cogent
economics
& finance

FINANCIAL ECONOMICS | RESEARCH ARTICLE

Financial product development and members' voluntary saving behavior in saving and credit cooperatives in Tigray: A case study in Endamohoni Woreda

*Corresponding author: Tekeste Berhanu, Department of Accounting and Finance, College of Business and Economics Mekelle University, Mekelle, Ethiopia
E-mail: tekeste.berhanu@yahoo.com.

Reviewing editor:
David McMillan, University of Stirling, UK

Additional information is available at the end of the article

Solomon Abadi Dirar[1], Tekeste Berhanu[1]*, Dereje Getachew[2,3] and Hossein Azadi[2,4,5]

Abstract: This survey study aimed to analyze the financial product development and members' saving behavior in saving and credit cooperative societies (SACCOs) in the Endamohoni Woreda district in Tigary, Ethiopia. Using cluster random sampling, the study was conducted in four SACCOs and selected 96 members from the SACCOs. Data were collected using structured questionnaire and focus group discussion. Binary logistic regression was employed to identify and analyze the determinants of members' voluntary savings. Results showed that voluntary savings are significantly affected by age, marital status, educational level, number of dependents, access to training, household size, safety, and years of membership in SACCOs. The results also showed that the SACCOs provide a very limited range of financial products to their members. Yet, the survey indicated that the members have access to other formal financial institutions, other than their own SACCOs given that their access to loans was easier and service delivery was faster in those financial institutions than the SACCOs. Therefore, the SACCOs and the concerned bodies regarding the development promotion of SACCOs need to take into consideration the aforementioned factors when designing policies and strategies that aim at enhancing voluntary savings of the SACCOs' members.

ABOUT THE AUTHORS

Solomon Abadi is one of the senior staff members in Maichew TVET Agricultural College. He did his Master's degree in cooperative marketing and has conducted his thesis on saving and credit cooperatives.

Tekeste Berhanu is an assistant professor of banking and finance in Mekelle University. He has conducted researches in areas related to banking, finance, and saving and credit cooperatives.

Dereje Getachew is a lecture in the Department of Cooperative Studies of Mekelle University. He has conducted research in areas related in accounting, baking, and finance.

Hossein Azadi is a senior researcher at the Centre for Environmental Sciences (UHasselt) and Economics and Rural Development, Gembloux Agro-Bio Tech (ULg). He is also a scientific staff at the Department of Geography (UGent). His research interests include agri-rural and development studies.

PUBLIC INTEREST STATEMENT

SACCOs are semi-formal financial institutions that mobilize savings, provide loans as well as other products to their members. This study analyzed the financial product development and members' saving behavior in SACCOs' in Endamohoni Woreda. Results showed that voluntary savings were significantly affected by age, marital status, educational level, number of dependents, access to training, household size, safety, and the number of years as members of a SACCO. The results also showed that SACCOs provide a very limited range of financial products to their members. Also, the members access other formal financial institutions, other than their SACCOs due to the easy accessibility to loans and the fast service delivery system of those institutions. Therefore, the SACCOs as well as the concerned bodies regarding the promotion of SACCOs development, need to take the aforementioned factors into consideration in order to enhance the voluntary savings of SACCO members.

cogent • oa

1. Introduction

Onchangwa, Odhiambo, Sagwe, and Stella (2013) define saving and credit co-operative societies (SACCOs) as cooperatives which provide their members with convenient and secure means of saving money and obtaining credit at affordable interest rates. SACCOs are financial institutions designed for people, to have their own efficient financial service giving institutions that empower themselves in building asset by teaching thrift culture and make themselves accessible to credit in a sustainable way (Tache, 2006). Members of these financial institutions can be both net savers and net borrowers. The objective of SACCO societies is members' empowerment through savings mobilization, disbursement of credit, and ensuring SACCOs' long-term sustainability through prudent financial practice (Clement, Mbewa, & Jagongo, 2012).

In Ethiopia, even though SACCOs encourage saving among members by providing a safe, convenient, and attractive medium for investment, and eliminate hardship by enabling members to borrow at a reasonable rate and minimum conditions, lack of saving habit has been considered as a main problem (Benson, Bartholomew, & Kazungu, 2013). However, majority of SACCO members deposit their savings that exceed compulsory savings in commercial banks and microfinance institutions (Ebisa, 2012; Sinha, Viswanathan, & Narayanan, 2015; Yamori, 2015). Indeed, most members of SACCOs only save part of their compulsory savings on a regular basis. Voluntary savings are those that members can make in the society willingly. Whereas, compulsory saving is a savings account that a member is forced to deposit into the cooperative society on a regular basis. If members save only what is compulsory in their SACCOs and their excess funds in other financial institutions, the SACCOs scope of operation will be limited and their continuity will be in question. A very important question here is: "why are the members of SACCOs saving in other financial institutions rather than their own SACCOs?" Our literature review shows that there is no in-depth study that assesses financial product development and members' saving behavior in SACCOs in the woredas/districts and elsewhere in the region. There are only few studies that dealt with household saving behaviors. For example, a study by Berhane (2010) tried to look into the role of rural saving and credit cooperatives in enhancing members' saving behavior in Ganta Afeshum Woreda; a district in Tigray. Another notable study was the one that was made by Kifle (2012) which tried to examine factors that affect cooperative members' saving behavior in Tigray. However, none of these two studies specify the type of savings that they deal with. Examining factors that determine members' voluntary savings is a worthier study than dealing with the total savings or compulsory savings because each member is required by law to make the compulsory savings on a regular basis. Furthermore, assessing the determinants of voluntary savings is extremely vital to analyze why SACCO members are saving their excess funds (after meeting regular savings) in other formal financial institutions, which will, in turn, help deal with the different financial products used by SACCOs, as their sustainability depends on the provision of reliable financial products.

More specifically, this study aims to:

(1) Assess the existing financial products offered by SACCOs.

(2) Investigate the status of members' savings in SACCOs.

(3) Examine the determinants of voluntary savings in SACCOs.

(4) Examine the link between SACCOs financial products and members saving behaviors.

cogent · · economics & finance

2. Methodology

2.1. Description of the study area

The study was conducted in Endamehoni Woreda, which is one of the eight woredas in the southern zone of the Tigray State of Regional Government (Figure 1). This woreda is located in the surrounding area of the Maichew town and consists of 19 Tabia. The area lies on 121 km south of Mekelle which is the capital city of the region. The study site is located in highland region with the total of 65,000 ha of which 14,462.75 ha is realized as grazing land. The study area also includes abundant natural resources and potential agricultural farm lands. The average annual rainfall ranges from 600 to 900 mm with an altitude of 1,653–3,909 m above the sea level (masl) with average annual temperature of 16–25°C. According to the Endamahoni Woreda Development Planning Office, demographic composition of the woreda consists of 47,824 male and 48,547 female.

2.2. Sampling design

In the Endamehoni Woreda, there are 24 SACCOs of which 18 are established by non-governmental employees and the rest or 6 are established by governmental employees which are found in the Maichew town. In this study, a sample of four SACCOs was selected using cluster random sampling: two from those SACCOs established by members of private, non-governmental institutions in rural areas and the two others from those SACCOs established by government employees in urban areas. The randomly selected sample cooperatives are: Millenium, Tsion, Gedam, and Embeba Haya (Table 1).

Figure 1. Geographical locations for Endamehoni Woreda, Tigray.
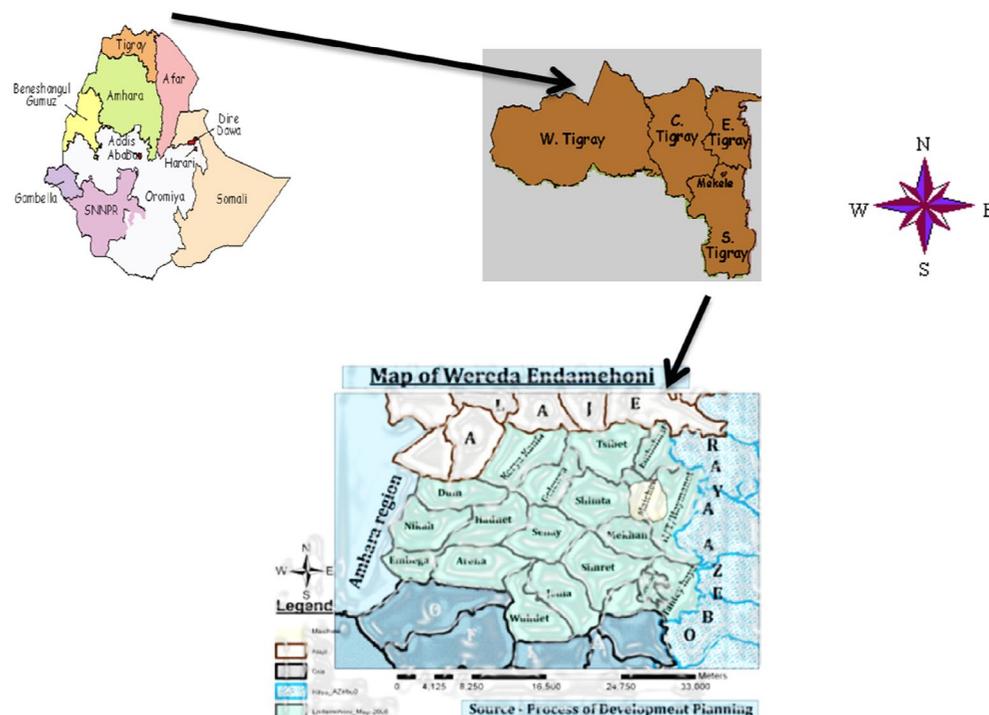

Table 1. Total number of SACCO members and the number of sample for each studied SACCO			
No.	Name of SACCO	Total number of members	Sample members
1	Millennium	585	20
2	Tsion	183	6
3	Embeba Haya	1,444	49
4	Gedam	615	21
Total population		2,827	96

Given that the number of members in different societies was different, the probability proportionate to size (PPS) was applied to select individual members from each society. Accordingly, the sample size (*n*) of the study was estimated at 96 members from the total population of 2,827 (*N*) that is determined by Yemane (1967) formula as follows:

$$\text{i.e. } n = \frac{N}{1 + N(e)^2}, \quad n = \frac{2,827}{29.27} = 96$$

where *e* is the level of precision, i.e. *e* = 0.1 (10% level of significance), *N* = is the total population, and *n* = sample size.

2.3. Data collection

In this study, both primary and secondary data were used. The primary data were collected through both closed- and open-ended questionnaires (where the targeted respondents are SACCO members) and focus group discussion. Focus group discussion was used to collect relevant information from the Board of Directors (BOD), loan committee, employees of the SACCOs, and experts in the office of cooperative promotion bureau. Secondary data were collected from various sources according to their relevance to the purpose of the study. Documents prepared by cooperatives like agendas and financial statements were also used. From the respective district cooperative promotion bureau, documents related directly to cooperatives were gathered such as the list of cooperative societies and general written information about the cooperatives movement in the woreda.

2.4. Conceptual framework

Eleven factors were identified in this study as the main determinants for members' voluntary savings in SACCOs. The factors include age, gender, marital status, educational level, household size, access to training, number of dependents (dependency ratio), safety (security), number of years as members of a SACCOs, distance to SACCO's office, and participation. The determinants (independent variables) in the conceptual framework were selected after an extensive literature review that

Figure 2. Conceptual framework of the study.
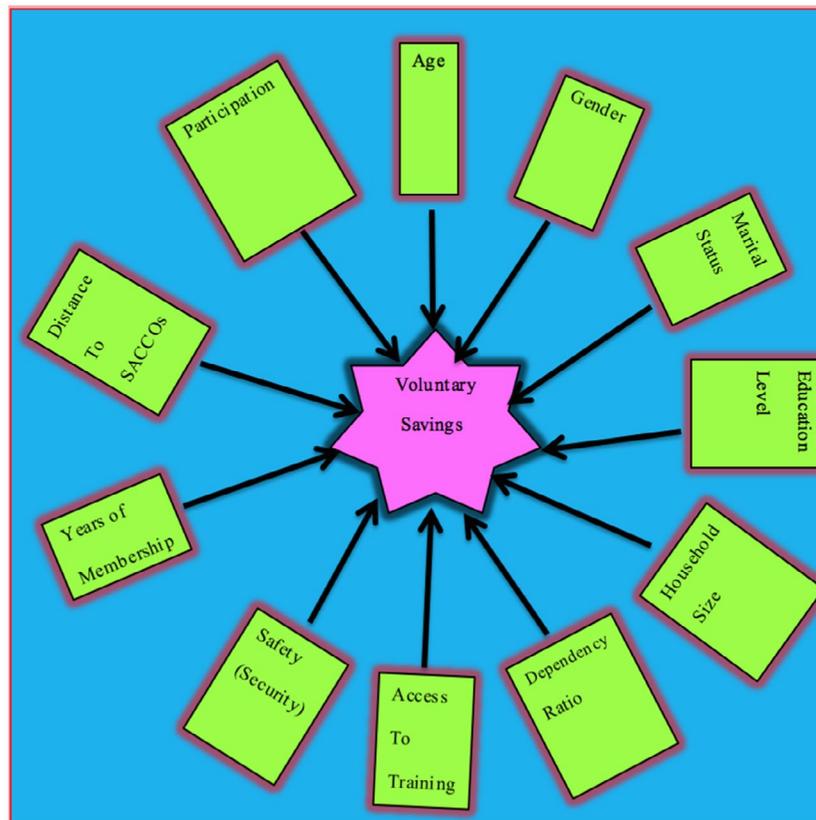
revealed that there are many factors affecting members' voluntary savings, among which, the 11 determinants were the most important and relevant ones. Figure 2 shows the effect of the above-mentioned explanatory variables on the binary dependent variable.

2.5. Model specification
The following model was applied in this study:

$$P(yi) = \ln\left(\frac{P_i}{1-P}\right) = \beta_0 + \beta_1 x1 + \beta_2 x2 + \beta_3 x3 + \beta_4 x4 + \beta_5 x5 + \beta_6 x6 + \beta_7 x7 + \beta_8 x8$$
$$+ \beta_9 x9 + \beta_{10} x10 \beta_{11} x11 + u_i$$

where $P(yi)$ = the probability that ith member is a voluntary saver given explanatory variables; β_0 = constant (intercept) ; β_1–β_{11} = slope coefficients ; $\ln = \frac{1}{1-P_i}$ natural logarithm of the odds ratio (logit model).

The model can be written as a multiplicative function by taking the exponential form of both sides of the equations: odds (using voluntary savings) = P/(1−P) = $\exp\{\alpha + \beta_i X_i\}$ = $e^\alpha e^{\beta i x i}$. This is a model for odds. Odds change multiplicatively with X_i. One unit increase in X_i leads to a change (increase or decrease) of $e^{\beta i}$ in the odds that a member is a voluntary saver. The logarithm of the odds changes linearly with X_i. However, the logarithm of odds is not an intuitively easy or natural scale to interpret. Thus, a coefficient assigned to an independent variable is interpreted as the change in the logit (log odds that $y = 1$), as a one-unit increase in the independent variable with the other independent variables, is held constant.

Alternatively, it can be expressed in terms of probability as follows:

$$P = \exp\{\alpha + \beta_i X_i / 1 + \exp(\alpha + \beta_i X_i)\} \text{ or, } p = \text{Odds}/(1 + \text{odds})$$

where X_i's can be categorical or continuous, but Y is always categorical (binary), *voluntary saver or not* in this case.

3. Result and discussion

3.1. Saving behavior of the SACCO members
More than one-third (39.58%) of the respondents did not have any saving habits before they became the members of SACCOs. This shows that more than half of the respondents (60.02%) are involved in SACCOs with sufficient knowledge concerning savings habits. However, less than half (39.58%) of the members are involved in the SACCOs without prior knowledge about how to save money. In the study area, SACCOs mostly provide the same kinds of saving services. When looking at the members' savings patterns, most of the SACCOs provide voluntary and compulsory saving services. Voluntary savings are a service from which clients can withdraw and often (but not always) accounts that they receive interest on. Whereas, compulsory saving is a saving account that a member is forced to deposit into on a regular basis; it is a membership saving, i.e. it must be added to on a monthly basis. In this case, the members have very poor awareness on the other types of savings. In the study, it is also stated that 68% of the respondents are voluntary savers. According to Bersales and Mapa (2006), voluntary saving is very important to farmers since they do not have regular income. They can save as voluntary saving during harvest time, and transfer monthly to their compulsory saving accounts (Bersales & Mapa, 2006). This shows that the member's level of voluntary savers and their ability to use voluntary savings in the study should still increase to be sufficient. This finding shows that the member's level of voluntary savings is still insufficient. It has been noted that nowadays, since dividends are made based on the members' participation in their SACCOs and because SACCOs require members to regularly deposit a fixed amount before being eligible for a loan, they are becoming well aware of the benefits of saving. This study also shows, as a major mechanism, the members are doubling their share amounts because they believe that they can obtain a good dividend and access to high loan amounts if and only if their share amount is increased. The increasing number of membership in every SACCO within the study area indicates that the saving habits of the people are increasing.

cogent ·· economics & finance

Table 2. Status of respondents saving habits		
Status of respondents saving habits	**Frequency**	**Percent**
Have saving habits	58	60.42
Have no saving habits	38	39.58
Total	96	100.00

Source: Own survey.

3.1.1. Trend members saving habits before becoming members of SACCOs

The saving habit of the respondents before becoming the members of a SACCO has also been assessed. More than half (60.42%) of the respondents had saving habits before becoming the members of SACCOs, whereas less than half (39.58%) of the respondents did not have saving habits before becoming the members of a SACCO (Table 2). The overall survey result revealed that a significant number of members had no saving habits before being involved in SACCOs as a member. In line with our findings, some studies by Mohd, Abd, Rahayu, Rahman, and Ahmad (2006) and Genanew, Butte, and Yegnanew (2011) indicate that most low-income households have very low (even negative) saving rates and very limited (again, often negative) asset accumulation. So, the goal of promoting financial saving habit is likely to make people more aware of financial opportunities, choices, and possible consequences. Nwankwo, Ewuim, and Asoya (2013), on their review, stated that in cooperatives, members are encouraged to save voluntarily and as a matter of obligation (regular savings).

### 3.1.2. Members' status of voluntary savings

As shown in Figure 3, about two-third (68.75%) of the respondents saved voluntarily, while 30 (31.25%) were non-savers. Accordingly, the amount of the respondents' voluntary savings has been categorized for the sake of simplicity when analyzing the data. The results also indicate that the amount of money saved voluntarily in the SACCOs consists of different sizes. More than one-fourth (25.76%) of the respondents have saved voluntarily between 50 and 1,000 ETB (Ethiopian Birr), while less than one-fourth (21.21%) of them had a voluntary savings between 1,001 and 2,000 ETB. The voluntary savings of less than other one-fourth (22.73%) of the respondents amounted between 4,001 and 5,000 ETB, while 15.15% of the respondents save 3,001 and 4,000 ETB in a voluntary basis and 12.12 and 3.03% of the respondents voluntarily save their money by amounts that ranged from 2,001 to 3,000 ETB and greater than 5,000 ETB, respectively. The overall analysis of Figure 3, indicates that the majority of the respondents voluntarily save amounts from 50 to 2,000 ETB. This, in turn, shows that the amount of money saved by the respondents voluntarily is characterized at a medium level.

3.1.3. Child savings in SACCOs

From the total of 24 SACCOs, 17 have started child savings accounts, which are a new type of financial service. In this case, the distribution (shown in Table 3) reveals that only two of the SACCOs, namely Embeba Haya and Lemlem Sale, have relatively high amounts of child savings accounts; respectively, 38.78 and 34.01%. This indicates that there is a high gap between these two SACCOs and the two others, which accounts for less than 5%, except for Freweyni, which has 13.1%.

Figure 3. The amount of money saved voluntarily by the respondents in SACCOs.

Source: Own survey.
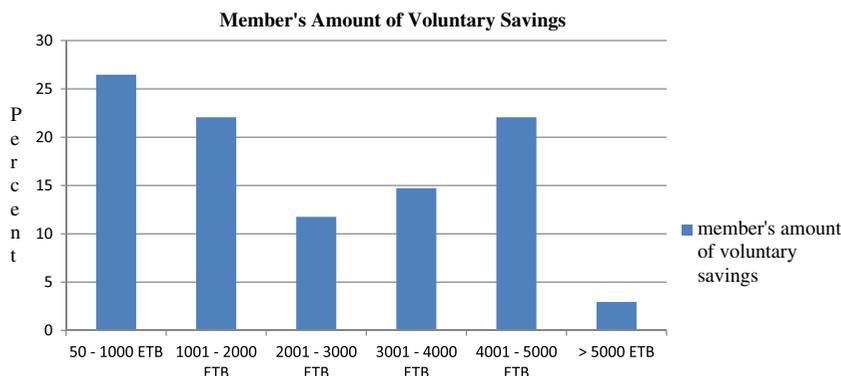
Table 3. Child savings in each SACCO (2012–2014)						
S.No.	Name of SACCOs	Sex		Total	Saving amounts	Percent
		M	F			
1	Haftamnesh	20	68	88	14,800	4.30
2	Embeba haya	107	93	200	133,452.05	38.78
3	Meserete birhan	30	30	60	2,853	0.83
4	Lemlem sale	33	19	52	117,056	34.01
5	Birhan tsibet	2	0	2	298	0.09
6	Tsion	2	1	3	970	0.28
7	Hiwot lemlem	2	5	7	820	0.24
8	Gedam	9	7	16	5,706	1.66
9	Gereb ayni	41	39	80	8,272	2.4
10	Genet	4	2	6	1,445	0.42
11	Fereweyni	28	24	52	45,125	13.1
12	Felamit senay	9	15	24	2,179	0.63
13	Amdi jema	40	39	79	4,728	1.37
14	Birhan alem	9	6	15	1,330	0.39
15	Tinsa'e	3	9	12	1,080	0.31
16	Teklibebzewa	0	2	2	118	0.03
17	Shewit	42	34	76	3,895	1.13
Total		381	393	774	344,127.05	100.00

Source: Annual reports data of the survey (2015).

3.2. The types of financial products accessed by SACCO members

Most of SACCOs provide similar financial products, such as loans, different kinds of savings accounts, such as voluntary savings, compulsory savings, and time savings. As indicated in Table 4,

| Table 4. Types of financial products of the respondents		
Reponses on the types of financial products	Frequency	Percent
Voluntary and compulsory savings	1	1.04
Voluntary, compulsory, saving insurance, time savings, child savings, and loans	5	5.21
Voluntary, compulsory, time savings, saving insurance, and loans	6	6.25
Voluntary, compulsory, time savings, and loans	11	11.46
Voluntary, compulsory, saving insurance, child savings, and loans	11	11.46
Voluntary, compulsory, saving insurance, and loan	19	19.79
Voluntary, compulsory, and loans	13	13.79
Compulsory savings	2	2.08
Compulsory savings, time savings, and loans	3	3.13
Compulsory savings and saving insurance	1	1.04
Compulsory, saving insurance, child savings, and loans	1	1.04
Compulsory, saving insurance, and loans	6	6.25
Compulsory savings and loans	17	17.71
Total	96	100.00

Source: Own survey.

a great number of SACCOs has also introduced child savings accounts. Whereas, saving insurance has only been introduced in one of the SACCOs in the study area, Embeba Haya. This indicates that the demand of the members for other financial products is still low, with the exception of loans. The result of the focus group discussion also confirms that almost all the members only have a high demand for loans. Even though all the SACCOs in the study area provide short-term loans, members are demanding medium- and long-term loans as well. However, the demand of the members does not match the amounts in their savings accounts given that the only way to increase the amount of loan provisions is to increase the amount of money saved. In the survey, the common types of financial products that the respondents mostly receive from their SACCOs are categorized as voluntary savings, compulsory savings, saving insurance, time savings, child savings, and loans. The analysis of Table 4 shows that the 19% of the respondents have access to financial services such as voluntary savings, compulsory savings, saving insurance, and loans from their SACCOs, followed by 17.71% who have access to compulsory saving and loan services. The implication of the survey is that more than 60% of the respondents have access to voluntary saving services in their SACCOs. This finding indicates that the respondents are aware of the benefits of the voluntary savings. It should also be noted that compulsory savings is a service that all the members have access to that regularly. Therefore, and as shown in Table 4, all the respondents are compulsory savers. The findings of the survey also revealed that almost all the respondents have access to loan services from their own SACCOs. Whereas, the other types of services such as time savings and child savings have been accessed only by a few number of the respondents.

3.3. Problems faced by members while demanding loans
When demanding loans, members face different problems. The result of the survey indicates that administrative problems and the insufficient amount of loan extended to members are among those frequently mentioned by members. As shown in Figure 4, more than half (53%) of the respondents did face administrative problems while they demand for loans and more than one-third (35%) of the respondents are in opinion that the amount of loan extended to them is insufficient. The overall analysis revealed that the majority of the members are dissatisfied when taking loans from their SACCOs due to problems associated with administration and the size of loan that is provided to members.

Figure 4. The main problems faced in demanding loans.

Source: Own survey.

cogent ·· economics & finance
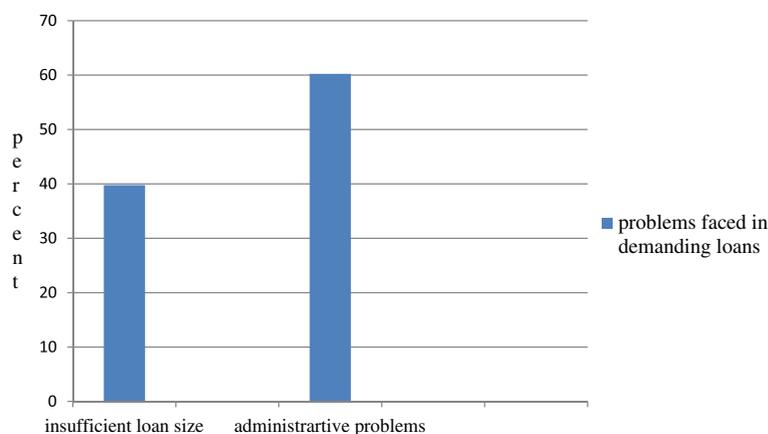
Table 5. Summary of descriptive statistics of the main variables included in the study					
Variables	Number of Observations	Mean value	Standard deviation	Minimum value	Maximum value
Age	96	35.76	8.88	22	62
Gender	96	0.48	0.50	0	1
Level of education	96	4.58	1.31	1	6
Marital status	96	2.03	0.44	1	3
Number of dependents	96	2.32	1.36	0	5
Household size	96	4.53	1.75	1	10
Access to training	96	0.41	0.49	0	1
Safety(security)	96	1.05	0.22	1	2
Distance to SACCOs	96	1.92	0.26	1	2
Membership year	96	3.06	1.06	1	4
Participation	96	1.04	0.20	1	2

Source: Own survey.

3.4. Summary of the descriptive statistics

Table 5 presents the summary of the descriptive statistics of the main variables included in the regression model. It shows the mean distribution, the standard deviations, the minimum and maximum values of each variable. On average, all SACCOs' members that were surveyed in this study are around 35.76 years old with a standard deviation of 8.88 years, which shows that there is a large deviation from the average and the minimum and the maximum ages, which were 22 and 60 years, respectively. This implies that the study has considered both young and old SACCOs' members. Moreover, the household size was 4.53 with a standard deviation of about 1.75, with minimum and maximum household sizes of 1 and 10 people, respectively. The descriptive statistics also show that, on average, the respondents' years of membership within the SACCO is 3.06 years with a standard deviation of 1.06, minimum of 1, and maximum of 4 years of the respondents' membership of SACCOs. More details of the demographic attributes of the respondents are presented in Table 5.

3.5. Determinants of members' voluntary savings behavior in SACCOs

Assuming voluntary savings (y_i) as a dependent variable, where a value of "1" is given to voluntary savers and "0" to non-voluntary savers, the effect of explanatory variables was estimated using a regression model. Table 6 shows the types, codes, and values attached to each variable in the model.

3.6. Interpretation of estimation results

In the model (Table 7), four potential continuous and seven discrete variables were entered. From the total of 11 explanatory (predictors) variables, only 9 variables, of which 3 were continuous and 6 were dummies, were found to significantly influence member's voluntary savings. Variables found to be significant include age, household size, and access to training, which were found to be significant at 5%. Marital status (dummy 2, married), educational level (dummy 3, 1st–6th grade), number of dependents in a family, and educational level (dummy 5, grade 9th–12th completed) were found to be significant at a 10% probability level. Safety (security) was found to be significant at a 1% probability level. Detailed discussion on the result of the regression model is given below.

cogent -- economics & finance

Table 6. Summary of the variables included in the model

Variables	Type	Codes	Values
Age	Continuous	X1	Age of the respondents is in number of years
Gender	Dummy	X2	"1" if household head is male and "0" otherwise
Marital status	Dummy	X5	"1" for single, "2" for married and "3" for divorced
Level of education	Dummy	X3	"1" for illiterate, "2" for able to read and write, "3" for 1st–6th grade complete, "4" for 7th–8th grade complete, "5" for 9th–12th grade, and "6" for above 12th grade
Number of dependents	Continuous	X4	"1" for having one dependents, "2" for two, "3" for three, "4" for four, and "5" for more than four
Household size	Continuous	X6	Household size of respondents is in numbers
Access to training	Dummy	X7	"0" if the household has access to training and "1" otherwise
Safety (security)	Dummy	X8	"1" for those who said secured and "2" otherwise
Distance to SACCOs	Dummy	X9	"1" if yes(far) and "2" for no (not far)
Years of membership	Continuous	X10	"1" if the respondent stay for one year, "2" for two years, "3" for three years and "4" for more four years
Participation	Dummy	X11	"1" for those who say yes and "2" for not

Source: Own survey.

Table 7. Results of the regression on the determinants of voluntary savings of SACCO members

Independent variables	Coefficient	Standard errors	Z value	P > |z|
Constant	−2.3597	1.1627	−2.03	0.042**
Age	−1.1143	0.0476	−2.40	0.016**
Gender	−1.1615	0.8211	−1.05	0.293
Dummy 1 = single	2.5465	2.1983	1.16	0.247
Dummy 2 = married	2.6709	1.5224	1.75	0.079***
Dummy 2 = able to read and write	0.2748	1.1851	1.08	0.282
Dummy 3 = 1st–6th grade	2.9626	1.0511	1.87	0.062***
Dummy 4 = 7th–8th grade	0.9003	1.9049	0.99	0.320
Dummy 5 = 9th–12th grade	1.9672	0.8258	2.38	0.082***
Number of dependents	−1.1707	0.6215	−1.88	0.060***
Household size	−1.8127	0.8480	−2.14	0.033**
Access to training	1.4819	0.6843	2.17	0.030**
Safety (security)	0.3136	0.1195	2.62	0.009*
Distance to SACCOs	−1.1035	0.1060	−1.00	0.318
Years of membership	0.7881	0.4527	1.74	0.082***
Participation	2.7128	1.7669	1.54	0.125

Source: Own survey.

*Significance levels at 1%.

**Significance levels at 5%.

***Significance levels at 10%.

cogent • economics & finance

3.6.1. Age

The age of the members is one of the significant variables, with a coefficient of −1.1143 and *p*-value of 0.016. Here, age has a negative relationship with voluntary savings and is statistically significant at a 5% level. The negative and significant relationship between the variables indicates that as age increases, the ability to make voluntary savings will also decrease. The marginal effect of the variable also confirms that a unit increase in a member's age will lead to a decline in the probability of voluntary savings by 13%. Consistent to our study, Kifle (2012) and Subhashree (2013) also found negative and significant relationship between member's age and members' savings.

3.6.2. Household size

The household family size is significant at 5%, but is negatively related to the member's status of voluntary savings. This indicates that the larger the household of a member, the lower his/her ability to use voluntary savings. Moreover, members with a large family size also increase the consumption pattern of the members, which in turn leads to decreased savings. The marginal effect of the variable also confirms that adding a household member to a family decreases the members' trend to use voluntary savings by 18.1%. The study reinforces how family planning is important to boost capital formation through enhanced savings margin.

3.6.3. Number of dependents

This variable has a negative relationship with members' trend of voluntary savings and was statistically significant at 10%. The negative relationship between the variables indicates that as the number of dependents (economically inactive people) increases in a family, the member's ability to use voluntary savings will decrease. A higher dependency ratio implies a greater burden of consumption expenditure and the more the household budget is allocated for consumption expenditure, the lower instances of saving can be expected.

3.6.4. Years of membership

The findings of the study show that the number of years that members stayed in SACCOs is significant at 10% and is positively related to the ability of the members to have voluntary savings. Here, the result of the study indicates that an increase by one year of membership in a SACCO increases the member's ability to have voluntary savings by 78%.

3.6.5. Marital status

As indicated in Table 8, the variable marital status has a negative relationship with members' ability to make voluntary savings and is statistically significant at 10%. This indicates that married people have a higher probability to use voluntary savings than those who do not have; most likely, given the fact that married people have a higher level of responsibility to keep the livelihood of their family safe. The study reveals that 81.81% of the married respondents are voluntary savers; whereas, only 6.1% of single respondents and 12.1% of divorced respondents are found to be voluntary savers. The small percentage of voluntary savers for single and divorced population could be due to the fact that unlike married population who have more responsibility to improve their livelihoods, single and divorced people may be reluctant to make decisions to improve their living standards. Especially, those who are single are more dependent on their family financially and in decision-making to get involved in any kind of business. Those who are married are more likely to use voluntary savings than the others as they are doing things together and generate different ideas to get involved in various businesses. Similarly, 76.66% of non-savers are also represented by married members. The empirical evidence presented by Subhashree (2013) also supports the finding that the married population is subjected to more liabilities, which discourages them to save more, as the income of the individuals is spent on the family consumption.

3.6.6. Educational level

The educational level of the members, dummy 3 (members who completed 1st–6th grade) and dummy 5 (members who are 9th–12th grade completed) has a positive effect on the probability of the members' status of voluntary savings and are found to be significant at 10%. The positive and significant relationship indicates that education increases the ability of the members to have voluntary savings. The role of education is obvious in its effect on household income, adopting technologies, demography, health, in particular, and the socioeconomic status of the family, in general (Keralem, 2005). The marginal effect indicates that adding one year to the formal schooling leads the probability of members to save on a voluntary basis to rise by about 296% for members who completed an educational level between 1st and 6th grade and 196% for members who completed 9th–12th grade.

3.6.7. Access to training

Access to training has positive relationship with members' ability to make voluntary savings, as it is expected, and is significant at 5%. Getting access to training gives the members the ability to use voluntary savings by 14.8% more than those members who have no access to training. This indicates that voluntary savings are significantly affected by training that the members gain. One of the mechanisms used to maximize voluntary savings is the availability of access to training, so as to boost the awareness of the members.

3.6.8. Safety (security)

The safety or security of members for savings is highly significant at 1%. It has a positive relationship with the member's trend to use voluntary savings. This shows that as the level of security for savings increases, members' trend to use voluntary savings in their SACCOs will increase and vice versa. This is due to the members' high level of concern about the safety of their savings against man-made or natural risks that can happen.

3.7. The correlation of financial product development and members' saving behaviors

When measuring the correlation between the independent and the dependent variables, r was used. Table 8 shows the correlation matrix of voluntary savings and the independent variables; i.e. the financial products. The correlation matrix table shows that "voluntary savings" has a moderately significant positive relationship with financial products, measured at $r = 0.7297$. The matrix represents a strong positive linear relationship between voluntary savings and financial products. This implies that, as SACCOs diversify their financial products, members would tend to make voluntary savings. Thus, SACCOs need to introduce and develop different types of financial products if they have to attract the deposit that they require to mobilize from their members.

Table 8. Correlation matrix of voluntary savings and financial products			
		Financial products	**Voluntary savings**
Financial products	Pearson correlation	1	0.7297
	N	96	96
Voluntary savings	Pearson correlation	0.7279	1
	N	96	96

Source: Survey data (2015).

cogent ·· economics & finance

4. Conclusions

The SACCOs in the study area provide different kinds of financial products to their members. The majority of the respondents agreed that 19% of the members are beneficiaries of voluntary savings, compulsory savings, saving insurance, and loans (short-term loans). In case of savings insurance, it is only offered by one notable SACCOs in the study area, Embeba Haya. Even though all the SACCOs in the study area provide short-term loans, the members also demand medium- and long-term loans. Whereas, other types of services such as time savings and child savings accounts are still only accessed by a small number of the members.

The results of the study also show that the number of years that the members stayed in SACCOs is positively related to the ability of the members to use voluntary savings. On average, the members stayed in the cooperative for 3 years with a minimum of 1 and maximum of 4 years. The study revealed that the majority of the respondents (46.88%) have been involved in cooperative societies for more than three years.

The majority of the respondents (48.96%) have access to SACCOs and Equb, 25% of the respondents also have access to almost all types of financial institutions, such as microfinance, SACCOs, and banks, as well as informal financial institutions such as Equb. Moreover, the reasons members access other financial institutions other than their own SACCOs in the study area were revealed. This study shows that the majority of the members are attracted to other financial institutions due to their easily accessible loans, as reported by 76.5% of the respondents. Furthermore, 46% of the respondents prefer other financial institutions due to their fast delivery system. In general, the correlation between voluntary savings and financial products is positive and significant. This implies that the type of financial products affect members' voluntary savings.

Author details
Solomon Abadi Dirar[1]
E-mail: soloab123@gmail.com
Tekeste Berhanu[1]
E-mail: tekeste.berhanu@yahoo.com
Dereje Getachew[2,3]
E-mail: dgpeace23@gmail.com
Hossein Azadi[2,4,5]
E-mail: hossein.azadi@ugent.be
[1] Department of Accounting and Finance, College of Business and Economics Mekelle University, Mekelle, Ethiopia.
[2] Department of Geography, Ghent University, B-9000 Ghent, Belgium.
[3] Department of Management, Mekelle University, P.O. Box 451, Mekelle, Ethiopia.
[4] Centre for Environmental Sciences, Hasselt University, Agoralaan Building D, B-3590 Diepenbeek, Belgium.
[5] Economics and Rural Development, Gembloux Agro-Bio Tech, University of Liège, B-4000 Liège, Belgium.

References
Benson, O., Bartholomew, T., & Kazungu, I. (2013). Relationship between sources of funds and outreach in savings and credits cooperatives societies: Tanzanian case. *European Journal of Business and Management, 5*, 188–196.

Berhane, H. (2010). *The role of RUSACCOs on the improvement of member's saving behavior in Ganta Afeshum Wereda* (unpublished thesis). Mekelle University, Tigray.

Bersales, L. G. S., & Mapa, D. S. (2006). *Patterns and determinants of household saving in the Philippines.* Makati City: USAID. Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.495.1966&rep=rep1&type=pdf

Clement, O., Mbewa, O., & Jagongo, A. (2012). Financial practice as a determinant of growth of savings and credit co-operative societies' wealth. *International Journal of Business and Social Science, 3*, 204–219.

Ebisa, D. (2012). The effects of post 1991 Era financial sector deregulations in Ethiopia: An inspirational guide for agribusiness. *Basic Research Journal of Agricultural Science and Review, 1*, 81–87.

Genanew, T., Butte, G., & Yegnanew, A. (2011). *Statistical analysis of saving habits of employees: A case study at Debre Birhantown in North Shoa, Ethiopia* (MPRA paper no 42301). Munich personal RePEc archive. Retrieved from https://mpra.ub.uni-muenchen.de/42301/1/MPRA_paper_42301.pdf

Keralem, E. (2005). *Honeybee production systems, opportunities and challenges in Enebse Esar Midir Wereda (Amhara region) and Amarospecial Wereda (Southern nations, nationalities and peoples region), Ethiopia* (M.Sc Thesis). Alemaya University, Ethiopia.

Kifle, T. (2012). Determinants of saving behavior of cooperative members survey evidence from Tigrai region, Ethiopia. *Journal of Research in Economics and International Finance (JREIF), 1*, 150–158.

cogent •• economics & finance

Mohd, S., Abd, G., Rahayu, A., Rahman, N., & Ahmad, Y. (2006). *Saving habits: A study on group duitmstaff*. Shah Alam: Liniversiti Teknologi Mara Shah Alam, Selangor.

Nwankwo, F., Ewuim, N., & Asoya, N. (2013). Effect of cooperatives on the savings behavior of members in oyi local government area, Anambra state, Nigeria. *An International Multidisciplinary Journal, Ethiopia, 7*, 209–227.

Onchangwa, G., Odhiambo, A., Sagwe, O., & Stella, O. (2013). Influence of consumption on savings and credit cooperative society (SACCO) members' Investment culture in Kenya. *Interdisciplinary Journal of Contemporary Research in Business, 5*, 97–105.

Sinha, P., Viswanathan, B., & Narayanan, B. (2015). Financial market and growth: Evidence from post-reforms India. *Cogent Economics & Finance, 3*(1), 1–9.

Subhashree, N. (2013, May). *Determinants and pattern of saving behavior in rural households of Western Odisha* (Msc thesis). Rourkela: Department of Humanities and Social Sciences National Institute of Technology.

Tache, G. M. (2006). *SACOO promotion and development Lira Region* (Final report). Uganda: USAID (United States Agency for International Development). Retrieved from http://pdf.usaid.gov/pdf_docs/Pnadk961.pdf

Yamori, N. (2015). Japanese SMEs and the credit guarantee system after the global financial crisis. *Cogent Economics & Finance, 3*(1), 1–18.

Yemane, T. (1967). *Statistics: An introductory analysis* (2nd Ed.). New York, NY: Harper and row.

Cogent Economics & Finance (ISSN: 2332-2039) is published by Cogent OA, part of Taylor & Francis Group.

Publishing with Cogent OA ensures:

- Immediate, universal access to your article on publication
- High visibility and discoverability via the Cogent OA website as well as Taylor & Francis Online
- Download and citation statistics for your article
- Rapid online publication
- Input from, and dialog with, expert editors and editorial boards
- Retention of full copyright of your article
- Guaranteed legacy preservation of your article
- Discounts and waivers for authors in developing regions

Submit your manuscript to a Cogent OA journal at www.CogentOA.com