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Determinants of Savings and Credit Cooperatives Societies (SACCOs) outreach in Addis Ababa.

A thesis Submitted to the Department of Accounting and Finance, College of Business and Economics, Addis Ababa University, in Partial Fulfillment of the Requirements for Degree of Masters of Business Administration (MBA) in Finance

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Declaration

I, Nigusie Dibissa, declare that, this thesis under the title "*Determinants of saving and credit cooperative societies (SACCOS) outreach in Addis Ababa*" is my original work produced under the guidance of my advisor Dr. Degefe Duressa, and has never been published and/or submitted for any award of Degree in any other University. Any source used is duly acknowledged in this study.

Signed: ---------- Date: ----------

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Certification

This is to certify that the thesis prepared by Nigusie Dibissa with the title *"Determinants of Saving and credit cooperatives outreach in Addis Ababa"* and submitted in partial fulfillment for Masters of Business Administration in Finance complies with the regulations of the university and meets the accepted standards with respect to originality and quality.

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Examiner: Ato G/Medhin G. Signature _____date_____

Advisor: Dr. Degefe Duressa, Signature _____date_____

Abstracts

The main purpose of this study was to examine Determinants of Saving and credit cooperatives (SACCOs) outreach in Addis Ababa. The study followed quantitative research approach and explanatory research design. Using purposive sampling, 32 SACCOs were taken from 235 affiliated members of AASCCOU. Data used in the analysis comprises secondary data and also panel data regression model is used for the analysis. The major determinant factors that affect outreach of SACCOS by taking loan size as a measurement are amount of saving, level of interest rate on saving, amount of dividend paid to members which has a positive relationship and statistically significant and the others determinants that have positive relationship but statistically insignificant are age of SACCO's, income per capital and maturity date. On the other hand when number of SACCO's member is taken amount of saving and income per capital has positive relationship and significantly affects SACCOs outreach. Similarly age of SACCOs, dividend paid to members and maturity date affects number of SACCO's members positively but they are insignificant. In addition the major determinant factor that negatively affects loan size and statistically significant is level of interest rate on borrowing. In the same way MEMB is affected negatively by LIB and LIS negatively but its significance level is weak. Therefore the researcher recommends SACCOS should give high attention in attracting members to increase their source of fund by providing awareness about the benefit of joining SACCOS, by using social medias, providing training to clients, by distributing brochure for clients, if fund is available should encourage members to take loan to increase dividend for idle funds, should charge compatible interest rate on loan to members to attract members, should increase the duration of repayment of loan and finally Federal cooperatives agency should pay attention in continuous supervision of SACCOs.

Key terms: *outreach, SACCOs' Determinants, Loan outstanding and number of members*

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Contents

List of figures and tables

Acronyms and Abbreviations

AASCCU: Addis Saving and Credit Cooperative Union
ACCOSSCA: Africa Confederation of Cooperative Society Savings and Credit Association
ASACCO: Age of saving and credit cooperatives
CEX: Consumer Expenditure Survey
CLRM: classical linear regression model
CRAR: Credit per asset
DIVD: Dividend paid to members
DW: Durbin--Watson
GDP Growth Domestic Product
GLP: Gross loan portfolio
IPC: Income per capital
ISF: Internal sources of funds
LER: External-internal sources ratio
LIB: Level of interest rate on borrowing
LIS: Level of interest rate on saving
MD: Maturity date
MEMB: Number of members
MFI: Micro finance institutions
NGDP Nominal Growth Domestic Product
NWM: Number of women members
OECD: Economic Co-operation and Development
OLS: Ordinary least squares
OSS: Operational Self Sustainability
PSID: Panel Study of Income Dynamics
RFI: Rural financial institutions
RUSACCO: Rural saving and credit cooperatives
SACC: Number of saving and credit cooperative
SAV: Amount of saving
SACCOS: Saving and credit cooperatives
SCF: Survey of Consumer Finances
SPTF: Social performance task force
SRF: Sample regression function

CHAPTER ONE

1. INTRODUCTION

1.1 Background of the Study

According to Mckernan and Chen (2005), cited in Ofei (2001), finance is the backbone of any business enterprise. For country's economic development, financial institutions play a vital role in the world. Formation of financial institutions can be formal, semiformal and informal institutions.

Micro finances are one of the formal financial institutions that provide financial services to the poor and rural areas with high interest rate to compensate for the risk. World Bank's strategy seeks to improve the demand and supply conditions for expanding access of the rural poor to a suitable "diversity of products and institutions that fill the financial needs of low-income rural clients in income generation and reduction of vulnerability" (World Bank, 2002).

MFIs focus on providing credit to the poor who have no access to commercial banks, in order to reduce poverty and to help the poor with setting up their own income generating businesses which is described as outreach in many literatures generally. The objective of the MFIs is basically poverty alleviation through the provision of suitable financial services to the poor who actually don't have access to the financial support services of other formal financial institutions. To this effect, the delivery of microfinance service to the poor in Ethiopia is one of the main effective instruments of insuring food security, reducing poverty and increasing employment in both urban and rural areas. This could only be realized by developing capable and suitable

microfinance institutions (Wolday, 2004). SACCOS can help providing financial services to the poor and rural societies in this regard.

However, society's access to financial services depends on many variables such as financial development of the country, income level of the individuals, geographic location and development of the country accompanied by other variables. That means even though financial service is vital to the society, it is not equally available to all members of society. Hence, Savings and Credit Cooperatives (SACCOs) are established based on this premise to serve the interest of economically neglected segment of society. SACCOs are the main providers of financial services for low income, rural and urban societies who are overlooked by formal financial institutions in many countries.

According to Munyiri (2006) cited in Ofei (2001), Savings and Credit Co-operative Societies (SACCOs), which are started locally, are more attractive to customers thus deeply entrenching themselves in the financial sectors of many countries. In fact, they have solid bases of small saving accounts constituting a stable and relatively low-cost source of funding and low administrative costs Branch (2005) cited Ofei (2001). SACCOs are able to advance loans at interest rates lower than those charged by other financial providers. In addition, SACCOs have the ability and opportunity to reach clients in areas that are unattractive to banks such as rural or poor areas. The core objective of SACCOs is to ensure members empowerment through mobilization of savings and disbursement of credit (Ofei, 2001).

1.2. Overview of SACCOS in Ethiopia

Ethiopians have a strong tradition of saving, which is evident from the widespread existence of informal rotating savings and credit organizations such as iqubs and iddirs. There is also a promising history in the country of successful savings and credit cooperatives in urban areas. In Ethiopia, the history of modern cooperatives was started in 1960 (Federal Cooperatives Agency, 2012).

Saving and credit cooperatives are one of the successful cooperatives ventures in Ethiopia. Actually the history of cooperative movements in Ethiopia has demonstrated the potential for growth and expanded outreach in the success of nearly 700 mainly urban based saving and credit cooperatives. There is a sound legal and policy framework conducive to the establishment of financially and politically independent rural and urban saving and credit cooperatives (Wolday, 2004).

Establishment of saving and credit cooperative societies in Ethiopia started in the mid-1960s. From 1964-1973, there were 28 saving and credit cooperative societies and these societies formed their own national apex body known as Ethiopian Thrift and Cooperative Societies Limited (Muluneh,2012). SACCOs have been growing fast since 1979, however; the rate of growth is slower than other types of cooperatives in Ethiopia. In 1991 the number of SACCOs in Ethiopia was 3,491 (Dessalew, 2014).

During the Derg regime (1974-1991), different types of cooperative societies (Agricultural Cooperatives, Housing Cooperatives, Saving and Credit cooperatives and Mining Cooperatives)

were organized, promoted, regulated and inspected by different ministries and institutions (Muluneh,2012).

During the Derg period, Proclamation No. 138/70 was issued which provided the National Bank of Ethiopia to promote and organize SACCOs. These cooperatives were not demand-driven and member managed. There were frauds, embezzlement and mismanagement. However, the saving and credit cooperatives (SACCOs), mainly in urban areas, which were insulated from government interference, continued to thrive. After the adoption of mixed economy in 1991, producers' cooperatives were completely abandoned and only limited strong service cooperatives with committed leadership survived. Little or no attention was paid to the cooperative sector until 1995 (Wolday, 2004).

After the fall of the Derg regime in 1991, adoption of Economic Reform Program helped the organization, promotion and development of cooperative societies within the framework of free market economy. This opportunity opened to turn cooperative societies into real people's organizations and the number of saving and credit cooperative societies mushrooming up both in urban and rural areas have increased tremendously. Generally, the poor are considered credit risk to the conventional banks and hence excluded from the credit market (Muluneh,2012).

The number of urban SACCOS organized in all the national regional states of the country as at June 30, 2011 was 4286 with membership size of 393, 658 (229, 893 male and 163, 765 females).The number of RUSACCOS organized and operating in all the National Regional states of the country as of June 30, 2011 was 5300 with membership size of 443,287 (227,225 male and

216,062 female) and total capital of Br 66,459,550. Moreover the total amount of saving also reached Br 120,197,388 (Muluneh,2012).

Currently according to information from federal cooperatives agency there are 1,705 SACCOs in Addis Ababa with a total membership of 230,888 out of which 148,306 are women members. Those SACCOs are mobilizing a total capital of 4,555,102,303.00 Birr.

1.3 Statement of the Problem

Ethiopia has low geographic and demographic bank branches. Micro-finance institutions meet only about 20% of the demand for financial services for the excluded. In 2010, only about 0.1% of the Ethiopian population has access to insurance services. In the case of SACCOS, their capital base is very small to support the lending programs and ensure sustainability (Muluneh, 2012).

Various studies have been conducted on SACCOS by a number of researchers; Management of Savings and Credit Cooperatives from the Perspective of Outreach and Sustainability Kifle (2011) and he concluded that those grassroots and member-owned financial institutions called the saving and credit cooperatives were able to mobilize huge financial resources and to provide credit and savings services to a large mass base at a standard compared to that of formal financial institutions. According to him SACCOS are viable financial institutions whose development must be strongly supported. According to him lack of awareness and poor saving culture, weak organizational arrangement and governance problems, policy and regulatory environment, weak institutional capacity, low capital base, lack of differentiated products, inappropriate loan security requirements are identified as the factors that affect the growth/outreach of SACCOS. In

addition Kifle (2012) also conducted on The Impact of Savings and Credit Cooperatives in Ofla Wereda Tigray Region of Ethiopia and come out with there is Positive significant correlation have been observed between seniority, saving, size of loan, number of times loan availed and post income of the respondents. Similarly for profit, there is significant and positive correlation between seniority, the size of loan and number of times loan availed and profit from economic activities while the variable saving had significant negative correlation with the profit. The Socio-Economic Role of Saving and Credit Cooperatives in Promoting Gender Equality (Dessalew 2014), Relationship between Sources of Funds and Outreach in Savings and Credits Cooperatives Societies, and they concluded that sources of funds (internal or external) contributed to breadth outreach for SACCOs (Ndiege, Haule and Kazungu, 2013), Effect of Savings and Credit Co-operative Societies Strategies on Member's Savings Mobilization (Cheruiyot, Kimeli and Ogendo, 2012), The Contribution of SACCOs Financial Stewardship to Growth (Olando, Jagongo and Mbewa, 2013), The Impacts of Credits Risk Management on Profitability of Rural Savings and Credits Cooperative Societies (Magali ,2013) and sustainability of Rural SACCOS (Magali, 2013) are some of the researches conducted so far.

Additionally Toli (2013), has analyzed saving and credit Cooperatives financial service in Addis Ababa and indicated that outreach in SACCOs shows an increasing trend. But the study didn't mention what contributes to the increase in outreach of SACCOs.

Cooperatives are key grassroots level organizations that are very critical instruments in implementing the objectives of the various development programs such as Rural Development Strategy, Poverty Reduction Programs, and Food Security Programs. SACCOS, (along with

other institutions such as MFIs) emerge to fill the financial service gap to the poor not attended by the banking system (Muluneh, 2012).

As mentioned above various studies were conducted on the management, source of funds, credit risks, contribution, and sustainability of SACCO's. Many of the factors studied by those authors could be affected by the extent of outreach of SACCO's to the potential population. While impact of wider outreach can be impliedly understood, it is important to know what factors does impede outreach. Such study has not been undertaken yet. This study therefore attempts to fill the gap by investigating the determinants of SACCOS outreach. Therefore the study focused on analyzing the data using regression model to show clearly the determinants of outreach in case of SACCOS quantitatively. To the end of the study current research answers

- What is the relationship between determinant factors of outreach and SACCO's outreach?

1.4. Hypothesis of the study

Various researches mentioned that there are various indicators of outreach. Lafourcade, Isern, Mwangi, and Brown, (2005) listed that Number of active borrowers with loans outstanding, Number of women borrowers, Gross loan portfolio, Average Loan Balance per Borrower, Number of savers and total savings. In order to achieve the objective of the study and to answer the above question, a number of hypotheses were tested regarding the determinants of SACCO's outreach in Addis Ababa based on different empirical research and theoretical reviewed made. The following null hypotheses are formulated.

1. There is no relationship between outreach and age of SACCO's
2. There no relationship between outreach and amount of savings

3. There is no relationship between outreach and level of interest rate on saving

4. There is no relationship between outreach and level of interest rate on borrowings.

5. There is no relationship between outreach and dividend distributed to members.

6. There is no relationship between outreach and maturity date of loan (duration to repayment period).

7. There is no relationship between income per capital and outreach.

1.5. Objective of the Study

1.5.1. General Objective

The general objective of this research is to identify and examine the Determinants of Saving and credit cooperatives outreach in Addis Ababa.

1.5.2 Specific Objectives

To achieve the aforementioned general objective the following specific objectives are developed;

- To examine the relationship between outreach and Age of SACCO's.
- To examine the relationship between outreach of SACCO's and amount of saving.
- To examine the relationship between outreach SACCO's and interest rate on saving.
- To examine the relationship between outreach of SACCO's and interest rate on borrowing.
- To examine the relationship between outreach and dividend distributed to members.
- To examine the relationship between outreach SACCO's and maturity date to repay the loan.

- To examine the relationship between outreach of SACCO's and income per capital.

1.6. Significance of the study

This study is expected to have the following significance; for practitioners, decision makers and policy implementers, it gives insight on factors that affect outreach in SACCOs and help on how to increase outreach, take corrective on deviations and serve the interest of their client. For academicians and other researchers, it will drop light on SACCOs outreach and might be used as a source of other researches and reference for related studies. For policy makers, it might be used as a reference in developing policies related with SACCOs and how to appreciate their expansion considering their current service to poor community.

1.7. Scope and Limitation of the Study

The scope of the study is limited to the Determinants of Saving and credit cooperatives outreach in Addis Ababa. The study used only five-year audited financial statement. Thus, the finding of the study is limited to determinants of outreach and any conclusion and recommendation is related to SACCOs and cannot be used for other financial institutions. In addition, SACCOS who are not members of Addis Ababa Credit Union Cooperatives are not included in the study. The researcher also used variables which are measured and explained numerically and did not used other factors like level of education, human power, governance and management etc. that may affect the outreach of SACCOs. During data collection the main problem was unavailability of data as a result the researcher used purposive sampling method rather than taking simple random sampling method which may decrease the quality of the paper. For example researcher couldn't get the number of borrowers and in addition the number of SACCOS which consecutively (annually) audited their financial statements was limited.

1.8. Organization of the study

The current research is organized in five chapters in total. Chapter one is all about introduction. The rest of the paper is organized as follows. Chapter two provides a conceptual framework and literature review on the topic; both empirical and theoretical aspects. Chapter three explains the methodology followed in the study to achieve the objective of the study. Chapter four presents the analysis and finding of the study. Finally, in chapter five of this study, presents conclusions, recommendations and future research directions.

To sum up, chapter one has explained the general introduction to the research by uncovering the main agenda in the research. The rationale and objective of the study is mentioned with the expected significance of the study. Briefings on the delimitation and limitation of the study are also given.

CHAPTER TWO

2. LITERATURE REVIEW

2.1 Theoretical review

The cooperative life cycle: Cooperatives, like any form of organization, have an apparent life cycle that exhibits several distinct stages, or phases. Drawing from the experience of agricultural cooperatives in the United States, Cook and Burress (2009) describe a cooperative life cycle framework consisting of five phases: Economic Justification, Organizational Design, Growth-Glory-Heterogeneity, Recognition and Introspection, and finally, Choice. Organizational life cycle models predict an organization moves from inception to growth, to maturity, to decline or redevelopment.

Economic Justification includes the recognition, understanding, translation, transference and manifestation of patron enjoined collaborative action to ameliorate the socioeconomic consequences of the market contracting costs or collective rent seeking opportunities.

Organizational design is a phase in which cooperatives are achieving constitutional adaptability and flexibility, in voting mechanisms, member qualifications and responsibilities and authority distribution requires considerable input from members at this stage.

Growth, glory and Heterogeneity: Over time, individual members of a successful cooperative may experience a divergence of interests. This heterogeneity in preferences may threaten the

viability of the cooperative organization as competing member-patron interests have the potential to increase collective decision-making costs

Recognition and Introspection: Recognition and discussion of this phenomenon enters formal discussion very slowly and reluctantly because of inherent conflicts and denial tendencies. Collective decision-making costs, particularly in the form of costly decisions and conflict resolution begin to rise. Recognizing in a transparent manner, analyzing the causes of, and contemplating options to the phenomenon of rising ownership costs is the activity of phase four.

Choice: in this phase the member patron is being asked to inform a decision – a decision that affects organizational survival. If the full range of options is available, the member will choose from the following to tinker, reinvent, spawn or exit.

According to Prakash D. (2003) there are many theorists in many parts of the world that have made major contributions to cooperative thought, and most of that thought has been concerned with cooperative values.

'Self-Help' is based on the belief that all people can and should strive to control their own destiny. Cooperators believe that full individual development can take place only in association with others. Individuals also develop through cooperative action by the skills they learn in facilitating the growth of their cooperative.

'Self-Responsibility' means that members assume responsibility for their cooperative – for its establishment and its continuing vitality. Members have the responsibility of promoting their cooperative among their families, friends and acquaintances. Members also ensure that their cooperative remains independent;

'Equality'. Members, whether an individual or a group, are all equal. It does not depend on the social and economic status of the member;

Achieving **'equity'** within a cooperative is continuing, never-ending challenge. It also refers to how members are treated within a cooperative. They should be treated equitably in how they are rewarded for their participation in a cooperative, normally through patronage dividends, allocation to capital reserves in their name, or reduction in charges;

'Solidarity' ensures that cooperative action is not just a disguised form of limited self-interest. A cooperative is more than in association of members; it is also a collectivity. All members including the employees and the nonmembers who are closely associated with the cooperative should be treated fairly. This also means that the cooperative has a responsibility for the collective interest of its members. It has historical roots. Cooperators and cooperatives stand together. Solidarity is the very cause and consequence of self-help and mutual help – two of the fundamental concepts at the heart of cooperative philosophy. It is this philosophy which distinguishes cooperatives from other forms of economic organizations;

Founders of the Cooperative Movement have, through their foresight and deep involvement has been able to refine the concept. They are found everywhere. Their contributions were practical, ethical and moral. Many of the early cooperatives of the 19th century, most obviously the Rochdale Pioneers, had a special commitment to honesty – fair dealings in the market place, honest measurements, high quality and fair prices. Over the decades agricultural cooperatives have prospered because of their commitment to high quality, honestly-labelled produce. Honesty, openness, social responsibility and care for others are values which may be found in all kinds of organisations, but they are particularly cogent and undeniable within cooperative enterprise.

Some theories of the evolution of cooperatives:

Wave Theory: We should not be surprised to see waves of cooperative organization, especially in depressed times, followed by waves of cooperative failures.

Wind-It -Up Theory: Once they have secured the terms they require, competitors may adjust their prices or improve their services such that the group (i.e., the cooperative) becomes redundant. The cooperative has achieved its purpose and the members, considering that it is now obsolete, may wind it up.

Pacemaker Theory: The very existence of a successful cooperative makes for greater efficiency amongst the competitors, so that even when price and service adjustments have been effective, the organization is kept in being to fulfill a pacemaker role.

Mop-Up Theory: In static or declining markets, IOF may have little to lose by acting opportunistically. Such behavior may therefore crest incentives for farmers to integrate forward via cooperatives in these this markets.

Existing theoretical works on credit cooperatives emphasize three principles of cooperative organization that are of particular significance to their performance (cf. Fama/Jensen 1983, Bonus 1986, Rasmusen 1988, Braverman/Guasch 1989, Krahnen/Schmidt 1994 cited by Krahnen J.P. and Schmidt R.H 1995):

The *Identity Principle* refers to the fact that the members of the cooperative are clients and owners. This self-contained structure is a prerequisite for the application of a simple, cheap and effective credit technology, namely peer monitoring. The high costs of screening and monitoring small borrowers operating in the informal sector, which make this market segment so unattractive for conventional banks, can be drastically reduced by this system of reciprocal or, so to speak, neighbourly monitoring (Stiglitz 1990).

The *Nominal Capital Principle* (redeemable equity capital) means that the equity capital of the cooperative members is, in economic terms, really only a shareholder's loan as it can, in principle, be reclaimed at any time and then repayable at nominal value. In practice, the distinction between shareholdings and deposits is also frequently blurred. This situation obliges the credit cooperative to maintain a comparatively high volume of liquid reserves. Retained earnings, on the other hand, are not in danger of being redeemed or withdrawn. As a consequence, the formation of internal reserves (retained earnings) results in an irredeemable and

non-voting item of equity capital. It is therefore reasonable to assume that the management of credit cooperatives will be in favour of retaining a relatively large portion of its profits.

The *Equality Principle* ("one man - one vote"), which implies that voting rights at the general meeting are not proportionate to the volume of capital invested, undermines in principle the motivation, normally inherent in equity capital, to exercise control, and invites a "free rider" mentality. As the number of members, i.e. the size of the credit cooperative, increases, and this negative incentive is magnified. This in effect eliminates the regulatory function of relatively large, active investors, typical of joint stock companies.

2.1.1. Definition of SACCOs

SACCOs are user-owned financial institutions that offer both savings and credit services to their members. Members of these financial institutions can be both net savers and net borrowers. Depending on a country's legal framework, SACCOs may be authorized to mobilize member savings and non-members savings or member savings only. SACCO Society is financial cooperative society established by voluntary people based on the philosophy of building self-help society or "people helping people". SACCO Society is owned, managed, controlled by members. Members have the right to decide on its issues, members have the right to benefit from its service. SACCO Society is formed initially for the poorer to provide financial services such as safe place for savings and providing easy accessible loans to members. SACCO Society is "not for profit or for charity" but serve members at fair profit margins. In SACCO Society member's savings form a good pool of money, from which loans are made to members with fair lending interest and the interest rate is decided by members. In SACCO Society once overhead and other expenses are paid, reserve for cushion against any loss, and for expansion of services set aside,

the remaining income from loans is returned back to members in the form of dividend on savings, share or both (Getachew, 2006).

SACCO Society are financial institutions designed for people, to have their own efficient financial service giving institutions that empowers themselves in building asset by teaching thrift culture and make themselves accessible to credit in sustainable way (Getachew, 2006).

What makes SACCOs different from other cooperatives and financial institutions is that SACCO's operations are concentrated within their own membership and a person must be a member in order to save, borrow or receive other services from the SACCO. In developing SACCOS, working funds are comprised mostly of member shares; in mature SACCOs, working funds are mainly deposits. SACCOs' make loans to members, emphasizing primarily the character and ability to repay. SACCOs' rely to a significant extent upon the volunteer efforts of the members; the key element in the development of SACCOs' is volunteerism. The difference between a SACCO and other forms of co-operatives is that the SACCO can accept deposits from its members as savings and also issue out loans to qualifying members of the SACCO (Henama, 2012).

2.1.2 Types of SACCOs

According to Bwana and Mwakujonga (2013), various types of SACCOs exist, depending on the membership profile and the products extended to the SACCO members differ accordingly. In essence, there are three broad categories of SACCOs:

- **Community-based SACCOs:** These SACCOs can be found in urban areas or regional towns, but are most frequently encountered on village level. A variety of group and

individual loans can be found, including women solidarity loans, business loans for individual members, or loans for small and micro enterprises;

- **Employee-based SACCOs.** These represent SACCOs where all the members are drawn from one employer and these SACCOs are generally located in urban areas or regional level. Specific salary-based loans are extended which are often guaranteed by the employer.
- **Agricultural SACCOs.** To date these represent primarily small-scale cane growers in areas such as the rural region. Both individual farmers and farmers' associations can be clients of the SACCO. Loans are extended for various purposes, including agricultural production loans.

2.1.3. History of SACCOs

English speaking nations were the first to adopt SACCOs in Africa. The first entrants into SACCOs' community include Ghana, Uganda, Nigeria, Tanzania, and Kenya. Among all, the first SACCO Society, in Africa, was introduced in Ghana in 1959. Most of the Non-English speaking nations in Africa started appreciating SACCOs in 1960s, with major influx into SACCO community in 1970s (Mwakajumilo, 2011).

According to Alila and Obado (1990), in Africa, the idea of savings and credit societies was first discussed in 1955 in Jirapa, a small town in Ghana which was then the Gold Coast. The idea was brought by a Roman Catholic priest, Father John McNulty from Ireland. He had studied in Canada where he learnt about SACCOs'. Father McNulty decided to assist the Jirapa villagers to form a savings and credit Co-operative. The cooperative had a specific aim of assisting the members to address their financial problems which they could hardly do individually.

The formation of SACCO in Africa grew tremendously to the extent that the African countries formed a continental association of SACCOs, Africa Confederation of Cooperative Society Savings and Credit Association (ACCOSSCA), in 1965 (Olando, Mbewa and Jagongo, 2012).

Establishment of saving and credit cooperative societies in Ethiopia started in the mid-1960s. From 1964-1973, there were 28 saving and credit cooperative societies and these societies formed their own national apex body known as Ethiopian Thrift and Cooperative Societies Limited (Muluneh,2012).

2.1.4. Role of SACCOs

Access to finance offered by SACCOs influence growth of youth entrepreneurship. There was increased growth of youth entrepreneurship as a result of different aspects employed by SACCOs to increase access to finance (Mwangi and Wanjau, 2013). For traders the main problem is a shortage of working capital and SACCO‟s could be very useful; especially SACCO of traders.

Establishment of micro-business both in the rural areas and urban areas which has raised the standard of living for the people, Provision of financial services to all vulnerable groups including women, the youth and the disabled. This has helped to elevate their status in Society through economic and social empowerment. Inculcation of a culture of savings in the lives of people and discouraging non-productive expenditures, source of direct employment for the members and the staff of the SACCO and indirectly impacting the lives of many households who depend on the members and staff of the SACCO. Many rural micro projects i.e. restaurants,

taxis, salons handicrafts, shops and kiosks have been started from the loans taken by members of SACCOS. SACCOS have enabled to the savers to acquire the capacity to build low cost, yet high quality, housing units, and to buy vital household items, and put their children through affordable school system. SACCOS have enabled members to put some of their loans in agricultural development thereby increasing the productivity in the agricultural sector and enhancing food security (Okoye, 2009).

Through SACCOs, members can get micro and macro credit to create/start small businesses. A member in SACOOs has access to credit as a primary service. SACCO members have equal opportunity to get access to credit within the cooperatives. Almost all of males and female members within the SACCOs had access to credit. Thus, the participation of males and females in getting access to loans within the SACCOs was high. The SACCOs also provide loans to all members without gender discrimination (Dessalew, 2014)

The main objectives of any SACCOS are Encouraging and promoting to develop thrift culture within the members as well as the community by teaching wise use of their money and efficient management of their limited resources, teaching people how to create an asset that helps them to have a guarantee and collateral for future loan access, Making finance more accessible for members when they need it, and developing a linkage between the rural people and urban banks in order to have broader financial flows into the community and a safe haven for rural peoples' savings (Getachew, 2006).

The two fundamental function of a SACCO Society are financial intermediation and investment. That is bringing savers and borrowers together in a system that enables them to pool their money as savings and shares, and after capturing funds transforming into loans by calculating all of the costs of doing this business to make profitable/useful to both parties (the SACCO Society and its members). SACCO Society is a financial institution that purely deals with mobilizing money from members as savings, shares and providing easy accessible loans to members on time (Getachew, 2006).

2.1.5. Outreach

One of the greatest comparative advantages of SACCO is their ability to reach large number of people that are overlooked by formal financial institutions. The contributing fact to their advantage is their ability to collect deposit from members and providing diversified loan to members. So as also mentioned by Relampagos, Lamberte and Graham (1990), in terms of outreach, SACCOs are and should be better than other formal financial institutions.

Outreach is a common term which has been used in different contents and can be defined differently depending on where it is applied. As well, in microfinance outreach has become a common and important term. According to Okumu (2007) and Temu & Ishengoma (2010), the term outreach in microfinance has been defined differently by different scholars. But both of them concluded that all the ideas fall fewer than two main categories which are breadth and depth outreach.

Outreach at a glance means the number of clients served (Kereta, 2007). But, Meyer (2002) cited in Kereta (2007) noted that outreach is multidimensional concept. Meyer (2002) stated that in order to measure outreach we need to look in to different dimensions.

"The first is simply the number of persons now served that were previously denied access to formal financial services". Usually these persons will be the poor because they cannot provide the collateral required for accessing formal loans, are perceived as being too risky to serve, and impose high transaction costs on financial institutions because of the small size of their financial activities and transactions. Women often face greater problems than men in accessing financial services so number of women served is often measured as another criterion.

Outreach refers to the type of clientele served and the variety of financial services offered (Yaron 1992). Outreach is defined as the ability of an MFI to provide high quality financial services to a large number of clients Lariviere and Martin (1999) cited in Bereket and Rani (2011). Outreach is "a social benefit of microfinance" aiming at improving the well being of the poor (Schreiner 2002).

Outreach or coverage measures the scale and depth of penetration of services (extent of services and number of clients in certain categories or areas) by providers of financial services to a targeted clientele–generally the poor. Rural outreach measures the penetration of these services in rural areas (Turto, 2008). Growth or outreach is "a hybrid measure that assesses the extent to which an MFI has succeeded in reaching its target clients and the degree to which the MFI has met the demand of clients for financial services" (Yaron, 1992). The indicators of outreach are

the depth (types of clients reached and level of poverty) and breadth of outreach (number of clients served) (Yaron, 1992). Thus, growth of the microfinance institutions involves: (i) a permanent increase in the size, scale, and complexity in activities and various results being achieved by MFIs overtime.

2.1.6. Measures of Outreach

According to Schreiner (2002), there are six aspects of outreach:

1. Worth to clients: Worth of outreach to clients is defined as their willingness to pay. Worth hinges on the terms of the financial contract and on the tastes, constraints, and opportunities of clients. He takes as example dimensions of a loan include the amount disbursed, the term to maturity, and the size of the installment. For deposits, worth increases with the interest rate and as the contract is less restrictive, for example when minimum balances are low and when withdrawals are convenient and unlimited. Microfinance improves the welfare of the poor even if it does not increase their profits, so the increase in profits is just a lower bound on total worth. For example, savings services may buffer shocks, and loans may fund life-cycle events such as weddings or funerals.

It is difficult to measure worth to clients, in part because worth depends on the subjective gain that a client gets from a financial contract and in part because it is difficult to know what would have happened in the absence of microfinance.

2. Cost to clients: Cost of outreach to clients is the sum of price costs and transaction costs. Price costs are direct cash payments for interest and fees. Price costs are revenue for the microfinance organization. Transaction costs are non-price costs for both non-cash opportunity

costs such as the time to apply for a loan and indirect cash expenses for such things as transport, documents, food, and taxes needed to use a financial contract.

3. Depth: Depth of outreach is the value that society attaches to the net gain of a given client. In welfare theory, depth is the weight of a client in the social-welfare function. If society has a preference for the poor, then poverty is a good proxy for depth.

The most common proxy for depth is loan size. The size of a loan, however, has five dimensions. Although most analysts look only at the amount disbursed, size may also be seen as the term to maturity, the amount of installment, or the time between installments. The best measure of size is the average amount outstanding in terms of dollar-years of borrowed purchasing power.

4. Breadth: Breadth of outreach is the number of clients. Breadth matters because of budget constraints; the wants and needs of the poor exceed the resources earmarked for them.

5. Length: Length of outreach is the time frame of the supply of microfinance. If society cares about the welfare of the poor both now and in the future, then length matters.

6. Scope: Scope of outreach is the number of types of financial contracts supplied. Scope between products might mean both loans and savings services. Scope within a product might mean loans to both groups and individuals.

In sum, depth is the social value of net gain, where net gain is worth to clients minus cost to clients. Breadth is number of clients, length is years of service, and scope is types of contracts. The social benefit of the outreach of a microfinance organization is net gain weighted by depth,

summed across breadth of clients and across scope of contracts, and summed and discounted through length of time.

Breadth outreach is defined as the number of people who get financial services from MFIs. Conning (cited by Okumu, 2007) and Lafourcade et al (2005) explained that, outreach of microfinance is extension of financial services to wider population. Obviously by means of these ideas, it implies that increase in outreach in SACCOs is measured by increase in number of active members along with financial services. According to Hulme and Musley any description in MFIs should not exclude poor. Therefore depth of outreach is all about how it reaches the poorest of poor.

Outreach can be measured by (i) the value and number of loans extended, (ii) the value and number of savings accounts, (iii) the types of financial services offered by the rural financial institutions (RFI), (iv) the number of branches and village post/units, (v) the percentage of total rural population served, (vi) the real annual growth of RFI assets over recent years, and (vii) women's' participation (Yaron 1992)

Depth of outreach is the value that society attached to the net gain of a given client (Schreiner 2002). The loan size is usually taken as a proxy for the depth of outreach (Bhatt and Tang 2001; Cull et al. 2007; Schreiner 2002; Lensink 2008). The assumption is that the smaller the loan size, the deeper the outreach, or the poorer the client the smaller the amounts or shorter times, indicate better depth. Accordingly, it is believed that poorest clients are served if the majorities are female and the average loan size is smaller (Bhatt and Tang 2001). An alternative proxy to the

depth of outreach of microfinance is the percentage of women borrowers. The social performance task force (SPTF) (2009) report showed that women outreach is considered as an important indicator in the various social performance measurement and assessment tools used (cited Bereket and Rani, 2011).

Breadth of outreach simply involves the number of poor people reached by MFI and is measured as the total number of active borrowers. It can also be assessed in relation to the increase in branch network and staff hired over time (Bereket and Rani 2011).

2.2. Empirical review

SACCO's are formed with sole purpose of improving member's welfare thorough returns on savings and loans facilities among other products. SACCO's advance loans to members at relatively lower interest rates compared to other financial institutions. Additionally, SACCO's reach clients in rural and or poor areas which are un-entered to by banking institutions. This makes SACCO's are more attractive to customers as the preferred financial institutions (Osoti 2014)

Mohammed (2011) conducted a research entitled financing strategies, financial sustainability and outreach of SACCOs in Uganda and indicated that there is a significant positive relationship between the financing strategies and the outreach of SACCOs. Similarly, the results indicate a positive relationship between the components of financing strategies with outreach i.e. Debt financing strategies and equity financing strategies. In other words, if a firm properly structure its financial strategies such as having clear equity owners, and professional management of

financial constraints, it will result into improved outreach in terms depth and breadth which can be reflected in the firm's ability to reach out to the poorest members of the society and to also be in a position to avail loans whenever needed by its clients.

Kifle (2011) conducted a research entitled Management of Savings and Credit Cooperatives from the Perspective of Outreach and Sustainability: Evidence from Southern Tigrai of Ethiopia and concluded that There is a substantial growth in outreach and improvement of operational Self-Sufficiency and grassroots and member-owned financial institutions called the saving and credit cooperatives were able to mobilize huge financial resources and to provide credit and savings services to a large mass base at a standard compared to that of formal financial institutions.

Kifle (2012) also conducted a research entitled The Impact of Savings and Credit Cooperatives in Ofla Wereda Tigray Region of Ethiopia. The study examined the Pearson test used to determine correlations between income as well as profit and the independent variables. Only four variables deserve attention (seniority, saving, loan size, and number of times loan availed). The study comes out there is significant Positive correlation have been observed between seniority, saving, size of loan, number of times loan availed and post income of the respondents. Similarly for profit, there is significant and positive correlation between seniority, the size of loan and number of times loan availed and profit from economic activities while the variable saving had significant negative correlation with the profit The study also came out with a range of reasons in response to the question 'why have non-members not joined the SACCO?. Nonmembers stated that no perceived benefits, lack of information and high interest on loan are the critical problems of SACCO.

Mwangi and Wanjau (2013), while looking into the role of SACCOs in the growth of youth entrepreneurship in Kenya investigated whether access to finance, products and services and entrepreneurship education offered by SACCO's influence growth of youth entrepreneurship. The study used a descriptive research design where the target population was SACCO'S targeting youth owned enterprises. The study adopted a census involving all SACCOs targeting youth entrepreneurs within the Nairobi County and they indicated that there was a moderate positive relationship between enterprise growth and access to finance. Thus, an increase in access to finance by SACCOs would lead to increase in growth of youth entrepreneurship. Their findings also indicated that there was a weak positive relationship between enterprise growth and service and product provision by SACCOs hence an increase in the quality of service and product provision by SACCOs would lead to increase in growth of youth entrepreneurship.

Different literatures have mentioned ways of measuring outreach in various ways. Magali (2013) conducted a research on SACCO's Sustainability in Tanzania. The researcher applied qualitative, descriptive and two separate multivariate regression models to analyze the outreach and sustainability of the rural SACCOS in Tanzania. The outreach model is measured by the logarithm of average loan size (depth). The results from the regression equation show that cost per borrower, Operational Self Sustainability and savings and deposits to total assets significantly influence the outreach, measured by log average loan size. The findings further show that the cost per borrower influence outreach positively, implying that in order to reach rural SACCOS to the large number of clients, including the women borrowers and the very poor, it has to incur high costs. Also, he showed that the outreach increases with the increase of financial performance measured by OSS. The findings also show that sustainability increases as

the average loan size increases, indicating that, it is the large size of loans which makes the rural SACCOS sustainable or vice versa.

According to Hulme and Musley (1996), in their assessment on finance against poverty which is conducted in Bangladish, Bolivia, India, Indonesia, Kenya, Malawi and Sri Lanka without the poor the supposed MFI is no longer different from a bank. Their argument is that outreach should not be measured by just total number of clients but it should rather be based on the number of poor clients. Besides, according to Ledgerwood (1999) the number of borrowers or clients as a measure of outreach considers only the total number of clients served from various products of MFIs without their relative level of poverty. Thus, average loan size has been used as a proxy measure of depth of outreach using relative level of poverty.

In addition Ndiege, Haule and Kazungu (2013), described outreach is treated as dependent variable using two proxies which are number of members of SACCOs and average credits as breadth and depth respectively. These proxies are the common ways of describing outreach in microfinance (Nyamsogoro, 2010; Temu & Ishengoma, 2010; and Okumu, 2007). Simillarly Ndiege, Haule and Kazungu (2013), have used both two proxies together. They mentioned that the reason why they used together is increase understanding of the nature of outreach and increase accuracy in making conclusion.

Ndiege, Haule and Kazungu (2013) take a source of funding as an important factor of outreach in SACCOs. This component mostly has been used in measuring sustainability and then researchers make links between outreach and sustainability of microfinance. According to the principles and

objectives of SACCOs, it is important to understand in specific the direct link between the sources of funding and the outreach because they (SACCOS) are on the whole formed to promote both savings and provision of loans as compared to other microfinance which mostly focus on provision of credits/loans.

Ndiege, Haule and Kazungu (2013) examined the relationship between sources of funds and outreach of SACCOs in Tanzania with specific attentions on external source of fund and developed panel data regression model based on assumption that there is positive relationship between outreach and sources of funds in SACCOs. The logic is that increases of funds in SACCOs results to breadth outreach because more people join cooperatives following the availability of enough credits. Similarly these increments results to increase in depth outreach because they inflate loan portfolio whereby people are able to access more loans. If percentage change in funds exceeds average loan/credits size then it is a growth of outreach and vice versa (Okumu, 2007).

Demand deposits and savings are summed and used as total internal sources of funds in the SACCOs. Increase in number of SACCOs as financial institutions increases access to financial services. Moreover, this can be interpreted that the older the SACCOs the deeper the outreach and/or the membership in SACCOs increases with time. Growth of loan portfolio is important in growth of breadth outreach (Ndiege, Haule and Kazungu 2013).

2.2.1. Factors Affecting the Outreach of SACCOs

Kifle (2011) identified some of the challenges facing SACCOs in his research entitled management of savings and credit cooperatives from the perspective of outreach and sustainability: Evidence from Southern Tigrai of Ethiopia based on information obtained / data collected through interview schedule and key informants in the study area. According to this researcher, lack of awareness about the benefits of the services provided by SACCOs in mobilizing savings and poor saving culture, weak organizational arrangement and governance problems

According to Kifle (2011) SACCOs are managed and run by elected committee members since voluntary and member-driven cooperatives are considered to be key tools to build economies of scale, improve management skills and change attitudes. The committees' ability to manage these financial cooperatives depends on the members' willingness, commitment, literacy level and the level of voluntarism. The management committees' commitment, dedication and management style can significantly affect the growth and development of SACCOs. In addition, personal quality is required from each committee member in terms of personal integrity, competence and commitment.

Policy and Regulatory Environment: lack of a separate financial cooperatives law to promote cooperative banking is a major constraint to the development of SACCOs. Low Capital Base: SACCOs are preoccupied with facilitating access to finance for their members only rather than working towards developing savings based financial cooperatives with business concept. Weak institutional capacity, lack of differentiated products: he observed that there is no clearly

articulated and defined financial product development and revision policy within the Ethiopian SACCOs. Inappropriate loan security requirements: The personal guarantor requirement inhibits some members from borrowing because a given guarantor has to be a non-borrower and cannot borrow until his obligation as guarantor is settled (transferred), getting a guarantor is difficult and threats from other Financial Institutions (MFIs) (Kifle 2011).

Zerfeshewa B. (2010), identified in her research entitled determinants of saving and credit cooperatives (SACCOS) operational performance in Gondar town, Ethiopia by using primary and secondary data collection method for sampled SACCOS in Gonder area mentioned that the challenges of SACCOS are Governance weakness :SACCOs are usually governed by a volunteer board of directors elected by the membership i.e. they are not professional persons; small, young SACCOs are also often staffed entirely by volunteers., Inadequate regulation and supervision, which means Competent external regulation and supervision can identify, avoid and resolve many common problems experienced by SACCOs and credit unions, Limited Menu of Products: greater variety of products, such as housing loans and use better tools to assess and manage loan risk., Damage done by external credit, etc. that supports Kifle (2011).

In addition to this Muluneh Alemu (2012) in his article Financial Inclusion Buttress incomes, assets, reduce vulnerability to shocks, mentioned as SACCOS faced various challenges, which undermine their institutional and financial sustainability in Ethiopia. The major challenges include inadequate legal, regulatory and supervisory framework: SACCOS as financial cooperatives offering near banking products and services lack a specialized legal, regulatory and supervisory framework, Low capital base: Members' capital subscription, registration fees,

regular and voluntary savings are the principal sources of the primary society's capital base and they are very small to support the lending programs and ensure sustainability of SACCOs, Weak governance: SACCOS are unable to employ high caliber management staff and the burden of due diligence is left to SACCO members who may have limited education on financial management and cooperatives, and Poor infrastructure facilities: Most of the RUSACCOs have no adequate infrastructure facilities including office space and office facilities necessary to run their operations.

2.3. Research Gap

As mentioned above there were various studies conducted on management, impact, role, financial services provided, source of fund, influence, contribution, effect, credit risk, sustainability etc. of SACCO's. Those mentioned studies affects outreach of the SACCO's directly or indirectly. Because it is difficult to understand its effects, benefits and to analyze without understanding there outreach regarding breadth and depth of the SACCOS. Therefore it is important and helpful to know and understand the determinants of SACCO's outreach. As a result this study is intended to conduct a study on the Determinants of Saving and credit cooperatives (SACCOS) outreach in Addis Ababa.

2.4. Conceptual framework

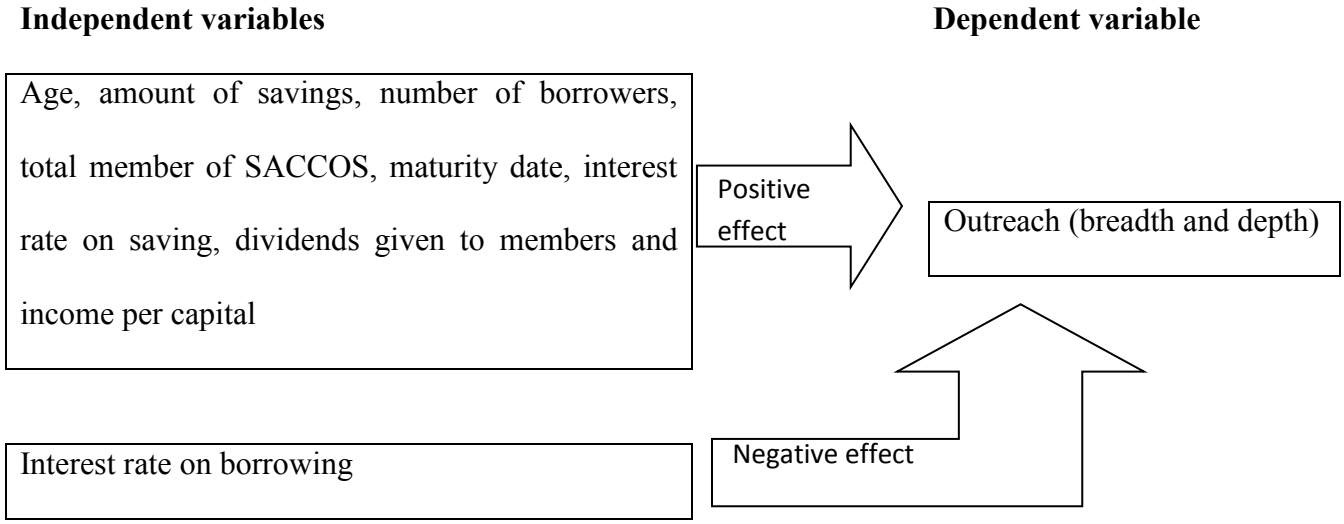


Figure 2.1: conceptual frame work

Source: Owen computation

From the above diagram researcher tried to demonstrate that there is a positive relationship between Age, amount of savings, number of borrowers, total member of SACCOS, maturity date, interest rate on saving, dividends given to members, income per capital and outreach of SACCO's. And in addition it shows that there is negative relationship between interest rate on borrowing and outreach of SACCO's.

CHAPTER THREE

3. METHODOLOGY OF THE STUDY

This chapter describes the methodology followed and used to achieve the aforementioned objectives of the study. Overall, the chapter has the following set; research approach, research design, target population, sample and sampling technique, Source of Data and Method of Collection, method of data analysis, Model specification, Variables Definition and Measurements of the study.

3.1. Research Approach

For this study as mentioned in specific objective, researcher needs to show the effects and relationships of determinant factors on outreach of SACCO's. Therefore for this study quantitative research approach was used.

Quantitative approach is one in which the investigator primarily uses post positivist claims for developing knowledge (i.e., cause and effect thinking, reduction to specific variables and hypotheses and questions, use of measurement and observation, and the test of theories), employs strategies of inquiry such as experiments and surveys, and collects data on predetermined instruments that yield statistical data (Creswell, J W. 2003).

3.2. Research Design

The research followed exploratory research design. Because the main purpose of this study is formulating a problem for more precise investigation. Additionally, exploratory study calls for

the discovery of ideas and insights. The current study intends to find the influencing factors of outreach in SACCOs.

3.3. Target Population

The target population used for the study was saving and credit Cooperatives (SACCOS) in Addis Ababa which are registered under Addis Saving and Credit Cooperative Union (AASCCU). According to AASCCU, Addis Ababa there are 235 SACCOS as of June 2014, which are registered and affiliated members.

3.4. Sample and Sampling Technique

Since, taking all population for the study does not result in efficiency, taking sample is justifiable. It is naturally neither practical nor feasible to study the whole population in most studies. Hence, a set of participants is selected from the population, which is less in number (size) but adequately represents the population from which it is drawn so that true inferences about the population can be made from the results obtained.

To determine the sample size purposive sampling method was used for this study. The reason for using this method of sampling is that unavailability of five year successive audited data, there are some SACCOS that don't have full data continuously done for five years, and in addition there are some SACCOS that doesn't complete five years after their establishment. Therefore in order to avoid those problems purposive sampling method was used. Thus, among 235 SACCOs who are members of AASCCU, based on Carvalho, J. (1984) thirty two (32) SACCO's data was collected from respective districts of Addis Ababa city.

Table3.1 Sample size determination

Population size	Small	Medium	Large
51-90	5	13	20
91-150	8	20	32
151-280	13	32	50
281-500	20	50	80
501-1200	32	80	125
1201-3200	50	125	200
3201-10000	80	200	315
10,001-35,000	125	315	500
35001-150,000	200	500	800

Source : Carvalho (1984)

Since the natures and type of products SACCOs in Addis Ababa provided to their members are homogeneous, the researcher believed that the sample size represents the target population. Homogeneity in a population means that the members of the population are similar on the characteristic under study. In addition L. R. Gay (1987) also suggests 10% of large populations and 20% of small populations as minimums. Using Gay's suggestion, the sample size represents 14 % of the population which is greater than 10% of the population.

3.5. Source of Data and Method of Collection

The study used secondary data from SACCOS in Addis Ababa. The secondary data is collected from the audited financial statements, annual reports and magazines of the respective cooperatives included in the sample in addition letters which respective SACCOs sent to their respective district was used.

3.6. Method of Data Analysis

After collecting the data and all necessary information is gathered, the data was edited, coded, organized and fed into EViews software where panel regression analysis and Pearson correlation analysis is used. The panel data parameters can be estimated using fixed effect or random regression models (Gujarati 2004). To choose between the two models, whether to use fixed effects or random effects both model two models was tested using Hausman test. Panel regression analysis was used to identify determinants of outreach. Correlation analysis is important to analyze the relationship between the determinants and outreach of SACCOS and how significant, direction and strength of the relationship. Additionally, descriptive statistics like mean, median and standard deviation was calculated for necessary inferences.

3.7. Model specification, Variables Definition and Measurements

Model Specification

The researcher used panel data regression model because Panel data have the dimensions of both time series and cross-sections (Chris Brooks 2008), where μit is error terms, representing variables which are not included in the models, βi are coefficients of independent variables and t means time (in this case year). To examine determinants of SACCO's outreach, the researcher used the random effect model or fixed effects model after testing the validity of the assumption of the models by using the Hausman test.

Therefore to conduct the study the researcher used two proxies. To measure the breadth of outreach the dependent variable is number of SACCO's members (MEMB) and to measure the depth of outreach average loan outstanding (LOS) is used. As a result to conduct the study the following model is formulated.

$LOSit = \beta 1 + \beta 2ASACOit + \beta 3SAVit + \beta 4LISit + \beta 5LIBit + \beta 6MDit + \beta 7DIVDit + \beta 8IPCit + \mu it$

$MEMBit = \beta 1 + \beta 2ASACOit + \beta 3SAVit + \beta 4LISit + \beta 5LIBit + \beta 6MDit + \beta 7DIVDit + \beta 8IPCit + \mu it$

Where

LOS= loan outstanding

MEMB= Number of SACCOS members

βi are coefficients of independent or explanatory variables

ASACO = Age of saving and credit cooperatives

SAV=Saving

LIS=Level of interest rate on saving

LIB=Level of interest rate on borrowing

MD= Maturity date

DIV= Dividend paid

IPC= Income per capital

μit = error terms

Multiple regression models is used to estimate the parameters since it has more than one independent variable. Multiple Regressions is a statistical tool that allows you to examine how multiple independent variables are related to a dependent variable. Once you have identified how these multiple variables relate to your dependent variable, you can take information about all of the independent variables and use it to make much more powerful and accurate predictions about why things are the way they are (Chris Brooks 2008).

3.8. Variable's Definition and Measurements

3.8.1. Dependent variable

As mentioned above, most of the literatures supported, outreach is treated as dependent variable using two proxies which are number of members of SACCOs (MEMB) and loan size as breadth and depth respectively.

According to Ledgerwood (1999) the number of borrowers or clients as a measure of outreach considers only the total number of clients served from various products of MFIs without their relative level of poverty. Thus, average loan size has been used as a proxy measure of depth of outreach using relative level of poverty.

Ndiege, Haule and Kazungu (2013) used number of members (MEMB) and average credits (AVC) as dependent variables for breadth and depth of outreach in the first and second model by using the same independent variables for both models.

Depth of outreach has received more attention from all quarters who are concerned about the overall social outreach of microfinance, including policy makers. From the point of providing poor people with access to credit, breadth of outreach can be thought of as measuring the quantity of microcredit while depth of outreach measures the quality of microcredit. The major limitation of using depth of outreach is a lack of information in measuring the level of poverty of the recipients of credit. Ideally, one would like to use the income level or wealth level of the individual borrowers to measure the depth of outreach. Since such information on income or wealth is usually not collected by an MFI, and it is not revealed (due to privacy concerns) by the

MFI when they do collect such information, data on income or wealth is not available to researchers (Quayes S. 2012)

Outreach can be measured by the value and number of loans extended (Yaron 1992). Therefore to conduct the study since there is two models the researcher used multiple regression analysis. Natural logarithm of loan size and the trend of number of members who join SACCOS during the year are taken as a proxy to measure the outreach of SACCOs. Since the objective of the study is to examine the determinants of SACCO's outreach, it is believed that it has good test if both models used simultaneously. In this study loan size is measured in terms of natural logarithm of total loan outstanding during the year and MEMB is measured in terms of number of people who join SACCOs during the year and natural logarithm is taken.

Table3.2: Indicators to assess outreach and financial performance of MFIs

Indicators	**Measure / definition**
Borrowers	Number of active borrowers with loans outstanding
Percentage of Women Borrowers	Number of women borrowers/number of borrowers
Gross loan portfolio	Gross loan portfolio
Average Loan Balance per Borrower	GLP/number of borrowers
Savers	Number of savers
Savings	Total value of passbook and time deposit accounts
Average Savings Balance per Saver	Savings/Number of savers

Source; Lafourcade, Isern, Mwangi, and Brown, 2005

3.8.2. Independent Variables

Ndiege, Haule and Kazungu (2013) used credits per assets (CRAR), external source of funds (EQT), internal sources of funds (LIB) and external-internal sources ratio (LER), age of SACCOS (YEAR) and number of SACCOS (SACC) as independent variables.

For the independent variables the researcher used Age of SACCOS (Year), amount of saving (SAV), level of interest rate on saving (LIS), level of interest rate on borrowing (LIB), maturity date or maximum duration to repay the loan (MD), dividend paid on saving account (DIVD) and income per capital (IPC).

3.8.2.1. Age of SACCO's

The model is based on there is a positive relationship between age of SACCOs and outreach according to Nyamsogoro (2010), and Okumu (2007), outreach in MFIs is deeper when microfinance is older, it has big assets (size), located in rural areas, has low cost of outreach (interest charged on loan) and lend in groups. The age of SACCOs is measured by number of years after the establishment of the SACCO.

3.8.2.2. Amount of Saving

In addition it is assumed that there is a positive relationship between amount of saving (SAV) and outreach of SACCOS. Okumu (2007) clarified that savings has been an important microfinance product which has significant effect on outreach in three grounds; firstly he said savings is an important financial service required by poor people, secondly it is source of cheap loans to member which is basically required by low income people, and lastly it has been considered the main component in loan portfolio. The logic is that increases of funds in SACCOs results to increase loan size and breadth for outreach because more people join cooperatives following the availability of enough credits. Similarly these increments results to increase in depth outreach because they inflate loan portfolio whereby people are able to access more loans (Ndiege, Haule and Kazungu, 2013)

Mwakajumilo (2011), underlined savings mobilization as an important indicator of measuring outreach as it is one indicator of the empowerment of the poor and capital accumulation which is important for poverty eradication.

As saving is the total value of passbook and time deposit accounts, for this study amount of saving is measured by adding compulsory and voluntary saving together and natural logarithm of total amount of saving is taken for respective years.

3.8.2.3. Level of interest Rate on saving (LIS)

In addition there are other assumptions that the researcher used as a determinants of SACCO's outreach. The first one is Level of interest Rate on saving (LIS). The logic behind this is if the clients get high amount of interest on their saving, they are attracted to save and it increases the number of members in breadth and also as the number of members increase it appreciates the SACCOs to lend for more number of members for depth of outreach. Nwachukwu and Odigie (2009) estimated Error-Correction model to find out the relationship between interest rate and savings. Their result showed that savings rate rises with real interest rate on bank deposits. Thus, a more favorable treatment of real interest rate has a positive implication on savings and capital accumulation as well as long run growth. A cut in interest rates will reduce the rewards for savings which tend to discourage savings. Level of interest rate is taken from respective SACCO's at what percent they pay for members on their saving. Level of interest rate is measured in terms of percentage.

3.8.2.4. Level of interest rate on borrowing (LIB)

The second assumption is level of interest rate on borrowing (LIB) Campion, A., Ekka, R. K., & Wenner, M. (2010) when they studied Interest Rates and Implications for Microfinance in Latin

America and the Caribbean; they mentioned that excessively high interest rates can attract negative publicity. Cull.R, Kunt.A.D and Morduch.J (2006) in their study on Financial Performance and Outreach: A Global Analysis of Leading Micro banks also mentioned that there is a negative association between charging higher interest rates and having a large customer base. And also they mentioned that overall profitability falls as interest rates rise beyond a point. This result is consistent with falling demand for credit (and thus diminishing scale economies) at high interest rates. This implies that if interest rate charged on borrowing is less than what formal financial institutions charged customers are attracted to be a member of SACCOs as it minimizes there cost and vies versa. Therefore the level of interest rate on borrowing has a negative relationship with outreach. Level of interest rate on borrowing is also measured in terms of percentage.

3.8.2.5. Maturity Date (MD) or maximum duration to repay the loan

The third assumption is the level of maximum duration to repay the loan (MD). The researcher assumed that there is a positive relationship between maturity date and SACCO's outreach. The logic behind this assumption is, as the duration to repay the loan increases customers are attracted, because they are charged less amount for their monthly payment on the loan and also time value of money is also assumed in this case. Maturity date is measured in terms of years taken to expire for repayment of the loan.

3.8.2.6. Dividend paid (DIVD)

The fourth assumption is Dividend paid (DIVD) at the end of the year. This assumption is what also makes SACCOs odd from other financial services; because members get certain amount of dividend paid to them on the amount they borrowed themselves. The logic behind this is if the members are paid high amount of dividend it attracts more number of members and it has a

contribution to breadth and depth. Therefore it is assumed that dividend paid has a positive relationship with SACCOS. In this case dividend is measured by dividing the total dividend paid by the number of members. The reason why it is divided by the total number of members is all SACCO members are paid whether they borrow or not.

Piprek G. (2007) conducted a case study entitled Linking with Savings and Credit Cooperatives (SACCOs) to expand financial access in rural areas: a case study of CRDB Bank in Tanzania, unlike the pricing strategies of traditional SACCO's pricing guidelines by micro finance companies results in strong profits, which in turns enable the payment of dividends to investors (members). This further serves to attract new investors while also setting the SACCOs on the path to financial sustainability.

In addition Malombe G.M (2011), described that at the end of the financial year if the performance of SACCOs has been good, most members will increase their monthly contributions so as to enjoy higher dividends. The reverse would be true in the subsequent years where members would decrease their savings if dividend payout is reduced.

Kifle (2011) also mentioned that dividend obtained from membership contributed their own share in attracting new members. A similar study by Mitchell Group, Inc (2005) reported: "The payment of patronage dividends to farmers, which was set until recently at 70 percent of the net surplus of a Cooperative or Union, has been the most important incentive for farmers to join cooperatives."

3.8.2.7. Income per capital

In this study income per capital is used as a control variable. Modigliani (1970) found in a comprehensive study of the determinants of saving rates in the Convention on the Organisation for Economic Co-operation and Development (OECD) countries in the period from the 1960s to the 198Os, Bosworth (1993) found that the growth rate of income was the most important determinant of saving.

Carroll C.D and Weil D.N. (1994), Used data from three household surveys, the Panel Study of Income Dynamics (PSID), the 1983 Survey of Consumer Finances (SCF), and the 1961-62 Consumer Expenditure Survey (CEX) and find that the level of saving or wealth is positively related to the level of permanent income, but even controlling for the effect of permanent income on saving they generally find that households with predictably greater income growth save more.

Mousavi N, Monjazeb M. (2014) evaluates the impact of growth rate of real per capita GDP on the saving rate of Iran and a few selected developed and developing countries in the interval 1965 to 2010 which was analyzed by panel data method. After presenting of research studies in this field the results show the positive effects of the lags saving rate and the growth rate of real per capita GDP on the saving rate. The results are statistically significant.

Income per capital is measured in terms of nominal gross domestic product divided by total population of the country (NGDP/total population).

The logic assumption behind this is as income per capital of a country increases individual house hold income will increase. As a result individuals are intended to save money. Therefore in case

of SACCO's if individual household income increases they save and as the same time for borrowers loan size will increase.

For this study the researcher summarized definition of variables and its measurements as follows in table 3.3.

Table 3.3: definition of variables and its measurement

Indicators	**Measure / definition**
Loan size	Amount of loan provided to the members and its measurement is natural logarithm
Number of SACCO members (MRMB)	Total number of SACCOs members increment during the year. This is measured by total number of members current year minus base year and natural logarithm is taken.
Age of SACCOS	Number of years after the establishment
Saving	The amount of saving deposited by members (compulsory + voluntary saving) or Total value of passbook and time deposit accounts. It is measured in terms of natural logarithm
Level of interest rate on saving	Level of interest rate that the SACCOS pays for members on their saving in terms of percentage.
Level of interest rate on borrowing	Level of interest rate that the SACCOS charge members on loan provided in terms of percentage.
Dividend	Amount that is distributed to members at end of the year and it is measured in terms of natural logarithm
Maturity date	Duration taken to repay fully the loan and it is measured in terms of year.
Income per capital	Nominal GDP of the country/total population

Source: own computation

CHAPTER FOUR

4. DATA PRESENTATION AND ANALYSIS

This section of the paper presents and examines the data collected from secondary sources and shows the results of the regression that determines outreach of SACCO's in this study. Annual balanced panel data is used where all the variables are observed for each cross-section and each time period. The study has a time series segment spanning from the period 2010 up to 2014 and a cross section segment which considered thirty two SACCOs. This chapter is categorized in to four. First the Diagnostic tests of the data are tested. On the second section descriptive statistics are analyzed on the third section correlation analysis are discussed and in the last section based on the regression analysis hypothesis are tested and discussed.

With panel/cross sectional time series data, the most commonly estimated models are probably fixed effects and random effects models. The first issue is the choice between fixed effects (FE) and a random effects (RE) model based on the Hausman test. According to this test null hypothesis says that random effects model is appropriate than the fixed effects model (Brooks, 2008, p.509). As indicated by the Hausman test on equation table below the difference in coefficients between Fixed Effect and Random Effect is systematic, providing evidence in that random effect is appropriate. The *p*-value for the test is greater than 5%, indicating that the random effects model is appropriate and that the fixed effects specification is not appropriate, since the null hypothesis is accepted at 5% significant level. The null hypothesis of the Hausman test is that both estimators are consistent and thus corr(xit ci) =0. We cannot reject the null on a 5% significance level for both tests, and therefore we have that the unobserved characteristics

and the explanatory variables are uncorrelated**.** Therefore researcher concluded that the random effects estimator is the most efficient to use in this case.

Table 4.1: Correlated Random Effects - Hausman Test for loan size

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	3.982074	5	0.5520

Source; Computed from Eviews result

The above tables 4.1 result revels that since the probability of the result is greater than 5% the null hypothesis is accepted for random effect and fixed effect is not appropriate.

Table 4.2: Correlated Random Effects - Hausman Test for Member

Correlated Random Effects - Hausman Test

Equation: EQ01

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	4.571849	5	0.4703

Source; Computed from Eviews result

The above tables 4.2 result also indicates that since the probability of the result is greater than 5% the null hypothesis is accepted for random effect and fixed effect is not appropriate.

4.1. Diagnostic tests of the data set based on the assumptions

There are five assumptions relating to the classical linear regression model (CLRM) to be tested. These were required to show that the estimation technique, ordinary least squares (OLS), had a number of desirable properties, so that hypothesis tests regarding the coefficient estimates could validly be conducted.

4.1.1. The average value of the errors is zero: E(ut) = 0

The first assumption required is that the average value of the errors is zero. In fact, if a constant term is included in the regression equation, this assumption will never be violated. So that in this model a constant term is included. As a result this assumption is not violated.

4.1.2. Heteroscedasticity Test: var(ut) = $\sigma^2 < \infty$

It has been assumed thus far that the variance of the errors is constant, σ^2 -- this is known as the assumption of homoscedasticity. If the errors do not have a constant variance, they are said to be heteroscedastic. To check this assumption White test was conducted for the models.

Table 4.3: Heteroskedasticity Test for LOS

Heteroskedasticity Test: White

F-statistic	1.973597	Prob. F(33,126)	0.2048*
Obs*R-squared	54.52134	Prob. Chi-Square(33)	0.2704*
Scaled explained SS	41.90158	Prob. Chi-Square(33)	0.6343*

Source; Computed from Eviews result

*Note: * indicates that it is not rejected*

The above table 4.3 indicated that, both $\chi 2$ and F-test versions fail to reject the null hypothesis even at 10% significant level, this indicates that the variance of the errors is constant (i.e there is no the problem of homoscedasticity in the model.

Table 4.4: Heteroskedasticity Test for MEMB

Heteroskedasticity Test: White

F-statistic	6.719689	Prob. F(42,117)	0.2231*
Obs*R-squared	113.1094	Prob. Chi-Square(42)	0.3312*
Scaled explained SS	58.00122	Prob. Chi-Square(42)	0.6511*

Source; Computed from Eviews result

*Note: * indicates that it is not rejected*

The above table 4.4 also indicated that, both $\chi 2$ and F-test versions fail to reject the null hypothesis even at 10% significant level, this indicates that the variance of the errors is constant (i.e there is no problem of homoscedasticity in the model.

4.1.3. Test for Autocorrelation

Assumption 3 that is made of the CLRM's disturbance terms is that the covariance between the error terms over time (or cross-sectionally, for that type of data) is zero. In other words, it is assumed that the errors are uncorrelated with one another. If the errors are not uncorrelated with one another, it would be stated that they are 'autocorrelated' or that they are 'serially correlated'.

Durbin--Watson (DW) is a test for first order autocorrelation i.e. it tests only for a relationship between an error and its immediately previous value.

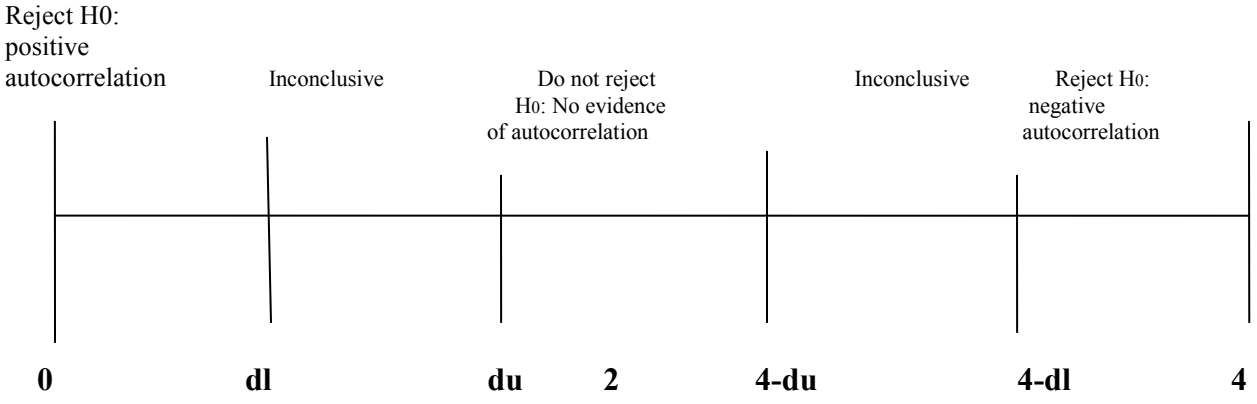
DW has two critical values: an upper critical value (dU) and a lower critical value (dL), and there is also an intermediate region where the null hypothesis of no autocorrelation can neither be

rejected nor not rejected! The rejection, non-rejection, and inconclusive regions are shown on the number line in figure.

So, to reiterate, the null hypothesis is rejected and the existence of positive autocorrelation presumed if DW is less than the lower critical value; the null hypothesis is rejected and the existence of negative autocorrelation presumed if DW is greater than 4 minus the lower critical value; the null hypothesis is not rejected and no significant residual autocorrelation is presumed if DW is between the upper and 4 minus the upper limits.

As per this test the values of Durbin--Watson for both models, the null hypothesis is not autocorrelated since DW from the regression is 1.80 and 1.78 which is between the upper and 4 minus the upper limits by using DW table.

Figure 4.1: DW autocorrelation test limit



4.1.4. Multicollinearity Test

An implicit assumption that is made when using the OLS estimation method is that the explanatory variables are not correlated with one another. It helps to identify the correlation

between explanatory variables and to avoid double effect of independent variable from the model. In other words, multicollinearity describes the relationship among explanatory variables. A problem occurs when the explanatory variables are very highly correlated with each other, and this problem is known as multicollinearity (Chris Brooks 2008).

As indicated on the correlation matrix almost all correlations that have occurred among explanatory variables are weak correlations; this indicates there is no the existence of multicollinearity problem on the study. Even if, relatively high positive correlation existed between saving and dividend (0.79) the researcher ignored this near multicollinearity problem. Because Cooper and Schindler (2009) and Hailer et al (2006) suggested that multicollinearity problem should be corrected when the correlation extent to be above 0.8 and 0.9 respectively.

From table 4.5 we can see that there is a positive correlation between saving and dividend (0.79). This means as saving increases SACCO's number of member increases and at the same time loan size increases. As result SACCO's loan size increases since SACCO's income is from the interest on borrowing and their dividend also increases.

The result of the study revels that age of SACCO's has a positive relation with amount saving, maturity date, dividend and income per capital. This indicates that as age of SACCO's increases the saving amount increases and affects the other variables positively. In addition age of SACCO's has a negative relationship with level of interest rate on saving and level of interest rate on borrowing. The negative relation with LIB indicates that as the age of SACCO's increase their performance is good and there cost reduce, as result they minimize the interest rate on loan

for members. Similarly the negative relationship with LIS indicates that as age of SACCOS increase they did not increase LIS.

The regression analysis result indicates that amount of saving has a positive relationship with all variables (from table 4.5). Since in case of SACCO's, all members have to save some amount of money in advance to get loan saving has a positive relationship with all other variables

Dividend has a positive relationship with majority of the variables except level of interest rate on borrowing. The negative relationship implies that may be as the LIB increases members are not initiated to be a member and also to borrow and as result loan size decrease that also decreases dividend.

Income per capital has a positive relation with all variables. In addition maturity date for the loan has positive relationship with majority of the variables except level of interest rate on borrowing (LIB).

Table 4.5: Multicollinearity test

Correlation							
	ASACCO	DIVD	IPC	LIB	LIS	MD	SAV
ASACCO	1.000000						
DIVD	0.596506	1.000000					
IPC	0.245171	0.240550	1.000000				
LIB	-0.350417	-0.355766	4.73E-18	1.000000			
LIS	-0.085721	0.224221	0.000000	0.042147	1.000000		
MD	0.490552	0.652436	0.045787	-0.429846	0.235479	1.000000	
SAV	0.535225	0.794478	0.171094	-0.533191	0.161424	0.771452	1.000000

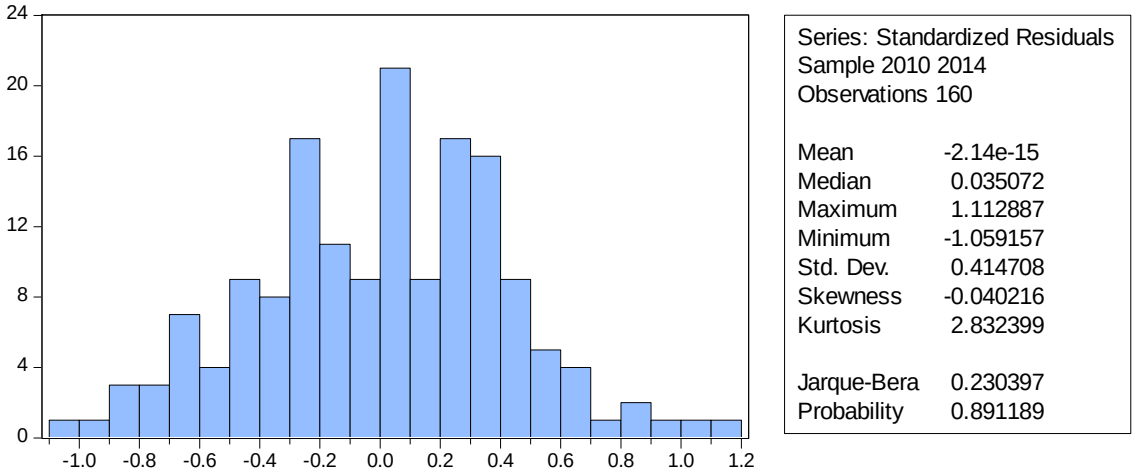
Source; Computed from Eviews result

4.1.5. The disturbances are normally distributed

One of the most commonly applied tests for normality is the Bera--Jarque (hereafter BJ) test. BJ uses the property of a normally distributed random variable that the entire distribution is characterised by the first two moments -- the mean and the variance.

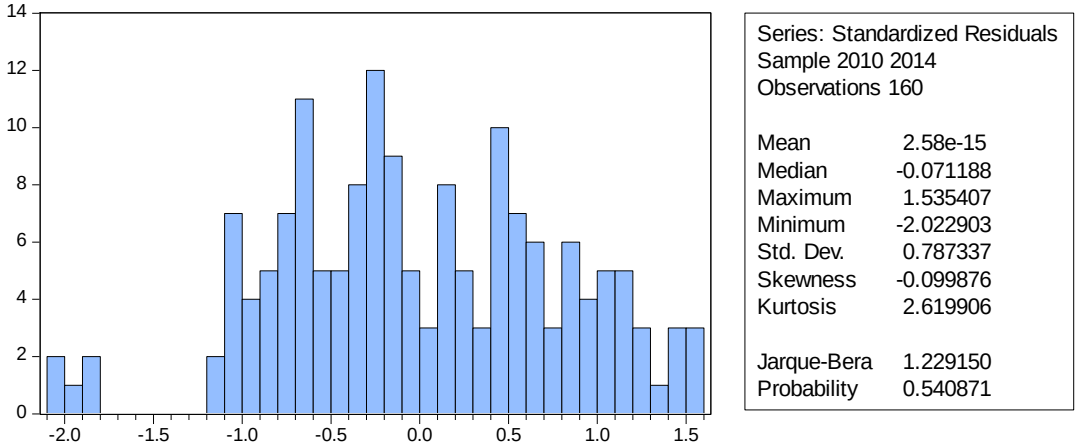
In this case the histogram is bell-shaped and the Bera--Jarque statistic is not significant. Based on the results shown in the p-values is insignificant for both models and the researcher failed to reject the null hypothesis since p-value is greater than 5%, which says the residual value is normally distributed. Therefore, there is no normality problem on the data used for this study.

Figure 4.2: normality test for LOS



Source; Computed from Eviews result

Figure 4.2: normality test for MEMB



Source; Computed from Eviews result

4.1.6. Model misspecification errors

This is another important test to check whether Loan size has linear relation with its determinants or not. To test the stability of parameter, the study conducted the Ramsey stability RESET test Brooks, 2008, p. 176). The null hypothesis of this test says there is linear (stable) relation between the dependant and independent variables.

Table 4.6: Ramsey RESET Test for LOS

Ramsey RESET Test
Equation: UNTITLED
Specification: LOS C AGESACCOS DIVD IPC LIB LIS MD SAV
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	1.031941	151	0.3037
F-statistic	1.064902	(1, 151)	0.3037
Likelihood ratio	1.124412	1	0.2890

Source; Computed from Eviews result

Table 4.6 indicates that since both *F*- statistics and $\chi 2$ versions of the tests is greater than 5% null hypothesis is accepted which means there is no normality problem for LOS.

Table 4.7: Ramsey RESET Test for MEMB

Ramsey RESET Test
Equation: UNTITLED
Specification: MEMB C ASACCO DIVD IPC LIB LIS MD SAV
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	4.319554	151	0.2730
F-statistic	18.65854	(1, 151)	0.2730
Likelihood ratio	18.64128	1	0.2598

Source; Computed from Eviews result

From the above table 4.7 both *F*- statistics and $\chi 2$ versions of the tests are presented and it can be seen that there is no apparent non linearity in the regression equation and so it is concluded that the linear model is appropriate at 10% significant level.

4.2. Descriptive Statistics Result and Discussion

This section discussed the summery statistics of each variables of the study. The variables include the dependent, independent and control variables.

The following table 4.8 reports the mean, standard deviation, median, minimum and maximum of each variable in the sample. The descriptive statistics are presented after checking the normality of the data. Because the presence of non normality (outliers) probably, results in a biased mean and standard deviations when incorporated in the descriptive statistics. They do not only affect the descriptive characteristics but could also deteriorate results from the regression using the OLS technique. Since the tests approved a normal distribution of the data, the possible outliers are not indicated separately.

Table 4.8: descriptive statistics of variables

variables		mean	median	maximum	minimum	St.deviation	No Obs
Dependent variable	LOS	13.57837	13.39654	18.48822	9.431081	1.806754	160
	MEMB	5.525011	5.393462	8.916104	3.583519	1.046459	160
Independent variables	ASACCO	8.400000	7.000000	32.00000	1.000000	5.740949	160
	SAV	14.17486	13.92158	18.72408	10.48114	1.689375	160
	DIVD	9.517294	9.063269	15.12061	0.000000	2.099857	160
	LIS	5.062500	5.000000	5.500000	5.000000	0.242821	160
	LIB	8.781250	8.500000	10.50000	7.000000	1.344319	160
	MD	5.668750	6.000000	12.00000	2.000000	2.564199	160
	IPC	8.970447	9.077888	9.382226	8.471742	0.329683	160

Source: Eviews summery statistics result

Note: los, sav,divd and ipc are taken as natural logarithm and lis, lib and nwm are taken as a percentage.

As stated in the above table 4.8 the outreach measurement i.e. dependent variable (LOS) which is taken in natural logarithm indicates that, the sampled SACCOS have an average positive loan size over the five years. From the total of 160 observations, the mean of loan size equals to 13.58 birr with a minimum of 9.4 birr and a maximum of 18.49 birr respectively and the st.deviation is 1.8 birr. This indicates that they are showing good performance because as we can see the minimum amount provided is 9.4 birr. The other dependent variable is MEMB which is measured in terms of its trends shows that mean for five years is 5.52 with a maximum of 8.9 and minimum of 3.4 and also its st.deviation is 1.04. That implies that in average 6 peoples joined each SACCOS every year. This indicates that there is an increase trend of the MEMB each year which also indicates the SACCOs outreach is increasing each year. In this case since natural logarithm of the member trend is taken, the researcher used decimal numbers. Therefore

in both models the result revels that outreach of SACCOs is increasing positively from time to time.

Regarding the explanatory variables the mean of SACCO's age is 8.4 years with a maximum of 32 years and minimum of 1 year from the sample taken and the standard deviation is 5.74 years that shows there is a large variation. From this the researcher understand most SACCOS are established in 2000s and also SACCOS establishment is also continuing its establishment in Addis Ababa which indicates that the SACCOS establishment is good as it facilitates outreach of financial services for the poor and also for peoples who have no formal financial access.

On average the average saving amount in SACCOS is 14.17 birr with the maximum saving amount of 18.72 birr, minimum of 10.48 birr and the standard deviation is 1.69 birr. This indicates that SACCO's loan size mostly depends on the saving amount. In addition this also indicates that many people are saving their money in SACCOS which has a high contribution to outreach of financial services in Addis Ababa.

On average SACCOS are paying 9.5 birr as a dividend with the maximum of 15.12 birr, minimum of 0 and standard deviation of 2.09 birr. This indicates that SACCO's performance is good but as someone can see there is a year in which SACCOS do not have dividend paid to members. Also regarding level of interest on saving on average they pay is 5.06% with a maximum 5.5 %, minimum is 5% and the standard deviation is 0.24 on deposit. This implies that SACCOS are paying interest rate on deposit which is competitive with commercial banks in Ethiopia and which should be appreciated. Regarding level of interest rate on loan on average SACCOS are charging 8.78% with the maximum of 10.5%, minimum of 7% and standard deviation of 1.34 which is high when compared with level of interest on saving.

The other variable taken in this study is maturity date or maximum duration to repay the loan of SACCOS. Regarding this variable to repay and finish the loan it takes an average of 1.67 years with a maximum of 12 years, minimum of 2 years and the standard deviation is 2.56 years.

Finally the mean of income per capital for five years shows that 8.97 birr with the maximum of 9.38 birr, minimum of 8.47 birr and the standard deviation is 0.33 birr. From this someone can understand that the variation of income per capital is low. As indicated in the regression analysis in the following section income per capital has positive contribution to the loan size.

4.3. Correlation analysis of the study variables

This section of the study presents the results and discussions of the Pearson correlation analysis. To identify the relationship among the independent variables and SACCOs outreach Pearson correlation coefficients were used. Correlation coefficients show the extent and direction of the linear relationship between independent variables and SACCO's outreach measures of the sample SACCOS.

4.3.1. Correlation analysis of LOS

The correlation matrix which shows the relationship of loan size with age of SACCOS, dividend, income per capital, level of interest rate on saving, maturity date and amount of saving revels that they are positively and significantly correlated at 1 percent significance level. On the other hand level of interest rate on borrowing shows negatively and significantly correlated at 1 percent significant level with loan size (see appendix I).

As per the correlation result reported the Pearson correlation coefficients of age of SACCOS, dividend, income per capital, level of interest rate on borrowing, level of interest rate on saving,

maturity date and amount of saving are 57 percent, 82 percent, 18 percent, -57 percent ,23 percent ,74 percent and 96 percent respectively. From this it can be understand that amount of saving, dividend, maturity date and age of SACCOs are strongly associated with loan size.

4.3.2. Correlation analysis of MEMB

The correlation matrix which shows the relationship of MEMB with age of SACCOS, dividend, income per capital, maturity date and amount of saving are positively and significantly correlated with MEMB at 1 percent significance level. In addition level of interest rate on saving has positively correlated but it is not significant. On the other hand level of interest rate on borrowing is negatively correlated with MEMB at 1 percent significant level (see appendix II)

As per the correlation result reported the Pearson correlation coefficients of age of SACCOS, dividend, income per capital, level of interest rate on borrowing, level of interest rate on saving, maturity date and amount of saving are 23 percent, 54 percent, 22 percent, -41 percent ,11 percent ,53 percent and 63 percent respectively (from appendix II).

4.4. Regression results and Interpretation

This section presents over all the empirical results of the regressions that are assumed as a determinants for the outreach of SACCO's. In this section all formulated hypothesis are analyzed, tested and the relationships are presented individually based on the regression analysis output from Eview.

Table 4.9: Regression result for LOS

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.504899	1.660085	-0.906519	0.3661
ASACCO	0.021674	0.015143	1.431251	0.1544
DIVD	0.083472	0.023694	3.522937	0.0006***
IPC	0.063275	0.080722	0.783855	0.4343
LIB	-0.167057	0.060884	-2.743851	0.0068***
LIS	0.742188	0.309573	2.397455	0.0177**
MD	-0.004240	0.029468	-0.143868	0.8858
SAV	0.795270	0.044157	18.01010	0.0000***

R-squared	0.886374
Adjusted R-squared	0.881142
S.E. of regression	0.210354
F-statistic	169.3894
Prob(F-statistic)	0.000000

Source; Computed from Eviews result

*Notes: *, ** and *** denotes significance level at 10%, 5% and 1% respectively*

Table 4.10: Regression result for MEMB

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3.058966	3.227483	-0.947787	0.3447
ASACCO	0.029982	0.032452	0.923900	0.3570
DIVD	0.032697	0.025806	1.267052	0.2071
IPC	0.415087	0.143145	2.899759	0.0043***
LIB	-0.059257	0.119908	-0.494193	0.6219
LIS	-0.122146	0.616004	-0.198287	0.8431
MD	0.005370	0.038908	0.138007	0.8904
SAV	0.416177	0.051779	8.037628	0.0000***

R-squared	0.641809
Adjusted R-squared	0.625313
S.E. of regression	0.216271
F-statistic	38.90779
Prob(F-statistic)	0.000000

Source; Computed from Eviews result

*Notes: *** denotes significance level at 1% respectively*

4.4.1 Goodness of fit statistics

Quantities known as goodness of fit statistics are available to test how well the sample regression function (SRF) fits the data -- that is, how 'close' the fitted regression line is to all of the data points taken together. The most common goodness of fit statistic is known as R^2. One way to define R^2 is to say that it is the square of the correlation coefficient between y and ˆy -- that is, the square of the correlation between the values of the dependent variable and the corresponding fitted values from the model. If the correlation is high, the model fits the data well, while if the correlation is low (close to zero), the model is not providing a good fit to the data (Chris Brooks 2008).

From both tables above 4.9 and 4.10 implies that the explanatory power of the models (in terms of R^2) that examines the determinants of LOS and MEMB is significant. That means as seen in the table 4.9 R^2 and Adjusted R^2 regression analyses is almost the same which is 0.886 and Adjusted R^2 is also 88% which is close to 1 in the table and that shows the explanatory power of the regression is high. Similarly R2 and Adjusted R2 for table 4.10 show that 0.641.and 0.625 respectively that implies it is high.

The results of the estimations are based on random effect model regression. By using Random effect regression the value of F-statistic is 169.3894 and 38.90779 respectively which is strongly significant at 1% significant level since its probability is zero supporting the validity and stability of the model is relevant for the study. From tables 4.9 and 4.10 we can understand that age of SACCOS, has positive relationship with loan size but its significance level is weak. Dividend paid to members, level of interest rate on saving and amount of savings are strongly significant determinants of loan size and has positive relationship with loan size in table 4.9. However level

of interest rate on borrowing has negative relationship with outreach of SACCOs at significant level of 1% which is highly significant in table 4.9 which is expected by the researcher but for table 1.10 it is has negative relationship but it is not signficant. Table 4.10 also indicates that there is positive relationship between ASACCO, DIVD, IPC, MD, SAV and MEMB. However MEMB has negative relationship with LIB and LIS.

4.4.2. Age of SACCO's

Table 4.9 and 4.10 above revels that result of the regression shows that the coefficient of the age of SACCOS is positive 0.02 and 0.03 which indicates there is a positive relationship with loan size and MEMB but statistically it is not significant at 10%. This implies as SACCOs become older its outreach will increase. Most SACCOs in Addis Ababa are also employee based and as a result it may be not significant because the number of SACCO's members are determined by the number of employees in the organization unless the organization is growing and employ new employees. The study supports Ndiege B.O, Haule T.B. and Kazungu I. (2013), the older the SACCOS the deeper the outreach and/or the membership in SACCOS increases with time and also it supports the findings of Nyamsogoro (2010), and Okumu (2007) outreach in MFIs is deeper when microfinance is older, it has big assets (size), located in rural areas, has low cost of outreach (interest charged on loan) and lend in groups.

4.4.3. Dividend paid to members

As mentioned above this is the case which makes SACCOS odd from other financial services, because even if they pay high interest rate on borrowing they get back it in the form of dividend. From the above table 4.9 dividend has positive relationship (0.08) with loan size and it is strongly significant at 1% significance level and similarly it has positive relationship (0.03) with

MEMB but statistically its significant level is weak. From this we can understand that dividend paid to members highly determines the outreach of SACCOs positively. This implies that SACCOs which pay high dividend to members attracts more members, at the same time amount of saving also increases, which contributes highly to the outreach of SACCOs positively. This could be from the increase in the expense of SACCOs. As we have seen members' saving is increasing at higher rate, if there is no proportional savings mobilization, the interest expense on saving could result in decrease in the profit and thus dividend. Kifle (2011) also mentioned that dividend obtained from membership contributes a lot in attracting new members.

4.4.4. Level of Interest rate on borrowing

According to Toli (2013) getting loan is the primary benefit that members expect after joining SACCOs. Interest on loan is the source of income for SACCOs. Income for SACCOs is expense for members. As we see from tables 4.9 and 4.10 above in the regression analyses, it has negative relationship which is -0.17 and -0.06 with the loan size and MEMB. Statistically at 1% significance level it is significant for loan size but for MEMB the significance level is weak. This indicates that as the level of interest rate on borrowing increases it decreases the loan size and peoples did not initiated to borrow money and this declines the outreach of SACCOS. This supports the findings of Campion, A., Ekka, R. K., & Wenner, M. (2010) that excessively high interest rates can attract negative publicity. Also Cull.R, Kunt.A.D and Morduch.J (2006) mentioned that there is a negative association between charging higher interest rates and having a large customer base. Hulme D. and Mosley P. (1996) also mentioned that saving schemes, intensive loan collection and market interest rate has higher loan impact at a given level of average borrower poverty.

4.4.5. Level of interest rate on saving

SACCOs pay interest on members' deposit. Setting compatible interest rate may attract members especially to save additional amount above forced saving. The coefficient of LIS with LOS from table 4.9 shows that 0.74 which is positive and indicates that there is a positive relationship between level of interest rate on saving and loan size and it is significant at 5% significance level. This indicates that if SACCOS pay high interest rate they can attract many members and also at the same time they can increase their loan size. This is further supported by Mwakajumilo (2011) who stated that SACCOs can attract savings and encourage members to draw away their account from banks by offering competitive interest rates. Relampagos, Lamberte and Graham (1990) also stated that members saving behavior can be determined by the interest rate on fixed deposit. But the regression result for MEMB revels that there is a negative relationship (-0.12) with LIS but statistically it is not significant. The reason for negative relationship may be majority of SACCOS pay interest rate on deposit which is almost similar and SACCOS who have many members and smaller members pay similar interest rate on deposit as a result it may be not influential.

4.4.6. Amount of Saving

"Saving as a requirement appears good for any institution that deals with credit" Patrick (2008). Saving is basic in SACCOs to get any benefit. Forced saving is common in SACCOs that are formed in different organizations by employees and also there is voluntary saving. Forced saving means members are expected to save at least the minimum level to be a member in SACCOS. As it can be seen from the above tables 4.9 and 4.10 amount of saving has a positive relationship which is 0.79 with loan size at 1% significance level which shows that there is strong relationship between saving and loan size similarly with MEMB which is also 0.41. This implies

that as SACCOS continue to get more funds, members also receive higher loan size in average. This is supported by Ndiege B.O, Haule T.B. and Kazungu I. (2013) when they conducted a research on Relationship between Sources of Funds and Outreach in Savings and Credits Cooperatives Societies: Tanzanian case. Their finding was SACCOS continue to get more funds from commercial banks their members also receive higher loan size in average. In addition Okumu (2007) also clarified that savings has been an important microfinance product which has significant effect on outreach.

In outreach concept this can be generally translated as a poor outreach in SACCOS because it is indicated in many studies that higher depth outreach will mean small loans (Nyamsogoro, 2010; Okumu, 2007). But as per this study it is not possible to make such conclusion, because as already explained before in this paper, this depend on the difference between percentage increase in number of loan size and number of members. Because in case of SACCOS, as number of members increases amount of saving also increases.

4.4.7. Maturity Date (MD) or Maximum duration to repay the loan

Regarding expire date to repay the loan the above table 4.9 revels that it has negative relationship with loan size but its significance level is statistically weak. The assumption behind this was if the maturity date for repayment of the loan is long it attracts more members to join SACCO since their cost is minimum to repay the loan based on the agreement and also members borrow from SACCOS which will indicate that the loan size will increase. But from the table we can understand that the relationship is negative but it has weak significance level. As a result we can say that SACCOS are not more concerned with the maturity date in this study. This may be the reason is that SACCO members need loan for short time. Or because since they repay the loan

through gradual process which means they will finish the payment by discounting and they are not forced to repay the loan at the same time (once) as a result, may be they are not much concerned to maturity date. This supports finding of Toli J. (2013), which says that number of members with loan outstanding shows a fluctuating trend over the analysis period which happens because members' borrow for short term duration and SACCOs allow members to reapply for credit before full payment of previous loan. In other cases in table 4.11 shows that there is a positive relationship between MD and MEMB but statistically it is not significant. This indicates that as the maturity date increases members are attracted and join SACCOs which also increases outreach of SACCOs

4.4.8. Income per capital

Regarding income per capital since getting information from each individual about their income is difficult researcher used income per capital from central statistics which is published annually. According to table 4.9 incomes per capital has a positive relationship (0.06) with loan size. But statistically its significance level is weak as seen in the table the probability is 0.43. Similarly the result of table 4.10 indicates that there is a positive relationship (0.41) between income per capital and MEMB which is statistically significant at 1% significance level. This implies that as income of individuals increase they are initiated to join SACCOs. This indicates that there is a positive relationship between IPC and outreach of SACCOs.

In addition this supports the findings of Hulme D. and Mosley P. (1996). In their book Finance Against poverty volume 1 they point out that loan size is positively correlated with the income of the borrowers. The reason is that poor people want to take small loans. In case of this study even if the significance level is low it is true because in case of SACCOS members borrow money

based on their saving amounts, the one who save more will get more loan. As a result in this the researcher can see that as the income level of the country increase loan size will increase in case of SACCOS. Also it is obvious that as income of an individual increase they are intended to save above the compulsory in SACCOS and the other individual who faces shortage of fund will borrow so that the since SACCOS capacity to lend depends on the amount of saving also loan size will increase.

Chapter Five

5. Summary of Findings, Conclusions and Recommendation

In this chapter, depending on the analysis of the data, conclusions and recommendations have been made. To remind, the major objective of this study was to identify and examine the determinants of Saving and Credit Cooperatives' (SACCOS') outreach in Addis Ababa. The study also used an appropriate econometric methodology for the estimation of variables coefficient under fixed effect regression models. The following sections discussed about the summary of findings, final conclusion remarks of the study and applicable recommendations.

5.1. Summary of findings

As discussed from the introduction part of the study, there were seven null hypothesis formulated in this research. The first null hypothesis says that there is no relationship between outreach and age of SACCO's which is rejected. Because the above tables 4.9 and 4.10, result indicates that there is a positive relationship between age of SACCOS and loan size but statistically it is weak. The second hypothesis also said that there is no relationship between outreach of SACCOs and amount of savings and this is also rejected. Because in the above regression analysis result there is high positive relationship between SACCOS outreach and amount of saving which is statistically highly significant in both cases (LOS and MEMB) which indicate that the null hypothesis should be rejected. The third hypothesis says that there is no relationship between outreach and level of interest rate on saving which is also rejected by the analysis. Because as discussed above there is a positive relationship between interest rate on saving and SACCOS outreach. The fourth hypothesis said that there is no relationship between outreach and level of interest rate on borrowings which is rejected when tested. Because there is a negative

relationship between loan size and level of interest rate on borrowing which is statistically also significant for loan size but the significance level for MEMB is weak. The fifth hypothesis says that there is no relationship between outreach and dividend distributed to members. This hypothesis is also rejected. For the reason that the regression analysis result revels there is a positive relationship between dividends distributed to members and loan size which is also statistically significant. Similarly it has also positive relationship with MEMB but statistically the significance level is weak. Similarly the sixth hypothesis also said there is no relationship between outreach and maturity date of loan (repayment period). In this case even though the relationship is negative its significance level is statistically very low. The last hypothesis said there is no relationship between income per capital and SACCOS outreach which would be rejected. As we have seen from the regression result IPC has a positive relationship with loan size and MEMB. The result revels that MEMB is statistically significant at 1% significant level but in case of LOS its significance level is weak.

5.2. Conclusion

The number of members in SACCOs is increasing from time to time. The factors that could contribute in attracting new members would be low cost of saving and the benefits that former members enjoy such as dividend and easy credit access.

The regression analysis of the study reveals that the explanatory power of SACCO's determinants in terms of R^2 for loan size and MEMB is 88% and 64% respectively and the over all probability of F-statistic is zero in both models. From this the researcher concluded that the major determinants for the outreach of SACCOS is the independent variable observed in the

regression analysis, such as amount of saving, dividend paid to members, level of interest rate on saving, level of interest rate on borrowing, age of SACCOS, maturity date (maximum duration to repay the loan) and income per capital.

The regression analysis of the study evidenced that loan size and MEMB of SACCO's is highly influenced by the amount of saving. Hence the result of the regression shows that the coefficient for amount of saving is positive with a high magnitude and it is statistically significant at 1% level of significance. This supports the findings of Ndiege B.O, Haule T.B. and Kazungu I. (2013).

The regression analysis result shows that there is a positive relationship between age of SACCOs and outreach which supports the findings of Ndiege B.O, Haule T.B. and Kazungu I. (2013), Nyamsogoro (2010), and Okumu (2007).

Interest rate on saving is found as significantly affect the outreach of SACCOS, hence the study reveals that the coefficient for level of interest rate on saving is high next to amount of saving which shows positive relationship with loan size and it is statistically significant at 5% significance level . On the other hand it has negative relationship with MEMB but its significance level is weak. This is further supported by Mwakajumilo (2011) and Relampagos, Lamberte and Graham (1990). This indicates that interest rate on saving affects SACCOs outreach positively. This implies that most SACCO's members join SACCOS to save and get some amount of profit in terms of interest rate. In addition it is also easy to save because since most SACCOS are employ based, individuals do not need to go anywhere to save their money simply their employers discounted from their salary and deposit in to their saving account.

The other determinant factor is dividend paid to members. The regression analysis of the study shows that dividend has a positive relationship with outreach of SACCOs. This is evidenced by Kifle (2011). The coefficient for dividend paid to members is high next to level of interest on saving and also which is statistically significant at 1% level of significance for loan size but the significance level for MEMB is weak. This implies that that as dividend paid to member's increases it attracts people to join SACCOS and MEMB increase as a result at the same time loan size will also increase.

This study shows that there is a negative relationship between interest rate on borrowing and loan size which is statistically significant at 1% significance level which supports the findings of Ekka, R. K., & Wenner, M. (2010) and Cull.R, Kunt.A.D and Morduch.J (2006). This indicates that as interest rate on borrowing increase loan size decreases because members do not take loan since their expense is high. Similarly it has negative relationship with MEMB but statistically it is not significant. This implies that level of interest rate on borrowing does not prevent peoples to join SACCOS since the objective of SACCOs is not only to lend money but also they provide saving services to members.

The researcher also concluded that there is a positive relationship between income per capital of the country and SACCOS outreach. This indicates that as individual income increases peoples are engaged to save money and initiated to join SACCOS. This also supported by the findings of Hulme D. and Mosley P. (1996).

The regression analysis of the study shows that Duration to repay the loan has negative relationship with loan size and it has positive relationship with MEMB. But the regression result shows statistically it is not significant (the significance level is weak) in both models. This indicates that peoples need credit for short period of time and this supports the finding of Toli J. (2013), which says that number of members with loan outstanding shows a fluctuating trend over the analysis period which happens because members' borrow for short term duration and SACCOs allow members to reapply for credit before full payment of previous loan.

5.3. Recommendation

This study examined determinants of saving and credit cooperatives outreach in Addis Ababa from selected samples. On the basis of the findings and conclusions reached, the following recommendations were forwarded.

Over all from the result the researcher see that the major determinant of loan size in SACCOS is saving amount (deposit) from members. Therefore SACCOS should give high attention in attracting members to increase their source of fund by providing awareness about the benefit of joining SACCOS by using different social Medias, by creating training programs, through distribution of brochure to clients etc. To be viable financial institutions, SACCOs should attract members to save by setting compatible interest rate that encourage members to save above forced saving that they take to banks.

If saving of member is high, SACCOs should encourage members to take loan to improve their life and enhance investment culture in members' also to expose benefits of joining SACCOs as well as to increase dividend payout to members. This could be done by adding their service package such as training on entrepreneurial skills.

SACCOS should increase the duration of repayment of loan to attract members to take loan and also they should appreciate women to be members of SACCOS to expand outreach.

Finally Federal cooperatives agency should pay attention continuously supervising of SACCOS as they help many peoples in providing loan as well as saving services and they are one of the financial service providers that highly contribute for the outreach of financial services for the country.

5.3. Suggested areas for future research

This study has not been exhaustive so that it is recommended to other researchers to conduct studies on the following area. To examine and analyze determinants of SACCOS outreach by including other variables which the researcher didn't included in this study that may affects the outreach of SACCOs.

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Appendix I: Correlation analysis of LOS

Covariance Analysis: Ordinary
Date: 05/28/15 Time: 09:31
Sample: 2010 2014
Included observations: 160

Correlation								
Probability	LOS	ASACCO	DIVD	IPC	LIB	LIS	MD	SAV
LOS	1.000000							

ASACCO	0.567012	1.000000						
	0.0000	-----						
DIVD	0.824889	0.596506	1.000000					
	0.0000	0.0000	-----					
IPC	0.178718	0.245171	0.240550	1.000000				
	0.0238	0.0018	0.0022	-----				
LIB	-0.572639	-0.350417	-0.355766	4.73E-18	1.000000			
	0.0000	0.0000	0.0000	1.0000	-----			
LIS	0.228976	-0.085721	0.224221	0.000000	0.042147	1.000000		
	0.0036	0.2811	0.0044	1.0000	0.5967	-----		
MD	0.740598	0.490552	0.652436	0.045787	-0.429846	0.235479	1.000000	
	0.0000	0.0000	0.0000	0.5653	0.0000	0.0027	-----	
SAV	0.961582	0.535225	0.794478	0.171094	-0.533191	0.161424	0.771452	1.000000
	0.0000	0.0000	0.0000	0.0305	0.0000	0.0414	0.0000	-----

Source: Eviews summery statistics result

Appendix II: Correlation analysis of MEMB

Covariance Analysis: Ordinary
Date: 05/28/15 Time: 09:31
Sample: 2010 2014
Included observations: 160

Correlation								
Probability	MEMB	ASACCO	DIVD	IPC	LIB	LIS	MD	SAV
MEMB	1.000000							
ASACCO	0.229342	1.000000						
	0.0035	-----						
DIVD	0.536457	0.572813	1.000000					
	0.0000	0.0000	-----					
IPC	0.221590	0.288654	0.238209	1.000000				
	0.0049	0.0002	0.0024	-----				
LIB	-0.413203	-0.368941	-0.359653	4.73E-18	1.000000			
	0.0000	0.0000	0.0000	1.0000	-----			
LIS	0.106302	-0.082665	0.225382	0.000000	0.042147	1.000000		
	0.1809	0.2987	0.0042	1.0000	0.5967	-----		
MD	0.533291	0.517586	0.652830	0.045787	-0.429846	0.235479	1.000000	
	0.0000	0.0000	0.0000	0.5653	0.0000	0.0027	-----	
SAV	0.628335	0.498173	0.798267	0.171094	-0.533191	0.161424	0.771452	1.000000
	0.0000	0.0000	0.0000	0.0305	0.0000	0.0414	0.0000	-----

Source: Eviews summery statistics result

Appendix III: Eviews Original Regression Results

Regression result of loan size

Dependent Variable: LOS

Method: Panel EGLS (Cross-section random effects)

Date: 05/20/15 Time: 11:16

Sample: 2010 2014

Periods included: 5

Cross-sections included: 32

Total panel (balanced) observations: 160

Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.504899	1.660085	-0.906519	0.3661
ASACCO	0.021674	0.015143	1.431251	0.1544
DIVD	0.083472	0.023694	3.522937	0.0006
IPC	0.063275	0.080722	0.783855	0.4343
LIB	-0.167057	0.060884	-2.743851	0.0068
LIS	0.742188	0.309573	2.397455	0.0177
MD	-0.004240	0.029468	-0.143868	0.8858
SAV	0.795270	0.044157	18.01010	0.0000

Effects Specification		
	S.D.	Rho
Cross-section random	0.389420	0.7741
Idiosyncratic random	0.210367	0.2259

Weighted Statistics			
R-squared	0.886374	Mean dependent var	3.188627
Adjusted R-squared	0.881142	S.D. dependent var	0.610150
S.E. of regression	0.210354	Sum squared resid	6.725842
F-statistic	169.3894	Durbin-Watson stat	1.804263
Prob(F-statistic)	0.000000		

Unweighted Statistics			
R-squared	0.947315	Mean dependent var	13.57837
Sum squared resid	27.34520	Durbin-Watson stat	0.443778

Regression result of MEMB

Dependent Variable: MEMB

Method: Panel EGLS (Cross-section random effects)

Date: 05/27/15 Time: 04:00

Sample: 2010 2014

Periods included: 5

Cross-sections included: 32

Total panel (balanced) observations: 160

Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3.058966	3.227483	-0.947787	0.3447
ASACCO	0.029982	0.032452	0.923900	0.3570
DIVD	0.032697	0.025806	1.267052	0.2071
IPC	0.415087	0.143145	2.899759	0.0043
LIB	-0.059257	0.119908	-0.494193	0.6219
LIS	-0.122146	0.616004	-0.198287	0.8431
MD	0.005370	0.038908	0.138007	0.8904
SAV	0.416177	0.051779	8.037628	0.0000

Effects Specification		
	S.D.	Rho
Cross-section random	0.813521	0.9342
Idiosyncratic random	0.215865	0.0658

Weighted Statistics			
R-squared	0.641809	Mean dependent var	0.651066
Adjusted R-squared	0.625313	S.D. dependent var	0.353316
S.E. of regression	0.216271	Sum squared resid	7.109496
F-statistic	38.90779	Durbin-Watson stat	1.783356
Prob(F-statistic)	0.000000		

Unweighted Statistics			
R-squared	0.433921	Mean dependent var	5.525011
Sum squared resid	98.56408	Durbin-Watson stat	0.357947