

Factors Affecting Rural Households Savings: The case of Gedebe Hasasa District, West Arsi Zone, Oromia National Regional State, Ethiopia

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Abstract

Saving is the strategic variable in achieving financial security and growth affecting both individual and national wellbeing. However, saving level in Ethiopia particularly in rural areas is limited and little is known empirically about its factors. This study initiated with the objective of identifying forms of savings used by rural households and identifying major factors

affecting rural households' savings in Gedeb Hasasa District using survey data collected from 188 sample households. The descriptive results of the study showed that 43.1% of the sampled households had savings in formal financial institutions during the survey time whereas 56.9% of the sampled households had no saving in formal financial institutions. From the Binary logit results, five variables namely; household head's education level, access to credit service, average annual income, average annual expenditure and distance from formal financial institutions were found to have significant effect on rural households' savings. Based on these findings, the researcher recommended that emphasis should be given towards strengthening different educational opportunities (formal and integrated adult education), government agricultural offices with nongovernmental organizations should work to improve the rural households' agricultural productivity through income diversification and financial institutions should provide saving services by establishing satellite branches reasonably near to the rural households' residences to promote rural households' savings.

Keywords: rural households' savings, formal financial institutions, saver households, non-saver households.

Introduction

Saving has been considered as one of the factors affecting growth to lead the developing countries to the path of development. In developing countries savings are important factors of households' welfare. On the other hand, without savings, households have few other mechanisms to smooth out unexpected variations in their income. For individuals and households savings provide a cushion of security against future contingencies whereas for nation savings provide the funds needed in the developmental efforts (Gedela, 2012). In addition, saving enable households to maintain a relative stable lifetime level of living. It is also likely that households refrain from current consumption to save for payment for children's education (Yao *et al.*, 2011).

Rural households' savings in developing countries particularly in Sub-Saharan Africa remains limited and far behind from other parts of the world. Chaia *et al.* (2009) combine a number of data sources to estimate that only about 20% of households in Sub-Saharan Africa saved their money in formal financial institutions. 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, economic

fluctuations and climate risk lead to important income variations and leave the households vulnerable to severe hardship. Moreover, their social coverage is restricted and the financial markets are not well developed. Thus, these countries often face saving allocation problems and have difficulties to develop productive investments (Tsega and Yemane, 2014).

Similarly, in Ethiopia rural households' savings is found to be limited and only six million households save money in formal financial institutions with an average of 875 Birr per year (Aron *et al.*, 2013). The average share of gross domestic saving in the year 2012 was 12.4% of the GDP (Girma *et al.*, 2014). The average gross saving rate as percentage of GDP of Ethiopia was also 21% (Tsega and Yemane, 2014). Recognizing this fact, the country has planned to promote rural households savings among citizens so as to mobilize adequate saving. In the five years Growth and Transformation Plan (GTP) of the country, it is envisaged to increase saving rate of GDP. The strategy of the government that have been indicated to mobilize domestic saving resource are creating enabling environment such as increasing financial sector accessibility to rural areas and service diversification by financial sector (MoFED, 2009).

Gedeb Hasasa District is one of the districts of West Arsi Zone, Oromia Regional State. It is one of the most productive areas especially in Wheat and Barley production. And most of the production is carried out by smallholder farmers characterized having limited access for credit. Thus, mobilizing own saving could serve as a main source of finance for investment to the rural households in the study area. Thus, assessing factors affecting rural households' savings in the study area can bring valuable contribution to the accumulation of capital thereby for investment boost. In addition, conducting location specific studies is useful in addressing area specific problems for policy interventions.

Materials and Methods

Description of the Study Area

West Arsi Zone is one of the eighteen administrative Zones of Oromia National Regional State, bordered by Bale on the South, SNNPR on the South West, Shewa on the North West and Afar Regional State on the North and Hararghe on the West. GedebHasasa District is located in west Arsi Zone of Oromia National Regional State, at about 305Kms South East of the capital city of Addis Ababa and at about 108 Kms from Assela town and at about 80 Kms from Shashemane town. According to the information from Agriculture Office of

Sampling Procedures and Sample Size

Multi-stage sampling method was applied to select sample 'kebeles' and respondents to study factors affecting rural households were saving. First, 188 sampled households were determined using the formula given by Becker (2005) from a total of 3972 household heads at 5 percent error and 95 percent confidence level . *He forwards* the procedure as follows:

$$n = \frac{Z^2 * P (1 - P)}{e^2}$$

Where n is the minimum sample size to be drawn, z is the desired confidence level (the value corresponding to the 95 percent level of confidence (i.e. 1.96), is the desired level of precision that is 5 percent and P is the estimated percentage proportion of the population. The total rural households in all 25 'kebeles' of the district were about 27842. The estimated percentage of the population in the sample 'kebeles' (p) was about 14.3 percent. The researcher divided the rural 'kebeles' as near ('kebeles' located up to ten Km) and far ('kebeles' located over ten Km) using stratified sampling method. Then, four rural 'kebeles' two from near and two from far were selected randomly. In the third stage, the rural households in each 'kebeles' were stratified in to saver and non-saver categories in formal financial institutions based on the source provided by the financial institutions. Finally, systematic

random sampling was used to select sample respondents proportional to sample size was used to determine the number of sampled households from each 'kebeles'.

Model Specification

Binary logistic regression model was a proper model when the dependent variable is a dummy one consisting of two, 0 and 1, or more levels; logistic regression model can be properly used.

Thus, logistic regression model that was employed in this study was a binary logistic regression model, where dependent variable is Y and independent one is X. In order to elucidate the model, the following logistic distribution function was used (Maddala, 1986; Greene, 1993; and Gujarati, 1995).

$$P_i = \Pr(Y=1/X_i) = \frac{1}{1 + e^{-(\beta_1 + \beta_2 X_i)}} \quad (1)$$

In the logistic distribution equation, P_i is the independent variable; X_i is the data that is the possibility of a preference by an individual (option of having 1 and 0 values). When $\beta_1 + \beta_2 X_i$ in Equation 1 is replaced by Z_i , Equation 2 is obtained:

$$P_i = \frac{1}{1 + e^{-Z_i}} \quad (2)$$

Z is between $-\infty$ and $+\infty$, and P_i is between 1 and 0. When P_i shows the possibility of savers, the possibility of non-savers of

rural households is $1 - P_i$. Then, the possibility of non-saver can be explained as in Equation 3 as follows:

$$1 - P_i = \frac{1}{1 + e^{Z_i}} \quad (3)$$

Equation 4 is obtained by dividing the savers by non-savers:

$$\frac{P_i}{1 - P_i} = \frac{1 + e^{Z_i}}{1 + e^{-Z_i}} = e^{Z_i} \quad (4)$$

When the natural logarithm of both sides of the equation is written, Equation 1 is obtained:

$$L_i = \ln\left(\frac{P_i}{1 - P_i}\right) = Z_i = \beta_1 + \beta_2 X_i \quad (5)$$

Thus, non-linear logistic regression model is liberalized based on both its parameters and variables. “L” is called “logit” and models such as this called “logit models” (Gujarati, 1995, 2003). In these situations, Equation 1 is used for proper transformations:

$$P_i = \frac{1}{1 + e^{-(\beta_1 + \beta_2 X_1 + \beta_3 X_2 + \dots + \beta_k X_k)}} \quad (6)$$

Odds and odds ratio are significant terms in logit model. Odds are defined as the ratio of the number of events that occurred to number of events that did not occur. “Odds ratio” on the other hand, is the ratio of two odds, in other words, the ratio of likelihood to another. In Equation 4, two probabilities, savers

rural households is 1- P_i . Then, the possibility of non-saver can be explained as in Equation 3 as follows:

$$Z_i = \beta_0 + \epsilon \beta_i X + U_i \quad (7)$$

Therefore, the above Binary logit econometric model was used for the study to identify major factors affecting rural households savings.

Data Source and Method of Data Collection

Both primary and secondary data were collected from the relevant sources by employing different data collection methods. The primary data were collected through household survey respondents, focus group discussions and key informant interviews. For household survey of the study, interview schedule consists of close-ended questions were used as data collection instrument. The interview schedule prepared in English and translated into local language (Amharic).

On the other hand, the secondary data were collected from the findings stated in published and unpublished documents and literatures related to the research problem. These were based from the recent literatures such as; articles, journals, reports, working papers, books, and internet sources related to rural

households savings. Information related to factors influencing rural households' savings were collected from secondary sources of data.

The dependent variable has a dichotomous nature measuring rural households' savings status in formal financial institutions in the year 2013/2014. This is to distinguish or discriminate between those savers and non-savers in the study area. It takes a value of 1 if the households save in formal financial institutions otherwise 0.

Results and Discussions

Characteristics of Sampled Households

Sex of household heads

Sex is one of the variables that can explain rural households' savings. As indicated in Table 1, out of the sampled households 125 (66.5%) were male and the remaining 63 (33.5%) were female. Of the total sampled households, 31 (29%) of the non-savers were female headed households where as 76 (71%) of the non-savers were male headed households. On the other hand, 32 (39.5%) of the sampled saver households were female headed households where as 49 (60.5%) of the sampled saver households were male headed

households. The result revealed that male headed saver and non-saver households had greater percentage than female headed households.

Based on Table 1 the Chi- square value ($\chi^2= 2.3$; $P=0.09$) showed that there was no statistically significant association between saving status and sex of saver and non-saver households. This implies that being male or female headed household had no statistically significant effect on saving decision of the households. This possibly indicate that male and female headed households had equal chance to access to information on saving and formal financial institutions make their target on male and female headed households during saving mobilization.

Marital status of household heads

The marital status of the head of the households also affects the saving status of the rural households. Of the total sampled household heads, 111 (59%), 77 (41%) were married single and respectively (Table 1). Among the non-savers 68 (63.6%) were married where as 39 (36.4%) of them were single. On the other hand, 43 (53.1%) of the savers were married where as 38 (46.9%) of the savers were single.

Regarding its association, the chi-square test indicated that there had no statistically significant association between marital status and saving status of saver and non- saver households ($\chi^2 = 4.99$; $P = 0.17$). Therefore, the result in this study clearly showed that being married or unmarried had no significant effect on rural households' savings. This possibly married and unmarried household heads would have similar socio - cultural background regarding to rural households' savings.

Education level of household heads

Education enhances the capacity of individuals to obtain, process, and utilize information through different sources. It is required to make saving decision. As a result, level of education of the head of the households influences the saving status of the rural households. According to the survey result, savers and non-savers who were illiterate were 22 (27.2 %) and 38 (35.5%) respectively and from the savers and non-savers who were literate were 59 (72.8 %) and 69 (64.5%) respectively. The chi-square value $\chi^2=10.93$; $p= 0.012$) of the sampled households indicated that there was statistically significant difference in the education levels of savers and non-savers (Table 1).

The percentage difference between savers and non-savers in terms of literacy level may mean that literate household heads had more exposure to the external environment and information which helps them to easily associate them to saving from formal financial institutions. It implies that saver rural households with more education were likely to save their money in formal financial institutions. This finding was similar with the finding of (Aron *et al.*, 2013) that indicated as the academic level of households' increase the saving status shows improvement and Girma *et al.* (2014) indicated that showed positive and statistically significant effect on rural households' savings. But, Sebhatu (2012) found that education and rural households' savings had negative relationship and the possible explanation given was some saving schemes might not need good educational background of the respondents.

Table 1.Characterization of saver and non-saver households by demographic factors

Variables	Saving status				χ^2 value
		non-saver (N=107)	saver (N=81)	Total (188)	
Sex	Female	N 31	32	63	2.3
	%	29.0	39.5	33.5	
	Male	N 76	49	125	
	%	71.0	60.5	66.5	
Marital status	Married	N 68	43	111	4.99
	%	63.6	53.1	59	
	Single	N 39	38	77	
	%	36.4	46.9	41	
Education Level	Illiterate	N 38	22	60	10.93**
	%	35.5	27.2	31.9	
	Literate	N 69	59	128	
	%	64.5	72.8	68.1	

Family size of sample households

The size of the family is also an important factor for the saving status of the rural households. Accordingly, the average family size of the sampled household was 7.3. The result indicated that the average family size of the sampled savers and non-savers was 7.84 and 7.01 respectively and the standard deviation of the family size of savers and non-savers was 4.54 and 3.47. Thus, the average result revealed that there was no large difference among the family size of the savers and non-savers with respect to their family size. But, the average family size of the sampled households was higher than the national average of 5 persons (CSA, 2010). The possible reason is rural households in the study area practices polygamous marriage.

The t-value indicated that there was no statistically significant mean difference (t-value= 1.33; p=0.18) between the mean family size of savers and non-savers (Table 2). The variation of family size of the two groups had not showed a larger difference and the result indicated that there had no significant effect on rural households saving.

Table 2. Characterization of savers and non-savers by age and family size

Variables	Saving status			t-value
	non-saver (N=107) mean (std)	saver (N=81) mean (std)	Total mean (std)	
Age	33.75 (8.35)	35.20 (10.33)	34.37 (9.25)	1.03
Family Size	7.01 (3.47)	7.84 (4.54)	7.3 (3.69)	1.33

Std =standard deviation

**Characterization of Savers and Non-Savers by
Socio-Economic Factors**

Landholding size of household heads

Land is a vital resource for the rural households as it can be accumulated in terms of money and productive asset at the time of financial emergency. According to the survey result, the average size of landholding of savers and non-savers was 2.67 and 2.30 hectares respectively and the standard deviation of the landholding size of savers and non-savers was 1.30 and 1.28 hectares respectively. The results of the mean value indicated that average landholding size of savers was larger than non-savers. The t-value ($t=1.92$; $P=0.05$) showed that there was statistically significant difference between the mean landholding size of savers and non-savers with respect to their landholding size. This implies that sampled households who had large landholding size had higher possibility to save in formal financial institutions. Rural households who are using their larger size of land for cultivation can utilize more capital and finally their income increases. As the income of the households increase because of cultivation of large farm land, the probability to save in formal financial institutions also increases. In addition, land is used as collateral for rural households for credit access from financial institutions.

Livestock ownership

Livestock is the most important asset for rural households in the study area. Rural households in the study area undertake both crop and livestock production activities. In the study area, livestock holding size varied among the sampled households. Based on Strock *et al.* (1991) the livestock number was converted into tropical livestock unit (TLU) to facilitate comparison between the two groups. According to the survey result, the average size of livestock of the sampled savers and non- savers was 8.62 and 7.54 TLU respectively and the standard deviation of the livestock ownership size of savers and non-savers was 5.30 and 5.45 TLU respectively. The result indicated that there was no greater difference between savers and non-savers with respect to their livestock ownership. The mean difference of livestock ownership between savers and non-savers was not statistically significant ($t=1.37$; $P=0.17$). This finding was similar with Obayelu (2012) that showed negative relationship between rural households savings status and livestock ownership but contrary with the findings of Girma *et al.* (2014) and Degu (2007) that showed positive and significant relationship between households saving status and livestock ownership.

Annual income of sample households

The major sources of income for the sampled households are crop production, livestock production and off farm/nonfarm activities. Income is an important factor of the saving status of the rural households. It is a positive factor that analyses the saving status of households. As shown in Table 3, the annual income of the sampled households was calculated in ETB and found by the researcher. The annual income of the savers and non-savers was 21640.63 and 11197.90 ETB and the standard deviation of the annual income of savers and non-savers was 18175.63 and 7890.40 ETB. As the mean income indicated that there was greater annual income difference between savers and non-savers. The t-value ($t=5.32$; $P=0.00$) also showed that there was statistically significant mean difference between the annual income of savers and non-savers with respect to their income levels. As indicated in the relative income hypothesis, higher income leads to higher probability of households to save. This result is consistent with a study by (Aron *et al.*, 2013) that showed income is a significant factor for the saving status of households and the result revealed that when the income level of households increased, the saving rate will also increase by some present. Rehman *et al.* (2010) also showed that household income would increase households saving ability.

Annual expenditure of sample households

As shown in Table 3, the result tried to find out the sampled households spent their incomes on and the expenditure of the money of the sampled households. The result indicated that a significant number of sampled households spent their income on food, clothing and purchase of inputs. The annual expenditure of the sampled households was calculated in ETB. The average annual expenditure of the savers and non- savers was 13364 and 7925.22 ETB and the standard deviation of the annual expenditure of savers and non-savers was 9375.71 and 4170.54 ETB respectively. The result revealed that savers spent more than non-savers. The t-value ($t=5.35$; $P=0.00$) showed that there was statistically significant difference between the annual expenditure of savers and non-savers with respect to their expenditure. As the landholding size of saver households is larger and uses their income for the purpose of cultivation, they would have spent more money for purchase of inputs and in turn earns more income from their cultivation.

When the income level of the sampled households' increases, their expenditure also increases but not as income increases and rural households have a possibility that the expenditure is utilized on productive activities and this can again lead to an increase in savings.

Table 3. Characterization of savers and non-savers by socio-economic factors

	Saving status		
	non-saver		t-value
	(N=107)	saver (N=81)	
Variables	mean (std)	mean (std)	
Landholding	2.30	2.67	1.92**
Size	(1.28)	(1.30)	
Livestock	7.54	8.62	1.37
Ownership	(5.45)	(5.30)	
Annual			
Income	11197.90 (7890.40)	21640.63 (18175.63)	5.32***
Annual			
Expenditure	7925.22 (4170.54)	13364 (9375.71)	5.35***

*** Significant at 1 % and ** significant at 5 %
std=standard deviation

Characterization of Savers and Non-Savers by Institutional Factors

Physical distance from financial institutions

Table 4 shows the distance in kilometers that the potential beneficiaries traveled on foot for using saving services in formal financial institutions. The average distance traveled by savers and non-savers to their nearest financial institution was 15.40 and 13.63 km and the standard deviation of the average distance to their nearest financial institution of savers and non-savers was 9.89 and 10.85 km. The result indicated that savers traveled relatively longer distance to save their money in formal financial institutions. But, the mean distance between savers and non-savers to their nearest formal financial institution was not statistically significant ($t=1.15$; $P=0.25$).

Households located relatively in far distance from financial institutions than households located in nearer to financial institutions save money. This is because households in distant area have large landholding size than households located near to the center (2.67 and 2.30 hectares respectively (Table 4) and this contributes for generating more income and in turn motivates households to save. As compared to closer households, distant households are scattered and there is large

variation among households in their landholding size since land is not equally distributed in the study area.

Table 4. Characterization of savers and non-savers by distance from financial institutions

Variable	Saving status		t-value
	non-saver (N=107)	saver (N=81)	
	mean (std)	mean (std)	
Distance from formal financial institutions	13.63 (10.85)	15.40 (9.89)	1.15

std= standard deviation

Access to credit

Credit can increase rural households' access to essential resources and fuel economic growth. It also enables efficient allocation of risk, costs and financial reserves. Besides, rural households can acquire inputs and equipments such as fertilizers, tractors, farming equipments and livestock that make them more productive and enhance overall agricultural productivity. Credit access of sampled households was assessed as indicated in Table 5. Out of the total sampled

households, 72 (38.3%) had credit access in the year 2013/14 where as 116 (61.7%) of the sampled households had not credit access. Accordingly, 40 (49.4%) of the savers and 76 (71%) of the non-savers had no credit access while 41 (50.6%) of savers and 31 (29%) of non savers had credit access.

Based on the Table results, the percentage of non-savers who had no credit access was higher. The result also revealed that savers who had credit access were higher. The Chi-square value ($\chi^2=9.14$; $p=0.002$) of the sampled households indicated that there was statistically significant association between credit access and saving status of savers and non-savers. The implication was that households who had more access to credit had higher probability to save their money in formal financial institutions. This possibly credit users would have more information and awareness regarding to saving in financial institutions than non-users. In addition, rural households would have used their loan for agricultural productivity that can increase the households' income.

The current study finding was similar with the finding of Obayelu (2012) but contrary to the findings of Girma *et al.* (2014) indicated that access to credit decreases saving in financial institutions because the available credit was mainly used to purchase agricultural inputs.

Utilization of agricultural extension services

Table 5 showed that utilization of agricultural extension services of sampled households and their saving status. Out of the total sampled households, 185 (98.4%) had used agricultural extension service in the year 2013/14 where as 3 (1.6%) of the households had not used agricultural extension service. Accordingly, 80 (98.8%) of the savers and 105 (98.1%) of the non-savers had used agricultural extension service in the same year while 1 (1.2%) of the savers and 2 (1.9%) of non-savers had not used agricultural extension services.

Based on the Table result, the percentage of non-savers who had used agricultural extension services was higher. The result also revealed that savers who had used agricultural extension services were higher. The chi-square value ($\chi^2=0.12$; $p=0.06$) of the sampled households indicated that there was no statistically significant association between utilization of agricultural extension service and saving status of savers and non-savers. This possibly sampled households who had got information regarding saving from development agents were not as such significant. This indicated that the extension system failed to incorporate and address saving issues. Though, savers and non-savers who had equal access to utilize agricultural extension services had no effect to make rural households saving decisions.

Table 5. Characterization of savers and non-savers by credit access and utilization of agricultural extension access

Variables	Saving status			χ^2 value
		non-saver (N=107)	saver (N=81)	
Access to credit	No	N 76	40	116
		% 71.0	49.4	61.7
	Yes	N 31	41	72
		% 29.0	50.6	38.3
Utilization of agricultural extension services	No	N 2	1	3
		% 1.9	1.2	1.6
	Yes	N 105	80	185
		% 98.1	98.8	98.4

*** Significant at 1 %

Forms of Savings used by Rural Households

Formal saving

Table 6 shows formal saving status of the sampled households. Out of 188 sampled households considered in the analysis, 43.1% rural households have used formal financial institutions and 56.9% who did not save in the formal financial institutions at the time of data collection. Of the sampled households that had used formal financial institutions, 14 (17.3%), 25 (30.9%), 25 (30.9%), 17 (20.9%) saved their money at Commercial Bank of Ethiopia, Oromia Cooperative Bank, Oromia Saving and Credit Share Company, and Saving and Credit Cooperatives respectively. The average annual saving amount of saver sampled households was higher at Commercial Bank of Ethiopia (10077.42 ETB) with standard deviation of (11184.33 ETB). Based on the feedback obtained from the focus group discussion, households who saved much money in Commercial Bank of Ethiopia mostly received remittances from abroad.

Table 6. Formal financial institutions and saving amount of the sample households

Saving in Formal Financial Institutions	N	%	Mean	Std. Deviation
Commercial Bank	14	17.3	10077.4286	11184.33562
Oromia Cooperative Bank	25	30.9	3872.8400	4144.70405
Oromia Saving and Credit Share Company	25	30.9	1838.0400	1801.80656
Saving and Credit Cooperatives	17	20.9	1435.5294	976.49489
Total	81	100		

Table 6 showed that there were several reasons why sampled households were engaged in formal saving. Out of the saver households who were on what encouraged them to save in formal financial institutions, 55 (67.9%) confirmed that mitigating an emergency was the sole reason, 23(28.4%) did it in order to buy expensive item and 3 (3.7%) since the money value from saving is going up. Similarly, (Rehman *et al.*, 2010) indicated the motivation of rural households to save includes; reserving against unforeseen contingencies, providing future anticipated differences between income and expenditure. The result of the focus group discussion held with staff members of Commercial Bank of Ethiopia showed that the Bank has

started rewarding for savers. This encouraged the rural households to save their money in financial institutions.

During the focus group discussion period, a man from the members of the focus group discussion said that my neighbor had got motorcycle as a reward since he has saved his money in Commercial Bank of Ethiopia. This encouraged him and has started saving at Commercial Bank of Ethiopia.

Summary of Descriptive Results of Explanatory Variables

In order to have a clear picture of the demographic, socio-economic, and institutional and variables related to saving institutions which differentiate savers from the non-savers chi-square and t-test tests were applied. Four continuous variables namely; landholding size, annual income, annual expenditure, distance from market and two discrete variables namely; education level of household heads and access to credit were found to be significant at 1% and 5% probability level (Table 7).

Table 7. Summary results of descriptive analysis of explanatory variables

Continuous Variables	Mean value		t-value
	non-saver	Saver	
Age	33.75	35.2	1.03
Family size	7.01	7.84	1.33
Landholding size	2.3	2.67	1.92**
Livestock ownership	7.54	8.62	1.37
Annual income	11197.9	21640.63	5.32***
Annual expenditure	7925.22	13364	5.35***
Distance from market center	11.14	14.28	2.25**
Distance from financial institutions	13.63	15.4	1.15

Discrete Variables	χ^2 -value
Sex	2.3
Marital status	4.99
Education level	10.93**
Religion	3.38
Access to credit	9.14***
Utilization of agricultural extension services	0.12

*** significant at 1 % and

** significant 5%

Results of the Binary Logit Model

The dependent variable households' saving status takes a value of one if the households save in formal financial institutions, and zero otherwise. Binary logit model identifies characteristics that stimulate households to save in formal financial institutions as opposed to those who do not. Before running the Binary logit model, different tests were carried out. The technique of variance inflation factor (VIF) was employed to detect the problem of multi-collinearity among the continuous variables. According to Gujarati (2003), VIF can be defined as: VIF

$$(x_i) = 1/1-R_i^2$$

Where, R_i^2 is the square of multiple correlation coefficients that results when one explanatory variable (X_i) is regressed against all other explanatory variables. The larger the value of VIF the more collinear the variable X_i is. As a rule of thumb, if the VIF of a variable exceeds 10, there is a multi-collinearity problem. The VIF values displayed below (Table 8) have shown that all the continuous explanatory variables have no multi-collinearity problem.

Table 8. Variance inflation factor for continuous variables

Variables	Tolerance	VIF
AGE	0.508	1.969
FAMSIZE	0.401	2.492
LANDHS	0.507	1.972
LIVOWN	0.592	1.69
ANEXP	0.308	3.244
ANINC	0.442	2.264
DISTFIN	0.283	3.533
DISTMKT	0.302	3.312

Similarly, contingency coefficients were computed to check the existence of multi-collinearity problem among the discrete explanatory variables. The contingency coefficient is computed as:

$$C = \sqrt{\frac{\chi^2}{N + \chi^2}}$$

Where, C= Coefficient of contingency,

χ^2 = Chi-square random variable and N = total sample size.

The result showed that in all cases, contingency coefficient is

less than one so that there was no high degree of association among the discrete explanatory variables. The decision rule states that when the result approaches to 1, indicates the existence of multi-collinearity where as values less than 0.75 indicates as there is no problem. The values of the contingency coefficients implied that there was no multi-collinearity problem among the explanatory dummy variables (Table 8).

The results of the Binary logit model estimations (Table 9) of factors significantly influencing the decision to save in formal financial institutions and the model was found to be significant at 1% significance level. Out of the total variables; five of the variables were found to be significant while the remaining were not significant in explaining the variations in the dependent variable. The maximum likelihood estimates of the Binary logistic regression model showed that education level of head of the households, annual income, annual expenditure, credit access and distance from formal financial institutions were important factors influencing saving decisions of rural households in the study area. Most of the variables age, sex, marital status, family size, landholding size, religion, and utilization of agricultural extension services, livestock ownership and distance from market center were not powerful in explaining rural households' savings status.

Table 9. Maximum likelihood estimates of the Binary logit model

Explanatory Variables	Estimated Coefficient (B)	S.E.	Wald Statistics	Odds Ratio	Marginal Effect
SEX	-.228	.773	.087	.796	-.056
RELIG	.748	.628	1.421	2.113	.184
AGE	-.020	.028	.509	.980	-.004
FAMSIZE	-.010	.080	.016	1.228	.050
LANDHS	.205	.188	1.198	.990	-.002
LIVOWN	-.039	.049	.631	.962	-.009
ANINC	.000**	.000	4.713	1.000	.000
ANEXP	.000**	.000	5.185	1.000	.000
ACCRT	1.390***	.414	11.241	4.013	.333
UAEXT	1.620	1.928	.706	5.054	-.304
DISTMKT	.061	.035	2.969	1.063	.015
DISTFIN	-.072**	.036	3.986	.930	-.017
MARTS	-1.137	.817	1.934	.321	-.275
EDUL	.978**	.467	4.395	2.659	.228
CONSTANT	-4.331	2.399	3.260	-	-

Source: Model output (2015)

Notes: Odds ratio shows the predicted changes in odds for a unit increase in the predictor, Nagelkerke R Square = 40.8***, Omnibus Tests of model coefficients: Chi-square = 68.18***, -2log likelihood = 188.83***; Percentage of correct prediction=76.6, correctly predicted non-savers = 85, correctly predicted savers = 65.4; df = 14, Significant at 1% and 5% significance level respectively.

Education level of household heads: education increases the analytical ability of individuals to process information received from any source. As the model result on Table 24 revealed, education level of households is statistically significant at 5 % significance level and positively influences the dependent variable, saving status, and it is in line with the hypothesis. This shows as households are getting educated, they are more likely to save in formal financial institutions. Based on the model result, literate household heads had 2.66 times more odds-ratio of saving than illiterate household heads.

Annual income: average annual income showed significance and positive effect at 5 % probability level on rural households saving status and it is in line with the hypothesis. Other factors being constant, the odds-ratio increased by a factor of 1 when their annual income is increased by 1 unit. Part of the

explanation for this result income would increase households saving ability and enhance the probability of households to save in formal financial institutions. This result is consistent with studies done by (Tsega and Yemane, 2014) and Rehman *et al.* (2010) that shows rural households saving is significantly and positively associated to households' income.

Credit access of households: was hypothesized to have positive effect on rural households' savings and significant at 1% probability level and it is in line with the hypothesis. Keeping other factors constant in the model, the likelihood of rural households with access to credit relative to the base category increased by 4.01 when access to credit increases.

The result implies that rural households with more access to credit would have higher tendency to save more in formal financial institutions. This would have possibly meant that credit user households used their loan for production purpose and in turn increases their income. The present study finding was similar to Obayelu (2012) that show positive and significant effect between credit access and rural households saving status and contrary to Adeyeno and Baire (2005) that shows negative and no significant effect between credit access and rural households saving status.

Distance from formal financial institutions: the model result of the study confirmed that distance affects negatively and significantly at 5% probability level and it is in line with the hypothesis. The model result revealed that those households who are residing short distance from formal financial institutions had more access to save whereas those who are residing at far distance from formal financial institutions had less access to save in formal financial institutions due to distance factor. Moreover, the odds ratio in favor of access to save decreases by a factor of 0.93 for those sampled households residing at a far distance from financial institutions other things being kept constant. The possible explanation for this is that as the sampled households' are close (near) to the financial institutions; they would have more access to use the service than the one in far place. The current finding was similar to Chemonics International (2007) identified distance remains a major barrier to formal financial saving and other markets in rural areas in SSA specially in rural Uganda, only 10% of the population has access to basic financial services.

Conclusions

The descriptive analysis showed that some rural households practiced saving in formal financial institutions and the common reasons for rural households no saving in formal financial institutions in the study area were; they had no surplus cash to save, low income, they were not aware about saving culture and saving institutions are far.

Besides, the Binary logit analysis showed that household heads' education level enhances households' awareness to decide to save money in formal financial institutions. Households with accesses to credit service enhance rural households' savings. Households with high annual income would like to save in formal financial institutions. Distance from formal financial institutions significantly affects rural households' savings in the study area.

Policy Implications

In order to make illiterate rural households have better understanding towards savings and make decision to save, emphasis should be given towards strengthening different educational opportunities (integrated adult education). The result of the Binary logit model revealed that average annual

income had positive and statistically significant effect on rural households' savings status. Based on this finding, to make non-saver households to save in financial institutions, there is a need to further improve the rural households' income through diversifying their agricultural activities and income source by engaging in nonfarm/off farm activities. Credit access had positive and statistically significant effect on rural households' savings status.

In order to make non-saver rural households to save, financial institutions should have awareness creation, consult program and provide productive loan and follow up their credit utilization so that they can use it to generate additional income and this in turn motivates rural households to save in financial institutions. The Binary logit result revealed that distance from financial institutions had negative and statistically significant effect on the saving status of rural households. Hence, financial institutions should provide saving services by establishing satellite branches reasonably near to the rural households' residences.

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