

# Household Saving Behavior and Determinants of Savings in Financial Institutions: The Case of Derra District, Oromia Region, Ethiopia

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## Abstract

Saving is the fraction of income not instantly consumed but kept for future investment, consumption or for unforeseen contingencies in the future. The aim of this study was to investigate the saving behavior of household and determinants of saving in the district using primary data from 249 samples of household. The analysis used descriptive and inferential analysis to achieve the objective the study. The descriptive part showed that about 14.5% of the household were not saving in financial institutions whereas about 85.5% saved in financial institution. The chi-square test of association revealed that Age of household head, education level of household head, main occupation, knowing about the interest rate of financial institution, having farm land, getting advice about saving were significantly associated the saving status of households. Additionally, the logistic regression showed that age of household, main occupations, knowing about interest rates, income of households and family size were significant determinants of households saving status. In order to enhance the households saving status in financial institutions, the district, the Oromia regional state and the government financial sectors should work on awareness creation about saving and increase the income of the household.

**Keywords:** Financial institution; Logistic regression; Saving Status

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## 1. INTRODUCTION

Saving is the fraction of income not immediately consumed but kept for future investment, consumption or for unforeseen incidents. It also used in improving the well-being of individuals and serve as a security at the times of shocks for the households. In developing countries savings are important factors of households' well-being. Individuals and households savings provide a cushion of security against future incident whereas for nation savings provide the funds needed in the developmental efforts (Gedela, 2012). In addition, saving enable households to maintain a stable life time level of living and it is also likely to refrain from current consumption to save for payment for children's education (Yao *et al.*, 2011). Unexpected events in the life-cycle of individuals make saving an important element in fulfilling the financial gap (Popovici 2012).

In many developing economies mainly Africa, saving and investment are necessary engines for capital formation and economic growth. It has been claimed that saving constitutes the basis for capital formation and capital formation constitutes a critical factor of economic growth. Saving in developing countries is not only used as the means of accumulating wealth but also used as smoothing consumption in face of the volatile and unpredictable income and helping to ensure the living standards of poor people whose lives are difficult and uncertain (Oladipo, 2010).

Households savings in developing countries particularly in Sub-Saharan Africa remains limited and far behind from other parts of the world. This is due to high levels of unemployment, low level of income, the engagement of a large proportion of the population in the informal sector and poor performance of the economy (Karim, 2010). In developing countries like Ethiopia, economic fluctuations and climate risk lead to important income variations and leave the households vulnerable to severe hardship. Besides, their social coverage is limited and the financial markets are not well developed. Consequently, these countries often face saving allocation problems and have difficulties to develop productive investments (Tsega and Yemane, 2014). The saving habit of developing countries has been hindered by different factors such as inadequate financial service, physical distance from financial institution, little incentive to save, low interest rate and lack of adequate income to save (Ondiege, 2012).

For the developing countries including Ethiopian, the household savings rate is a prime cause for the highs or lows economic development and influencing the overall economic scenario. Countries having higher level of saving rates have managed to reduce the burden of foreign debt and thus domestic investments will be financed by domestic saving especially household sectors (Tadele, 2015).

In Ethiopia as well as in Derra district, there are formal and informal financial and non-financial institutions

which serves the community in their daily financial activity. In Ethiopia different studies were done and identify the different factors related to the households saving behaviors such as Mirach and Hailu,(2014) study showed 54.1% of sample households practiced saving and the common reasons for households not to save are low income, inflation, low interest rate, cultural background, education, social affairs and unemployment. In addition, study by Bizuneh (2011), Mirach and Hailu (2014), Halefom (2015) and Saliya A. (2018), using tobit model showed that income, age, sex, education and forms of institutions used for saving are significant determinants of household savings. However, these studies did not consider the saving behavior in financial institution explicitly. Hence, this study tried to assess and investigate the saving behavior of the households and factors related with it in the financial institution in the district using chi-square test of association and logit model.

## 2. DATA AND METHODS

### 2.1. Study area and Data

The study conducted in Derra district. The district is one of the 18 districts of the North Shewa Administrative Zone, which is located in Oromia Regional State of Ethiopia. It is 213 km far from Addis Ababa, the capital city of Ethiopia. The district is located between 12° 92' - 13° 12' N latitude and 34° 40' - 35° 80' E longitude and elevation from 1798 m to 2118 m above sea level. The administrative center of Derra is Gundo Meskel (CSA, 2011). A total of 217,292 people live in the district (CSA Population Projection, 2013).

In order to achieve the objective of the study, primary data source was used from the household who live in the study area through survey based structured questionnaire. These data on socioeconomic, demographic and saving behavior of the respondent was collected using face-to-face interview from July 20 to August 30, 2019.

### 2.2 Sampling Procedure and Sample size determination

#### 2.2.1. Sampling procedure

A three stage sampling techniques used to select the representative households from the study area. At first stage, Dera district is selected purposively taking into consideration time, budget, and accessibility issues to investigate the saving behavior of the community. Secondly, 4 kebeles (3 out of 30 rural kebeles and 1 out of 4 urban kebeles) were selected randomly to yield maximum precision per cost, minimize bias and to give equal chance to be sampled for kebeles (Cochran, 1977). Thirdly, 249 Households were selected using systematic random sampling technique and interviewed.

#### 2.2.2. Sample size determination

The sample size (n) is determined using the statistical formula  $n = \frac{N}{1 + Ne^2}$  (Yemane1967), Where n is sample size, N total rural household in the three kebeles, e is precision or margin of error (5%).

$$n = \frac{N}{1 + Ne^2} = n = \frac{N}{1 + Ne^2} = \frac{2347}{1 + 2347(0.06^2)} = \frac{2347}{1 + 8.8675} = 248.4 = 249$$

Lastly, the total sample size is allocated to each kebele using proportion to size allocation methods.  $n_h = \frac{N_h}{N} * n$

Kebeles	HH size (N <sub>h</sub> )	Sample Size(n <sub>h</sub> )
Dembi Birjie	840	89
Gundomeskel 02	425	45
Ada'a Melkie	654	69
Selelkula	428	46
Total	2347	249

### 2.3. Study variables

**Dependent Variable:** Saving behaviors of the household which could be saving status (if the household not saved in financial institution coded as 1 or 0 otherwise)

**Independent variables:** are variables expected to influence the saving characteristics of household which could be socio-economic, demographic and institutional factors. These variables are:

- Gender Household head
- Age of Household head
- Marital Status
- Family size
- Religion
- Education level
- Place of Residence (kebele)
- Main occupation
- Income of households
- Having own farm land

- Having livestock
- Getting advice to save
- Prefer type of financial institution
- Know interest rate
- Distance to Financial institution

## 2.4 Method of Data Analysis

The study used descriptive and inferential statistics to achieve the aim of the study. From descriptive statistics, it used percentages, means, cross tabulation, charts, standard deviations, and from inferential statistics it used chi-square test of association and binary logistic regression to identify the major behaviors of saving and factors associated with household saving activity.

### 2.4.1. Binary Logistic regression model

The binary logistic regression procedure empowers one to select the predictive model for dichotomous dependent variables. It describes the relationship between a dichotomous response variable and a set of explanatory variables. The explanatory variables may be continuous or discrete (McCullagh and Nelder, 1989). Binary response models are of major importance in the social sciences as well as in demography since many social phenomena are discrete or qualitative rather than continuous or quantitative in nature. In such studies, the logistic regression model has become the statistical model of choice (Agresti, 2007).

For this study, the binary logistic regression model used to investigate effect of predictors on the probability of the response variables (saving status of households) ( $Y_i$ ) given at Derra district which is defined as follows.  $Y_i$  coded as 1 if the respondent not saved in financial institution and 0 otherwise. Where:  $i = 1, 2 \dots n$  and  $n$  is the number of households who are sampled.

Let us denote the proportion of success (not saved money in financial institution)

$$p(Y_i = 1) = \pi_{ij}, p(Y_{ij} = 1) = 1 - \pi_{ij}$$

$$\text{and } Y_i \sim \text{Bernoulli}(\pi_i)$$

Let  $X_{n \times (k+1)}$  denote the single level binary logistic regression data matrix of  $k$  predictor variables of the saving status and  $\beta_{(k+1) \times 1}$  be a vector of coefficients and given as:

$$X = \begin{bmatrix} 1 & x_{11} & x_{12} & \dots & x_{1k} \\ 1 & x_{21} & x_{22} & \dots & x_{2k} \\ \vdots & \dots & \dots & \dots & \vdots \\ 1 & x_{n1} & x_{n2} & \dots & x_{nk} \end{bmatrix} \quad \beta = \begin{bmatrix} \beta_0 \\ \beta_1 \\ \vdots \\ \beta_k \end{bmatrix}$$

$X$  -is the design matrix

$\beta$  - is the vector of unknown coefficients of the covariates and intercept Then, the logistic regression function is given as:

$$\pi_i = \frac{\exp(\beta_0 + \beta_1 X_{i1} + \beta_2 X_{i2} + \dots + \beta_k X_{ik})}{1 + \exp(\beta_0 + \beta_1 X_{i1} + \beta_2 X_{i2} + \dots + \beta_k X_{ik})} = \frac{\exp(X_i' \beta)}{1 + \exp(X_i' \beta)}$$

where:-  $\pi_i$  [ $i = 1, 2, \dots, n$ ] is the  $i^{\text{th}}$  probability of households saving status given the vector of predictors ( $X$ )

By algebraic manipulation, the logistic regression equation can be written as in terms of an odds ratio:

$$\pi = \frac{P(y = 1 / Xi)}{1 - P(y = 1 / Xi)} = \exp(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k) = \exp(X_i' \beta)$$

$$\log\left(\frac{P(y = 1 / Xi)}{1 - P(y = 1 / Xi)}\right) = \log\left(\frac{\pi_i}{1 - \pi_i}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k = X_i' \beta$$

where:-  $i = 1, 2, \dots, k$

The coefficient is interpreted as the change in the log-odds of saving status per unit change of the corresponding continuous covariate. In case of categorical predictor variable, it is interpreted as the log-odds of saving status given a category compared to the reference category (Dayton, 1992).

## 3. RESULT AND DISCUSSION

### 3.1. Demographic Characteristic of Respondent

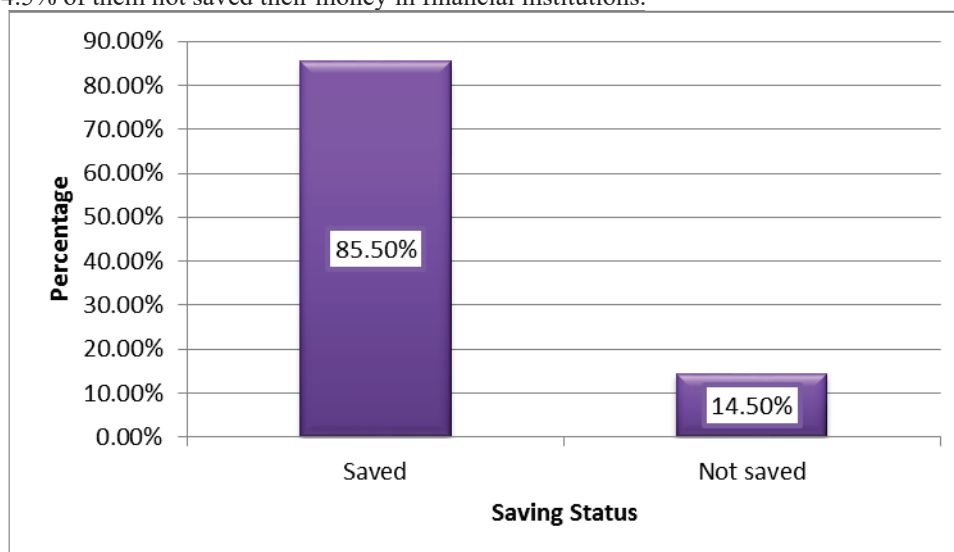
From the total respondent of the study 205(82.3%) of them were male whereas 44(17.7%) of them were females. Based on the age distribution, most of them were aged in between 36-45 and 26-35, which 36.9% and 35.3%, respectively. Similarly, one can see other demographic character of the respondents from Table 1.

**Table 1: Demographic characteristic of respondent**

Characteristics	Category	Frequency	Percentage (%)
Gender	Male	205	82.3
	Female	44	17.7
Age	18-25	36	14.5
	26-35	88	35.3
	36-45	92	36.9
	46 and above	30	12.0
Marital status	Single	27	10.8
	Married	221	88.8
	Divorced/widowed	1	.4
Religion	Muslim	88	34.5
	Orthodox	140	56.2
	Protestant	22	8.8
	others	1	0.4
Education Household heads	Not educated	104	41.8
	Primary	87	34.9
	Secondary and above	58	23.3
Kebele of respondent	Dembi Birjie	89	35.7
	Gundomeskel 02	45	18.1
	Ada'a Melkie	69	27.7
	Selelkula	46	18.5

### 3.2. Saving behavior of the households

The following figure1 showed that most of the respondents (85.5%) saved their money in financial institution while about 14.5% of them not saved their money in financial institutions.



**Figure 1: Saving status of the respondents**

The respondent saved amount in birr(Ethiopian currency) runs between 0 to 160,000 birr with standard deviation 24499.28 birr and mean annual saved birr 18,543.43.

On average the respondent have 3.87 family sizes with minimum and maximum 1 and 9 respectively. Additionally, the mean annual total income the household was 78131.71 birr and on average 7.29 kilometers far from the financial institutions.

Table 2: Summary of some variables

	minimum	Mean	maximum	Std. deviation
Saved amount in birr	0	18,543.43	160,000	24,499.28
Family size	1	3.86	9	1.979
Total income	14,400	78,131.71	200,000	39,855.89
Distance to	1	7.29	17	5.549

### 3.3. Saving behavior vs Demographic and Socio-economic variables

The major socioeconomic and demographic related characteristic of the respondents was presented in Table 3. Out of the total respondent of 249, 14.5% of them were not saved their money in financial institution while 85.5 % of save in financial institutions.

With regard to Sex of the respondent, Male respondents (15.6%) were highest non-saver than female respondents (9.1%) and most of female respondent were more saver than Males. Similarly, based on the age distribution, those who aged 46-55 were the highest non-saver (36.7%) than the others and those who aged 36-45 were the lowest non-saviors 9.8%.

As the education level of respondent increase the percentage of saving behavior also increase. The percentage of non-saver based the education level varies 6.7%, 16.1% and 25.9% of uneducated, primary and secondary and above education level, respectively.

The percentages of saving status based on marital status the respondent increase as one move from single to married. Additionally, the percentage of non-saver varied from 7.4% and 15.4% for those who were single and married, respectively. Similarly, the percentages of saving behavior vary based on religion of respondent and the highest non-saver were 15.7% of those who were orthodox followed by 12.8% of Muslim and the least were protestant 9.1%.

Those respondents who live in Gundo meskel 02 kebele (91.1%) were more savers than who live in Dembi Birjie (88.8%), Ada'a melkie (82.6%) and Selekula (78.3%). Whereas the non-savers varied from 11.2%, 8.9%, 17.4% and 21.7% for those who lived in Dembi Birjie, Ada'a melkie and Selekula, respectively. Saving behavior of the vary cross the main occupation of the respondent 65.5% to 100% and petty trader were the lowest non-saver (0.00%) while employed respondent were the highest non-saver(34.3%). Similarly, one can check the respondent saving and non-saving distribution from Table3.

In general, one can see the chi-square test of association between the saving status and the different factors in Table3 of column chi-square test. At 5% level of significance, the chi-square test of association showed that the variable age, education level of Household head, main occupation, having farm land, getting advice to save and preference of institution were significantly associated with saving status where gender, marital status, religion and kebeles were not significant.

Table 3: Saving behavior vs demographic, Socio-economic

Variables	Category	Saving behavior		Chi-square Test
		Saved	Not saved	Pearson value (p-values)
		Frequency (%)	Frequency (%)	
Gender	Female	40(90.9)	4(9.1)	1.245 (0.265)
	Male	173(84.4)	32(15.6)	
Age	18-25	32(88.9)	4(11.1)	14.47 <b>(0.006)</b>
	26-35	76(86.4)	12(13.6)	
	36-45	83(90.2)	9(9.8)	
	46 and above	19(63.3)	11(36.7)	
Marital status	Single	25(92.6)	2(7.4)	1.4 (0.495)
	Married	187(84.6)	34(15.4)	
Religion	Muslim	75(87.2)	11(12.8)	6.8 (0.079)
	Orthodox	118(84.3)	22(15.7)	
	Protestant	20(90.9)	2(9.1)	
Education Household heads	Not educated	97(93.3)	7(6.7)	11.30 <b>(0.004)</b>
	Primary	73(83.9)	14(16.1)	
	Secondary and above	43(74.1)	15(25.9)	
Kebele of respondent	Dembi Birjie	79(88.8)	10(11.2)	4.37 (0.228)
	Gundomeskel 02	41(91.1)	4(8.9)	
	Ada'a Melkie	57(82.6)	12(17.4)	
	Selelkula	36(78.3)	10(21.7)	
Main occupation	Farmer	126(92.6)	10(7.4)	31.405 <b>(0.000)</b>
	Petty Trader	26(100.0)	0(0.00)	
	Casual Laborer	15(88.2)	2(11.8)	
	Employment	46(65.5)	24(34.3)	
Have farm land	Yes	123(92.5)	10(7.5)	16.05 <b>(0.00)</b>
	No	79(75.02)	26(24.8)	
Have livestock	Yes	101(91.0)	10(9.0)	8.239 <b>(0.016)</b>
	No	101(79.5)	26(20.5)	

Variables	Category	Saving behavior		Chi-square Test
		Saved	Not saved	Pearson value (p-values)
		Frequency (%)	Frequency (%)	
Get advice to save	Yes	189(88.7)	24(11.3)	26.35 <b>(0.000)</b>
	No	13(52.0)	12(48.0)	
Prefer institution	Formal	187(88.2)	25(11.8)	8.195 <b>(0.004)</b>
	Informal	26(70.3)	11(29.7)	
Know interest rates	Know	176(91.7)	16(8.3)	25.43 <b>(0.000)</b>
	Not know	37(64.9)	20(35.1)	

### 3.4. Determinants of household saving behavior

The binary logistic regression in Table 4 showed that age of household head, in occupation of the household, knowing interest rate of formal financial institution, income of the household and family size were significantly influence saving status of the household in the district at 5 % level of significance while education level of household head, and distance from the financial institution were not significantly influence the saving status of the households. Effects of these factors on saving status of the household were interpreted in terms of odds ratio and discussed as follows.

Ages of household head was significantly affect saving status of the households at 5% level of significance and the odds not saving for the household head who aged 26-35 and 46 and above was 6.22 and 2.78 times higher than those who aged 18-25, respectively, keeping other factors constants. This finding was in line with the previous study done by Quartey & Blankson, (2008), Bizuneh (2011), Njung'e (2013), Michael (2013), Girma et al. (2013), Mirach and Hailu,(2014), Bogale Y. *et al* (2017) and Saliya, A. Y.(2018) that ages of the households positively related to households saving status. As the ages of the households age increase, the saving behaviors of the also increase.

Main occupations of the household significantly influence the saving status of the households at 5% level of significance and the odds of not saving for those households who were petty traders, casual laborer and employed were 23.50, 20.615 and 135.03 times more than those whose main occupation was farmer, respectively, keeping other factors constant. This finding was in line with the previous study done by Gina *et al.*(2012), Nayak (2013), Njung'e (2013), Obi-Egbedi *et al.* (2014), Mirach and Hailu,(2014) and Bogale Y. *et al* (2017) that employment status of the households related to the saving behavior of the household.

Knowing about the interest rate of financial institution of the household significantly influence the saving status of the households at 5% level of significance and the odds of not saving for those households who do not know about the interest rate of financial institution was 20.88 times more than those who know about the interest rate, keeping other factors constant. This finding was in line with the previous study done by Nayak (2013), Roba(2013) and Mirach and Hailu,(2014) that the awareness of interest rate encourages the saving of individuals and saving behavior.

Income of the household significantly influence the saving status of the households at 5% level of significance and as the income the household increase by one unit, the households not saving decrease by .999 times , keeping other factors constant. This finding was in line with previous study done by Bizuneh (2011), Popovici (2012), Workineh (2013), Raba (2013), Njung'e (2013), Michael (2013), Girma *et al.* (2013), Mirach and Hailu,(2014) Obi-Egbedi *et al.* (2014), Halefom Y. (2015), Bogale Y. *et al* (2017) and Saliya, A. Y.(2018) that income of the household positively related with saving behavior of the households implies that as the income of the households increase, saving also increase.

Family size of the household also significantly influence saving status of the households at 5% level of significance and as the number of family size increase by one person, the household not saving decrease by 0.595 times, keeping other factors constant. This finding was in line with the previous study done by Popovici (2012), Obayelu (2012), Michael (2013), Obi-Egbedi et al. (2014) and Bogale Y. *et al* (2017) that family size was negatively related to household saving status implies that the higher family size reduce saving of the family.

Table 4: Factors affecting saving status of the households

Variables	Categories	Odds Ratio	S.E	Z	P-values	95 % CI of OR	
		(OR)					
$\beta_0$ (constant)		0.028	0.0449	-2.23	0.026*	0.146	0.650
Age of HH (Ref: 18-25)							
	26-35	6.225	5.839	1.95	0.051*	0.9905	39.128
	36-45	8.153	10.673	1.60	0.109	0.626	106.080
	46 and above	2.788	4.966	4.45	0.000**	0.849	9.154
Education (Ref: No education)							
	Primary education	1.180	1.0924	0.18	0.858	0.1923	7.242
	2 <sup>nd</sup> ary and above	0.332	.330	-1.11	0.267	0.0471	2.333
Main occupation(Ref: Farmer)							
	Petty Trader	23.508	32.229	2.30	0.021*	1.600	345.323
	Casual Laborer	20.615	32.606	1.91	0.056*	0.928	45.763
	Employed	135.031	185.603	3.61	0.000**	9.398	194.012
Know Interest Rate(Ref: know)							
	Not know	20.884	15.463	4.10	0.000**	4.893	89.141
Income in birr		0.999	0.00014	-2.76	0.006*	0.999	0.999
Distance to financial institution		0.956	0.066	-0.64	0.521	0.834	1.096
Family size		0.595	0.1575	-1.96	0.050*	0.355	1.002
LR chi2(12) = 113.42 ,		prob > chi2 = 0.000					

(Ref: Reference category, \*, \*\* significant at 1%, 5% level of significance)

Data Source: On Survey (2019)

#### 4. CONCLUSION AND RECOMMENDATION

The study aimed to assess and investigated saving behaviors of the household and it associated factor in the district based on a random sample of 249 households from four kebeles of the district. It also used quantitative primary data taken by using survey methods and analyzed using descriptive and inferential analysis methods.

The descriptive analysis revealed that out of 249 household, about 36(14.5%) of them not saved their money in financial institutions whereas about 213 (85.5%) of them saved their money in financial institutions. The factor such as age of household head, education level of household head, main occupation of the households, having farm land, getting advice about saving, knowing about financial institution interest rate, having livestock and preference on the types financial institution were statistically associated with saving status of the households.

The logit model also identified that the variables such as age of household head, main occupation of the household, knowing interest rate of formal financial institution, income of the household and family size were statistically significant determinants of saving status of the household in the district.

Therefore to improve the household's saving behavior in financial institutions, the district financial sector and institution, the Oromia regional state and the government financial sectors should work on awareness creation and promotions about saving and its advantage in improving and sustaining the economic growth of the community.

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