00%) are participate in habits of saving. This shows as married rural households participate in habits of saving than unmarried rural households due to the married rural households use the money in systematic way rather than spend the many for consumption purpose. The marital status of the respondents and the head of the households also determine the saving participation of the rural households. As shown in table 3, ( $X^2=0.804$ ) shows that there is no a significance difference between participant and non-participant groups participation of rural household of formal saving related to marital status of the households statically insignificant. That means, rural households participate in rural households was the same as the rural households not participate in formal saving.

The study showed that the maximum of the households heads have occupation. More than 75% of the households are privates and percent having the main occupation of the family as many of the occupation category lies by the ancestral occupation like mostly the agriculture. As shown in the table 2, ( $X^2=0.409$ ) the Chi-square results shows that who participate in habits of saving

were the same as who do not participate in habits saving due to occupation was statically insignificant.

As we indicated from the table 3, among 130 respondents 34(35.4%) are illiterate and 66(70.25%) are literate .Among those groups 34.4% are participated from uneducated and 70.25 from educated whereas 18(19.52%) are literate who are not participant and 12(13.23%) from illiterate. The level of education is one of the deciding factors of the employment in which one is engaged in. In general, those who are engaged in lower employment have low educational qualifications whereas those with higher education are engaged in higher income occupations. AS shown in the table 2, ( $\chi^2=17.2470$ ) indicates that there is a significance difference between Participant and non-participant regarding to education was statically significant. Which means literate people who participate in the habit of saving were more than those who did not participate in habit saving.

### **Econometric Results**

The factor affecting households’ decision to save were examined using logistic regression model since the dependent variable is dichotomous. Binary logistic regression model is the multivariate statistical tool used to analyze the relationship between the dependent variable (decision to save) and the independent variables; namely age, ,sex ,marital status, education, occupation , family size, size of land holding and income. The logistic regression model predicts the log odds (participation of saving or not) of the dependent variable.

The regression coefficient together with their sign indicates the direction of the independent variable on the effect of dependent variable, being the category of interest of response variable for a unit of increase in the independent or uncontrolled variable and also used the marginal effect for the interpretation due to it is more popular than odd ratio or expected value in order to determine by what magnitude of the explanatory variable changes the dependent variable.

Table 4, Logistic regression model of factors affecting households’ decision to save

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<b>Variable</b>	<b>Coef.</b>	<b>Std. Err.</b>	<b>Z</b>	<b>P&gt;z</b>	<b>dy/dx</b>
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AGE	-0.0188122	0.0020491	-0.26	0.796	-0.0005298
SEX	-1.558116	0.043725	-1	0.316	-0.0438783
MARTATU					
S	-0.9520679	0.0449996	-0.6	0.551	-0.0268113
FAMSIZE	-0.3224775	0.0094589	-0.96	0.337	-0.0090813
OCCU	-0.9887585	0.0774141	-0.36	0.719	-0.0278446
EDUC	2.201266	0.0252397	2.46	0.014	0.0619901**
INCOME	1.12E-04	1.31E-06	2.41	0.016	3.15E-06**
DISTANCE	-1.438379	0.0105505	-3.84	0.000	-0.0405064***
LAND	2.717353	0.0275437	2.78	0.005	0.0765237***

Note: Dependent variables are Decision to use. N=130, prob> chi2 = 000 , Prop > chi2 = 0.9357, Log likelihood = -29.65, \*\*\* and \*\* means, statistically significant at 1% and 5% respectively. Std.Err is robust.

Source: Computed from the field survey data, 2019

### Education of household head

The result of logistic regression presented that education level of household head was positively affect the probability of households' decision to save at 5% significance level. If other variables being constant, the rural households shift from illiterate to literate by one unit, the probability of participation of rural households in decision to save increases by 0.06199( 6.199% ) factors (Table 3). This may be because decision to save requires some skill and training. Education tends to improve rationality and have good attitude about decision to save by considering the benefits which gained from saving diversified use of resources.

Similarly, studies conducted by Mulat, (1996) and Gordon (2001) were reported that skilled and educated people are believed to be more participate in habits of saving because of their access to information and opportunities. In addition to this, the high literacy level of the respondents increases the probability of rural households' heads having improved standard of living by making informed decisions on consumption and savings as Akerrele (2004) resulted study.

### **Income of household head**

This explanatory variable affects the status of saving positively at 5% significance level. Because income is the total amount of household earning that captured by different means of sources may be privately or governmentally. As shown from the table 4, if the income of the rural households increases by 1%, the rural household decision to save or performance increases by 3.15 to 0.6 units. There are different source of income in the households like; farm source and nonfarm sources. Due to the increase in source of income households are raise their awareness about saving and they increase amount of saving. In the same manner, the rural households have very less income and high consumption as their marginal propensity to consume is high and they are subjected to save less which significantly puts an impact on their investment pattern and the status of saving as studied Nayak, (2013).

### **Size of land holding**

As shown from the table above Size of land holding is the main factors which affect the status of saving at 1% significance level and positively. This means, other being constant, if the Size of land holding of the rural households increases by 1 hectare, the probability of household decision to save increases by 0.0765birr .The main reason was land is considered as the biggest asset for the rural households as it can be accumulated in terms of money and productive asset at the time of financial institution which gained from the land by change in a cash form for the sake of got good security from formal saving institution rather than other informal way. In short manner the size of the land is high, the income is high, and this leads to increase the intensity of saving. The same to that Oluwakam ,(2013) studied that land could serve as additional households income through rent and this would have increased their source of income and the intensity of saving and also he proposed that size of land holding was affect significantly the amount of saving negatively.

### **Distance of household head**

Distance of rural households from formal saving participation institution is one of the factors that influence households' decision to save. This variable affects the dependent variable negatively at 1% significance level. The marginal effect of this variable indicated that, other things being constant, as walking hour of households to financial institutions increases by one hour the

probability of participation of households in decision to save reduced by the factor 0.0499(4.499%). This is because of distance from saving institution increase transaction costs and lack of infrastructure. Increase in distance from the household to saving institution reduced households' decision to save due to increased transaction costs that is farmers who reside in rural areas far from the locations of formal saving institutions have a lower opportunity of getting the probability to saving. This result is in lined with a study by Abdallah and Ebiaidalla (2015) in kassala.

#### **4. Conclusion and Recommendations**

This study was aimed at analyzing the rural household decision to save in Ambo District of Oromia National regional State. The specific objectives of the study include identifying factor affecting household decision to save in the study areas. The data were generated from both primary and secondary sources. Among 10 explanatory variables, which were hypothesized to affect household decision to save, the significant variables included in the logit model such as education of the household head, Income and land size of small holder farmers were positively and significantly affect household decision to save while distance the household head from financial institutions were negatively and significantly affect households decision to save in the study area. Therefore, this study recommends that in order to make macro-economic successful these factors and problems are taken into consideration by policy makers to participate in saving. Our results have important implications for the management and future of farmers, as well as for the assessment of their development impacts. The government also diversify size of land to households by distribute the lands from the handling of more land by an unnecessary way to increase the intensity of saving that gained from the products from the land then changed as a cash form in order to save.

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