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The Impact of Microfinance on Household Saving: The Case of Amhara Credit and Saving Institution Feres Bet Sub-Branch, Degadamot Woreda

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Abstract
In Ethiopia, among other things, low level of domestic saving which is reflected in large resource gap is one of the fundamental problems hampering production, productivity and income of the people. Since access to institutional saving is very limited, the majority of rural poor households are forced to search financial services through informal channels and holding in-kind savings as their alternatives. To overcome these problems and to mobilize rural domestic financial resources, the government of Ethiopia supports microfinance institutions as one of the means. To this end, the government created conducive environment for the development of microfinance institutions by issuing proclamation No.40/1996 (the microfinance law). Amhara Credit and Saving Institution (ACSI) is one of the largest microfinance institutions operating in Ethiopia established in accordance with the above mentioned proclamation. Its microfinance market is the low income population of Ethiopia, particularly of the Amhara Region. ACSI's primary mission is to improve the economic situation of low income, productive poor people in Amhara Region primarily through increased access to lending and saving services. The study sought to assess the impact of microfinance (ACSI) on household saving in Dega damot woreda. A two stage sampling procedure was developed to select 5 sample kebels and 150 sampled rural households. Structured questionnaire was developed to collect quantitative data from sampled households' .In addition; focus group discussion was applied to generate qualitative data. The descriptive statistics and censored Tobit regression model were used for analyzing the data collected. The output from the study shows that 70 % of sampled households practiced financial and non-financial savings where as the remaining 30 % did not practice any form of saving. Surprisingly, 73.27 % were from the treatment group while only 26.73% were from the control group which indicates the positive impact of ACSI on household savings in the study area. Therefore, financial policy aimed to encourage rural households and expanding formal financial institutions could increase the domestic resource mobilization capacity of the country and foster economic growth.
Key words: Microfinance, Household Savings, ANRS,West Gojjam,Degadamot District

CHAPTER ONE
1. INTRODUCTION

Rich Stearns, president of World Vision U.S Ones said "I have seen the power of microfinance over the world in the eyes of mothers and fathers. ***It is unmistakable- the joy and deep satisfaction they fell*** *from being able to work hard and provide their children and their future" (world vision micro.org, 2010).*

1.1. Background of the study

Microfinance institutions increase opportunities for poor section of every society by helping them to access credit and introducing the habit of saving. The major reasons formal financial institutions financially exclude the poor is associated with high risks and high costs. There is enormous amount of uncertainty with regard to the repayment capacity of the poor. Information regard to credit is inadequate or unavailable, expenditure and income patterns of the poor are irregular, and the majority of the poor do not have collateral. In addition to these, high probability of exposure to systematic risks including crop failure or commodity price fluctuation is fairly high, thus lending to the poor is a high risk investment with high probabilities of default (Maren, 2010).

Chowdhury (2010) associated the above situation with information barriers .He noted that banks are often reluctant to offer rural banking services to the poor because of existing information asymmetries. Adverse selection and moral hazard are two typical causes of information asymmetries. The lender has little or no information on the quality of its borrowers i.e. whether they are risky or are they safe. In addition, Morduch (1999) explained that banks exclude the poor due to high transaction cost of serving the rural poor. Small loan size requirement but frequent loan transaction is another reason of the exclusion. In sum these are seen as the main issues that led to the failure of rural credit markets and to continued exclusion of the poor from those markets in most developing countries.

Microfinance emerged as a remedy to these issues with the objective to resolve them by employing range of financial innovations. The principle of group lending lies at the center of those innovations. According to this approach, members of the groups are mutually responsible for repaying the loans which leads to self-

monitoring within the group and make each member to work hard to be more successful.

The government of Ethiopia supports microfinance institutions as one of the means addressing the poorest segment of the society to reduce poverty. To this end, the government created conducive environment for the development of microfinance institutions by issuing proclamation No.40/1996 (the microfinance law). Amhara Credit and Saving Institution (ACSI) is one of the largest microfinance institutions operating in Ethiopia established in accordance with the above mentioned proclamation. It was registered as Share Company on November 25, 1997 and started operation in the second half of the 1998. It is an active member of Association of Ethiopian Microfinance Institutions (AEMFI). Its microfinance market is the low income population of Ethiopia, particularly of the Amhara Region. ACSI's primary mission is to improve the economic situation of low income, productive poor people in Amhara Region primarily through increased access to lending and saving services.

The main activities performed by ACSI are carryout micro financing activities both in urban and rural Ethiopia, particularly, credit, promoting saving, money transfer and pension fund management, mobilize resources from various sources, promotional counseling and training services and plough back profits generated from operations.

The study aims to assess the impact of microfinance institutions on household saving by taking a case study of ACSI FerseBet sub-branch in Amhara Regional State, West Gojjam zone. It was conducted by assessing the clients (treatment group) who are participating in the program and incoming clients (control group) in the near future.

1.2. Statement of the Problem

Domestic resource mobilization is a key determinant to support rapid economic growth and development. Realizing sustainable economic growth in a country requires huge amount of savings and investment. However, in most developing counties including Ethiopia, huge saving investment gap is a serious problem which creates difficulty to finance investments needed for growth from domestic savings. Due to this, financing investment through domestic government borrowing and/or foreign loan and grants has been taken as a short run solution by developing countries (Deaton, 2005).But this is not a reliable long run solution rather it would significantly increase the countries debt burden in the future.

Microfinance institutions increase opportunities for poor section of every society by helping them to access credit and introducing the habit of saving. And the emergence of these institutions has been seen as a solution for low domestic savings through accessing the rural poor households in financial services. Webster and Fidler (1999) viewed access of financial services to the poor as a tool to escape from poverty through investing in income generating activities and introducing the habit of saving in rural poor households. In many low income countries, however, the prevailing operation of the formal financial institutions is inefficient to provide sustainable financial facilities to the poor due to high transaction cost of providing financial services. To overcome this serious problem, in most developing countries financial inclusion has become a popular concept of among politicians .To this end economic reforms aimed at increasing the accessibility of financial services to the poor are key factors for politicians and are still subject to a lot of research(Beck,2009).

Does access to microfinance really introduce saving habits in rural poor households? There are two conflicting views about this issue i.e. old and new view. The proponents of the old view including Rutherford (2000) and Robinson (2001) argued that poor rural households, particularly in Africa, cannot save because they are too poor. Even if they get some additional income through some windfall, they spend it on consumption or social ceremonies. And therefore, rural saving mobilization efforts are not fruitful and worth nothing. On the contrary, the new view argued that if rural poor households have access to financial services, they have the capacity and the desire to save and would respond appropriately to saving opportunities and incentives. Among the proponents of this view, Coleman and Williams (2006) argued that the poor do save even though they do not have complete access to savings facilities in formal financial institutions. Instead, the poor use informal channels and non-financial assets for their savings which are not visible to formal financial institutions. If they get access to financial services, they become active and regular savers.

In addition to the above two conflicting views, there are scholars warnings the positive impact of microfinance on household savings and poverty reduction. Nazrul Islam (2009) argued that microfinance alone cannot induce household saving and solve the problem of poverty. He raised the simple fact that Bangladesh and Bolivia which have experienced significant expansion of microfinance have not been the international leaders in mobilizing rural saving and reducing poverty while East Asian countries that have little or no microfinance mobilizing rural savings and reduced poverty through labour-intensive industrialization making use of the international trade opportunities.

These debates on microfinance and saving mobilization shows that it is unclear whether microfinance contributes to the mobilization of domestic savings in rural poor households. It is also difficult to conclude microfinance as the most efficient method to mobilize domestic savings from rural poor households. This controversial issue implies that much more solid empirical research is needed.

In, Ethiopia, Amhara region, more than 30% of the regional population earns an income below the

(locally driven) poverty line income level (Getaneh, 2008) .According to the livelihood profile of the region, the problem is highly observed in rural areas including Dega Damote wereda which is the focus area of this research. In this wereda, agriculture productivity is very low due to sever land degradation and high soil acidity. Because of this and lacks of other options to generate subsistence level income, the local population migrate every year to other productive areas both legally and illegally. This statement clearly indicates that the poor households in the district have fewer propensities to save due to constraint of income.

Faced with the above problem in most rural part of the country, rural poverty reduction has been identified as the overarching long term goal for the government of Ethiopia. Excluded more than 80% of the population, the rural poor, from financial services greatly affects the domestic saving of the country .In 2010/11, the domestic saving of the country is only 8.8 % of the total GDP (MoFED, 2012).There is a huge resource gap to undertake capital formation which is regarded as one of the requirement for accelerating economic growth. To bridge the saving-investment gap, the country has relied on external sources of finance such as loan, aid and foreign direct investment (FDI) in near past. Even by sub-Saharan standards, Ethiopia's domestic saving rate has been very low. From 1997 to 2010, the average saving rate in low-income countries of Africa was about 9 percent while it was about 19 percent of middle income countries. In the same period, the average domestic saving rate of fragile sub-Saharan African states was 11.5 percent, still significantly higher than Ethiopia's saving rate (Tsegabirhan, 2010).

In fact some studies have been conducted regarding impact of microfinance (ACSI) on poor households in Amhara region. However, these studies have some difficulties to generalize about the impact due to the methodology adopted or level of impact assessment. In addition, the studies were conducted on urban and semi-urban areas and it is difficult to generalize microfinance impacts on rural areas. Kassa (2008), Bamlaku (2006) and others conducted a research on ACSI's impact on poverty reduction taking institutional sustainability and some economic variables as indicator of clients' well-being improvement. But, according to Hulme (2000), good impact assessment should be conducted based on the change on intended beneficiaries. In this regard, Wolday (2001) showed that products of microfinance institution were not produced based on market analysis to meet the need and preference of the clients while keeping the financial institutions profitable. Schafer (2000) also argued that impact measurement in microfinance should not stop at the institutional level rather it should seek to measure and explain induced changes that occurred at the client level in terms of quantity and direction. This clearly indicates that conducting impact based on institutional sustainability does not indicate changes on beneficiaries. Not only the level of impact, the descriptive and comparative analysis methods used in the studies discussed above is not also suited to generalize the impact of the program on beneficiaries.

All the above discussions clearly show that the issue is highly researchable and needs empirical research to identify the impact of programme intervention on rural household saving mobilization. Not only in Ethiopia, in other developing countries also financial access and savings behavior of low-income people has been understudied. Literatures have focused more on the lending side. Some studies have analyzed the effects of expanding access to credit, but little has been done on the effects of increasing access to savings instruments.

1.3. Research Questions

- Does ACSI have significant impact on rural household saving?
- Does participation in microfinance increase the saving capacity of its clients?
- In which form of saving does ACSI have significant impact?

1.4. Objectives of the Study

The general objective of the study is to analyze how microfinance (ACSI) has impacted on the habit of saving and saving capacity in rural households particularly poor households in Dega Damote District.

1.4.1 Specific Objectives

- To assess the impact of ACSI micro financing services on household saving in the study area.
- To assess the impact of ASCI on forms of savings hold by households through analyzing the form of saving between treatment and control groups.
- To investigate the perceptions and satisfaction of program participants about the services of microfinance.

CHAPTER TWO

2. RESEARCH METHODOLOGY

2.1 Sources and Types of Data

The study was mainly based on primary data and in some extent secondary data had been employed. Structured questionnaire was used containing both close and open ended questions. Besides, focus group discussions had been conducted with the clients of the program in the study area in order to identify salient problems of the institution. In addition to the above sources of data, some form of secondary data like saving mobilization was used from ACSI. Quantitative and qualitative data have been used to measure the impact of the program in the survey study. Quantitative techniques were used to drive an empirical estimate of the impact of an intervention on the target group. The qualitative method has also been used to show the direction of change and individual's

perception about the program.

2.2 Sampling Method and Sample Size Determination

Two sample groups from the total population had been identified so as to select respondents for the survey. The first group consisted of those who were in the waiting list i.e. respondents who were selected but not getting microfinance services by microfinance institution. These groups were selected by the same criteria which were used to select the beneficiaries. The second group consisted of people who have been in the program. The selection had been conducted randomly to avoid sampling biases. The list of people from the institution was used as a sampling frame. Two stages sample design procedure was adopted for the survey.

- The first stage was the selection of sample kebeles.
- The second stage is the selection of sample respondents from the selected kebeles.

Currently, there are 25 kebeles in which the Feresbet sub- branch of ACSI is operating. Five of them, namely, Akelat Woybegne,Filatit Akabit,Tame Abakidan,Telim Butella and Ziqualla Wogem have been selected purposively as a sample kebele based on the involvement of ACSI and the availability of control groups in the kebeles. Both treatment and control groups were selected randomly from sample kebeles.

Participation categories: It is necessary to first determine which observations have been included in the treatment and the control sample in order to analyze the data. The approach is to differentiate between the experiment groups and control groups according to the participation status of the households with the program during the survey period. To avoid selection biases during the selection of treatment and control groups, the researchers did take both samples from the list of the institution in which both sample groups were selected by same criteria including economic and social set-up.

- **The treatment (experiment) sample**: included all households who are classified as program participants.
- **Control sample**: included all households who were classified as new entrants of the program. Specifically, the control sample included all households who had never received services from the program but who are in the waiting list to take loan for the first time.

Sample Size Determination

To get the representative sample households used in this study is determined using the following well-known formula (Yamane, 1967).

Formula: $$n = \frac{N}{1+N(e^2)}$$ Where: n = the desired sample size, **N** = total number of population =6597 and **e** = the level of precision which is equal to 0.09.

Based on this the total sample size is 122. To account for possible error during data collection and inconsistence response of respondents, the sample size was increased to 150. 75 respondents were selected from borrowers while the remaining 75 were from non-clients who make up the control group. All 150 respondents were selected from five kebeles proportionally based on the sampled population. However, only 144 questionnaires 74 from treatment and 70 from control groups were valid and used for the purpose of analysis.

2.3 Econometric Model Specification

This study is mainly interested on analyzing the impact of microfinance on rural household saving. Since the dependent variable is continuous, Tobit model had been applied to analyze the real change in the saving due to the change in explanatory variables. In addition the quantitative impact of microfinance participation on holdings of saving either in cash or kind form had been assessed among clients and non-clients using Tobit regression model.

Before specifying the Tobit regression model, let's elaborate why the regression analysis preferred to other impact analysis methods for microfinance impact on household savings. According to Hulme(2000) impact assessment requires scientific methods which seeks to ensure that the effects can be attributed to causes through experimentation .However ,this approach is virtually infeasible in social science due to the subject matter ,and so the approach has been adopted in to quasi-experiments as applied by Hulme (2000) and introduced by Casley and Lury(1982).The quasi-experiments approach attempts to simulate the situation which would have prevailed if there had been no intervention. Among the methods of this approach, control-group method, Propensity Score Matching (PSM) and Difference-in-Difference method (D-in-D) are the widely used ones.

The common problem of the impact assessment methods is related with finding a base line data (information) to identify the effect of program intervention. Due to this problem, some researchers relying on memory of clients to compare changes before and after program interventions even if inaccurate responses in some cases could not be entirely avoided. Except its enormous demands for data on other possible causal factors (control variables) and its assumptions, regression analysis can solve the problems exist due to inaccurate base line data requirements (Mosley, 1997). This regression analysis allows researchers to equate groups (control and treatment) through collecting data on control variables that the researcher pretty sure the group will be differing

on. The advantage of this statistical control compared to the matching and other methods is that the researcher can base the research on samples participants who are randomly selected from the population (Pedhazur and Schmelkin, 1991). This solves the problem of throw out cases from the data like in matching when one can't find a match for an individual. So, due to this benefit regression analysis (Tobit model) had been applied in this research. The main interest variables of the study, i.e. program participation dummy, had been analyzed through controlling other variables such as education, household size, land size etc. If the coefficient of this grouping variable (participation dummy) is statistically significant, it indicates that microfinance appears to have had a statistically significant net impact on household savings.

Specification of Tobit Regression Model

To observe the real impact of the institution, two groups of respondents have been taken i.e. clients as treatment group and non-clients in the waiting list as control group .The dummy of program participation(1= clients in the program and 0= non-clients in the waiting list) had been taken as main explanatory variable to identify the impact of the program. The dependent variable saving is continuous limited variable. Since this limited dependent variable is continuous from zero to positive infinity, but censored at zero, the Tobit model is appropriate. In this model the dependent variable indicates the amount of household saving (HS_i). Since the dependent variable saving assumes zero for those who do not save and any other large positive value for those participating in saving, this variable is limited (or censored) from below and saving for all household can be captured by the latent variable of saving (HS_i^*) satisfies the Classical Linear Regression Model (CLRM) assumption of a normal, homoscedasticity normal distribution with a linear conditional mean.

Thus, the model for the latent variable HS_i^* can be given by:

$$HS_i^* = \mathrm{B}X_i + \varepsilon_i$$

Where $\varepsilon / \chi_i \sim N(0, \sigma^2)$ ---------- (1)

i=1, 2, 3…….n

HS* is unobservable but $HS_i = HS_i^*$ if $HS_i^* > 0$

$= 0$ if $HS_i^* \leq 0$ ----------(2)

Where: HS_i is the observed amount of household savings

HS_i^* is the latent variable which is not observed

is vector of unknown parameters

X_i is vector of independent variables affecting household savings. These were livestock ownership, land holding, loan size, program participation dummy, age of household head, expenditure on education and health, off farm participation, income from cash crops, marital status, and education level of household head, dependency ratio, household size, and sex of household head.

The above relation shows that the latent variable (HS^*) is equal to the amount of money saved by the household (HS_i); otherwise it is zero if the household does not save. In other word, this model is a combination of the probability that $HS_i=0$ and the distribution of HS_i given that $HS_i^* > 0$. According to Wooldridge (2001), the probability that no money saved by a given household ($HS_i=0$) can be given as:

$$\Pr(HS_i = 0) = \Pr(HS^* \leq 0) = \Pr(\frac{\varepsilon}{\sigma} \leq -\frac{BX_i}{\sigma}) = 1 - \Phi(\frac{BX_i}{\sigma}) \quad \text{---------- (3)}$$

And the distribution of HS_i given that $HS^* > 0$ is:

$$E(HS_i / HS^* > 0) = BX_i + E\{\varepsilon / \varepsilon > -BX_i\} = BX_i + \sigma \frac{\phi(BX_i / \sigma)}{\Phi(BX_i / \sigma)} \quad \text{---------- (4)}$$

Where $\Phi(.)$ and $\phi(.)$ are the operations for the cumulative distribution and probability density function of the standard normal respectively. The second function implies that $E\{\varepsilon / \varepsilon > -BX_i\} \neq 0$ and applying OLS model will be biased and inconsistent even asymptotically and the result of coefficients will be different from the one estimated for the whole sample size (Gujarati, 2003). Since the Tobit model is a nonlinear, the appropriate method to estimation the value of coefficients is to use the Maximum Likelihood (ML) Methods of Estimation.

The coefficients from the Tobit model are difficult to interpret because they measure the change in the unobservable (latent variable- HS*) associated with a change in one of the explanatory Variables. A more useful

measure is what we call the *marginal effects*. Applying the specified model, different types of marginal effects of the explanatory variables on the dependent variables can be estimated in the Tobit model. However, the question that this paper wants to answer is analyzing the impact of participation on microfinance by controlling other variables, i.e. the demographic and economic variables (which affects the household behaviors on economic decisions), on the amount of money saved by those households who are able to generate income and willing to save and used to save for smoothing future consumption or investment opportunity. This conditional marginal effect can be calculated as:

$$E\{HS_i / HS_i > 0\} = \frac{\partial E\{HS_i \left| HS_i^* > 0\right.\}}{\partial \mathrm{X}_i} = B_k + B_k \lambda' \mathrm{X}(\frac{B\mathrm{X}_i}{\sigma}) \quad \text{, ---------- (5)}$$

Where $$\lambda\left(\frac{B\mathrm{X}_i}{\sigma}\right) = \frac{\phi\left(B\mathrm{X}_i / \sigma\right)}{\Phi\left(B\mathrm{X}_i / \sigma\right)}$$

This marginal effect is interpreted as the change in the expected value of amount of total money saved in birr /or in kind/ with respect to difference in program participation holding other explanatory variables constant.

Thus, the probability of saving in relation with the explanatory variables is explained based on the sign of the coefficients. The parameters tell how the saving status of the treatment groups and control groups changes as explanatory variables change. The positive sign of the parameters show that the changes of the variables are greater in clients than non-clients.

Therefore, descriptive analysis and Tobit regression models were employed to analyze the impact of microfinance on saving and forms of saving on rural poor households in the study area. In addition the quantitative analysis had been complemented by qualitative techniques that attempt to explain the processes through which impacts actually occur. The analysis of the assessment had based on the following variables.

CHAPTER THREE

3. RESULTS AND DISCUSSION

3.1. Descriptive Analysis of Data

As stated in the introduction part, the goal of this paper is to analyze the impact of microfinance on rural household savings through comparing the savings of households with access to microfinance services (treatment groups) to those without it (control groups) and try to identify whether there is a significant effect on the savings or on other forms of savings caused by the availability of formal financial vehicles. To shied highlights on the data collected, the field survey was grouped and sub-grouped in way to meet the objectives of the study. In this part to provide results from the primary data of variables, the descriptive statistics including t-test were used before econometrics analysis of the data. This is followed by the interpretation and discussion about findings using econometrics methods in the next part.

3.1.1 General characteristics of respondents

For the purpose of observing savings in each age category as of Life Cycle Hypothesis (LCH), age category was used for the descriptive analysis, but age is taken as continuous variable in the regression analysis. Out of the total respondents, the age of 54 (37.5%) respondents is in the range of 45-55, 46 (31.94%) are in the range of 35-45. This implies that the ages of most respondents lie in the productive age group which is between 35 and 55 (see table 1).

Table 1*:* .Sample Respondents by age group

Age	Treatment group		Control group		Total (%)
	male (%)	Female (%)	Male (%)	Female (%)	
25-35	6(50)	1(8.33)	4(33.33)	1(8.33)	12(8.33)
35-45	13(28.26)	10(21.74)	12(26.09)	11(23.91)	46(31.94)
45-55	21(38.89)	3(5.55)	14(25.92)	16(29.63)	54(37.5)
55-65	13(48.15)	3(11.11)	10(37.04)	1(3.7)	27(18.75)
Above 65	3(60)	1(20)	1(20)	0(0)	5(3.48)
Total	56(38.89)	18(12.5)	41(28.47)	29(20.14)	144(100)

Source: Survey result, 2013/14

In addition to the analysis given above, it is also possible to see the average age of sample respondents. The average age for males in the treatment group was 49.2 years old and for female clients was 44.7 years whereas for males in the control group, the mean age was 48 years and for that of females was 45.7 years during the survey. Here the average age of total sample respondents was 47 years with the minimum and maximum ages of 25 and 72 years with standard deviation of 9.97 years, respectively. The survey result showed that adult households were better in saving as compared to young, but not old household heads. It may be due to that old

household heads are aware of that during retirement they will not have options to serve themselves unless they have put some money as old age insurance.

3.1.2 Saving mobilization in the study area

There are two types of savings in ACSI which are in operation i.e. compulsory and voluntary savings. Compulsory saving is normally imposed and starts simultaneously with the loan that is approved for the individuals who are program participants. Compulsory saving used as collateral to protect loan defaults. MFIs that require compulsory savings as a condition of obtaining loan generally assume that poor people must be taught to save, and that they need to learn financial discipline. It is operated in the institution with a five percent savings deposited in the institution from the total loan when it is exactly disbursed to the individual. After the initial five percent savings, the individual is required to save one percent of his/her loan monthly with an interest rate of four percent.

On the other hand, voluntary saving is a type of saving in which an individual saves depending on his/her willingness and it includes not only program participants but also non-participants. In this type of saving an individual is able to save and withdraw his/her deposits at any time without the notification of the institution when need arises. Table 2 indicates that the total number of both voluntary and compulsory savers increases from year to year. At the end of 2007, the total number of savers was 7,820 while after five years at the same fiscal year the total number of savers reached 19,803. Similarly, the amount of savings for both voluntary and compulsory has increased. In 2007, the total amount of savings was 3,682,472.30 Birr while at the end of 2011 it reached 10,450,592.60 Birr. Even if it doesn't indicate the impact of the program on participants (treatment groups) separately, the trend for both number of savers and amount of money saved shows the improvement in the saving behavior of the rural community in the study area. This clearly shows that the amount of voluntary savings increased at a considerable amount.

It is confirms Sadoulet's (2006) conclusion that poor people greatly value flexible savings, where they can save unrestrictedly and often very small amount at convenient intervals, and which they can access rapidly. In his study he also found that offering voluntary, safety and accessible savings services results in the inclusion of the poorest by 10 % of the population, who are reluctant and thus not saved in MFIs.

This fact is also reflected in case of ACSI which is observed in the average annual saving of both compulsory and voluntary savings. The average voluntary saving decreased from 1,846.80 birr in 2007 to 1,579.96 Birr in the year 2011. In the same token, the average compulsory saving of individuals decreased from Birr 262.42 in 2007 to 234.83 Birr in 2011 fiscal year. However, the number of savers in both cases shows a remarkable growth within five years difference. This is in a complete agreement with Sadoulet's (2006) conclusion that both in compulsory and voluntary savings a large number of poor people involved with a demand of little loan size and voluntary savings and that is why the average annual compulsory and voluntary savings have decreased with the increase of participants.

Table 2: Saving Mobilization in ACSI Feres Bet sub-branch

Year	Types of savings				Total savers Savers	Total amount of savings
	Voluntary individual saving		Compulsory individual saving			
	Number of savers	Amount of savings	Number of savers	Amount of savings		
2007	1 029	1 900 361.21	6791	1782111.09	7 820	3 682 472.30
2008	1 307	2 775 207.77	8009	3 059 894.06	9 316	5 835 101.83
2009	2 051	4 417 122.83	8748	3 446 374.19	10 799	7 863 497.02
2010	3 840	2 669 001.56	10045	2 386 616.15	13 885	5 055 617.71
2011	4 312	6 812 806.85	15491	3 637 785.78	1 9803	10 450 592.60
2013	3 717	3 179 078.15	595	263 539.13	4 312	6 885 234.50

Source*:* ACSI, Feres Bet Sub-branch

3.1.3 Motives for savings in the study area

As it was clearly stated in the literature part, there is a debate among scholars about the savings of the rural poor households. Some researchers strongly believed that rural households in developing countries, particularly in Africa, are too poor to save. Others like Coleman (2006) concluded that the poor do not save not because of lack of willingness to save rather due to lack of access to savings facilities in formal financial institutions. Even if they lacked access to formal financial institutions, these groups of people use informal financial institutions and non-financial assets for their savings and once suitable financial instruments are available to them, they become eager and regular savers.

To observe the saving motives for rural households in the study area, respondents were asked to respond for the question "for what purpose they saved in any forms of savings". Out of the total respondents holding their savings in cash form, 38(51.35%) reported as they saved certain amount for the purpose of loan repayment. These respondents said that to received large amount of loan in the next loan cycle, we have saved a

certain amount to repay the borrowed loan at due date. This shows that due to the involuntary savings, the effect of microfinance on household savings is likely to be positive. But, microfinance institution can also induce voluntary savings if it helps generate income of the poor through investing the loan on the income generating activities. 20 (27.03 %) respondents reported that unexpected future happening (emergency) like contribution for loan defaulters among their group members as their motive to save certain amount of cash in ACSI.

The remaining group of respondents constitutes those program participants who have saved certain voluntary saving amount in addition to compulsory saving. Among these groups 6 (8.11%) respondents reported old age use as their motive to save certain amount. Other three groups in equal frequency i.e. 2(2.7%) reported that the demand for saving certain amount of voluntary saving arises from for safety purpose, to earn interest and to finance children's education expenditure. They reason out that even if saving at home is favorable to access easily the money during emergency need arise; it is highly vulnerable to theft, fire damage, temptation and pest attacks. One may expect that many rural households save their cash savings in financial institutions to earn positive returns i.e. interest. However, the survey result shows that out of the total 74 respondents who hold their savings in cash form; only 2 percent deposited their cash to earn interest. This survey result encourages raising questions like does rural households prefer in-kind saving to cash saving? It needs further assessment to identify major reasons for low motive for earning interest rate and the next part assess this issue.

3.1.4. Microfinance impact on household savings

There was a common belief among scholars that many rural households in developing countries are too poor to save. They argued that even the poor get some windfall income which is excess of daily consumption, they spend on other social ceremonies. Others on the contrary argued that the poor can save if they get the chance but the problem they faced is lack of access to formal financial institution. On the other side, some scholars confirm that the poor can save like others do, but most of the time the savings of the poor is not visible to formal financial institution and also their savings is in many forms such as saving in cash, in-kind especially in livestock form , and in precious metals.

In the study area out of the total sample respondents (144), 70 percent practice saving and the rest 30 percent do not save in any form of savings due mainly to lack or in sufficient funds or other socio-economic reasons. Among these savers, the majorities (73.27 %) are from the participants (treatment group) and the remaining (26.73 %) are from in-coming clients (control groups). To analyze the impact of microfinance on household savings on the study area, the following part displays savings of households in different forms and the reasons why the respondents engage in the type of savings that they do.

3.1.4.1. Impact on cash savings

The descriptive statistics in Table 3 below shows that the mean annual cash saving of the treatment group is 543.39 Birr and its standard deviation is 258.30.Whereas the mean annual savings and standard deviation for the control groups are 10.06 birr and 50.63 respectively.

Table 3: Independent T test for annual cash savings

Group	Obs.	Mean	Std. Err.	Std. Dev.	Sig.(2-tailed)
Control	70	10.06	6.05	50.63	0.000
Treatment	74	543.39	30.03	258.30	
Combined	144	284.13	27.24	326.88	
Diff.		-533.33	31.43		

Source: own computation from survey data, 2013/14

As indicated in Table 3 above, the mean difference in annual cash savings between the two groups is 533.33 Birr. However, to ensure the difference is whether a matter of chance or it is statistically significance, the result of the independent t test should be carefully examined. The result shows that the significance value which is less than one percent is a clear indicator of the rejection of the null hypothesis and the acceptance of the alternative hypothesis. From this we can say that the value of cash savings is positively related with program participation i.e. microfinance institution has a positive impact on household cash savings.

3.1.4.2. Impact on in-kind savings

In this research it is expected that due to difference in financial literacy and other non-financial services provided by microfinance institutions, treatment groups have experienced saving in cash form and their counter parts hold their savings in non-cash forms. To confirm the statistical significance of this assumption the following two hypotheses were developed.

Null hypothesis (H_0)*:* There is no significance difference between the non- cash savings of treatment (program participants) and control groups (incoming clients).

Alternative hypothesis (H_a)*:* The non-cash savings of the treatment group is significantly greater than the control groups.

The descriptive statistics result in Table 4 below shows that mean annual in-kind savings of the treatment groups is 1,646.22 birr and the standard deviation is 2,297.86. In the same way the mean annual in-kind savings of the control groups is 349.64 birr with standard deviation of 545.32.

As clearly observed in Table 5 below , the mean annual in-kind savings of the treatment group is greater than the control group with a mean difference of birr 1,296.57. This mean difference also confirms that participation in microfinance has a positive impact on the in-kind savings of rural households. But to ensure whether the difference is statistically significance or it is a matter of chance, the independent t- test result should be carefully examined.

Table 4**: Independent T test for annual in-kind saving**

Group	Obs.	Mean	Std. Err.	Std. Dev.	Sig.(2-tailed)
Control	70	349.64	65.18	545.32	0.000
Treatment	74	1646.22	267.12	2297.86	
Combined	144	1015.94	150.50	1806.06	
Diff.		-1296.57	281.91		

Source: Own computation from survey data, 2013/14

There is a significance difference between the annual in-kind savings of treatment and control groups, i.e. participation in microfinance program has a positive impact on household in-kind savings. But the independent t-test result is on the opposite of the expectation that microfinance participation encourages participantes to hold their savings in cash form than in-kind savings . The reason may be that microfinance participation increases the income of participantes through investing the loan on income generating activities. As the income of the treatment group increases ,their capacity to purchase livestock as a form of savings also increases, but the decision to choose forms of savings is not different from the control groups. Like the treatment groups ,control groups may choose in-kind savings to protect the problem of temptation i.e. the marginal propensity to consume in-kind saving is less than that of cash savings.

3.1.4.3. Impact on total savings

To test if the savings of treatment groups could directly associated with the participation in microfinance programmes, similar hypothesis testing procedure was undertaken.

H_0:There is no significance difference in saving capacity between the two groups.

H_a:target groups have significantly more saving capacity than the control groups

As Table 5 indicates mean annual savings of the target group 2207.45 birr is more than that of the control group (379.99 birr) .Whether the mean difference is statistically significant or it is a matter of chance, independent t test result is more appropriate. The test result shows that the significance value for savings is less than 1 percent which is below alpha (.05). Therefore, it is possible to say that microfinance programmes have positive and significant impact on household savings in the study area.

Table 5:Independent T test for total annual savings

Group	Obs.	Mean	Std. Err.	Std. Dev.	Sig.(2-tailed)
Control	70	379.99	72.88	609.74	0.000
Treatment	74	2207.45	267.03	2297.09	
Combined	144	1319.10	160.58	1926.95	
Diff.		-1827.46	283.60		

Source**:** own computation from survey data, 2013/14

3.1.5. Focus group discussion results

Focus group discussions were used to obtain insights from target audience perceptions, needs, problems, beliefs and reasons about services of ACSI and the saving behavior of the community.

3.1.5.1. Households trustfulness on ACSI

Findings from this study reveal that most households did not participating on voluntary savings services. The discussion result shows that the reasons for low participation on savings were not related with trust in ACSI rather lack of experiencing in using financial institution and also lack of information about financial services were mentioned as major reasons. According to the respondents opinion this is due to the fact that ACSI (Feres bet sub-branch) did not disseminate the information about the services /products which it offers. This could be the reason that voluntary savings is not popular among poor households in Dega Damote District (the study area).

3.1.5.2. Group lending system

The result of FGD had shown that most ACSI clients did not favor with group lending system of the institution. They reason out that to get large loan size in the next loan cycle, all group members should repay the pervious loan on due date. However, some group members who did not utilize the loan on productive activities, may be due to shortage of land and other productive assets, do not repay timely. Due to this all group members penalized and cannot access the amount of loan needed. Because of this and other fears almost all respondents replay as they are not voluntary to accept the poorest of the poor as a group member. In line with this I have asked the loan officers as well as the staff manager about the issue and their response is the same with the clients. They said that unless it is the will of the group, we cannot force them to include the poor as a member and if we do so it promoted some participants to leave the microfinance programs. This clearly indicates the exclusion of the

poorest of the poor from microfinance services which is opposed the objective of micro finances.

3.1.5.3. Loan size

In the focus group discussion most respondents reported that the amount of loan disbursed by ACSI is not enough to undertake meaningful income generating activity. Among these groups, there were some respondents who borrowed from village money lenders to undertake income generating activities. Others who borrowed for purchasing of agricultural inputs only reported as the loan size is enough to undertake their planned activity.

3.1.5.4. Non-financial services of ACIS

Non-financial services such as education, vocational training and technical assistance are crucial to improve saving habit, financial management, book keeping and production techniques. In this regard the FGD result shows that most microfinance participants have got non-financial services especially about the utilization of the loan. But the respondent said that the monitoring and supervision of loan utilization from ACSI is low. Due to this many borrowers inclined to invest in the higher risky and less return activities and they encountered difficulties to return the loan on time.

To generalize the results of descriptive analysis, microfinance institutions have positive and significant impact on all forms of savings in rural kebels of Dega damot woreda. The results of all independent t tests confirm this reality, but descriptive analysis alone is not enough to conclude the impact of microfinance participation on household savings.

3.2. Econometrics Analysis

In this part the econometrics model defines the impact of microfinance on household savings. The impact of program participation was decomposed in to impact on cash savings, impact on in-kind savings and impact on total savings, and each case had been discussed independently. These three classifications of savings are dependent variables whereas the proxy variable of microfinance impact i.e. program participation dummy and in some extent loan amount and other variables are explanatory variables.

3.2.1. Diagnostic tests

Before running Tobit regression model, the following diagnostic tests[1] were made to check the existence of multicollinearity, heteroscedasticity, non-normality and model specification problems in the regression analysis.

To test the presence of serious multicollinearity problem, Collin test for both discrete and continuous variables was applied. From this test the value of Variance Inflation Factor (VIF) was used as a rule of thumb, if VIF of the variable exceeds 10, there is MC problem. The VIF values displayed in Table 1A in the annex part have shown that all the continuous and discrete variables have no serious multicollinearity problem. Under hetroscedasticity problem, the estimators of the regression coefficients are unbiased and consistent .However, the estimated variance of the regression estimators are biased and the conventionally calculated confidence intervals and test of significances are invalid which leads to wrong conclusions. To avoid the problem of hetroscedasticity, which is a serious problem for cross-sectional data and other related problems were minimized through taking standard robust regression for Tobit regression models. The overall significance of the model was observed in the regression estimation (model output). The F-value of all the three models indicates that at least one of the explanatory variables is non-zero and can predict the dependent variable. In addition to the F-value, specification test using the link test was done. The idea of link test is based on the idea that if the econometrics model is properly specified, one should be able to find no additional independent variables that are significantly predicting the dependent variable. The decision whether the model is correctly specified or not is based on the significance of the predicted square after regress the dependent variable (saving) with prediction and prediction square (yhatsquare). The test result for all three Tobit regression models shows that the models are correctly specified with insignificant prediction squares (see Table 3B, 3C and 3D in annex part).

In regression analysis, normality is required not for obtaining unbiased estimates of regression coefficients. But it is only required for valid hypothesis testing, that is, normality assumption assures that the p-values for the t-tests and F-test will be valid. The residuals (errors) are identically and independently distributed which is used for drawing inferences on the basis of the normal distribution. To test the normal distribution of error terms, the Kernel density estimate method was applied and the result attached in annex part (fig1A) shows that the error terms normally distributed as the normal density overlaid on the plot.

3.2.2. Estimation results of the Tobit model for cash savings

As listed in the Table 6 below, out of the total variables considered in the regression analysis seven variables were found to be significantly influence the saving capacity of sample households in the study area. These variables includes land size, loan amount, program participation dummy, income from cash crops, marital status and household size were found to have significance influence on the amount of household savings. Some variables including monetary value of livestock, dependency ratio and secondary education level displays unexpected sign in the regression output. For example, households with secondary education save less compared with the base category i.e. illiterate households, which is unexpected. However, all these variables were found

[1] .All diagnostic test results were presented under Annex3

insignificant in the study area, hence, their sign is not of relevance.

As expected land size (Land) has positive and highly significance effect on household savings at less than 1 % level of significance. It is straight forward that the bigger the land size, the more the farmer produce and the higher is the revenue generated which will in turn induce savings. Land may have impact on savings in two sides. On the one side, income from crops produced and the other effect is on income from livestock through its contribution of grazing. However, land in Ethiopia case is owned by the state and the households do have only the right of use and it cannot be taken as the determinant of saving since households could not increase the size of their land. But to identify the pure impact of program participation on household savings, the basic asset of rural communities i.e., land, was taken as a determinant.

The variable loan (Lnloan) which stands for the amount of loan in Birr that the respondents borrowed from MFIs or other informal sources is positively related with households' annual cash savings. The coefficient of this variable is significant at 1 % level of significance. The marginal effect[1] of loan size shows that, on average a percentage change/increase in loan size increases the intensity of household savings by 22.78 birr (annex Table4A). The effect of loan may be from two directions. For program participants (treatment groups), the positive impact of loan size on savings will be either from compulsory savings as compulsory savings increases with loan size or the other way in which loan amount has positive impact on savings for both groups is that large loan size enables the households to overcome liquidity constraints and provides better chance of making more economic activities and boosts to generate more income which in turn induces savings. The result is in complete agreement with a study by Rogg (2000) in Latin America's countries that concluded as there is likelihood of savings increasing with increase credit access due to a shift of saving from cash and near-liquid assets to deposit accounts in microfinance institutions.

The program participation dummy (**Progpar**) which is the main interest variable of this research has positive and highly significant impact at 1 % level of significance on household annual cash savings. The positive coefficient of the variable implies that the treatment groups have more chance to save cash savings than the control groups. The marginal effect of participation (Table 4A, annex) indicates that on average being participant in microfinance increases the saving intensity of households by 283.26 Birr. The possible explanation of positive impact of microfinance on household saving is that the small amount of credit given helps the poor participants to meet their requirement and every little loan helps the poor to increase their income through investing in income generating small business/economic activities. The other possible explanation is that during loan disbursement, the program subtracts 5 percent of the loan as compulsory savings to avoid a possible loan defaults and the participant asked to save one percent of the loan on monthly base. This compulsory savings introduce the habit of saving in microfinance participants which later encourages voluntary savings of rural households. In addition to its financial services impact, microfinance impacted on savings through its non-financial services, including knowledge transmission through group meeting, business development services provided to clients to invest the granted loan on productive activities and others which increases the financial literacy of participants.

[1] The marginal effects of all explanatory variables attached under Annex4

Table 6: Tobit model estimates for household cash savings (M1)

Explanatory variables	Coefficients.	Robust Std. Err.	T
Livestock	-.0001531	.0031169	-0.05
Land	151.8874***	41.12009	3.69
Lnloan	41.35367***	14.53268	2.85
Program Participation(=1)	514.2069***	113.1471	4.54
Age of hh	-20.49245	24.35998	-0.84
Agesq	.2280135	.258015	0.88
Expenditure on health(=1)	-16.19655	49.57654	-0.33
Expenditure on Education(=1)	-74.03698	76.85843	-0.96
Off farm participation(=1)	14.36605	60.60813	0.24
Income from crops	.0156317**	.0069792	2.24
Marital status of hh	**Married is a reference base**		
Single	-171.3884*	100.6993	-1.70
Divorced	-105.4532	98.48286	-1.07
Widowed	-190.616**	89.03559	-2.14
Education level of hh	**Illiterate is a base category**		
Primary	46.93715	56.62772	0.83
Secondary	-86.36547	111.6998	-0.77
Dependency Ratio	3.335378	2.272536	1.47
Type of dependency	**No dependency is a reference category**		
Young age dep.	16.35762	86.63335	0.19
Old age dep.	130.5058	146.9278	0.89
Both type	-32.65226	153.6538	-0.21
Household size	-30.86362**	15.16635	-2.04
Sex of hh	20.82005	81.64027	0.26
_cons	-8.292753	574.7927	-0.01

Obs. summary: 65 left-censored observations at SaveCash<=0 *Prob > F=0.0000*
79 uncensored observations, 0 right-censored observations
****, **,* significant @ 1%, 5% and 10% level of significance respectively*
Source:Model out put

The income from cash crops (**Inccrp**) as hypothesized affects positively and significantly the cash savings of rural households at 5 percent level of significance. This implies that as rural households produce more cash crops, the income of the household from these crops increases and induce cash savings. The average marginal effect shows that a unit increase in income from main crops increases the saving intensity of households by 0.0086 birr. This result is with a complete agreement with Keynesian theory of saving since income from crop is a part of household's disposable income.

3.2.3. Estimation results of the Tobit model for in-kind savings

As listed in the Table 7, out of the total variables considered in the regression analysis, five variables namely loan size, land size, education level (secondary education), livestock in its monetary value and household size were found to have significant impact on in-kind (non-financial) savings of household in the study area. The main interest variable program participation did not find as significant explanatory variable for non-financial savings.

As expected the amount of loan (**Loan**) that the sampled households received from ACSI or/and other informal source was found to have a significant positive effect on non-financial savings of households in the study area. The variable is significant at 1 percent level of significance. The marginal effect of the loan size indicates that a one percent increase in loan size results in 91.29 Birr increased the intensity of household non-financial savings.

The explanation of this result is straight forward that as households borrowed more cash, the ability of purchasing productive assets also increased. In the case of sample treatment groups, ACSI provides financial loans after borrowers explain the idea of their investment idea i.e. loan is approved only for productive poor households. The result is in complete agreement with the study of Pitt H and Khandker SR (1998) which found a significant association between women taking out loan and their accumulation of non-financial assets. In the same way Goldberg J and Yang D (2011) also found that in Malawi participation in microfinance (taking loan) increases savers accumulation of non-financial assets.

Table 7: Tobit model estimates for in-kind savings (M2)

Explanatory variables	Coefficients.	Robust Std. Err.	T
Lnloan	261.6363***	98.22936	2.66
Program Participation(=1)	-420.8284	752.9858	-0.56
Age	65.63376	257.6218	0.25
Agesq	-1.328894	2.781605	-0.48
Expenditure on health(=1)	-795.0151	523.9434	-1.52
Expenditure on Education(=1)	-649.8616	762.1246	-0.85
Land	1031.892*	604.7569	1.71
Off farm participation(=1)	921.306	664.1781	1.39
Income from crops	-.1780751	.1124678	-1.58
Marital status of hh	***Married is a reference base***		
Single	602.043	1953.149	0.31
Divorced	104.7439	1019.197	0.10
Widowed	918.8672	1157.008	0.79
Education level of hh	***Illiterate is a base category***		
Primary	-108.8173	669.4471	-0.16
Secondary	4704.268**	2346.642	2.00
Livestock	.0833608**	.0404509	2.06
Dependency Ratio	-2.732285	23.93942	-0.11
Type of dependency	***No dependency is a reference category***		
Young age dep.	35.28195	1048.713	0.03
Old age dep.	1854.332	1792.014	1.03
Both type	232.1604	2339.027	0.10
Household size	551.3144***	207.7198	2.65
Sex of hh	3.147691	790.7351	0.00
_cons	-4955.866	6243.646	-0.79

Obs.summary:80 left-censored observations at SaveKind<=0 64 uncensored observations
0 right-censored observationsProb. > F = 0.0026
****, **,* Significant @ 1%, 5% and 10% level of significance respectively*
Source: Model output

As expected, size of land holding (**land**) was found as a positive and significant determinant of household in-kind savings in the study area. The variable is significant at 10 percent of level of significance. The possible explanation for this positive impact is that as the households cultivated additional land, they have more probability to produce surplus output to supply to the market and earn additional income which latter encourages to purchase other productive assets like livestock. The other main reason is that since most in-kind savings in the rural area held in the form of livestock, additional land is served as grazing land which increases the capacity of having more livestock. It was already discussed in the first model that explaining the impact of land is used as to control the impact of other variables on household savings. However, the finding related with land size does not have any policy implication in case of Ethiopia since land is owned by the state. But rural households can use rented land for production purpose and it has positive impact on in-kind savings through generating additional agricultural income to households. In this case it is possible to state the marginal impact of land on in-kind savings. On average, a unit changes in size of land increase the intensity of household in-kind savings by 360.033 birr.

In rural areas ownership of livestock is a major source of income that is why its coefficient is positive and statistically significant at 5 percent level of significance for the study area. As it was clearly stated in the descriptive analysis part, illiteracy is the major problem in the rural kebeles of the study area. Due to this the creativity and entrepreneurial ability of households is low and those who were already in raising livestock diversify within this activity. This result is the same with the finding of William P. and Duflo E. (2011) on their research conducted in Morocco on the impact of microcredit in rural Morocco. They concluded that in rural Morocco, a decision was made to finance existing activities which had a track record. They further explained that one possible reason for the lack of investment in new sectors of activities is that microcredit programmes as it have been implemented in the rural areas ,did not particularly encourage and train the clients of the programme to start new way of savings/ activities.

The size of household (**HHS**) was found to have positive and significant association with rural household in-kind savings in the study area. The variable is significant at 1 percent level of significance. Households with more members, hence more labour power, are expected to have better chance of save more in in-kind form. The average marginal impact of household size indicates that having one more member of

households increase the intensity of household in-kind savings by 192.36 Birr. In rural areas most households hold in-kind savings in form of live animals and to herd those animals additional labour force is needed. The result is in complete agreement with the finding of Carlos E. and Pilar C. (2006) who concluded that having large family and participating in non-agricultural activity increases the probability of maintaining a large proportion of total assets in the form of livestock.

3.2.4. Estimation results of the Tobit model for total savings

As listed in the Table 10, six variables including livestock, land size, loan size, health expenditure, program participation dummy, education level (secondary education) and household size were found as significance explanatory variables of household total savings in the study area.

Table 9*:* Tobit model estimates for household total annual savings (M3)

Explanatory variables	**Coefficients.**	**Robust Std. Err.**	**T**
Livestock	.0556702**	.0277601	2.01
Land	939.067**	421.7395	2.23
Lnloan	216.4554***	72.35035	2.99
Program Participation(=1)	902.1297*	509.1759	1.77
Age of hh	61.06819	159.4941	0.38
Agesq	-.8870829	1.699666	-0.52
Expenditure on health(=1)	-576.5146*	333.682	-1.73
Expenditure on Education(=1)	-442.1499	535.3935	-0.83
Off farm participation(=1)	558.0679	461.1573	1.21
Income from crops	-.0956962	.0620947	-1.54
Marital status of hh	Married is a reference base		
Single	-307.1061	1046.387	-0.29
Divorced	-122.2295	739.3715	-0.17
Widowed	520.5013	719.1738	0.72
Education level of hh	Illiterate is a base category		
Primary	106.0828	448.1621	0.24
Secondary	3386.945*	1980.148	1.71
Dependency Ratio	8.992678	15.47394	0.58
Type of dependency	No dependency is a reference category		
Young age dep.	-94.89183	745.2989	-0.13
Old age dep.	1057.434	1282.293	0.82
Both type	322.0507	1338.086	0.24
Household size	290.2542**	124.9988	2.32
Sex of hh	-39.51669	514.4249	-0.08
_cons	-4003.46	3869.739	-1.03

Obs. summary: 43 left-censored observations at totsav <=0 Prob. > F=0.000
101 uncensored observations, 0 right-censored observations
****, **,* significant @ 1%, 5% and 10% level of significance respectively*
Source: Stata 11 output

CHAPTER FOUR
4. CONCLUSIONS AND RECOMMENDATION
4.1 Conclusions

This research focused on two main questions about the impact of microfinance on household savings in the study area. First, it asks whether participation in microfinance has an impact on the savings of rural poor households in the study area. Second, it looks for the form of savings hold by the treatment and control groups to analyze the impact of program participation on forms of savings i.e. financial and non-financial. Specifically does participation in microfinance program crowding out in-kind savings and encourage households to hold more financial savings?

The result of the descriptive and econometrics analysis of microfinance impact on rural household saving had shown that 70 % of the sample households practiced savings with average amount of 1,319 Birr. The remaining 30 % of the sampled respondents did not practice any form of savings.

In the case of the first question of the study, the research result has showed that the impact of microfinance on total savings of rural households is statistically significant and an important in magnitude. Due to program participation, the intensity of household total savings had been increased by 436.03 Birr. In addition to program participation dummy, variables including livestock holdings, land size, household education level (secondary education), household size and health related expenditure were found as significant explanatory

variables of household total saving in the study area. Except health related expenditures, all significant variables impacted on household total saving positively. Particularly education level of household head has considerably large positive impact in magnitude. The regression result shows that the change in education level from base category (illiterate) to secondary education increases the intensity of household savings by 2261.85 Birr. This is directly related to the impact of education on financial literacy which could help households understand their saving situations better, save more, and attain higher economic status and more economic security.

In the case of the second focus of this research, program participation has a positive and significant impact on household cash savings. Participation in microfinance increases the intensity of household cash savings by 283.26 Birr. However, the impact of participation on in-kind (non-financial) savings is not significant at least at 10 % level of significance. But its sign and magnitude indicates that participation in microfinance decreases the intensity of household non-financial savings by 146.83 Birr. The positive and significant impact of program participation on total household savings (cash saving plus in-kind saving) is a clear indictor for the risk aversions behavior of poor rural households through diversification of income sources (saving forms).

Generally, from this research it can be concluded that rural poor households can save a considerable fraction of their income when they have access to financial institutions and there is a possibility to mobilize rural savings through financial intermediaries to narrow the resource gap which fosters capital formation of the country and accelerates economic growth.

4.2. Recommendations

The study revealed that microfinance has positive and significant impact on rural household saving in the study area. But the impact on crowding out non-financial savings is not more pronounced in findings of the study .Based on these and other findings from this study, the following recommendations were made.

Both the descriptive and econometrics result revealed that economically active poor already save in a variety of forms, and they do not need to be taught to save. However, such clients need advice to choose among forms of savings. If this is the case, microfinance institutions should provide non-financial services especially financial education in combination of financial services to strengthen the financial literacy of clients. Financial education has dual benefits both for program participants and the program itself. For clients, it enable them to become more informed financial decision makers, enable them to choose among alternatives of financial products, it helps to reduce transaction costs, can help reduce the risks of running a business and financing business activities with loans. For microfinance institutions, improved ability of clients to manage debt can help keep repayment rates up and delinquency rates down.

In addition to financial education, continuous follow up from microfinance about the utilization of loans should be given great emphasis. If not ,there is a tendency in some households to change productive loans in to consumption loans which later increases loan defaults and discourages household savings.

To policymakers and financial intermediaries, financial saving must be given greater priority because it seems easier to directly influence and also because it provides funds to financial intermediaries for lending purposes and financing investment activities. Not only its contribution to the national savings to the country, holding in-kind saving has also high opportunity costs on rural households. The labour cost and fodder which is always overlooked in the estimation of benefits from in-kind savings is high. Especially, child labour utilization to care live animals has high opportunity cost in terms of dropout of school. It is also highly vulnerable to natural hazards such as drought, animal disease and flood especially saving in the form of live stock. In this case, the result of the study shows that only 2 percent of households saved their money in ACSI to earn interest. So ,policy incentives provided by ACSI to encourage household savings ,including interest rate, should be strong enough to induce households to save in financial form and discouraging (defer) their consumption as well as in-kind savings.

Since group members are responsible for each other's loans in the case of default, it is a strong incentive to exclude the marginalized poor from microfinance services. In the focused group discussion, I have asked the groups how they accept the poor who do not have an asset for guarantee. Surprisingly, almost all the group members as well as ACSI staff members answered the question in the same way that unless it is the will of group members, no one accept the poor as group members. This clearly indicates that the poor could not be the beneficiaries of microfinance services and adapt the habit of saving. Not only exclusion of poor clients, group lending system has also negative impact on voluntary saving of members of the group. Once the members have been forced to cover the loans of defaulters, they are less likely to deposit voluntary savings in their account. So, to make participant poor households from microfinance services and to build saving habit among them, the program should introduce another alternative to give loan to the poor. Like civil servants, the program could minimize the problem through permitting personal guarantees to the poor.

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Annex 3: Diagnostic Test Results

Table 3A: Multicollinearity Diagnostics using Collin test

Variable	VIF	SQRT VIF	Tolerance	R-Squared
Livestock	1.62	1.27	0.6163	0.3837
Land	1.45	1.20	0.6894	0.3106
Lnloan	4.08	2.02	0.2452	0.7548
ProgPar	4.37	2.09	0.2290	0.7710
Age	2.35	1.53	0.4248	0.5752
Exphealth	1.12	1.06	0.8909	0.1091
EducExp	1.37	1.17	0.7314	0.2686
Offarm	1.29	1.13	0.7764	0.2236
Inccrp	1.56	1.25	0.6401	0.3599
Marsta	2.49	1.58	0.4013	0.5987
Educ	1.43	1.20	0.6972	0.3028
DepR	2.49	1.58	0.4015	0.5985
Typedr	2.02	1.42	0.4950	0.5050
HHS	2.06	1.44	0.4844	0.5156
Sex	2.73	1.65	0.3659	0.6341

Mean VIF 2.1

Table 3B: Model *Specification Test for Tobit Regression (link test), cash saving (M1)*

Tobit regression Number of obs. = 144
LR chi2 (2) = 230.41
Prob. > chi2 = 0.0000
Log likelihood = -543.24362 Pseudo R2 = 0.1750

SaveCash	Coef.	Std. Err.	T	P>t
_hat	.9708757	.1031511	9.41	0.000
_hatsq	.0000602	.0001717	0.35	0.726
_cons	-4.730654	36.05988	-0.13	0.896

Obs. summary: 65 left-censored observations at SaveCash<=0
79 uncensored observations
0 right-censored observations

Table 3C: Model S*pecification Test for Tobit Regression (link test), kind saving (M2)*

Tobit regression Number of obs. = 144
LR chi2 (2) = 42.37
Prob. > chi2 = 0.0000
Log likelihood = -638.15721 Pseudo R2 = 0.0321

SaveKind	Coefficients	Std. Err.	t	P>t
_hat	.9974787	.1569874	6.35	0.000
_hatsq	5.89e-06	.0000668	0.09	0.930
_cons	-16.84102	349.5534	-0.05	0.962

Obs. summary: 80 left-censored observations at SaveKind<=0
64 uncensored observations
0 right-censored observations

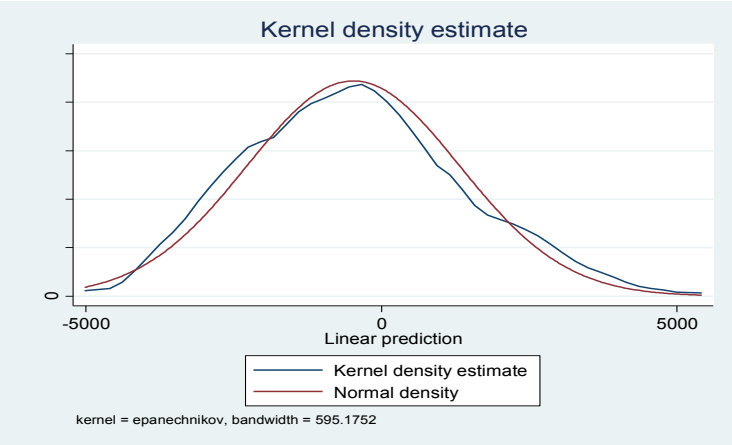
Table 3D: Model *Specification Test for Tobit Regression (link test), total saving (M3)*

Tobit regression Number of obs. = 144
LR chi2 (2) = 89.15
Prob. > chi2 = 0.0000
Log likelihood = -924.08413 Pseudo R2 =0.0460

total savings	Coefficients	Std. Err.	T	P>t
_hat	1.037065	.1614204	6.42	0.000
_ hatsq	-.000017	.0000559	-0.31	0.761
_cons	27.01753	230.5646	0.12	0.907

Obs. summary: 43 left-censored observations at totsav<=0
101 uncensored observations
0 right-censored observations

Figure1A: Test for Normality



Annex4: Marginal Effects

Table 4A: Marginal effect of explanatory variables on cash savings (M1)

Explanatory variables	dy/dx	Std. Err.	Z	P>z
Livestock	-.0000843	.0017167	-0.05	0.961
Land	83.67015	22.36961	3.74	0.000
Lnloan	22.78048	7.955938	2.86	0.004
Program Participation(=1)	283.261	59.36009	4.77	0.000
Age of hh	-11.28867	13.4583	-0.84	0.402
Agesq	.1256057	.1425203	0.88	0.378
Expenditure on health(=1)	-8.922188	27.30512	-0.33	0.744
Expenditure on Education(=1)	-40.78472	42.36006	-0.96	0.336
Off farm participation(=1)	7.913823	33.36928	0.24	0.813
Income from crops	.008611	.0038558	2.23	0.026
Marital status of hh				
Single	-90.91607	50.40016	-1.80	0.071
Divorced	-57.66135	52.36915	-1.10	0.271
Widowed	-100.1531	44.12252	-2.27	0.023
Education level of hh				
Primary	26.04772	31.51561	0.83	0.409
Secondary	-45.17478	56.30889	-0.80	0.422
Dependency Ratio	1.837359	1.241412	1.48	0.139
Type of dependency				
Young age dep.	8.945103	47.2758	0.19	0.850
Old age dep.	74.64786	86.99956	0.86	0.391
Both type	-17.48457	81.51549	-0.21	0.830
Household size	-17.00183	8.319121	-2.04	0.041
Sex of hh	11.46913	44.94642	0.26	0.799

Note: dy/dx for factor levels is the discrete change from the base level.

Table 4B: Marginal effect of explanatory variables on in-kind savings (M2)

Explanatory variables	dy/dx	Std. Err.	Z	P>z
Livestock	.0290851	.0139849	2.08	0.038
Land	360.033	210.1388	1.71	0.087
Lnloan	91.28638	34.13438	2.67	0.007
Program Participation(=1)	-146.8294	260.9328	-0.56	0.574
Age of hh	22.89999	90.02379	0.25	0.799
Agesq	-.4636586	.9737885	-0.48	0.634
Expenditure on health(=1)	-277.3853	185.2711	-1.50	0.134
Expenditure on Education(=1)	-226.7404	265.5754	-0.85	0.393
Off farm participation(=1)	321.4489	228.5866	1.41	0.160
Income from crops	-.0621314	.0388352	-1.60	0.110
Marital status of hh				
Single	219.1315	751.2618	0.29	0.771
Divorced	36.16315	354.7253	0.10	0.919
Widowed	345.8756	467.1233	0.74	0.459
Education level of hh				
Primary	-37.20796	228.6012	-0.16	0.871
Secondary	2598.912	1730.984	1.50	0.133
Dependency Ratio	-.9533098	8.355241	-0.11	0.909
Type of dependency				
Young age dep.	12.17385	361.3206	0.03	0.973
Old age dep.	775.1624	873.0027	0.89	0.375
Both type	81.79832	839.4293	0.10	0.922
Household size	192.3567	72.57088	2.65	0.008
Sex of hh	1.098247	275.8953	0.00	0.997

Note: dy/dx for factor levels is the discrete change from the base level.

Table 4C: Marginal effect of explanatory variables on total savings (M3)

Explanatory variables	dy/dx	Std. Err.	Z	P>z
Livestock	.0269073	.0130824	2.06	0.040
Land	453.8835	200.7006	2.26	0.024
Lnloan	104.6204	34.68497	3.02	0.003
Program Participation(=1)	436.0304	243.9005	1.79	0.074
Age of hh	29.51636	77.05448	0.38	0.702
Agesq	-.4287578	.8221622	-0.52	0.602
Expenditure on health(=1)	-278.6494	162.0612	-1.72	0.086
Expenditure on Education(=1)	-213.7063	259.5366	-0.82	0.410
Off farm participation(=1)	269.7335	218.5208	1.23	0.217
Income from crops	-.0462533	.0302303	-1.53	0.126
Marital status of hh				
Single	-141.9836	468.3625	-0.30	0.762
Divorced	-57.79675	345.6586	-0.17	0.867
Widowed	265.5525	384.0235	0.69	0.489
Education level of hh				
Primary	50.74845	214.1242	0.24	0.813
Secondary	2261.855	1638.166	1.38	0.167
Dependency Ratio	4.346471	7.431318	0.58	0.559
Type of dependency				
Young age dep.	-45.72726	360.0757	-0.13	0.899
Old age dep.	580.798	769.1775	0.76	0.450
Both type	162.9745	692.7917	0.24	0.814
Household size	140.2898	61.25833	2.29	0.022
Sex of hh	-19.09978	248.4943	-0.08	0.939

Note: d y/dx for factor levels is the discrete change from the base level.