

**Household Welfare Impact of Saving In Microfinance Program: Empirical
Evidence from Amhara Credit and Saving Institution, Ethiopia**

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Abstract

Ethiopia has a favorable macro policy environment and regulatory framework to promote local and national development. Accordingly, Amhara credit and Saving Institution (ACSI) which is one of the big MFIs in Ethiopia which has been established with the purpose of targeting to rural and urban poor people so as to reduce poverty throughout the region and the nation as well. So the prime purpose of this study is to examine the welfare impact of microfinance program in reference to ACSI. The study reports a survey of 270 clients of ACSI in urban areas of south wollo zone specific to clients of four branches residing in Dessie, Kombolcha and Haik towns. The Heckman selection model is used to analyze the impact of microfinance program on saving mobilization and hence household welfare. Results in the present study revealed that The significant and positive coefficient of the Inverse Mills ratio signifies that OLS would produce upwardly biased estimate which explains by how much the welfare in terms of expenditure is shifted up due to the selection effect. The estimated value of rho also suggests that there is a positive correlation between the unobservable of the choice participation equation and the expenditure equation, which may mean that those factors which increase the likelihood of participating in saving scheme tend to raise the welfare of the households through increasing their expenditure. In conclusion, microcredit program is positively influencing saving mobilization directly or indirectly. This means, there is a compulsory saving program which directly influencing the clients as a rule to save while receiving loan from MFI and also after the clients engage in different business activities they try to save voluntarily because they think that savings would be their future hope to improve their financial status as well as improve their living standard. Although the contributions from participation in the microfinance program particular ACSI is on good position, it is possible to say that the MF intervention could not fully bring about needed change in terms of household welfare for the majority of the clients. Therefore, one of the duties of Microfinance program intervention should be to work hard to enhance the impact of the program on client's economic and social wellbeing.

Key Words: *Amhara Credit and Saving Institution, Household expenditure, Household welfare, Participation in saving, Microfinance program, Microfinance clients*

1. Introduction

In the past, microfinance program focused almost exclusively on credit; savings were the "forgotten half" of financial intermediation. Savings mobilization has only recently been recognized as a major force in microfinance (Vogel, 1984). Over the last four decades, therefore, microfinance program has been identified as a useful tool that can effectively mobilize savings among poor households. Microfinance program has found that poor households are interested in a variety of savings services and products. Research has found that, for microfinance clients, savings products are as popular as working capital and credit for investments. In the microfinance movement, there has been a gradual shift since 1990 from poverty lending and obligatory savings products to a financial systems approach that recognizes the importance of savings for the poor (Yunus, 2003).

Savings is the main funding source for sustainable growth because it is less costly than loans which many MFIs rely on, stable source of funding, and improves public image and confidence. Thus, savings has always been central in microfinance but never seen as the driver but it is complimentary to credit. Conventional commercial banks operate at average savings levels that exclude the bulk of the people in developing economies. So the onus lies on microfinance institutions (MFIs) to mobilize savings for them. The importance of savings mobilization can never be over-emphasized as it deepens and expands outreach. Large numbers of customers choose to use savings services instead of credit as it helps the poor to better organize their financial lives and deal with emergencies.

Various studies have illustrated that poor people in developing countries including Ethiopia understands the importance of saving for future consumptions (Rutherford, 2008). But, most of them fail to access to safe and formal deposit services as majority of these institutions which mobilize savings like commercial banks, postal savings banks and credit unions, are not accessible in terms of both proximity, or the time and procedures needed to complete transactions are too burdensome to poor households. Likewise they may impose barriers like minimum transaction sizes and require savers to retain a minimum balance or operating hours may not be convenient for poor savers, both of which can exclude the poor (CGAP, 2005). Those who manage to save, are forced to invest informally in risky investments like jewelry, gold, animals or use of informal saving services which require time to be converted into cash (e. g. saving clubs, ROSCA, ASCA) and at times they lose much of these savings either by natural disasters, theft or eroded by trivial expenditure (Moulick et al., 2008). Therefore, practitioners, politician and scholars should have a strategy to promote and ensure that poor people are aware and have access to the usage of formal financial institutions to provide saving services.

Ethiopia has a favorable macro policy environment and regulatory framework to promote sustainable microfinance development (Wolday, 2003). The government of Ethiopia supports

microfinance institutions as one of the means of addressing the poorest segment of the society to reduce poverty. To this end, the government created a conducive environment for the development of MFIs by issuing proclamation No. 40/1996 (the microfinance law). This legal and regulatory framework has assisted in increasing the number of MFIs to more than thirty three (Gashaw T. Ayele, 2014). These different MFIs together formed an association under the name of Association of Ethiopian Microfinance Institutions (AEMFI) in 1999 to share their experiences so as to improve the services they render to their clients and provide advocacy services.

Amhara credit and Saving Institution (ACSI) which is one of the big MFIs in Ethiopia which has been established in accordance with proclamation No. 40/1996. It has been registered as a MFI in 1997 by national bank of Ethiopia. It has targeted both rural and urban poor people so as to reduce poverty throughout the region. Its head office is located in the capital city of the region Bahirdar. This study is, therefore, mainly investigates the impact of microfinance program on household welfare in south wollo, Ethiopia. The study also assesses the demographic and socioeconomic characteristics of clients with special emphasis on clients saving profile. Moreover, the extent of the role played by ACSI is examined.

2. Literature

The term microfinance refers to small-scale financial services- primary credit and savings- provided to people who operate small enterprises, provide services, fish farm or herd, and to other individuals or groups at local level of developing countries both rural and urban areas (Robinson, 2001). Indeed, the definition of microfinance extends to include both financial intermediation and social intermediation. Furthermore, microfinance is not simply banking; it is a development tool as well, and as such, its activities also involve provision of small loans, typically for working capital; informal appraisal of borrowers and their investments; collateral substitute, such as group collateral or compulsory savings, secured savings products etc (Ledgerwood 1999).

The formal financial services are not convenient and adequate enough to provide financial services to economically marginalized segments of the society especially in developing countries. These marginalized poor people have limited access to financial services from the formal financial institutions especially in developing countries. Because formal financial system has inadequate geographical outreach, lack of adequate management system, lack of skilled manpower, high risk perception and inadequate collateral, poor people found it difficult to obtain adequate financial services and were charged high rates of interest for credit by monopolistic moneylenders.

Microfinance program, however, has gained a worldwide acceptance and popularity since 1980s in providing financial services to the poor and used as one of the important economic tools in the effort to improve the livelihood of economically marginalized segments of the society. The modern microfinance is generally considered to have originated with the Grameen Bank founded in Bangladesh in 1983. Microfinance program provides a range of financial services such as loans, savings, insurance, transfer services, microcredit loans and other financial services targeted at low-income clients. MFIs, therefore, promoting small businesses; building capacity of the poor; extending small loans without collaterals; combining credit with savings; and charging commercial interest rates and they are often innovative and flexible in their design and implementation (Dejene, 1998).

Historically, Microfinance Institutions (MFI) offers credits mainly to poor people as a way to alleviate poverty. Today, there is a growing recognition that credit alone is not the only panacea of alleviating poverty. Poor people need and uses a variety of financial services, including savings. Savings have risen to the top of the microfinance as previously MFI focused primarily on providing loans and saving remained the “forgotten half” (Jacqueline .S, 2010). The recent shift from microcredit to microfinance reflects the recognition that all saving services and not just credits may help to improve security, manage risk and thus, in the long run improve the quality of lives of the poor household in developing countries (MacIsaac, 1997; Zeller and Sharma, 2000). Savings can serve as invaluable reserves, as insurance against crisis factors such as illness, natural disaster, theft and other necessary human needs like education and housing that can easily drive the poor into destitutions (Karlan and Morduch, 2010).

Recent developments in the design of microfinance schemes have come out with innovative features which resulted in reduced costs and risks of making loans to poor and isolated people and made financial services available to people who were previously excluded. Microfinance intervention may increase income, consumption, saving, investment, employment opportunities, better access to nutrition, health care and education.

Since the inception of the microfinance programs in the country, different researchers have been recording some empirical evidences. Accordingly, the research conducted in Ethiopia on the impact of microfinance program on livelihood of clients showed that participation in microfinance have had significant impacts on the livelihood indicator variables such as average monthly income, consumption expenditure, saving of borrowers, expenditure on housing improvements and investment of human capital, particularly expenditure on children education and medical care of borrower households. Moreover significance impacts of micro credit services on household income and expenditure shows more positive signals of importance which can be geared towards improving self-employment opportunities. Furthermore the saving increases along with period of attachment of the clients to financial institution. This trend of saving behavior should continue so that clients would able to expand their business Diro Bekele

and Regasa Dereje (2014). As cited Diro Bekele and Regasa Dereje (2014), empirical evidences has shown that out of many variables included in the model gender of household head, age of household head, numbers of dependent on the household member and spouse status of household head were found significance factors determining micro credit participation and the income and expenditure of the household.

Moreover, Mengstu, (1998) conducted a study on credit service administration under the micro enterprise project. He noted that the increase in the number of program beneficiaries was an indicator of the assistance of the program to employment creation. He also indicated that, the increase in the level of credit ceiling as well as the use of saving accounts as indicators of the growth of microenterprises towards the formal sector. However, to some degree, most of the studies confirmed that the rise in income as the result of the microfinance intervention was not significant; voluntary savings did not expand accordingly; sustainable increase in income was recorded in urban than in rural; and the importance of wealth, gender and activity differentials in determining the effectiveness of the programs was found to be highly significant, and so emphasized in all of the results of impact assessment studies.

3. Data and Methodology

3.1 Data Type and Source

The data employed in this study is a household survey, which is conducted in the three selected districts namely Dessie, Kombolcha and Hiak in south Wollo zonal branch of Amhara Credit and Saving Institution (ACSI). The data for this study were mainly drawn from primary used to collect information from the client households of the institution by taking sample clients of the branch offices. The main aim here is to obtain information from clients regarding impact of microcredit program on household welfare. In addition, interview questions are designed to ascertain the management and expert view on saving mobilization. In addition, data and reports of the south Wollo zone office and branch offices, manuals, pamphlets (flayers), magazines prepared by the institution, newspapers, journals, books and websites are used as per the requirement of the study.

3.2 The Study Area Description and Sampling

Currently, ACSI has 10 zonal offices distributed over the whole Amhara National Regional State (ANRS). These are North shoa zone office, Oromia zone office, South Wollo zone office North Wollo zone office, South Gondar zone office, North Gondar zone office, West Gojjam zone office, East Gojjam zone office, Awi zone office, Wagemera zone office (ACSI, 2018). A total of 412 branches are operating under those zonal offices. From 10 zonal offices South Wollo zone office has been chosen for the study for its convenience. Currently, there are 64 branches and 185 satellite offices operating under South Wollo zone office, out of these branches four branches are taken from the three selected study sites such as Dessie (2 branches out of 6), Kombolcha (1 branch out of 3) and Haik (1 branches out of 3). Under South Wollo zone office of ACSI there are 125,676 active clients using the services provided; in all branches. From the

total active clients available 12,167 active clients are from branches of the study sites (South Wollo ACSI, 2018).

These study sites are selected to participate in the assessment as they are relatively mature, having been operational for more than ten years, which allowed for the inclusion of clients that have been saving and borrowing from the institution for longer periods of time. Besides, the selection considers current performance, number of employees and overall potential of branches so as to clearly indicate the saving mobilization aspect of MFIs. In designing a sample for a study, the researcher chooses the size effect that is considered to be important and representative so that the researcher believed that these samples are representative for this study (Abiy, Alemayehu, Daniel, Melese and Yilma, 2009). Although the target population is gigantic, time and financial constraints as well as greater homogeneity in branches and clients of the institution limits the sample to one MFI, three study sites and five branches.

For the determination of sample size, there is no defined rule that can be followed (Kothari, 2004). However, the sample size of 270 is determined using the minimum sample size formulae of Fowler (2001), which is indicated by:

$$n = \frac{[z_{\alpha/2}]^2 P[1 - P]}{D^2}$$

where n= number of surveyed population; $Z_{\alpha/2}$ = the two-tailed critical value at 95 percent confidence interval (1.96); P = the proportion of clients to total target population or potential clients (0.129) by taking the data from south wollo zonal office¹; D = marginal error between the sample and population size (0.040), which refers to the estimated value has been lied within \pm 4.0% of the true value which in turn is less than 5%.

Once the sample size has been selected, client households were selected in using a two stage random sampling method. In the first stage branches were selected randomly from each town. In the second stage sample client households were randomly drawn from a complete list of respective selected branches in conformity to proportionate to size random sampling procedure. As a result, from table 3.1 it is shown that the numbers of households selected in each branch are determined in line with the population size of the branches.

¹ According to South Wollo zonal office of ACSI the target population or the potential clients of ACSI at zonal level is the total population of South Wollo zone with the age range of 18 to 60, that is, the population size of 992,965. To this end, the proportion of clients to total target population will be computed as a ratio of total active clients of the South Wollo ACSI (125,676) to the target population at zonal level. Thus, $125,676/992,965 = 0.129$ (Amhara BoFED, 2007 and South Wollo ACSI, 2018)

Table 3.1 Number of sampled client households by branch office proportionate to size

Sampled Woreda	Sampled branch	Total No. of client households	No. of sampled households ²
Dessie City	Dessie No. 1	2285	81
	Dessie No. 2	1567	56
Kombolcha City	Kombolcha	1552	55
Haik City	Haik	2164	78
TOTAL		7568	270

Source: Own computation using data on South Wollo ACSI, 2018 and CSA, 2007

3.3 Data Collection Procedure

A combination of data collection instruments such as structured questionnaire and interviews were used. The structured survey was directed to 270 clients from each town in each selected branch. Data that are collected by administering structured interview with questionnaire contains both open and close-ended questions and are filled by enumerators in collaboration with supervisors and the investigator so as to facilitate the study. To do this, enumerators were recruited and trained on data collection methods and on the contents of the interview guide. The questionnaire was originally developed in English and translated to Amharic language. A pilot survey will be conducted at few branches taking thirty clients so as to pre-test the questionnaire which helps to refine and adjust the questionnaire before the main survey is going to be carried at full-scale.

Interview with focal persons from clients and officials and experts from ACSI were conducted by the researcher in order to effectively gather pertinent information to the study. Furthermore, secondary information was collected from the regional office and branch offices of each town. Sectoral reports, manuals, policy documents, and previous research works are also important sources of data.

3.4 Method of Data Analysis

Once the nature of data and method of sampling is identified, appropriate descriptive and econometric techniques are employed to analyze the data. In the descriptive analysis, the study used descriptive statistics such as percentages, summary statistics and inferential statistics. In econometric analysis, econometric models particularly Heckman selection model is employed to

²The number of sampled households in each branch is determined as proportionately to size of active clients in each branch. The same applies to the number of branches selected in each city.

address the stated objectives. The Heckman selection model is used to analyze the impact of microfinance program on saving mobilization and hence household welfare. Stata econometric software package was used for the data entry and to perform statistical and econometric analysis. The detailed specification of econometric tools and methods are presented below.

Heckman Selection Model

Evaluating the impact of an institution or a program on an outcome variable using regression analysis can lead to biased estimate if the underlying process which governs “selection into the institution or a program is not incorporated in the empirical framework. The reason for this is that, the effect of the program may be overestimated or underestimated if program participants are more or less able due to certain unobservable characteristics, to derive these benefits compared to eligible non-participants (Zaman, 2001). To evaluate the benefit from a program, a model commonly employed is the following:

$$(3.1) \quad Y = X\beta + \alpha I + U$$

Where Y is the outcome, X is a vector of explanatory variables and I is a dummy variable equal to 1 if the individual participates in the program and 0 otherwise.

For this model, the effect of the program is measured by the estimate of α . However, the dummy variable ‘I’ cannot be treated as exogenous if the decision of an individual to participate or not to participate in the program is based on an individual self selection (Maddala, 1983). One solution to this problem in econometrics is the application of heckman selection model, specifically, the Heckman two-step procedures. The Heckman selection model is a response to sample selection bias. It is the appropriate tool to test and control sample selection biases (Wooldrige, 2002).

In view of the need to estimate the selection process into the microfinance program we use the Heckman two- step procedure which first estimates the participation equation (the probability of participating in the microfinance program) and derives maximum likelihood estimates from the coefficient of the participation equation. Using these estimates a variable known as the Mills ratio is constructed. The Mills ratio is the tool for controlling bias due to sample selection (Heckman, 1979).

The second stage involves including the Mills ratio to the saving equation and estimating the equation using ordinary least square technique. The variation which remains in the dependent variable after removing the effect of the known factors can only be caused by the influence of unknown factors. In the Heckman procedure, the residuals of the participation equation are used to construct a selection bias control factor, which is called Lambda and which is equivalent to the Inverse Mill's Ratio. This factor is a summarizing measure which reflects the effects of all unmeasured characteristics which are related to household participation in the program. The

value of this lambda for each of the respondents is saved and added to the data file as an additional variable (Heckman, 1979).

The probit model is used to predict the probability that an individual household is a participant or not and hence to obtain the inverse Mills ratio (Lambda). It can be expressed as the ratio of the standard normal density function, $\phi(Z)$, to one minus the standard normal distribution function, $\Phi(Z)$:

$$(3.2) \quad \lambda_i = \frac{\phi(Z_i)}{1-\Phi(Z_i)}$$

By recalling symmetry of the normal distribution, $\phi(z) = \phi(-z)$ and $1-\Phi(z) = \Phi(-z)$, the expected value of lambda is

$$(3.3) \quad \lambda_i = \frac{\phi(Z_i)}{\Phi(-Z_i)} = \frac{\phi(-Z_i)}{\Phi(-Z_i)}$$

Thus, lambda can be rewritten as:

$$(3.4) \quad \lambda_i = \frac{\phi(Z_i)}{1-\Phi(Z_i)} = \frac{\phi(Z_i)}{\Phi(-Z_i)} = \frac{\phi(-Z_i)}{\Phi(-Z_i)}$$

Where: " λ_i " is Lambda (inverse of Mill's ratio); ϕ and Φ are the density and distribution functions for the standard normal variable, respectively, and

$$(3.5) \quad Z_i = \frac{X_i \beta}{(\delta_e)^{1/2}}$$

In the two stage estimation technique, we simultaneously model participation in microfinance program and the impact of the program on household's saving. In this regard, the first step of the Heckman procedure is used to analyze factors influencing the household's participation in microfinance program. Thus, the probit (participation) model can be defined in terms of the level of the unobserved index as:

$$(3.6) \quad Y_i^* = \beta_0 + \sum_{i=1}^n \beta_i X_i + U_i, \quad U_i \sim N(0, \sigma_u^2)$$

$$(3.7) \quad \text{where } Y = \begin{cases} 1 & \text{if participant, } Y^* > 0 \\ 0 & \text{otherwise, } Y^* \leq 0 \end{cases}$$

Where: Y^* = unobservable variable³; X_i = explanatory variables; β_0 = the intercept term; β_i = unknown parameter to be estimated by the model; U_i = disturbances or error terms that follow a bivariate normal distribution with a zero mean and variance σ_u^2 .

In the second step of the Heckman procedure, an OLS regression analysis (i.e. a saving equation) is employed by including selection bias control factor, Lambda, as an additional independent variable in the model. Now, this model is freed from the effects of all unmeasured factors which relate to the amount of household saving and hence participation of the households, because the effects of these factors are controlled by lambda. Thus, the problem of selection bias is resolved and hence the OLS regression analysis produces unbiased coefficients. This yields the following estimation equation.

$$(3.8) \quad S_i = \alpha_0 + \alpha_1 W_i + \alpha_2 Y_i + \alpha_3 \lambda_i + \varepsilon_i = \sum_{i=1}^n \gamma_i Z_i + \varepsilon_i$$

Where: S_i = household's saving amount; W_i = a vector of regressors; Y_i = a dummy variable which is 1 for participant and 0 for non participant; α_i = vector of unknown parameter to be estimated ($i = 1, 2, 3$); λ_i = the Lambda (inverse Mill's ratio); ε_i = the new residual with property that $E(\varepsilon_i) = 0$.

Therefore, the saving equation in the second step of the Heckman procedure can also be specified as

$$(3.9) \quad S_i = \sum_{i=1}^n \gamma_i Z_i + \varepsilon_i, \text{ observed only if } Y^* > 0$$

Where S_i is household saving, Z_i a vector of all explanatory variables, including lambda, λ_i , and ε_i is a disturbance term which follows a bivariate normal distribution with a zero mean, variance σ_ε , and covariance $\sigma_{\varepsilon u}$. The estimator is based on the conditional expectation of the observed variable, household's saving amount S_i :

$$(3.10) \quad E(S_i / Y^* > 0) = z\gamma + \sigma_{\varepsilon u} \sigma_\varepsilon \lambda(-\beta x)$$

Where λ is the inverse mills ratio defined as $\lambda(-\beta x) = \phi(-\beta x) \div (1 - \Phi(-\beta x))$; β and γ are vectors of parameters which measure the effects of variables x and z ; ϕ and Φ are the functions of density and distribution of a normal, respectively. The expression of conditional expectation shows that S_i equals γZ only when the errors u_i and ε are non correlated, $\sigma_{\varepsilon u} = 0$; otherwise the

³ Y^* is a dichotomous variable which takes a value 1 when the latent variable $Y^* > 0$ and 0 otherwise. In this way $Y = 1$ indicates the participation in the microfinance program and $Y = 0$ that of not participating in the program.

expectation of S_i is affected by the variable of the participation equation. Thus, from the above household saving, we find that

$$(3.11) \quad S_i / Y^* > 0 = E(S_i / Y^* > 0) + v_i = z\gamma + \sigma_{\epsilon} \sigma_{\epsilon} \lambda(-\beta x) + v_i$$

Where v_i is the distributed error term, $N(0, \sigma_{\epsilon} (1 - \sigma_{\epsilon} (\lambda(\lambda - \beta x))))$

The description of covariates and outcome variables included in this study is generalized in the following table 3.2.

Table 3.2 Description of covariate and outcome variables

Variables		Description of Variables
<i>Dependent variables</i>		
savav	Participation in saving scheme	1 if the client household participates both in voluntary and compulsory saving and 0 if only compulsory saving
logtotexp	Log of monthly total expenditure	Continuous variable
<i>Explanatory Variables</i>		
gender	Gender of the client	1 if the client household head is male and 0 otherwise
age	Age of the client	Continuous variable
mrst	Marital status of the client	1 if the client household head is single 0 and otherwise
yrshl	Years of schooling	Continuous variable
fmlsiz	Family size of the client	Continuous variable
occup	Occupation of the client	1 if the client household head is self employed and 0 otherwise
savsors	Source of money for saving	1 if own business and 0 otherwise
savint	Interest rate on saving	1 if high and 0 otherwise
soncoop	Participation in social capital	1 if the client household participates and 0 otherwise
memyrs	Years of membership in social associations	Continuous variable
trainyr	Access to training in the last 12 months	1 if the client household has access and 0 otherwise
notrain	Number of trainings taken the last 12 months	Continuous variable
contACSI	Contribution of ACSI to enhance saving	1 if low and 0 otherwise
savamtsu	Monthly saving amount at the start up	Continuous variable
savamtcur	Monthly saving amount in the current time	Continuous variable

Source: Author's definition, 2020

4. Result and Discussion

4.1 Descriptive Analysis

Demographic and Socioeconomic Characteristics

Microfinance interventions mainly targets of the poor household; hence, assessment of its impact requires a clear picture of the households' demographic and socioeconomic characteristics. Table 4.1 summarizes the information pertaining to the overall profile of microfinance clients. This section, therefore, presents the demographic and socioeconomic information about the clients of the microcredit program. As per table 4.1, majority (61.85%) of the microcredit clients are males while the remaining 38.15 are females. This is testimony to the fact that most beneficiaries from microfinance program are men. Majority of the clients were in the productive age group with average age of 34.37 years. The range of the age goes from 17 to 82.

Marital status was another characteristic of the client in which the result reveals that about 20%% of the clients were single. The remaining 80% were married, divorced and widowed. The result is steady with previous studies such as Schwartz (2013) and Feleke's (2011). Schwartz (2013) married clients have a better tendency to become beneficiaries of microfinance program. The marital status result contrast with that of Feleke's (2011) indicates that majority of the beneficiary households were married. In this connection, due to their marriage partners the beneficiaries find it easy to gain better business ideas and additional income from their partners in order to start income generating activities.

With respect to education in terms of years of schooling, the microcredit clients have 9.52 as the mean years of schooling ranging from 0 to 18 years of schooling. This implies that majority of clients have completed grade 9 with the illiterate and holder of second degree as minimum and maximum levels of education. Education is a key instrument in social capital which has a positive impact on household ability to save money and use it for intended purposes. According to Feleke (2011) indicates microfinance creates a much better positive effect on beneficiaries equipped with a better education and skill training on saving, business administration, income generating and loan repaying, than on beneficiaries have no education and training skills. In contrast with this empirical evidence, the result in the present study has shown that the MFI under study (ACSI) is providing MF services mainly to the lower class of the society or economically and academically weak people. Lack of sufficient education in turn negatively affects the diversified productivity of clients. It would also reinforce cultural factors and other variables that affect the effectiveness of micro finance institutions. As far as clients' relationship with means of employment is concerned, the study showed that 35.19% of the total clients were government and non government employees. The remaining are involved in different activities such as farming, self employment, petty trade activities and among others.

In relation to social capital, 92.96% of ACSI clients were member of different social grouping or associations. And the remaining 7.04% were not participating in any of social grouping. The average number of years that the clients are being a member of these social associations is 5.08 which is also ranging from 1 to 23 years of membership. According to this it could mean that most of the clients were involved in different social associations. Based on the key informant interview, the microfinance clients confirmed that their social grouping is functional and gets advantage in sharing of ideas, experience of business and life and further for sharing of local goods in the case of social celebrations created among them. The result in this study is consistent with empirical evidences from Augusto and Ferriera (2007). According to Augusto and Ferriera (2007), current microfinance institutions shouldn't only come demonstrate the impact of their service towards financial wealth, but social benefits to the community be supposed to come together. Moreover, Orbuch (2011) suggests microfinance is going to contribute to the achievement of non-financial services and social capital apart from financial services and human capital. Here, it is possible to infer that MFIs particularly ACSI is playing its own role on social capital formation in one or another way.

Besides analyzing the basic demographic characteristics of the clients, data on saving mobilization and role of microfinance institutions to mobilize saving and loan disbursement were also analyzed and presented using descriptive statistics. In the present study, the target clients asked to make reply the question of access to saving are those clients whether they have involved both in voluntary and compulsory types of savings. Compulsory saving is a prerequisite for the clients to be the member of MFIs. In this regard, 12.59% of the clients were involved both in voluntary and compulsory savings. Others, 87.41% were participating only in compulsory type of saving. This implies that voluntary savings among the sample clients (12.59%) were insignificant. The study also assessed the sample clients' sources of income for saving. 44.92% of the clients were reported own business activity as sources of money for saving. The rest 55.08% were involved in such activities as employment, gift, family business, among others so as to generate income for saving. From the above discussion one can see that most of the clients' major source of money for saving was obtained from own business which could be taken as area of intervention so as to improve savings.

As regard to learning and growth undertaking of ACSI, less than half (49.63%) of the clients reported that they didn't receive training on saving for the last 12 months which is a reflection for the poor performance of the institution on awareness creation and capacity building. Orbuch (2011) accredits that the social service provided by microfinance contribute to the growth of human capital formation. Educational services including trainings contribute to the overall awareness of the beneficiaries, thereby making them productive in their life. However, as reported by the ACSI officials and experts, the reason for such low performance of the institution on capacitating the skill of the clients is due to the client's absenteeism and withdrawal during

training programs. Concerning the overall contribution of ACSI to enhance savings of the clients, only 20.37% of the clients are satisfied but majority (79.63%) of them are not satisfied. The overall contribution of ACSI on saving mobilization should be enhanced for a better saving mobilization performance of the institutions and thereby satisfaction of its clients. Moreover, this point of investigation requires further investigation and should be supported with rigorous study.

Table 4.1 Demographic and socioeconomic characteristics

Variable	Mean	Std. Dev.	Minimum	Maximum
Gender	0.6185	0.0296		
Age	34.3703	9.3957	17	82
Marital status	0.1989	0.3921		
Years of schooling	9.5222	4.3998	0	18
Occupation	0.3519	0.4784		
Family size	3.4667	1.6689	1	8
Membership in social network and cooperatives	0.9296	0.2703		
ACSI membership years	5.0889	3.3726	1	23
Access to saving at ACSI	0.1259	0.3312		
Source of money for saving	0.4492	0.4959		
Interest rate on saving	0.1148	0.3282		
Training on saving provided in the last 12 months	0.4963	0.5021		
No. of trainings in the last 12 months	1.5811	0.4955	1	2
Overall contribution of ACSI to enhance saving	0.2037	0.4035		

Source: Own survey, 2020

Table 4.2 Comparative analysis of clients' monthly saving

Variable	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
Monthly saving at the start up (savsu)	702.59	102.80	1676.72	500.17	905.01
Monthly saving currently (savcur)	663.87	92.22	1504.09	482.29	845.45
Difference (diff)	38.72	87.13	1421.11	-132.84	210.28
Mean (diff)= mean (savcur – savsu)					t = 0.44
H ₀ : mean = 0					degrees of freedom = 265
Ha: mean(diff) < 0		Ha: mean(diff) != 0		Ha: mean(diff) > 0	
Pr(T < t) = 0.6714		Pr(T > t) = 0.6571		Pr(T > t) = 0.3286	

Source: Own survey, 2020

In part of inferential analysis, the researcher considers two circumstances in saving mobilization, namely start up saving and current saving so as to investigate whether there is statistical significance difference on saving amount comparing the two scenarios measured under two different conditions and two different times. This would be done using two sample paired t-test which helps to examine the statistical difference between the start up and current saving amounts. As can be seen from table 4.2, one can easily observe that the average start-up monthly saving amount is Birr 663.87 while the average current monthly saving amount is Birr 702.59. As a result, the mean difference between the average start-up monthly saving and average current monthly saving is Birr 38.72.

The two-sided null hypothesis must be accepted even at the 1% level of significance, since p value=0.6571 is much greater than even 0.01. Thus, mean difference between the average start-up monthly saving and average current monthly saving is not statistically significance at any significant level. The result indicates that the microfinance program particular to the role of ACSI to improve saving mobilization is not remarkable since it didn't make statistically significant difference on savings over time. The result here in the inferential statistics confirmed with the previous result on descriptive analysis in which the overall contribution of ACSI to enhance saving is not promising.

4.2 Econometric Analysis

The welfare Impact of Microfinance Program

Household saving has its own implication on household welfare through increasing income and expenditures which in turn helps to meet household's basic needs and more choices. In this study the impact of microfinance on the welfare of the microfinance clients may be evident in the mean monthly expenditure of the clients which is the genuine indicator of household welfare.

The sample selection model particularly, the Heckman two stage estimation model is employed to investigate the above mentioned issue. This is because the information about client households might be subject to selection problem if the household select themselves or the program purposively selects households to participate in microfinance service in general and saving mobilization scheme in particular. In Heckman two-stage selection model, the first stage estimation of probit model or participation equation is done on the bottom panel of table 4.3 to capture the determinants of client household's participation decision saving mobilization scheme, with the dependent variable equal to one if a household participates both in voluntary and compulsory savings and zero otherwise. In the second stage, the outcome model or outcome equation is estimated on the top panel of table 4.3 by OLS regression including an additional selectivity term (the inverse Mills ratio or λ ; also sometimes referred to as hazard rate) as a control variable to examine household welfare (measured by expenditure) impact of participating in saving scheme. In this paper, therefore, the focus is on a method of controlling for selectivity bias known as the Heckman two-step selection model (Heckman, 1978; 1979; Heckman & Robb, 1986; Greene, 1993).

The summary of the model is presented at the very top of the table 4.3 indicating that there are 270 observations in the dataset, but that 34 of them are censored ($z=0$), which means we do not have observations on the dependent variable in the outcome equation. The computed Wald chi2 value and the associated p-value show that the overall model is statistically significant and explains the observed behavior. Concerning the analysis of impact of saving on welfare of the client households, firstly results of the two steps are analyzed and then interpreted the terminologies at the bottom. The survey results, therefore, is presented on Table 4.3.

The estimated result from probit model indicates that participation in saving scheme was positively and significantly influenced by age and education at 10% and 5% level of significance respectively. Accordingly, as the age of the microcredit client increased by one year, the probability of the client to participate in saving scheme deteriorates. Education of the client, measured by years of schooling also had a positive relationship with the probability of the participation of clients on saving scheme, indicating that more educated households were more likely to be participate in saving and recognize the significance of saving and were ready to participate in saving schemes than less educated households.

On the other hand, marital status and ACSI's contribution to enhance saving were found to have a negative significant influence on participation in saving scheme at. Marital status in terms of single was statistically significant at 5% level of significance. This suggests that single client households have lesser chance to participate in saving scheme than married households. In other words, married households have better chance to participate in saving that single households. The possible explanation for this relationship might be because married households have higher chance of being idea sharing with their spouse and/or children, there might be an access to earn income due to family member labour force and other mutualism related factors. ACSI's contribution to enhance saving in terms of low level of contribution has negative significant effect implying that the low the level of contribution by ACSI to encourage saving through various packages, the less likely the clients to participate in saving scheme of the institution.

Once the result of participation equation in the bottom panel is discussed in brief, the focus has shifted to substantive analysis of results from outcome equation in the top panel. The outcome or expenditure equation has been adjusted for selection bias via the Mills ratio calculated from the probit model in step one of the Heckman two stage estimation. Gender has a positive significant impact on welfare of the microfinance client households, as measured by expenditure, whereas household head age has negative significant impact on welfare of the household. In other words, while the male headed households have a significant positive impact on household welfare, household head age has significant negative impact on welfare of the household. This is likely through the indirect positive and negative impacts of male headed household and household head age on participation in saving schemes respectively. As regards to gender of the household head,

Table 4.3 Impact of microfinance program on household welfare

Heckman selection model -- two-step estimates	Number of obs	=	270
(regression model with sample selection)	Censored obs	=	34

Uncensored obs = 236
Wald chi2(8) = 81.01
Prob > chi2 = 0.0000

Variables	Coefficient	Standard Errors	z-value
<i>Log of total expenditure</i>			
Gender	0.2129	0.0989	2.15**
Age	-0.0147	0.0057	-2.57**
Marital status	-0.2292	0.1479	-1.55
Years of schooling	0.0693	0.0121	5.71***
Family size	0.1518	0.0329	4.61***
Participation in social associations (social capital)	-0.0464	0.1853	-0.25
Years of membership in social associations	-0.0059	0.0144	-0.41
Interest rate on saving	0.4193	0.1428	2.94***
Constant	7.3013	0.3386	21.57***
<i>Access to saving</i>			
Gender	0.2159	0.2368	0.91
Age	0.0222	0.0119	1.85*
Marital status	-0.6533	0.2936	-2.23**
Years of schooling	0.0629	0.0262	2.41**
Family size	-0.0248	0.0785	-0.32
Participation in social associations (social capital)	0.5469	0.3635	1.50
Years of membership in social associations	-0.0236	0.0402	-0.59
Interest rate on saving	0.5130	0.3792	1.35
Overall contribution of ACSI to enhance saving	-1.4779	0.2532	-5.84***
Mills			
Lambda	0.4356	0.2494	1.75*
Rho	0.6143		
Sigma	0.7090		

* Significant at 10%; ** Significant at 5%; *** Significant at 1%

Source: Own survey, 2020

for example, male headed household expenditure is more than female headed household as male headed ones is more likely to participate in saving scheme. To this end, the expenditure of male headed household is exceeding by 21.29% as compared to the female headed households which can lead to a conclusion that the welfare of male headed household is higher than female headed households participating in microfinance program. Unlike the gender, age of the client household head is significant at 5% level of significance but with negative effect, implying that the welfare of the household decreases with the increase in age of the household head.

The strongest determinant of household expenditure, household size has the largest impact on microfinance client household expenditure. The coefficient for this variable is statistically significant at 1% and quite large; expenditure increased by approximately by 15.19% for every additional member of a family. This is due to the linkage between more members with source and amount of income. That is, household with large family size can possibly have diversified income sources like being involved in different economic activities and hence getting more income which in turn help the household to have more expenditure. Moreover, although the effect of household size on welfare is controversial, its effect has to be treated with caution because of potential possibility of earning income in large families. It is generally expected that different household members exhibit different earnings potentials or might be eligible for different social transfers and benefits like child allowances and pension payments (Glewwe 1991; Lanjouw and Ravallion 1995).

Since clients of the microfinance are expected to have marginal access to education, education is expected to improve the possibility of additional expenditures in the household. The finding in this study revealed that education, measured in years of schooling, is statistically significant at 1% and hence it is expected to improve the situation household expenditure significantly. The client household's expenditure increases with the increase in client's years of schooling. In this regard, one extra years of education is contributing to improve the situation of the household expenditure by 8.32%. As an evidence for the result, Berhanu (1999) indicated that education has a positive and significant influence on household expenditure through the provision of credit, enhancement of saving, technical advice, and skill training among other areas of intervention by microfinance industry.

Interest rate on saving is statistically significant at 5% level of significance. A high interest rate on saving offered from ACSI micro financing scheme appears to have a significant and positive influence on the welfare of clients, measured by overall expenditure of the clients. Accordingly, one unit increase on saving interest rate leads to 51.7% increase on household expenditure. The plausible explanation for this result may be since high interest earned by clients is related to the use of income and savings, the results may signify that the participation in saving scheme of ACSI have more expenditure on food and non food items than the non participant clients, which can be mainly due to an improvement in the savings and thereby income of the clients.

Selection bias, had it not been corrected for the Heckman selection model, is beyond the level that one can ignore. Thus, participation in saving scheme is governed by an unobserved selection process. The positive coefficient of the Inverse Mills ratio signifies that OLS would produce upwardly biased estimate.

In this regard, by rejecting the null hypothesis $\rho=0$ or $\lambda=0$, the estimate of Mills λ is 0.436 and was found to be statistically significant at 10%, that suggests the upwardly biased estimate. This upwardly biased estimate explains by how much the welfare in terms of expenditure is shifted up (or down) due to the selection effect. The interpretation of this estimate is not straightforward. The ρ estimate, $=0.614$, also suggests that there is a positive correlation

between the unobservable of the choice participation equation and the expenditure equation, which may mean that those factors which increase the likelihood of participating in saving scheme tend to raise the welfare of the households through increasing their expenditure.

5. Conclusion and Recommendation

5.1 Conclusion

The present study mainly emphasizing on microfinance program impact taking ACSI of Ethiopia as a case was aimed at assessing the impact of microfinance program on welfare of client households, measured by expenditure. The study reports a survey of 270 clients of ACSI in south wollo specific to four urban branches in Dessie, Kombolcha and Haik towns. As per the findings of the present study, most of the client household heads were male and they were in the productive age group. Most of the clients of ACSI lack basic literacy and numeric skills. Almost all except few were married or divorced or widowed. Almost all except a few of ACSI clients were member of different social grouping or associations. The average number of years that they are being a member of these social associations is more than five years with a maximum of more than two decades.

Concerning the culture and size of saving, voluntary savings is not promising in that very few of the clients are involved in voluntary saving. The study also assessed the sample clients' sources of income for saving and half of the clients were reported own business activity as sources of money for saving. The remaining half was involved in such activities as employment, gift, and family business, among others so as to generate income for saving. As regard to learning and growth undertaking of ACSI, less than half of the clients reported that they didn't receive training on saving for the last 12 months which is a reflection for the poor performance of the institution on awareness creation and capacity building. Even there is not client received more than two training sessions for the last 12 months. Moreover, majority of the clients were reported that they were not satisfied with the overall contribution of ACSI in delivering its services in general and enhancing saving mobilization in particular.

Investigating the statistical significance difference on saving amount comparing the two scenarios at start up and current periods of time, the survey result was found that the mean difference between the average start-up monthly saving and average current monthly saving is not statistically significance at any significant level. The result indicates that the microfinance program particular to the role of ACSI to improve saving mobilization is not remarkable since it didn't make statistically significant difference on savings over time.

In order to evaluate the welfare impact of microfinance program, Heckman two stage estimation model is employed to investigate the welfare impact of microfinance program under two steps of the model. In the first stage, estimation of probit model or participation equation was done to capture the determinants of client household's participation decision on saving scheme. In the second stage, the outcome model or outcome equation is estimated using OLS regression to examine household welfare impact of participating in saving scheme.

According to the summary of the model the computed Wald chi2 value and the associated p-value show that the overall model is statistically significant and explains the observed behavior. The estimated result from probit model indicates that on the one hand participation in saving

scheme was positively and significantly influenced by age and education. On the other hand, marital status and ACSI's contribution to enhance saving were found to have a negative significant influence on participation in saving scheme. Once the result of participation equation is done, the outcome or expenditure equation has been adjusted for selection bias via the Mills ratio calculated from the probit model in step one of the Heckman two stage estimation. Accordingly,

Gender has a positive significant impact on welfare of the microfinance client households, as measured by expenditure, whereas household head age has negative significant impact on welfare of the household. Moreover, household size has the largest direct impact on microfinance client household expenditure. The coefficient for this variable is statistically significant and quite large. The finding in this study revealed that education, measured in years of schooling, is statistically significant and hence it is expected to improve the situation household expenditure significantly. A high interest rate on saving offered from ACSI micro financing scheme appears to have a significant and positive influence on the welfare of clients.

The significant and positive coefficient of the Inverse Mills ratio signifies that OLS would produce upwardly biased estimate which explains by how much the welfare in terms of expenditure is shifted up (or down) due to the selection effect. The estimated value of rho also suggests that there is a positive correlation between the unobservable of the choice participation equation and the expenditure equation, which may mean that those factors which increase the likelihood of participating in saving scheme tend to raise the welfare of the households through increasing their expenditure.

In conclusion, Microcredit program has a significant positive effect on saving mobilization. This reveals microcredit program is positively influencing saving mobilization directly or indirectly. This means, there is a compulsory saving program which directly influencing the clients as a rule to save while receiving loan from MFI and also after the clients engage in different business activities they try to save voluntarily because they think that savings would be their future hope to improve their financial status as well as improve their living standard. Therefore, this result supports the argument that micro financing scheme has a positive impact on improving the income and hence expenditure level of the beneficiary households.

Although the contributions from participation in the microfinance program particular ACSI is on good position, it is possible to say that the MF intervention could not fully bring about needed change in terms of household welfare for the majority of the clients. Therefore, one of the duties of Microfinance program intervention should be to work hard to enhance the impact of the program on client's economic and social wellbeing.

5.2 Recommendation

The participation of women headed households in microfinance program is relatively lower in the study area. This result suggested that women clients have lesser mobility and interaction in the community and also they have lesser participation in decision making role of businesses. In addition, the finding of evaluating the microfinance program confirms that gender of the household head is extremely significant in explaining the welfare impact of the program. Investing on gender-sensitive policies and programs, therefore, has paramount significant in improving the welfare of the client households.

Out of various factors which increase the likelihood of participating in saving scheme, age and education were found to be the important determinants which in turn tend to raise the welfare of the households through increasing their expenditure. Therefore, targeting on the age structure and educational status of the clients should be given a prime attention so as to improve the overall livelihood condition of the clients. Investing on education, for instance, as one important factor with significant impact on client household's welfare, is important enough to be used as creating awareness towards microfinance services and hence livelihood enhancement strategy.

Saving is one of the practices of microfinance services used to ensure the sustainability of the institutions. The number of clients in south wollo that started to save voluntarily is less. The low status of voluntary saving is the indication of little awareness and attitudinal changes of clients toward savings. Hence, MFIs in general and ACSI in particular have to work harder to build awareness and positive attitude so as beneficiaries exploit the potential advantages of the saving practice. In this connection, capital accumulation of the MFIs mainly ensured through savings which leads to sustainability of the services. Therefore, great attention should be given by ACSI to mobilize the untouched resources through working more on awareness creation and attitudinal change of its clients to improve the importance of its microcredit program on saving mobilization.

Since participation of the client households in social associations is high there is a high opportunity for ACSI to utilize the social capital for saving mobilization by integrating with other stakeholders or beneficiary programs such as health like HIV/AIDS and education like literacy trainings. Major source of money for saving was obtained from own business which could be taken as area of intervention so as to improve savings. The result indicates the fact that ACSI should targeted to motivate and support the clients to be engaged in their own business. In this result, we can conclude that creating employment opportunity specifically running of own business is the most important policy intervention so as to dramatically shift the livelihood of client households in South wollo. The plausible explanation for this is that employment schemes bring higher returns to labor and greater saving mobilization and income stability than other policy interventions.

The overall contribution of ACSI to enhance savings of the clients was not promising. ACSI should renovate itself in a way to enhance the overall contribution to saving mobilization through introducing various microfinance services and sharing saving experience of clients among themselves. Providing financial service alone cannot ensure the life improvement dreams of the microfinance clients. Therefore, the ACSI and other potential actors should think how the overall services could be more effective. In this regard, the institution should collaborate with others and

provide different integrated skill based trainings, business oriented information and counseling services. Besides, continuous follow up and close supervision of the clients, different incentive mechanisms for those clients who succeeded with the program is important to motivate clients to work hard toward the set goal. ACSI microfinance intervention should reverse the vicious circle of “low income – low saving – low income” into an expanding system of “high income – high saving – high income” in the intervention areas, through the provision of credit, enhancement of saving, technical advice, and skill training among other areas of intervention.

The impact of microfinance services can be more effective if it is supported by research. The current situation shows that there are no as such critical impact assessments done in area particular to case of ACSI. Despite the informal gathering of data and onetime assessment of service delivery of ACSI no comprehensive impact assessment has been made yet to see the contribution of the service to the livelihood condition of the beneficiaries. So beneficiaries focused studies and assessments should be conducted by the institution in order to see what it is really contributing.

Microfinance interventions in Ethiopia, including ACSI have become a crucial entry point for improving livelihood of the community at large. MFIs to accomplish that responsibility, however, need to be capacitated well from laying conducive legal environment to creating innovative mechanisms that helps to, at least, mitigate the potential challenges they are facing. To be effective in large scale, the coordination of different actors is crucial. For instance, program designers at higher levels, implementers at lower levels, and funding agents should re-evaluate the program design and implementation to bring the positive effect on the participants in terms of enhancing saving mobilization and hence ultimately community welfare. Moreover, measures should be taken to redesign and expand special urban financial institutions targeting on mobilization of saving and provision of loan for urban poor, for example, the financial institutions should design systems that enhance the saving habit of the urban people and establish insurance schemes by increasing the people’s awareness about the importance of insurance against income risk.

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