SAVING BEHAVIOUR AND DETERMINANTS OF SAVING MOBILIZATION BY RURAL FINANCIAL CO-OPERATORS IN TIGRAI REGION, ETHIOPIA

Sebhatu Kifle Tesfamariam

Mekelle University, Ethiopia

Abstract. This paper identified and examined saving behaviour and determinants of saving mobilization by the rural co-operators in Southern Tigrai Ethiopia. The input for the study was obtained from randomly selected 120 rural household savers from six purposively selected rural savings and credit cooperatives. The result of the study using least squares method showed that savings mobilized is determined by household annual income, amount of loan borrowed and year of member stay in the cooperative. These factors therefore have to be considered in designing strategies aimed at improving the saving mobilization of cooperative members in the study area. Besides, economically feasible cooperative societies in the region should be encouraged among the rural households by supporting them with revolving funds as they are more effective and efficient in mobilizing rural savings and provide collateral plus guarantor-based loans with low default rate. This will enable them to boost up their production output and increase their savings thereby stimulating the rural economy.

Key words: savings, co-operators, rural, determinants, Ethiopia

INTRODUCTION

In recent years, economists, international organizations, and governments in developing countries have placed increasing emphasis on the mobilization of deposits, not only to increase domestic savings, to achieve sustained economic growth and development but also to strengthen domestic financial intermediaries [Vogel et al. 1984, Gonzalez-Vega and Poyo 1986, Robinson 1994]. Other studies for example, Adriana de la

Corresponding author – Adres do korespondencji: Sebhatu Kifle Tesfamariam, Lecturer, Mekelle University, P.O. Box 451, Tigrai Region, Ethiopia, e-mail: K.TesfamariamSebhatu@uvt.nl; kifle20009@gmail.com

Huerta [2010] found that the existence of positive effects of household savings on economic growth and poverty alleviation. In addition, the recent financial crisis has led to serious repercussions in the global economy because of deep economic and moral losses of investors [Gorton 2009]. These events revealed the relevance of saving and especially its allocation in the nation economy [Bernhiem and Shoven 1991]. Indeed, saving is very important in the development of industrial and financial systems [Attanasio 1998, Bosworth et al. 1991, Deaton and Paxson 2000]. However, throughout the developing country, poor people still face partial or full exclusion from the financial sector and cannot take advantage of the opportunities. Conditions without savings, households have few other mechanisms to smooth out unexpected variations in their income. So, shocks may create some problems of human capital accumulation at early ages.

Following the financial liberalization in Ethiopia (1992) and the growing influence of the cash economy in rural areas, associations like rural savings and credit cooperatives (RUSACCOs) become very instrumental in savings mobilizations and provision of micro loans to members in rural areas of the country. These associations are mostly preferred by rural household due to easy accessibility of the services (physical proximity), relatively low interest rates, customer care, minimum deposit requirement, ease of access for savings, and informal nature of transactions [Adeyemo 1982, Onyenwaku and Ozoh 1992]. With the result that, farmers who are members of cooperatives tend to achieve higher yields, and staple crops that are marketed through cooperatives attain a price premium of around 7-8% [Bernard et al. 2010]. Indeed, the 2008 World Development Report reviewed the evidence and concluded that "Producer organizations are essential to achieve competitiveness for small-scale producers". However, savings mobilization rates have generally remained very low in rural sector. Given that, it is still not clear what factor determines household savings mobilization in the rural setting. Hence, the purpose of this paper is to identify and examine the socio-economic characteristics of rural household co-operators as well as ascertaining which of these characteristics significantly determines household savings mobilization in Southern Tigrai Ethiopia.

LITERATURE REVIEW

Overview of RUSACCOs in Ethiopia

The history of SACCOs establishment in Ethiopia dates back to 1950`s. However, early attempts to promote SACCOs remained mainly urban phenomena focusing on persons with permanent jobs. Although significant progress has been made in recent years, many rural financial institutions generally have insufficient capital, reach, and capacity to provide agricultural cooperatives with services at the scale they need. There are 9,582 SACCOs in the country, yet they provide less than one percent of the country's total financing, and many struggle with low-capacity management and governance [Amaha and Peck 2010]. Likewise, most MFIs have been identified by co-operators and other rural lenders as limited in their ability to robustly serve agricultural cooperatives because: (a) MFIs charge relatively high interest rates compared to other lender; (b) MFIs have limited reach in some inaccessible rural areas; (c) MFIs have traditional-

ly lacked the financing capital that agricultural cooperatives require to improve their capabilities and finance ongoing operations as much as they need, though refinancing programs like RUFIP.

In Ethiopia, RUSACCO is a recent phenomenon, promoted with proclamation No. 147/1998 issued in 1998, indicating the infancy of the sector. Performance analyses of the sector indicate that at present there are 5,296 RUSACCOs active in the country with the total membership of 443,123 (227,135 male and 215,988 female). As of 2011 the sector has pulled a saving amount of 120.20 Million Birr (6.7 Million USD), with 66.46 Million Birr (3.8 Million USD) in total capital and loan disbursed of 167.51 Million Birr (9.54 Million USD). However, the nature and range of their products remained basic and rudimentary. In terms of savings products they have compulsory and voluntary savings only. With respect to loans, they involve 100 percent security requirements. They provide collateral plus guarantor-based loans with uniform interest rate (see Partners Consultancy and Information Services, 2006). Moreover, the sector still faces a number of challenges including low membership base, poor saving culture, lack of separate regulation for being financial institutions, and lack of demand driven and diversified financial services [Tesfamariam 2011].

Conceptual and empirical studies

Household savings literature is based on two major hypotheses [Smyth 1993]. Following the pioneering work of Keynes which defines savings as a linear function of income, the first major breakthrough in savings literature is the permanent income hypothesis of Friedman [1957]. This hypothesis differentiates permanent income and transitory income as determinants of savings. Permanent income is defined in terms of the long-time income expectation over a planning period and a steady rate of consumption maintained over lifetime given the present value of wealth. Transitory income is the difference between actual and permanent income and since individuals are assumed not to consume out of this income category, marginal propensity to save on transitory income will be unity.

The second major contribution to savings literature comes from Ando and Modigliani's, lifecycle hypothesis, whose basic assumption is that individuals spread their lifetime consumption evenly over their lives by accumulating savings during earning years and maintaining consumption levels during retirement. Moreover, the life cycle theory suggests that age has an impact on savings. The young and the retired people are not savers. Therefore, the higher the dependency ratio of a nation, the lower will be the saving rate. Thus, implying what is called the level of effect of the life-cycle theory. Accessibility to the financial institutions is an important factor in the promotion of savings. When financial institutions/banks are opened near market centres and operate at convenient hours, rural people opt to institutionalize their surpluses. When they are confident as in its liquidity, they would prefer to earn something on the surplus other than putting aside. Stipulating low minimum transaction and balance limits would attract smaller depositors. Provision of financial services, like money transfer from one centre to another, can encourage depositors. Similarly, nonfinancial services like payment for purchase of crops, payment of bills, etc, can increase deposits. Payment for crops presents an opportunity for intermediation because the buyer could establish an account payable in favour of the farmer. When there is a linkage between savings and

lending, rural households will be prompted to hold deposits with a view to availing a loan when needed [Padmanabhan 1987].

A study by Browning and Lusardi [1996] states that three factors were found to be determinants of the saving behaviour of households in Africa. One of these was the ability to save which in turn depends on a household's disposable income and expenditure. The second was the propensity or willingness to save as influenced by socio-cultural and economic factors like the family obligation to educate children. The third one was the opportunity to save and returns on savings. In that same study, the two scholars [Browning and Lusardi 1996] also revealed that high cost of living and social responsibility (20%) of rural respondents and (25%) urban households was responsible for not saving. Besides they found out that family size affect saving in a negative form i.e. people with large families do rarely save compared to those with small families. Furthermore, it was also found out that landholding strongly influence the rate of total saving, since the size of land holding influences income and income influences savings positively [Attanasio 1998]. In another studies, dependency ratio, resource ownership and expenditure [Jappelli and Modigliani 1998] pattern affect the decision of household savings significantly. Overall, socio economic variables like income, level of education, interest payment, farm size, distance, household size were the major factors determining informal savings amongst vegetable farmers [Robinson 1994].

Methodological approaches

The study was carried out in two Woredas comprising *Ofla* and *Alaje* in Tigrai region Ethiopia. For the purpose of this research, six RUSACCOs were selected by adopting the technique of purposive sampling. The sample RUSACCOs were selected based on robust financial performance records, financially up-to-date members of their associations and long years of existence in the sector. It is ideally more useful to study a whole population in a research but, due to resource constraints the researcher selected part of the population. Samples of 120 cooperative members were successfully interviewed from six RUSACCOs (*Endodo, Meseret, Embeba-Hashenge, Fre-Alaje, Hadnet-chelena* and *Tirhas-Dila*). The sample size was determined based on the proportion of members in each RUSACCO and member respondents were randomly selected from the entry document of the cooperatives.

The study has utilized primary and secondary data of both qualitative and quantitative information. The primary data collection included household survey that targeted RUSACCOs co-operators and managers of cooperatives using structured interview schedule. The questionnaire interview was administered to a total of 120 household co-operators and managers of the respective cooperatives so as to obtain data about financial structure indicators. In addition, from the documentation and publication office of the Regional Cooperative Promotion Agencies (RCPAs) and other woreda cooperative promotion offices, attempts were made to explore and extract required information from available literature. Previous studies, with regard to determinants of savings mobilization in the region, however, have been very few. The fieldwork was carried out in the period between September and November 2011.

To draw some important conclusions on the member's savings performance and to suggest strategies to improve the savings behaviour of members, descriptive statistics like mean, standard deviations, percentage, and t-test were used in the analysis. Apart

from the descriptive statistics, OLS regression model is used to identify the determinants of savings mobilization among household members. Besides, statistical tests such as test of significance were used for interpretation of data and drawing conclusions. To analyze the collected data, SPSS statistical software was employed.

RESULTS AND DISCUSSION

RUSACCOs development of sources of funds

In Ethiopia, there is no standard measurement tool to evaluate the financial performance of SACCOs. World Council of Credit Unions (WOCCU) has implemented a standardized financial performance monitoring system designed to offer management guidance for credit unions and other savings institutions. The target goal is to strengthen and modernize credit unions and promote savings-based growth. Depositors can have confidence that savings institutions that meet the standards of excellence are safe and sound. However, the WOCCU measurement tool has not been put into effect in Ethiopia due to lack of coordinated management with required infrastructures. Hence, in this paper with limited available data, the researcher tries to evaluate the performance of the RUSACCOs using the standard set by WOCCU.

Growth of total assets is dependent on the growth of savings. The rationale for improving the saving culture of households is to stimulate growth in total asset that in turn affect the growth of other key areas. RUSACCOs in the study area have two main sources of funds, viz; savings deposits and member share capital. The table 1 below reveals that the performance of RUSACCOs savings deposits and member shares capital for three consecutive years.

It can be observed from Table 1 that savings deposits have increased far from 35.95 percent to 44.91% of total assets from 2009 to 2011. Savings may have increased due to new members joining the cooperatives and /or founding co-operators might purchase additional shares stimulated by the benefits of cooperation. In connection with this, member share capital has also increased from 9.82% to 20.31% of total assets from 2009 to 2011. Overall performance result of RUSACCOs regarding member shares indicates above the standard of excellence level of 10-20% of total asset from 2009 to 2011. Growth in member shares may be increased due to rise in the amount of patronage refunds received from investments in assets outside the cooperative. On the other hand, overall performance result with regard to savings deposits show below the standards of excellence level of 70-80% of total assets from 2009 to 2011 (except *Genet Telma* achieving above the standard of excellence in the year 2009). Possible explanation could be due to an increase in fixed assets, but a relatively smaller growth in member savings amount. In general, the performance results suggest that growth directly affects an institution's financial structure and requires close monitoring to maintain balance. For example, growth in savings drives growth in total assets. However, if loans are not growing as quickly as savings, then the institution will have high liquidity and low earnings. Likewise, as savings are growing, it is important to watch that institutional capital is increasing at a similar pace so that there will be a buffer to protect those

Table 1. RUSACCOs growth in savings deposits and member shares capital (%)
Tabela 1. Wzrost depozytów oszczędnościowych i kapitału członkowskiego w wiejskich spół-
dzielniach oszczędnościowo-kredytowych (%)

RUSACCOs Wiejskie spółdzielnie oszczędnościowo--kredytowe	2009		2010		2011	
	savings oszczędności	shares udziały	savings oszczędności	shares udziały	savings oszczędności	shares udziały
Endodo	41.28	6.92	46.47	10.22	44.91	9.05
Meseret	43.77	13.88	66.70	17.74	49.39	16.24
Fikre-Welde	48.63	15.44	46.83	15.12	34.57	11.12
Gerebweine	40.92	2.78	32.87	26.85	60.22	14.55
Fre-Alaje	62.67	16.72	56.89	17.32	48.66	13.66
Hadnet Chelena	55.46	35.43	45.07	33.45	46.37	12.91
Genet Telma	81.09	14.56	52.36	16.81	59.40	16.63
Bruh Tesfa	16.87	3.53	57.74	15.88	60.30	29.29
Total Razem	35.95	9.82	43.45	16.68	44.91	20.31

savings against unexpected losses. The standards of excellence set by WOCCU can help managers maintain a balanced and an effective financial structure in the study area.

Socioeconomic characteristics

The sampled household members constitute various socioeconomic features. Of the 11,558 household co-operators in the study districts (*Woredas*) the majority of them are run by men i.e. male co-operators are larger in number than female co-operators. Male members constituted 56.67% while 43.33% of the members are female. The t-test value of gender distribution of members annual savings is statistically significant at 5% confidence level (p-value = 0.0369). The mean annual savings of female and male members were Birr 526.91 and Birr 480.16 respectively. Even though women co-operators are smaller, the mean amount of savings exceeds by Birr 46.75 over men members. The survey data as shown in Table 2 below reveals that the average age of rural co-operators in Tigrai region was 32.5 years as well as various age groups ranging from 21 to a maximum of 59 years. A study executed by Onyenwaku and Ozoh [1992] has shown that cooperative farmers in this average age range are active and resourceful in their productive ventures, and this can positively enhance their investment and savings pattern. But the descriptive statistics result contradicts with the hypothesis in that as age increases the savings that could be mobilized decreases. Moreover, the mean annual savings of the different age group younger, middle and old was Birr 621.80, 564.25 Birr and 388.56 Birr respectively.

Table 2. Descriptive statistics of households' socioeconomic attributes
Tabela 2. Statystyka opisowa atrybutów socjoekonomicznych gospodarstw domowych

Household features Cechy gospodarstwa domowego	N	Mean Średnia	Min Wartość minimalna	Maxi Wartość maksymalna	Standard deviation Odchylenie standardowe
Member sex (1 = female, 0 = male) Płeć członka (1 = kobieta, 0 = mężczyzna)	120	0.40	–	–	0.491
Member age Wiek członka	120	32.5	21	59	6.636
Family size Wielkość rodziny	120	4.67	1	11	2.36
Farm size holding Wielkość posiadanego gospodarstwa rolnego	120	1.12	18	80	0.819
Total income per year Roczny dochód ogółem	120	9 106	280	37 230	11 236
Total expenditure Roczne wydatki ogółem	120	4 885	1 486	23 398	2 926
Distance to RUSACCOS Odległość do wiejskich spółdzielni oszczędnościowo-kredytowych	120	1.92	0	4	0.936

Rural co-operators household size

The numbers of people feeding from the same plate constitute a household. This has a great influence on the amount of savings that could be mobilized. When the household is large with majority being dependent, it will have a negative influence on savings and vice-versa. Moreover, large family number also increases the consumption pressure on the members, and it is therefore capable of reducing their levels of investment, savings, and propensity to save. Table 2 shows information on household family size. The average family size of the household is 4.67 slightly above the regional (4.3) and below the national average (4.9) with ranges from minimum of one to a maximum of 11 individuals. The mean annual savings of members were reported Birr 503.56. As family size increases, the amount of savings mobilized would decrease since the needs of other members of the household have to be met. This goes along with a study linking rural credit market and household socioeconomic by Orebiyi's [2000] which show that farmers with large household size could be a negative influence on mobilization of savings (dis-saving). Large household size could lead to increase in non-farm business expenses such as payment of school fees, hospital bill, clothing, feeding as well as the purchase of other household consumable items. This could detrimental to increase production in the rural economy, a disinvestment resulting from dis-saving.

Distribution of co-operators farm size

Farm size of the member is directly proportional to the level of output other things being equal. This means that an increase in the level of output especially per farm hectare an increase in the level of member income with its multiplier effect on the level of savings which can be mobilized. It can be observed from Table 2 above, the average farm size holding of the farmer co-operators in the study areas is found to be 1.12 hectare. A large proportion of the members (85.83%) revealed that a farm size holding between 0.5 and 2 hectare; where as 10% of the respondents have a farm size of greater than 2 hectare and only 4.17% of the respondents were landless. The difference between land holding and savings behaviour of respondents is statistically significant. The survey result reported annual savings for landless and landholder members were Birr 420 and Birr 609 respectively. Overall, the largest proportion of members in the study areas their livelihood is depends on agriculture such as farming, animal husbandry, beekeeping etc.

Members' sources of income and estimated expenditure

The major source of income for the cooperative members is on-farm activities (from crop production, livestock production, forest and perennial crop production). The amount of income generated from on-farm activities varied ranging from Birr 280 to a maximum amount of Birr 37230 per annum. In general, the average annual on-farm and off-farm income of the cooperative members were Birr 1106. The expected /actual annual expenditure of the rural co-operators is a major factor influencing the amount of savings that could be mobilized. If the expenditure is high in favour of consumption rather than productive purpose it can adversely affect the level of savings that could be mobilized. The survey data as shown in Table 2 above reveals that average mean annual expenditure of the cooperative members in study areas is 4975 Birr. The table as well signifies that the sample households' expenditure ranging from 1486 Birr to a maximum of 23398 Birr. Furthermore, the largest proportion (71.65%) of rural household co-operators expenditures is utilized for consumption while only (28.35%) is utilized for productive investment such as agricultural inputs, housing, trading etc.

Distance to the RUSACCO

In relation to the accessibility of the RUSACCO, distance to the financial cooperatives is a good proxy to evaluate this determinant of savings mobilization. Table 2 shows the average distances it takes member to reach RUSACCOs were 1.92 km with the minimum zero to a maximum of four km. Distance to RUSACCOS is statistically significant but it is negatively related to the amount of savings mobilized. This implies that as the distance of RUSACCOs from the household's home increases, the probability that the household will deposit in the RUSACCOs will decreases. These observations seem to suggest that accessibility have a moderate negative impact on savings mobilization, and that this impact is strong in rural areas.

Level of formal education

In order to capture the education level of household, we used the number of schooling years of the household head as an indicator for the human capital endowment of the whole household. In line with the literature, our assumption is that higher year of schooling will increase the amount of savings that could be mobilized. Education is an important factor in determining the probability of being a saver or a depositor. Of the 120 co-operators, 20 percent are illiterate, 31.67% are elementary school graduate, 26.67% are with junior and secondary school certificate and 21.67% are with higher education. The mean annual savings of members with different educational background of illiterate, elementary, junior and secondary, and higher were Birr 360.25, Birr 430.25, Birr 412.5, and Birr 481.75 respectively. Overall, it can be concluded from this trend that higher years of schooling are often inversely correlated to savings mobilized (see Table 3).

Table 3. Household educational background
Tabela 3. Profil wykształcenia w gospodarstwie domowym

Educational status Stan wykształcenia	Male Mężczyźni	Female Kobiety	Total Razem	Mean annual savings Średnie roczne oszczędności
Illiterate (0 years of education) Analfabeta (0 lat edukacji)	14 (58.33%)	10 (41.67%)	24	360.25
Elementary (1-6 years of education) Podstawowe (1-6 lat edukacji)	22 (57.89%)	16 (42.11%)	38	480.25
Junior and Secondary (7-10 years of edu) Gimnazjalne i średnie (7-10 lat edukacji)	15 (46.87%)	17 (53.13%)	32	412.5
Higher (above grade 11 years of edu) Wyższe (powyżej 11 lat edukacji)	17 (65.38%)	9 (34.62%)	26	441.75

When the educational status of the cooperative members is compared sex-wise, women's higher educational status constitutes only 35%. Of the illiterate household members, 41.67% are women and 58.33% are men. Out of the sample households with junior and secondary education, 46.87% are men while the proportion of female household with secondary education at most is 53.13%. Overall, it can be concluded from Table 3 that male are better educated among the cooperative members. A study executed by Adeyemo and Bamire [2005] stated that education improves the quality of labour and the ability to derive, decode and evaluate information. It also exposes the farmer to more investment opportunities. Thus, it is expected to positively influence farmers' savings/investment decisions for improved farm production and increased income levels. However, the educational level of a member is found statistically significant but it is negatively influencing savings mobilized by rural cooperative members. The possible explanation could be such saving schemes might not need good educational background of the members.

Years of membership in RUSACCO

Years of members' stay in RUSACCO have a positive contribution for savings mobilized among rural households. Table 4 shows the proportion of years of co-operators membership experience in various RUSACCO.

Table 4. Years of households' membership in RUSACCO
Tabela 4. Staż członkowski gospodarstw domowych w wiejskiej spółdzielni oszczędnościowo-
-kredytowej

Years of membership Staż członkowski		Number Liczba		Percentage Odsetek	
1-3		35		29.17	
4-7		69		57.5	
8 and above		16		13.33	
Educational status Wykształcenie	N	mean średnia	minimum wartość minimalna	maximum wartość maksymalna	standard deviation odchylenie standardowe
	120	4.8	3	8	2.197

The results of the survey show the year of members stay in the cooperative on average were approximately five years with minimum of three to a maximum of eight years. This shows that most of the members have not stayed long enough in their associations and could be assumed not to have acquired enough experience on how to mobilize enough savings for farming business. Their general managerial skills on the procurement of enough funds are yet to be fully developed.

Borrowed loans by members

As the amount of borrowed loan range increases, the proportion of female cooperative members in each loan group declines (see Table 5). Despite, the majority (50%) of

Table 5. Amount borrowed by members and' sex distribution
Tabela 5. Kwoty pożyczane przez członków według płci

Amount of borrowed loan range (in Birr) Zakres pożyczonych kwot (w birrach)	Male Mężczyźni	Female Kobiety	Total Razem
Borrowed loan is less than 3000 Kwota pożyczki poniżej 3000	17 (25.0%)	14 (26.92%)	31
Borrowed loan is between 3000 and 6000 Kwota pożyczki pomiędzy 3000 a 6000	29 (42.65%)	26 (50.0)	55
Borrowed loan is greater than 6000 Kwota pożyczki powyżej 6000	22 (32.35%)	12 (23.08%)	34
Total – Razem	68 (100%)	52 (100%)	120

female co-operators were in the medium term loan group the amount borrowed. In the short term loan group the proportion of female cooperative members was larger (26.92%) than male cooperative members (25%). Overall, the largest proportion of the cooperative members (45.83%) has borrowed loan between 3000 and 6000 Birr. While 25.83% of the cooperative members have borrowed loan below 3000 Birr, 28.33 percent of the cooperative members do earn loan more than 6000 Birr in RUSACCO.

Savings pattern of cooperative members

RUSACCOs in the study area offer very similar savings services and products. The products are grouped under two different savings system in most cooperatives: the voluntary savings mechanisms and the compulsory savings mechanisms. Voluntary savings is based on the principle that a member is free to decide to save/withdraw any amount at any time with little limitation. Often, but not always, the member receives interest on the savings. Compulsory savings is a mechanism, which generate a loan guarantee fund for the SACCOs. Based on the perception that it is risky to lend to poor, and that the "poor cannot save" SACCOs requires members to deposit regularly some fixed amounts before being eligible for a loan (see Robinson and Wright [2001]). The principle behind preliminary savings is that each loan applicant should show his/ her ability to save regularly some amount of, for a period of time (6 months), to finance a percentage loan as equity.

Household in rural areas have many asset options, the most frequent assets used as saving instruments are holding cash at home and bank deposits. Table 6 reveals savings experience of members in the financial cooperatives. The average savings deposit per member per year in the study area was 362.56 Birr during 2009 while this figure is increased between 2010 and 2011 with the value of 421.36 Birr and 565.75 Birr respectively. The maximum, minimum, and the standard deviation of savings trends of members for the last three years are depicted in the Table 6 above. A study by Adeyemo and Akala [1992] pointed out that similar arguments as the annual income increases, the average amount of savings per month in RUSACCO also increases.

Table 6. Member's average cash savings experience
Tabela 6. Średnie doświadczenie oszczędnościowe członków

Year Rok	Amount saved in Birr (N = 120) Kwota oszczędności w birrach (N = 120)			
	mean średnia	minimum wartość minimalna	maximum wartość maksymalna	standard deviation odchylenie standardowe
2009	362.56	248	825	121.77
2010	421.36	312	825	147.84
2011	565.75	298	825	180.81
Total Razem	1 349.67	90	2 400	382.08

Reasons for saving

None of the members gave interest earned from saving as a motive to save, from the given reasons. Unlike what is assumed in theory, households not only save for future consumption but also for future investment. This may explain the reason for insensitivity of saving to interest rates as found in numerous empirical studies. Thus interest on savings does not a factor for saving amongst rural co-operators of Tigrai region. Members then find it prudent to directly engage in investment rather than save to get return from savings. In the study area co-operators save primarily to accumulate capital for future investment, build up a buffer stock for contingencies and accumulate enough funds to pay for future planned expenditure on durable goods (which includes livestock, appliance, housing education and so on). This concurs with the studies by Lawrence et al. [2009] showing that interest on savings does not motivate saving amongst rural households.

Reasons for saving varied for both men and women, the principal reasons for saving with their RUSACCOs were: to obtain loans (29.17%), for security (19.17%), for emergencies (18.33%), for Housing (10%), for purchase appliances (11.67%), for future commitments (7.50%), and for education (4.16%). Among male members, the three main reasons were: to obtain loans (30.88%), for security (22.10%), and for emergencies (17.64%). In the case of female members, the three primary reasons were: to obtain loans (26.92%), for emergencies (19.23%), and for security (15.38%). Table 7 shows the distribution of members according to principal reasons for saving.

Table 7.   Distribution of members according to reasons for saving
Tabela 7. Podział członków według powodów oszczędzania

Reasons for savings Powody oszczędzania	Male Mężczyźni	Female Kobiety	Total Razem
Obtain loans Otrzymanie pożyczki	21 (30.88%)	14 (26.92%)	35 (29.17%)
Security Zabezpieczenie	15(22.10%)	8 (15.38%)	23 (19.17%)
Emergencies Nagłe okoliczności	12 (17.64%)	10 (19.23%)	22 (18.33%)
Housing Potrzeby mieszkaniowe	8 (11.75%)	4 (7.69%)	12 (10.00%)
Purchase appliances Zakup urządzeń	6 (8.81%)	8 (15.38%)	14 (11.67%)
Purchase farm input Zakup środków do gospodarstwa rolnego	3 (4.41%)	6 (11.54%)	9 (7.50%)
Education Wykształcenie	3 (4.41%)	2 (3.85%)	5 (4.16%)
Total Razem	68 (100)	52 (100)	120 (100)

Determinants of savings mobilization among rural co-operators

The preceding section (results of descriptive statistics) has identified many quantitative and qualitative factors which have direct or indirect influence on the amount of savings mobilized. This section aims to present the empirical results (see Table 8) of the OLS estimates of the determinants of rural household savings mobilization. The regression result provides some of the significant variables as well as having the highest value of the coefficient of determination (R^2) of 0.487. Out of the fifteen variables hypothesized that determine saving mobilization by rural co-operators only nine variables were statistically significant. Household annual income, farm size, and amount of borrowed loan as well as years of members stay in the coop were statistically significant and positively influence savings that could be mobilized. Conversely, household family size, age of member, distance to coop, education, and household expenditure were statistically significant but negatively influencing savings by the co-operators in the southern Tigrai. The estimated model for determinants of savings amongst cooperative members is implicitly presented as shown below:

$$Y = \alpha + \beta_{1X_1} + \beta_{2X_2} + \beta_{3X_3} + \beta_{4X_4} + \beta_{5X_5} + \beta_{6X_6} + \beta_{7X_7} + \beta_{8X_8} + \beta_{9X_9} + U$$

where:

Y – annual household amount saved in cooperative (Birr),
X_1 – household annual disposable income (Birr),
X_2 – farm size (hectares),
X_3 – family size (No. of household members),
X_4 – age of household (years),
X_5 – household loan taken from coop (Birr),
X_6 – distance to coop (km),
X_7 – years of stay member in the coop (years),
X_8 – household level of education (year spent in school),
X_9 – member annual expenditure (Birr),
βi's – slopes,
α – intercept,
U – error term.

The coefficient of household annual income is statistically significant at (1%) and positively related to the amount of savings mobilized showing that as annual income increases so will the amounts of savings increase. The marginal propensity to save out of income is 8.0312 in the study areas. This concurs with the studies conducted by: Sameroynina [2005], Wood [1995], Schrooten and Stephan [2003] showing that income positively influences savings. Hence, low saving level is a result of low income levels. An increase in household income by 1% increases the members' savings by 8.0312 Birr (see Table 8). The size of the co-operators farm size holdings considered as a further proxy for the level of savings. In line with the previous studies, we assume that household with more landholdings are more likely to take up a savings. Endogeneity does not play a larger role here as land in the study area is generally not as easily purchased as other assets but rather acquired through matrilineal inheritance rule. The results show that the farm size of co-operators was significant at 5% and positively related to amount of savings mobilized. This is plausible in that at some level the larger the farm size,

Table 8. Regression result of the determinants of savings mobilization by rural co-operators
Tabela 8. Wynik regresji wyznaczników mobilizacji oszczędnościowej według spółdzielców
              wiejskich

Independent variables Zmienne objaśniające	Savings (Y)		
	coefficient współczynnik	standard errors błąd standardowy	t-ratios współczynnik t
Intercept Punkt przecięcia	4 343.213	32.9635	9.852
Household income (X_1) Dochód gospodarstwa domowego (X_1)	8.0312	0.0122	3.423*
Farm size (X_2) Wielkość gospodarstwa domowego (X_2)	0.0697	2.6841	2.968**
Family size (X_3) Wielkość rodziny (X_3)	–18.2365	0.0052	–9.593***
Age of household (X_4) Wiek gospodarstwa domowego (X_4)	–2.6202	0.8619	–12.248**
Amount borrowed (X_5) Kwota pożyczki (X_5)	3.0296	8.7801	5.248*
Distance to coop (X_6) Odległość do spółdzielni (X_6)	–8.6571	6.2254	–1.628***
Year member stay coop (X_7) Staż członkowski w spółdzielni (X_7)	11.2101	0.0026	2.734***
Household education (X_8) Wykształcenie w gospodarstwie domowym (X_8)	–6.1362	0.0069	–1.841**
Household expend (X_9) Wydatki w gospodarstwie domowym (X_9)	0.0379	0.0156	4.376**

*Indicates significance at 1%, ** at 5%, *** at 10%, R^2 = 0.487, F-ratio = 10.54.
*Wskazuje poziom istotności na 1%, **na 5%, ***na 10%, R^2 = 0,487, wskaźnik F = 10,54.

the higher is the possibility of farm output and the productivity of the farmer concerned. This will translate to a higher income and hence higher savings [Orebiyi and Fakayode 2005]. The same results were reported by Azhar [1995] showed that the land holdings strongly influence the rate of total savings, since the size of land holding influences income and income influences savings positively. Similarly, landholding has an influence on the amount of savings that could be mobilized by rural co-operators.

The amount of loan borrowed is found to be significant at 1% and positive in explaining the level of savings mobilized by the cooperative members. Since it was 3.02965, it can be concluded that credit access has a net positive effect on savings such that an improvement in credit access will cause an increase in saving, and vice versa. According to economic theory, credit access is expected to have several influences on savings. An improvement in credit access is expected to have a positive impact on savings. This concurs with the study by Rogg [2000] stating that there is a likelihood of savings increasing in the Formal Financial Institutions (FFS) with increase in credit access due to a shift of saving from cash and near-liquid assets to deposit accounts in

FFS. A one Birr loan borrowed from RUSACCOS; will increase the savings mobilization by 3.02965 Birr. The results of the study also showed that increased year of members stay in RUSACCOs is significant at 10% and positively related to the amount of savings. This is because in-built mechanisms that exist among the cooperative members enable them to be able to mobilize savings more than non-cooperative members. An increase in one year of stay in RUSACCOs by members increases the savings amount by 11.210 Birr.

It can be seen from the results of the regression model in table 4.8 that variables such as family size, age, distance to RUSACCO, education, and expenditure are statistically significant and negatively related to the amount of savings mobilized in the study area. The household family size is significant but negatively related to the amount of savings that could be mobilized. This directly follows a prior expectation in that the larger the household of a member, the lower will be his/her ability to save. This is so because the available income will likely be expanded on non-productive consumption goods. Similar arguments presented by Lawrence et al. [2009] and Johansson [1998] state an increase in the dependency ratio is bound to cause a decline in saving, while a decline in dependency ratio will result in an increase in saving. One hypothesis of this paper is that as age of members' increases, it results in increased in savings amount up to a certain point. As members grow old, through training and experience it would increases their savings. Results of the study show that as age of cooperative members increases by one year it will result in a decline in member savings by about 2.62 Birr. It is expected that savings by the adult member (especially above 30 years) would be diminishing with age as they grow towards and beyond retirement age. This shows that the cooperative members lessen their savings, as they grow old. This confirms with the life cycle hypothesis of savings, which claims that a person would be expected to save up to a point and then start dis-saving as he grows old. The results obtained shows that most farmers in the study area are not too old and therefore tend to save to cater for their household. Similar results presented by Browning and Lusardi [1996] found that age of the household is negatively related to savings mobilization. The distance of RUSACCO is an important factor that it highly affects the savings mobilization by rural co-operators. The distances of RUSACCOs from members' houses do have positive effect in the members' savings amount. Even though, the results of the study show that this variable is statistically significant at 10%, but it is negatively correlated to the amount of savings mobilized. As RUSACCOs is close to the members house, it saves resources (time, labour) which otherwise would have been spent to search different financial products and services. As the distance of RUSACCOs office increases or decreases by a unit of kilometre from the residence of a member, it results in a decrease or increase of the amount of savings mobilized by 8.65711Birr. Another unexpected result is that the relationship between the amount of savings mobilized and member level of education is statistically significant at 10% and negatively related in the study area. The hypothesis for this specific variable that the higher is the education status the better will be the savings mobilized by rural co-operators. Possible explanation can be individuals at the higher level of education in rural areas tend to pay less attention to save money in associations. This is mainly due to awareness of banks' superior services such as ATM in major towns. Hence, money left after periodic monthly payment, they prefer to save in nearby commercial banks or other productive assets. It can be seen from the results of the regression model in table 4.8 that variable members' expenditure is significant at 5%

but negatively related to the amount of savings mobilized. If savings increase with increase in the level of expenditure there is a possibility that the expenditure is utilized on productive goods and services. This can lead to the creation of additional asset. This can increase savings and subsequently expand investment. Similar arguments presented by Bendig et al. [2009] state household size negatively affects the demand for savings products, as larger households are likely to consume a large share of their income and have less collateral. However, the rest of the variables such as interest rate, loan repayment and training were found to be insignificant in explaining savings mobilization and were ignored.

POLICY RECOMMENDATIONS AND CONCLUSION

The result of the study using least squares method showed that savings mobilized is determined by household annual income, livestock holding, amount of loan borrowed and year of member stay in the cooperative. These factors therefore have to be considered in designing strategies aimed at improving the saving mobilization of cooperative members in the study area. Saving and investment level in rural area can be enhanced if diversified range of savings products should be availed to encourage the saving opportunity of the members as well as formulating legislation for being financial institutions is put in place. In addition, economically feasible cooperative societies in the region should be encouraged among the rural households by supporting them with revolving funds as they are more effective and efficient in mobilizing rural savings and provide collateral plus guarantor-based loans with low default rate. This will enable them to expand their production output and increase their savings thereby stimulating the rural economy.

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ZACHOWANIE OSZCZĘDNOŚCIOWE I WYZNACZNIKI MOBILIZACJI OSZCZĘDNOŚCIOWEJ NA PRZYKŁADZIE SPÓŁDZIELCÓW FINANSOWYCH NA TERENACH WIEJSKICH W REGIONIE TIGRAI W ETIOPII

Streszczenie. W pracy określono i zbadano zachowanie oszczędnościowe i wyznaczniki mobilizacji oszczędnościowej na przykładzie spółdzielców finansowych na terenach wiejskich w regionie Tigrai w Etiopii. Materiał badawczy uzyskano na podstawie 120 losowo wybranych osób oszczędzających w wiejskich gospodarstwach spośród sześciu celowo wybranych wiejskich spółdzielni oszczędnościowo-kredytowych. Zastosowanie metody najmniejszych kwadratów dało wynik, który wykazał, że mobilizację oszczędnościową określa roczny dochód gospodarstwa domowego, kwota pożyczki oraz staż członkostwa w spółdzielni. Z tego względu należy wziąć te czynniki pod uwagę podczas planowania strategii mających na celu poprawę mobilizacji oszczędnościowej członków spółdzielni na obszarze badawczym. Poza tym ekonomicznie opłacalne towarzystwa spółdzielcze w regionie powinny być wspierane wśród wiejskich gospodarstw domowych przez fundusze odnawialne, ponieważ są bardziej skuteczne i wydajne w mobilizacji oszczędności na terenach wiejskich, a także zapewniają pożyczki gwarantowane zabezpieczeniem oraz gwarantowane przez żyranta przy niskim wskaźniku niewypłacalności. Umożliwi im to zwiększenie wydajności produkcji oraz zwiększenie oszczędności, tym samym stymulując gospodarkę wiejską.

Słowa kluczowe: oszczędności, spółdzielcy, wiejski, wyznaczniki, Etiopia