A STUDY ON IMPACT ANALYSIS OF MICROFINANCE ON POVERTY REDUCTION

(Econometrics Analysis using panel data from Northern Ethiopia)

By

Haftom Gebremeskel Teferi

THESIS

Submitted to
KDI School of Public Policy and Management
in partial fulfillment of the requirements
for the degree of

MASTER OF PUBLIC POLICY

2011

A STUDY ON IMPACT ANALYSIS OF MICROFINANCE ON POVERTY REDUCTION

(Econometrics Analysis using panel data from Northern Ethiopia)

By

Haftom Gebremeskel Teferi

THESIS

Submitted to
KDI School of Public Policy and Management
in partial fulfillment of the requirements
for the degree of

MASTER OF PUBLIC POLICY

2011

Professor Sohn Wook

A STUDY ON IMPACT ANALYSIS OF MICROFINANCE ON POVERTY REDUCTION

(Econometrics Analysis using panel data from Northern Ethiopia)

By

Haftom Gebremeskel Teferi

THESIS

Submitted to
KDI School of Public Policy and Management
in partial fulfillment of the requirements
for the degree of

MASTER OF PUBLIC POLICY

Committee in charge:

Professor Sohn, Wook, Supervisor

Professor Yoon-Ha YOO

Professor Jin-Soo LEE

Approval as of August , 2011

ABSTRACT

A STUDY ON IMPACT ANALYSIS OF MICROFINANCE ON POVERTY REDUCTION

(Econometrics Analysis using panel data from Northern Ethiopia)

By

Haftom Gebremeskel Teferi

The aim of the thesis is to assess the long-run impacts of Dedebit Credit and Savings Institution (DECSI) participation on poverty reduction based on panel data from Northern rural Ethiopia spanning for ten years from 1997 to 2006. The panel household survey provides a way of controlling for the joint determination of consumption expenditure and DECSI participation, and provides framework for measuring the impact of program participation on consumption expenditure using the household level fixed effect model. The fixed effect estimation strategy has been employed to eliminate the impact of unobservable household specific characteristics and other issues of endogeniety. The household level fixed effect suggest that controlling for household demographic characteristics and other factors, program participation has a significant and positive impact on the household per capita

consumption expenditure and per capita food consumption expenditure. As the marginal effect shows that program participation increases the per capita consumption expenditure and per capita food expenditure by 7.3 and 10 percent respectively. In general, microfinance program has a positive and significant effect on long-term permanent consumption expenditure implying that microfinance is a critical ingredient of consumption based poverty level and hence, it is pro-poor as it enhances the welfare of households.

Dedicated to my family and my lovely girl friend Suyan Jin

Acknowledgements

First of all, praise to almighty GOD, the most merciful and gracious, for his favor to me in completing this study. I wish to extend my heartfelt gratitude to the following individuals who, in one way or another, have shared their respective contributions for this paper to see the light of day. To my thesis adviser, Professor Sohn, Wook, for his precious time in going over series of drafts, his insightful suggestions and inspiring comments. To my loving parents, to whom all I am enormously indebted and who is always a towering of strength and inspiration; Above all, I wish to express sincere appreciation to KDI School of Public Policy and Management, outstanding professors for providing me with valuable knowledge and remarkable experience during my stay in Korea. In addition, special thanks are due to KDI school staff, whose familiarity with the needs and ideas of the community were helpful during the whole study period of this undertaking. I also thank my closest Korean and International friends for valuable input and enormous support and friendship during my stay in Korea. I highly appreciate everyone's participation in my student life.

TABLE OF CONTENTS

LIST OF TABLES

1. INTRODUCTION

1.1 Background

Over the past years, microfinance has been widely accepted as a viable policy option for poverty alleviation by the donor community, international organizations, governments and non-governmental organizations. The hope is that the provision of savings and credit is both effective in fighting poverty and more financially viable than other means.

Microfinance allows poor people to protect, diversify, and increase their sources of income, the essential path out of poverty and hunger. Various studies of microfinance programs are largely supportive in reducing poverty. In Zimbabwe, extremely poor clients of Zambuko Trust, a local MFI, increased their consumption of high protein foods when food expenditures across the country as a whole decreased (Barnes 2001). In India, in addition to increased economic wellbeing, MFI clients showed a striking shift from irregular, low-paid daily labor to more diversified sources of income, with a strong reliance on small businesses (Simanowitz and Walters, 2002). In Ethiopia, a study commissioned by the Dedebit Credit and Savings Institution (DECSI) and Norwegian People's Aid find that compared with non-clients, the DECSI clients experienced improvement in income,

asset holdings and consumption and assets. The DECSI clients also seemed to have more food security and were less vulnerable to food emergencies (Alex, Joe, Weldehana and Tassew, 2003). In Tanzania, the income and assets values of borrowers are almost twice larger than those non-borrowers (REPOA 2005). Deininger and Lu (2010), World Bank researchers, also find that there are significant economic gains from program participation in the form of better nutrition, increased asset accumulation, higher levels of consumption and consumption smoothing.

Despite the hype about microfinance being the best way to create jobs, increase workers' productivity and eradicate poverty, there is still plenty of debate about whether it has a significant impact on the lives of the poor or not. Challengers cast serious doubt particularly on the type and extent of the successes. Opponents contend that microfinance does not address the economic problem of the poorest. They further claim that if it addresses at all, either it benefits the middle poor or it caught the poor in subsistence activities with no specialized skills (Cowen and Boudreaux, 2009*; Kondo* et.al., 2008; Banerjee and Duflo, 2006; Imai et al. 2006; Morduch, 2005; Shreiner, 2002; Hume and Mosley, 1996) are some behind this proposition.

The problem with testing which side of the story is true is that researchers need very high quality data along a sufficiently long period of time. Most of the studies so far have depended on either incomplete or anecdotal information. As a result the debate has gone on for several years now and opponents of the microfinance approach could claim that no study has conclusively proved its positive effects on the poor. The purpose of the research is to estimate the long-run impacts of Dedebit Credit and Savings Institution (DECSI) from Northern rural Ethiopia on household consumption expenditure using panel data spanning for ten years from 1997 to 2006.

The rest of the paper is organized as follows. Section 2 provides a brief review of related literature. Section 3 explains the nature of the data and methodology of research. Section 4 presents the empirical results and section 5 draws conclusions.

1.2. Statement of the Problem and Justification

Almost all microfinance institutions (MFIs) in the world focus in making credit to urban and rural poor household unemployed, underemployed and small entrepreneurs, The emphasize first, in developing income activities by providing critically needed credit facilities and technical support to the poor and then on

saving mobilization. Like their counterparts in other part of the world, the mission of Dedebit Credit and Savings Institution (DECSI) which is operating in Northern part of Ethiopia, is poverty eradication.

Despite the growth of microfinance, programs specifically designed to target poor are still not very widespread. It is still being debated whether reaching the poorest with these programs is even desirable. An added concern is that funds are targeted to help the poor and /or landless, but there is generally little available to help small and medium size farmers from falling deeper into poverty. A study of thirteen (13) MFIs in seven developing countries were taken (Mosely and Hulme, 1998) and find that the evidence of a trade-off between reaching the very poor and having substantial impact on household income and consumption. They found that programs that targeted higher income households (those near the poverty line level) had a greater impact on household income. Those below the poverty line were not helped much and the very poorest were somewhat negatively affected.

In addition to outreach problem, a large proportion of micro credit loans are being used for consumption smoothing, especially for extremely poor households. Although consumption smoothing as a form of insurance and is crucial for the very poor households, consumption used for non-investment purposes do not generate income. This suggests, for the very poor households, consumption smoothing is at

the expense of long term improvement in economic status. This doesn't mean that microfinance doesn't have important positive effects, and in fact, helping the poor through difficult times by smoothing their consumption is an important factor in poverty alleviation. Moreover, the tradeoff between the long term objectives of MFIs and its short term use for consumption smoothing suggests that providing alternative means for reducing risk in the form of insurance and saving schemes would enable microfinance to achieve its long term poverty reduction objectives. In general, it is safe to say that microfinance helps to smooth that seasonal characteristic of much of the rural economic activity. Montgemery (1996) suggests that financial product such as saving facilities, insurance (against for example natural disaster) and small consumption loans with flexible repayment period might be more suitable to the need of the poorest. They would increase the short term income in terms of the productivity of the asset which the loan finances. In addition by gradually reducing vulnerability of the poor households, they would also encourage them to take riskier investment in working capital, hiring non family labor and increasing fixed capital.

To sum up, poverty is a multi-dimensional problem and hence needs multi-faceted intervention. Breaking the vicious circle of poverty demands integration of other development programs (household package, agricultural extension, selected

seeds, irrigation and water source development) good infrastructure, political stability and good macroeconomic environment, sound business plan and management. In so doing, special care should be given to assess its impact as it may be impossible to disentangle the impact of each and this helps not to over or underrate the impact and to be prissy as such reduction in poverty is not due to proliferation of microcredit alone. In addition, we presume microfinance scheme is not a single orbit program but needs continuous training and follow-up and discussions to change the psychology of clients, poor culture and work ethics as it may not flinch ahead with all these restraints and close watch what happens before; during and after you give a loan to a client is mandatory.

1.3. Overview of Dedebit Credit and Saving Institution (DECSI)

Dedebit Credit and Savings Institution (DECSI) was established in 1997 as a microfinance institution (MFI) providing credit and savings services for the rural and urban poor in the Tigray region of Ethiopia. DECSI evolved from a program established by the Relief Society of Tigray (REST), a local NGO founded in 1978. In 1993, REST conducted a socio-economic study on rural poverty in Tigray that indicated an unmet demand for finance by the rural poor. Based on this study, the

Rural Credit Scheme in Tigray (RCST) was established under REST in the following year.

The goal of RCST was to provide affordable and accessible microfinance services to poor communities in the Tigray region. Due to the rapid growth of its operations, RCST formally registered in 1997 with the National Bank of Ethiopia, the country's central bank, and began operation as an MFI under its new name Dedebit Credit and Savings Institution.

The mission of DECSI is to provide microfinance services to individuals not able to access the formal financial sector. The ownership structure of DECSI is 25 percent government-owned and 75 percent owned by nongovernmental organizations (NGOs), farmers associations and women and youth associations. By the end of 2008, DECSI had a gross loan portfolio equivalent to USD 145.8 million and approximately 464,000 borrowers. According to DECSI's own figures, about 51 percent of its clients are individual borrowers, and the remaining borrowers consist of "solidarity groups" and village banking societies. The average loan balance per borrower is equivalent to USD 314. By 2008, DECSI had a total deposits equivalent to USD 40 million and approximately 261,000 depositors. DECSI maintains 139 offices which employ 1,887 staff.

In 2008, DECSI's total assets were equivalent to USD 185.8 million. DECSI's overall financial performance in 2008 was measured by a return on assets (ROA) of 2.06 percent as compared to ROA of 3.85 percent in 2007. Likewise, DECSI's return on equity (ROE) reflected this decrease in 2008 of 10.51 percent from 18.82 percent in 2007.

The products and services provided by DECSI fall into three categories: loans, voluntary savings and fund transfer services. DECSI's loan products are as follows: (1) General Loans have a maximum loan amount of ETB 5,000 (USD 392) and a maximum loan term of 12 months. General loans are typically given for income generating activities, such as agriculture, trade and handicrafts. (2) Agricultural Package Loans have a maximum loan amount of ETB 5,000 (USD 392) and a maximum loan term of 12 months. These loans provide rural households that qualify under government-sponsored "Agricultural Package Program, food security at the household level by financing the purchase of dairy cows, dairy goats, beehives, water pumps and poultry. (3) Agricultural Input Loans have a maximum loan amount of ETB 350 (USD 27) and a maximum loan term of 8 months. These loans are disbursed to Agricultural Extension Program beneficiaries for the purchase of inputs, such as soil fertilizer, pesticides and seeds. The government sponsored Agricultural Extension Program provides training to farmers, promotes

agricultural research and disseminates technology to farmers. (4) Civil Servant Loans have a maximum loan amount of ETB 8,000 (USD 628) and a maximum loan term of 24 months. (5) Micro and Small Enterprise (MSE) Loans have a maximum loan amount of ETB 30,000 (USD 2,356) and a maximum loan term of 36-48 months. (6) Housing Loans information is not available.

DECSI offers two types of savings accounts: compulsory deposits of group and village center savings and voluntary deposits from individuals. DECSI's money transfer services also cover pension payment services for retired military and civil personnel.

DECSI receives funds and loans from international donors, government agencies and local sources. Donors of DECSI include the following: Norwegian People's Aid, International Fund for Population Development (IFPD), Glimmer of Hope, RUFIP Scheme and the International Agricultural Development Fund. DECSI has loans from the Development Bank of Ethiopia and the Commercial Bank of Ethiopia and receives matching funds from the Ethiopian government, including the Bureau of Trade and Industry and the Food Security Co-ordination Office.

1.4 Objectives and Research Questions

The general objective of this research is to analyze the long-run impacts of micro-finance on rural household's consumption smoothing and poverty in Northern rural Ethiopia, based on panel data spanning for ten years from 1997 to 2006. Hence, the writer's conjecture here is to explore the benefits gained from applying micro financing as a mechanism to reduce poverty in the country. Therefore, it is hoped that the study will answer questions like: Does Microfinance the best strategy in reducing poverty? Does consumption smoothing reduce poverty? Is consumption smoothing the end of poverty reduction?

2. REVIEW OF RELATED LITERATURE

2.1 A Review of Empirical Impact Studies in Ethiopia

There exist a wealth of literature on microfinance scheme since its foundation and we cannot be exhaustive to cover all but the most relevant to our study. Poverty reduction has been one of the major aspirations of development planning since 1950s-60s and the planning process has been sensitive to the needs of the poor.

Accordingly, the development attempts have been directed in creating adequate livelihoods and provision of services for a better quality of life for the poor. It is appreciated that poverty is an outcome of multiple deprivations and it is not simply a matter of inadequate income but also a matter of low literacy, short life expectancy, lack of basic needs such as drinking water, persistent drought (famine), lack of self-esteem and social-exclusion. Since these deprivations are inter-related, a comprehensive and integrated approach may eliminate poverty and ensure optimal utilization of human resources for sustainable development.

Hence, multi-pronged and convergent approaches with proper targeting are deemed essential for elimination of poverty. Well designed poverty alleviation programs, if effectively implemented, not only supplement the poverty reducing effects of growth but also could promote pro-poor growth. Several poverty alleviation programs have been in place for a long time now and one of them is microfinance. The programs and schemes have been modified, consolidated, expanded and improved over time (Cole, et al., 2008).

The establishment of the Grameen Bank as a micro-credit delivery model motivated many LDCs to replicate similar and/or modified credit and saving programs. Apart from that, the promising premises drawn the attention of Governments, NGOs, financial institutions, donors and individuals entice their

mind and start to believe that allocating vast resource to this sector can help to eradicate poverty and has positive impact in enhancing the living standard of the poor and a lot of attention has been given to those micro-credit borrowers. There is resounding triumph in the development of microfinance and fabulous achievements in reaching the bottom poor. However, the pitfalls are equally monstrous. Empirical researches conducted in Asia (Kondo et al., 2008; Imai et al., 2006; Yoshida and Zaman, 2005; Dwivedi, 2005; and Khawari, 2004): Latin America (Cowen and Boudreaux, 2009; Morduch, 2008 and Shreiner, 2002) and Africa (Zaid, 2008; Pitamber, 2003; Amaha, 2002) have well documented the said assertion. To corroborate this let's consider current developments: very recent reports by State of (Micro credit Summit Campaign, 2009) reveals that in this year, more than 150 million of the world's poorest families received a micro loan and achievement of this goal touches the lives of an estimated half a billion.

When the United Nations designated 2005 as the International Year of Microcredit, heated controversies, whether should it be year of microfinance or microcredit, among supporters of poverty and sustainability camps reached high stage and this year can be considered as a land mark for the MF division (Morduch, 2005). The broader shift towards the profit model began in the nineties, when Acción International, a network of Latin-American institutions, concluded that

“commercialization was the only way microfinance could serve large numbers of people, because commercial enterprises could tap the capital markets for the funds they needed to grow” (Morduch, 2005). As a result, BancoSol, an Acción affiliate, transformed itself from a nonprofit into the first private commercial bank in the world dedicated exclusively to microfinance and dozens of other institutions have followed this foot step (Morduch, 2005).

Many outstanding specialists in this sector consider the entrance of the profit motive as threats than potential sources of capital and pronounce the issue of humanity. It is inhuman and unfair to see a world where a few hundred million people enjoy access to all the resources of the planet, while over a billions struggle to survive. Yunus cites one study that concluded in the year 2000, "*the richest 1 percent owned 40 percent of the world's assets, and the richest 10 percent owned 85 percent. By contrast, the bottom half of the world's population owned barely 1 percent of the planet's assets*" (Yunus, 2007).

On the practical front, the underline reasons behind the failure stories pivot around the fungible nature of money (Zaid, 2008). It is observed that clients are using microcredit for consumption and not for business. Moreover, it is also a means to settle the existing debt and it eventually entails debt accumulation. It is so, since most borrowers are self-employed and work in the informal sector of the

economy; their incomes are often erratic; small, expected expenses can make repayment impossible in any given month or year. In the rural area, farmers have seasonal incomes and little cash for long periods of time. Recent studies have witnessed that microloans are often used to finance consumption and domestic expenses. Cowen and Boudreaux (2009) found that many borrowers use the money on personal expenses, fixing their roof, sending kids to school, purchasing a mobile phone - rather than on a small business.

Proponents of the sustainability camp defend their stand by asserting the poor are not amenable to microcredit but to other direct aids and the productive middle poor have been overlooked for centuries while the forerunners of the poverty camp try to redirect cash to the passive strata of the society. Recently, even the most celebrated success of microcredit playing hugely important role in allowing women to participate in productive economic activities is challenged. There are astonishing findings that microcredit enslaves women than to free them and women's empowerment through this scheme is dried out (Rozario, 2007). According to Rozario (2007) microcredit women clients are harassed, bitten and harmed by their husband as they consider them as source of capital in the form of dowry. Even this problem is exported to the women's family and many household were indebted while trying to fulfill this demand. . Considering these divergences of

thoughts and research findings, this study analyzes if micro credit scheme helps to reduce poverty and explore its impact on household consumption expenditure or welfare of clients after participation in microfinance.

In other words, it examines impact of microfinance on some basic household poverty indicators (household total and food expenditures) and asset holdings. What is more, we strongly believe that not only the correlation between microfinance and poverty but also the approaches to analyze impact are controversial and are still open-ended; so this study provides further empirical evidences on the poverty-reducing power of access to microfinance and its impact on the aforementioned interest variables.

Moreover, reckoning Ethiopia's top priority agenda of reducing poverty (PASDEP, 2006) and the extraordinary achievement of this sector that it reached 2.2 people directly and many more indirectly (AEMFI Report, 2009), and the challenges in the other flip- side (anti microcredit movement); not only that there is room to conduct research on this issue that many variables can be considered for analysis; but there is also lack of sufficient research on how microfinance scheme functions and whether they are really reducing poverty on the practical aspect in Ethiopia.

In general, the sector is dynamic and appropriate refinements are expected in the theoretical, methodological, empirical and policy research methods and approaches. This study provides further empirical evidences on the poverty-reducing effects of access to microfinance and its impact on clients using data from the rural area of Tigray, Northern Ethiopia.

Thus, given the overwhelming evidence, it appears that microfinance could unlock ways to achieve poverty reduction agenda of Ethiopia. Some of the empirical literatures in Ethiopia are summarized in the table given below:

Study	Coverage	Methodology	Result
Tsehaye & Mengistu (2002)	Addis Ababa (Meklit and Addis Credit and Saving) & Oromia (Oromia Credit & Savings S.C and Bussa Gonfa)	New borrowers as control group and frequent borrowers (more than one year) as treatment group. Only women samples were taken. Cross-tabs and ANOVA were used	Most women lack entrepreneurial skill. But still what the MFIs providing was only finance. Other aspects of assistance like business planning and monitoring, training etc are missing. The activities women are engaged are small and traditional like petty trading, pottery and basket making, which are less risky and have low return. Despite these shortfalls, positive impact has been observed in socio-economic empowerment of women in the study areas.
Wolday (2000)	All MFIs in Ethiopia	Sustainability (measured in terms of generating enough revenues) and	Over a brief period of time, MFIs in Ethiopia have shown remarkable improvement in terms of loan outstanding and savings. The clientele served by the MFIs in Ethiopia are mainly the rural poor.

		Outreach (measured in terms of the number of clients, loan size, percentage of loans to clientele below the poverty line, percentage of female clients, range of financial and nonfinancial services offered to the poor, the level of transaction costs levied on the poor and the extent of client satisfaction with respect to financial services.)	About 44 percent of the clients of MFIs in Ethiopia are female, relatively higher outreach of MFIs by all standards of measurement. The two government supported MFIs are ACSI and DECSI, which account for 80% of total clients in the industry. MFIs in Ethiopia have high repayment rate, which varies from 94 to 100 percent.
Kejela (2005)	Economic diversification at six districts (a total of 35 watersheds) in Central Tigray	Data were collected through focus-group discussions, key informant interviews, case studies and observations. For data analysis,	While the rich constitute 13% of the total population in the area, the poor and destitute consist 41% and 20% respectively. The remaining is medium. Financial returns to labour and capital are positive for wheat, barley, horse bean production, goat and oxen fattening, irrigated onion and pepper production. Petty trade is of little importance for the household's income in the study

		proportionate pilling exercises were done, and financial returns to labour and capital were analyzed.	area. Peer group collateral approach of credit service delivery needs to be replaced by another mechanism such as lending individual farm Enterprises.
Daba (2004)	Eastern Wollega Zone of Oromia Region	108 Clients and 108 nonclients were considered. Logit model and descriptive statistics were used. Outreach and sustainability were used for the analysis	Clients have shown improvement in their incomes. The out reach has shown increment and the loan repayment performance has been 100% for several years. But adequate business advising and supervision are missing
Berhanu (1999)	The Case of the project office for the creation of small-scale business opportunities in Addis Ababa	Probit Model to investigate determinants of loan repayment performance	While education, timely loan granting and the use of accounting system negatively affect the proportion of loan funds diverted, loan size, dependency ratio and consumption expenditure positively affect loan diversion.
Abreham (2002)	Private borrowers around Ziway	Determinants of loan repayment performance using tobit model	Education, access to other sources of income, and related work experience prior to taking the loan were found to enhance loan diversion.
Bekele *et al*	309 borrowers	Logistic	Borrowers who took larger loans

(2003)	of input loan in Oromia and Amhara Regions	Regression	were able to show better repayment performances. Ownership of livestock was also a positive factor affecting loan repayment performance. On the other hand, late disbursement of inputs was found to be a problem.
Jemal (2004)	11 PAs out of 14 in Gebreguracha town, Oromia region. The sample size was 203 (9.3% of the total beneficiaries of the program	Determinants of loan repayment performance two limit Probit Model. Impact on clients was analyzed as before and after.	The most significant determinants of loan repayment are education, loan size, loan diversion, availability of other credit sources, loan supervision, loan repayment period, income and value of livestock. Clients' income has shown improvement after they have joined the program; the credit scheme has 13 contributed positively towards improving the living standards of the clients in terms of income, access to education, medical facilities and nutritional status.
Padma M. and Getachew (2005)	Women Clients of Omo and Sidama MFIs in Awassa town, SNNP	200 women were randomly selected out of the total 1962 active clients. Simple percentages were calculated for the analysis.	their children to private schools and build assets. However, lack of entrepreneurial skills is observed in the study area so much so that 63% of the respondents indicated low returns in business and marketing problems as major obstacles.

Getaneh (2005)	Amhara Credit and Saving Institution	A before and after the program analysis of impact on clients	ACSI has brought very little impact in poverty reduction and enterprise development. The outreach performance is also minimal. The poor marketing situation, lack of infrastructure (road network in particular) and lack of business skill by the borrowers have negatively affected the performance of ACSI.
Haileselassie (2005)	Specialized Financial and Promotional Institution (SFPI), and Poverty Eradication And Community Empowerment Microfinance Institution (PEACE)	Level of outreach to the poor and financial sustainability of the institutions were used for analysis	Both MFIs have achieved a good balance in terms of reaching the poor and women, repayment performance and increment in savings. Though these institutions are not financially selfsustainable, there is evidence that their progress is promising, but can achieve it with adjusted lending interest rates.
Tassew (2005)	35 Watersheds in Central Tigray	Focus-group discussions involving 430 people were held. Cost-benefit Analysis of different economic activities were done for analysis	The most important activities that best fit into the current microcredit system in the region are petty trading, goat fattening and poultry development. Loan size needs to be increased and repayment period needs to be lengthened to make income diversification work better.
Berhanu (1998)	North Shoa, Amhara	Improvement in income	Credit has brought positive impact on the life of borrowers

	Region	as proxy indicator for improvement in living standards of the poor	
Fiona (2000) and Zaid (2000)	DECSI, Tigray	Secondary data as well as descriptive analysis	DECSI has brought a positive impact on living standards of people in Tigray
Asmelash (2003)	Tigray	Descriptive Statistics, Chi-Square Test and ANOVA	The credit provided to the poor has brought a positive impact on the life of the clients as compared to those who do not get access to these microfinance services. He showed that micro finance has brought a positive impact on income, asset building, and access to schools and medical facilities in the study area.
Bekele (2002)	MFIs in Addis Ababa	Review of secondary data Sources	MFIs in Addis Ababa need to: consider individual and cooperative credit delivery system, increase lending interest rates, lengthen the period of loan repayment, and open up additional financial services to meet the demands of the poor.
Alex, Heller Valle Joe, Weldehana, Tassew (2003)	DECSI, Tigray		the financial services of DECSI programs has had a positive impact on the lives of the clients. About 3/4 of the clients belong to the poorest population groups. It has been fairly successful in terms of poverty outreach. Compared to non-clients persons who have never been DECSI clients have been significantly more likely to have

			improved their life situation over the last five years. Their situation has improved in terms of income, consumption and asset.

2.3 Brief Description of MFIs in Ethiopia

The formalization of the MFIs, in Ethiopia was preceded by a micro credit which was used to be provided in a fragmented and unplanned manner even during the early 1970s. The micro credit scheme was donor driven rather than an outcome stemming from a clear policy direction and development strategy. Nor were these interventions market or demand driven and sustainable as they were almost grant based with little growth stimulating effect. There was no proven inbuilt credit risk management system. Credit was given based on neither on group lending nor on the basis of other form of collateral. Their outreach and impact has also remained limited (IFAD, 2001). Another feature of these credit schemes is that all were trying to address the credit delivery service alone. The provision of savings facilities, which is essential for a sustained service delivery, was completely ignored.

The government has encouraged the development of micro financial services, largely due to the rural people. The agricultural development strategy (2001) of the government takes rural finance as one of the key factors for enhancing

agricultural production and ensuring food security. A legal framework for the establishment and operation of micro finance institutions is provided by proclamation NO 40/1996. The proclamation stipulates that MFIs are to be established as share companies wholly owned by Ethiopians and should be licensed by the NBE. Following this Proclamation, about 28 MFIs have been established, and the fragmented provision of micro credits by various NGOs and government departments has now been better streamlined. The main objective of the MFIs in Ethiopia is to deliver micro-loans, micro-savings, micro-insurance, money transfer, leasing, etc to large number of productive yet resource-poor people in the country in a cost-effective and sustainable way.

2.2.1 Geographic Outreach/Coverage

Geographically, MF programs operate in Amhara, Tigray, Oromia, SNNP, Benshangul Gumuz, Regional States, and Addis Ababa and Dire Dawa City administrations. Not less than 40 percent of the MFIs operate in Addis Ababa followed by Oromia and Amhara Regional States. According to the study document prepared by Partners (2007), the majority of clients of the MFIs (78 percent) are rural households though significant variations are observed across the MFIs.

DECSI of Tigray has the widest coverage, reaching almost 84 percent of households in the region, while ACSI and the other three MFIs operting in Amhara have reached 13 percent of the total number of households in the region. The study document further describes that MFIs in Ethiopia can be broadly categorized into large (those having an outstanding loan balance of USD 5 million and above), medium (USD 900,000- USD 5 million) and small (below USD 900,000). There are five large and seven medium MFIs. The large MFIs include DECSI, ACSI, OCSSCO, ADCSI and OMFI. Among the medium are Wisdom, PEACE Sidama, SFPI, Eshet, Benshangul and Gasha. The others are classified as small. In terms of clients' numbers, DECSI and ACSI accounts for two-third of the overall client base of MFIs in Ethiopia. See appendix A Table 2.1 for Microfinance Institutions Operating in Ethiopia as at June 2007.

In general, MFIs have not covered all the regions in the country in their services and outreach due to drought and predominance of agricultural difficulties; inadequate infrastructure; lack of public awareness; and limited financial and skilled human resources. Lack of strict supervision, weak internal control and marketing strategy, negative effects of HIV/AIDS and market failure are also believed to contribute to limited outreach and growth of MFIs.

3. DATA AND METHODOLOGY

3.1. Sampling designs and data collection mechanisms

In this paper we use longitudinal panel data which were collected from a series of surveys conducted in the rural Tigray that covers the period from 1997 to 2006. The panel data set comes from a sub-sample of a bigger household survey that initially covered 100 villages in Tigray. Four of the five administrative zones - Southern, Eastern, Central, and Northwestern- that cover most of the highlands of Tigray are included in this study. This comprises eleven *Woredas* (districts) where a DECSI branch is located to serve the villages in its premises. Sixteen villages are sampled from each zone. The survey was conducted in four rounds (1997, 2000, 2003, and 2006). Efforts were made to keep the seasonal comparability among rounds. To achieve better representation, sampling was done at two stages. First, stratified by altitude (mainly highlands), agricultural potential, population density, and access to infrastructure (mainly market, credit, and irrigation), four *Tabias* were selected from each zone. A *tabia* contains a group of villages. One village is selected from each sample *Tabia.* Second, a total of 400 borrower and non-borrower households, 25 from each village were randomly selected from the village list.

Geographically, this sampling covers most of the densely populated highlands (1500 meters above sea level) and hence credit provision is widely distributed parts of the region. The western and southern lowlands that are less densely populated but are endowed with relatively better land resources and have unique climate are not included in this study. Multiple purpose household questionnaires were used to assess household on-farm and off-farm income, consumption expenditure, housing and assets, credit and saving information and access to infrastructure alongside a host of other information related to household characteristics, demographic factors, access to market and other services, migration, agricultural (livestock and crop) production and related investments, sales of agricultural goods and purchases. Information related to location of villages or other important levels of variables were also collected. The data collected from field survey form the basis for empirical analysis in this thesis.

Moreover, information were gathered related to household perception of access to and participation in credit markets, both from formal and informal, their corresponding credit limit, the purpose for which the credit was used farm investment, business, consumption smoothing and other family or social events and the repayment conditions in four rounds survey from 1997 to 2006 on a sample of 400 randomly selected households. Out of these 351 sample households were used

for the analysis part. Because this study relies on panel data to assess the impact of program participation, the study sample was restricted to 351 households that were interviewed in four rounds.

3.2 Methodology

Both descriptive and econometric tools were employed so as to analyze the long-run impacts of micro-finance (DECSI) on rural household's poverty. A summary statistics and tabulation of field data are used to explain the demographic characteristics of respondents as well as to examine the impact of DECSI's intervention toward improving the living standard of clients. Then an econometrics model was constructed to measure the impact of DECSI's credit access on the poor rural household's consumption expenditure and poverty using the available panel data. Specifically, the study attempts to test the impact of program participation on poverty reduction and the impact of access to credit on consumption poverty.

3.3 Modeling consumption poverty and program participation

Due to the dependence of rural economy on rain-fed agriculture, income and consumption of rural population are highly volatile depending on the weather. With

the absence of formal insurance and credit market, consumption smoothing is one of the difficult challenges for rural households. Morduch (1995) argued that though one rural farmer doubt different consumption and income smoothing mechanisms with absent or underdeveloped formal insurance and credit market, access to credit from the informal market and running down one's assets and selling are still important smoothing mechanisms. As MFI is available in rural villages of Northern Ethiopia, Tigray, using a model of consumption determination, it is possible to pick out the importance of access to credit (DECSI's credit) for consumption smoothing in rural areas Tigray. An individual is considered poor if his or her consumption or income falls below a certain threshold. This threshold defines the poverty line. We want to determine the impact of Microfinance program participation on the consumption side of poverty using regression analysis. Two pertinent problems are associated in using regression based determinants of poverty. One difficulty is how to construct a model of consumption expenditure based on some theoretical framework, which otherwise consumption expenditure is simply a linear (monotonic) transformation of the variables in the model so that the causation is not determinable. The common practice is to regress the logarithm of consumption per capita on a set of variables believed to determine consumption.

(3.1) $\ln pcC_{it} = \beta_0 + X_{it}\beta + u_{it}$,

Where $\ln pcC_{it}$ *is* log of per capita household yearly consumption expenditure, X_{it} is the vector of selected poverty indicators at time t, β is a vector of unknown parameters and u_{it} is an error term that is assumed to be distributed according to the standard normal distribution. The assumption on normality is applied. It is also assumed that u_{it} and X_{it} are uncorrelated. The logarithmic transformation of the consumption variable serves to reduce the usual asymmetry in the distribution of the error term and stabilizes the variance. The second problem is a problem of endogeniety of the variables. Efforts to assess the impact of microfinance programs can be biased by non random program placement and participation. Anti-poverty programs such as microfinance are often either placed in areas where the incidence of poverty is high or similarly, those who participate may self-select into a program based on unobserved factors such as entrepreneurial ability. Thus simply comparing the incidence of poverty in program and non-program areas may lead to the mistaken conclusion that estimated effects may under or over estimated depending on the type of analysis. Efficient and unbiased estimates of the parameters cannot be obtained without treating the non random program placement and participation effects as fixed. The consumption model in (3.1) above has the feature that the marginal effects of the determinants of consumption are constant across households and there are no unobserved effects. It is however arguable that there is

heterogeneity across households and the marginal effects themselves depend on household characteristics. Moreover, consumption is affected by a number of unobservable effects such as religion, cast, tradition, etc. This leads us to allow for a range of interaction effects of closely-correlated determinants of consumption-expenditure, scale effects of some of the variables such as household size, land, etc., as well as non-observable effects as shown in the model below:

(3.2) $lnpchhex_{it} = \beta_0 + X_{it}\beta + Z_i\gamma + \alpha_i + u_{it}$, $(i\ 1, 2, , N; t\ 1, 2, ,T)$

The disturbance u_{it} is assumed to be uncorrelated with Xit and α_i and has 0 mean and constant variance σ^2. The latent individual effect α_i *is* assumed to be a un observable time invariant individual variable with zero mean and constant variance σ^2. $X_{it\ and}\ Z_i$ are the observable household and community level time variant and time-invariant variables that affect household consumption expenditure. Moreover, the X_{it} and Z_i are factors assumed to be correlated with the time invariant individual variable α_{ii} but not to the disturbance term u_{it}, that is,

Cov (Xit, Z_i, u_i) = *0 but*

Cov (Xit,Z_i,α_i) is assumed to be different from 0 for some Z's and X's variables

The two main methods of dealing with α_i are to make the random effects or fixed effects assumption:

1. Random effects (RE): Assume α_i is independent of X_{it},Z_i or $E(\alpha_i \mid X_{it},Z_i) = 0$

2. Fixed effects (FE): Assume α_i is not independent of X_{it},Z_i.

3.3.1. Variables for regression

While selecting variables for regression, two important points are considered: the importance of the variable to determine poverty and its exogeneity to current consumption. Table 3.1 and 3.2 shows the list of variables used in the regression model and their summary statistics. The variables include: (1) demographic variables such as household size, age of household head, sex of household head, and age square of households; (2) education variables such as education of head of the household which is dummy for head of a household with the ability to write and read; (3) household assets such as per capita land owned and oxen owned; (4) access to credit such as dummy variable indicating whether the household is program participant or not; (5) community characteristics such as access to micro dam and access to extension program trainings given by the government and branch of DECSI in the village; and finally (6) other variables such as non-farm income and time dummy variables for each year are included to capture time variability of consumption.

Table 3.1. Description of variables

Variables	Description
lnc_i	the logarithm of per capita yearly consumption expenditure of households in rural Tigray
c_i	per capita yearly consumption expenditure of households in rural Tigray
Household size	the household size that used as a proxy for labor
Household size squared	age of the household size squared
Age of household head	age of the head of the household
Age of household head squrd	represents the age squared which can shown as a non-linear relationship between age and consumption
Education of household	represents the educational level of the household head
DECSI Participation	it is a dummy variable which indicates whether the household is program participant (DECSI)
Credit cycle	it shows the loan frequency of the household from the program
Land per capita	the land size of the land holding by household in hectare
Land per capita sqrd	the land size of the land holding by household squared in hectare
Value of household asset	the total value of asset of households in Ethiopian Birr
oxen	the number of oxen owned by the household which can be used as proxy for capital owning to ox-plough culture in rural Tigray
Non-farm income	it indicates whether the household has participate in non-farm income activities
Micro_dam	it shows whether the household has access to irrigation in his village
Extension program	it indicates whether the household has access to extension training program
Branch (DECSI)	it represents whether the household know that there is DECSI branch in his village
a_i	it captures unobserved, time constant factors that affect consumption expenditure or consumption poverty i.e., unobserved heterogeneity (individual heterogeneity term that
e_{it}	may contain initial endowment and non-random program placement)
	is an idiosyncratic error term or time varying error

3.4 Summary Statistics of Variables

The following table describes the summary of variables used for fixed effect model of analysis. Summary statistics like mean, standard deviation, minimum, and maximum are included.

Table-3.2 Summary statistics

Variable	Mean	Std. Dev.	Min	Max
Household size	5.282051	2.351552	1	13
Household size squared	33.42593	26.58296	1	169
Sex of household head	.2435897	.4294009	0	1
Age of household head	52.87464	14.85175	19	92
Age of household squd	3016.145	1607.109	361	8464
Household skill	.1168091	.3213071	0	1
Education of household	.275641	.4469959	0	1
DECSI participation	.4501425	.4976853	0	1
Credit cycle	1.784188	1.050272	0	4
Land per capita	.249361	.2561796	-.0625	2.5
Landper capita sqrd	.1277621	.4195876	0	6.25
Value of household asset	2.319424	46.09086	0	1690
Oxen	.8810541	.9548376	0	10
Nonfarm income	.7421652	.4375984	0	1
Micro_dam	.514245	.4999751	0	1
Extention program	.1645299	.3708879	0	1
Branch (DECSI)	.7645299	.4259442	0	1

As the above data shows the mean age of households is 52.8 which is at the productive age group. This implies that the program development is important for generating income and employment opportunities for productive citizens. With

regard to education level, most of the household heads are illiterate. The above table clearly shown that the program creates a great opportunity for credit access not only for literate people but also for less skilled labor force. In addition to this, household size can be taken as criteria to decide whether the microfinance program development and expansion is critical tool for poor households in rural areas to reduce poverty and its outcomes. It indicates a strategic choice to bring a fast change in the socio and economic situation of the poor household. According to the above figure, the mean household size of the respondents is 5 which is large household size. This means microfinance program is serving as means of existence for many people of rural households.

4. RESULT AND DISCUSSION

Two tests has conducted: one to check for the existence of random effects and another to check if some of the explanatory variables are correlated with the random individual effect. The Breusch-Pagan Lagrangian ultiplier effect was used to test the panel data set for unobservable effects. The null hypothesis is that the variance of the household specific error component is equal to zero, that is, $\text{var}(\alpha_i) = 0$ in equation (3.2) above. The test statistic, as shown in table 4.1, of the panel regression has a chi-square distribution with one degree of freedom. The calculated test statistic of 54.7 comfortably rejects the null hypothesis of zero variance at the 1 per cent significance level. This indicates that the individual specific effects are

statistically significant and this supports the use of panel estimation, rather than the pooled OLS method.

Table 4.1 Breusch and Pagan Lagrangian Multiplier test for random effects

lnpchhexp[hid,t] = Xb + u[hid] + e[hid,t]

Variables		Variance	Standard deviation=sqrt (var)
Per capita household expenditure (lnpchhexp)		.5948056	.7712364
	E	.2706179	.5202095
	U	.050216	.2240892

Test: Var(u) = 0
chi2(1) = 54.57
Prob > chi2 = 0.0000

Given the unobservable effects, the next step is to look at the potential correlation of α_i with some of the X's ans Z's so as to choose either a fixed effects model (FE) or a random effects model (RE). The Hausman (1978) specification test were used to determine whether some of the regressors are correlated with the household effect (the fixed effect) or all regressors are not correlated with the individual effect (random effect). The Hausman specification test is based upon the contrast between the FE and RE estimators. One of the crucial assumptions of the RE model is that the individual specific effects are uncorrelated with the exogenous variables also

called the orthogonality assumption i.e. $E(\alpha_i \mid X_{it}, Z_i) = 0$. If this assumption holds, the estimator in the RE model is efficient. The failure of this assumption makes the estimator of the RE model biased and inconsistent. On the other hand, even if the orthogonality assumption is violated, the estimator in the FE model remains unbiased and consistent. The test statistic for the hypothesis that α_i and Z's,Xit are uncorrelated is the Hausman chi-square statistic. This means:

H_0: $\alpha_i \perp X_{it}, Z_i$

H_a: $\alpha_i \not\perp X_{it}, Z_i$

If H_0 is true, both β_{FE} and β_{RE} are consistent, but only β_{RE} is efficient. If H_a is true, β_{FE} is consistent but β_{RE} is not.

The basic idea of the Hausman test is to form the difference between the estimator in the FE model and the estimator in the RE model, $q = \beta_{FE} - \beta_{RE}$, and see if the estimates vary widely. If the orthogonality assumption holds, both estimators should be consistent and thus, no systematic difference need be observed. If there is systematic difference, then we have to consider the possibility that the assumptions of the exogeniety of the regressors in the RE model are questionable.

Table 4.2 shows that under the null hypothesis of zero correlation between the error term and the regressors, the test statistic is asymptotically distributed as chi-squared with the degrees of freedom equal to the number of regressors. The calculated test

statistic with a significant value of chi2 rejects the null hypothesis of orthogonality at five per cent significance level. This means that the difference in coefficients as shown in column 3 is systematic and leaves us with the fixed effect model to get consistent parameter estimates.

Table 4.2 Hausman specification test between FE model and RE model

Variable	(b) Coefficient of FE model	(B) Coefficient of RE model	(b-B) Difference	Standard error S.E.
Household size	-.3783001	-.30764	-.0706601	.0209078
Household size sqrd	.0223793	.0179245	.0044547	.001687
Sex of hhhead	-.0288445	-.0302189	.0590633	.0215506
Age of household head	.0166219	.0108464	.0057755	.0045838
Age of household squrd	-.0001459	-.0001042	-.0000416	.0000437
Household skill	-.0268135	.0877235	-.1145371	.0229296
DECSI participation	.0741385	.090113	-.0159745	.0142326
Land per capita	.0928433	.402706	-.3098627	.0739443
Land per capita sqrd	-.0091089	-.1290669	.1381759	.0397235
Oxen	.0171413	.0413024	-.0241611	.0091902
Value of household Asset	.0001993	.0002264	-.0000271	.0001281
Micro_dam	-.0153156	-.0299206	.014605	.0207457
Extension program	.0012403	.0370711	-.0358307	.0209528
Branch (DECSI)	.1433783	.0636159	.0797625	.0294054
Dummy 2000	-1.205026	-1.189812	-.0152135	.
Dummy 2003	-.9511128	-.9626797	.0115669	.
Dummy 2006	-.9742492	-.957244	-.0170052	.

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

Chi2 = 70.01

Prob>chi2 = 0.0000

Therefore, in this thesis result estimation is made using household fixed effect estimator of panel data analysis to account for a positive correlation between the individual heterogeneity and the explanatory variables. The fixed effect estimation has an advantage over random effect model in that it account for the possible correlation between the responsive variables and unobserved heterogeneity (entrepreneurial ability and non-random program placement) without running into incidental parameter problem as α_i *(*unobserved heterogeneity) is not estimated along with the β (Wooldridge, 2002).

The panel household survey provides a way of controlling for the joint determination of consumption expenditure and DECSI participation, and provides framework for measuring the impact of credit on consumption expenditure using the household fixed effect method. The fixed effect estimation strategy has been employed to eliminate the impact of non-random program placement bias and to control other unobserved individual heterogeneities. The per capita expenditure and program participation and other variables are in the log-linear form, in attempt to eliminate heteroskedasticity problem. Although it was not possible to avoid the

problem entirely, the researcher selects the log-linear form which yielded the lowest X^2 values. We corrected also for heteroskedasticity by estimating robust standard error (White, 1980). Thus the coefficients measure percentage effect on the dependent variables. The consumption model is further separated in to two components i.e.,

i. Impact of program participation on household Per Capita consumption Expenditure (food expenditure and nonfood expenditure)

ii. Impact of program participation on household Per Capita food consumption Expenditure

4.1. Household Per Capita Consumption Expenditure

Household Demographics characteristics

As shown in table 4.3, the age of the household is negatively correlated to household expenditure or consumption poverty and is significant with a relatively small marginal effect. Households headed by older household heads, holding other variables constant, will tend to be poorer than those headed by younger household heads. This could be due to the fact that agriculture in northern Ethiopia requires

heavy physical labor and if households with older heads have insufficient labor in their household, they are at a disadvantage economically to undertake agricultural work. Among the demographic factors, household size has a significant negative effect on household expenditure as measured by real consumption per adult equivalent. Households with a larger family size are poorer than households with a smaller family size. This inverse relationship between consumption and size of household is a common finding in many empirical studies (Ravallion, 1995; Datt and Jolliffe, 2005; Shimeles, 2005).

Assets

Land is an important asset in the rural areas of northern Ethiopia. It has a positive and significant effect on household's expenditure. Households with more land per capita have a higher household expenditure than households with less land per capita. A rise in cultivated land by 1 hectare, will increases household consumption expenditure by 11 percent. Another important asset in agriculture with a significant and positive effect is the number of oxen owned. Oxen are the main source of agricultural power. We find that an increase in oxen ownership by one animal increases welfare by 6 percent.

Table 4.3 Fixed effect estimates of household Per Capita ConsumptionExpenditure

Variables	OLS Coefficients	OLS Fixed effect Coefficients
Constant	6.10***	6.31***
	(27.62)	(32.65)
Household size	-0.25***	-0.26***
	(-6.71)	(-8.60)
Household sizesquared	0.02***	0.02***
	(4.52)	(5.67)
Age of household head	-0.01	-0.07**
	(1.51)	(2.16)
Age of household sqrd	0.00	0.00
	(-1.12)	(-1.20)
Education of household head	0.06	0.02
	(1.23)	(0.54)
DECSI participation	0.10**	0.073**
	(2.61)	(3.10)
Land per capita	0.10**	0.11***
	(2.75)	(3.56)
Land per capita sqrd	-0.01*	-0.01**
	(-2.13)	(-2.94)
Oxen	0.04	0.06**
	(1.89)	(2.82)
Branch (DECSI)	0.41***	0.08*
	(10.68)	(2.05)
Micr-odam	0.20***	0.04
	(5.22)	(1.14)
Non-farm income	0.00	0.06*
	(0.08)	(2.64)
Dummy 2000		0.18***
		(3.52)
Dummy 2003		0.16***
		(3.31)
Dummy 2006		1.12***
		(20.75)

Observations	1,404	1,404
R-squared	0.18	0.44
Adj. R-squared	0.17	0.44

Program participation

The household level fixed effect result suggest that controlling for household demographic and other factors, access to microfinance program significantly and positively affects the household per capita yearly expenditure. As the marginal effect or coefficient suggests that program participation increases (boost) the household per capita yearly expenditure by around 7.3 percent. This reflects access to credit has a long term positive effects on household consumption expenditure.

Community level characteristics

Among the community level characteristics, Non-farm income has a positive impact on household consumption expenditure. The access to non-farm income is positively related to consumption expenditure with a statistically significant coefficient at 10 percent. Another community level characteristic considered is access to micro-dam or irrigation. The household fixed effect result indicates that access to irrigation has positive effect. But It is statistically insignificant at the 10

percent level. Finally, the dummy variables entered to control year specific variability in consumption are significant. This could be partly due to a response to the good harvest in those particular years.

4.2 Household Per Capita food Consumption Expenditure

Household Demographics characteristics

As shown in table 4.4, the age of the household is negatively correlated to household expenditure or consumption poverty and is significant with a relatively small marginal effect. Households headed by older household heads, holding other variables constant, will tend to be poorer than those headed by younger household heads. This could be due to the fact that agriculture in northern Ethiopia requires heavy physical labor and if households with older heads have insufficient labor in their household, they are at a disadvantage economically to undertake agricultural work. Among the demographic factors, household size has a significant negative effect on household expenditure as measured by real consumption per adult equivalent. Households with a larger family size are poorer than households with a smaller family size.

Table 4.4 Fixed effect estimates of household Per Capita Food Consumption Expenditure

Variables	OLS Coefficient	OLS Fixed Effect Coefficient
Household size	-0.26***	-0.26***
	(-6.83)	(-7.73)
Household size squared	0.01***	0.01***
	(4.46)	(4.90)
Age of household head	-0.01	-0.051
	(1.06)	(0.88)
Age of household squared	0.00	0.00
	(-0.76)	(-0.88)
Education Household head	0.04	0.04
	(0.88)	(0.98)
DECSI Prog participation	0.12**	0.10**
	(3.24)	(3.05)
Land per capita	0.10**	0.12***
	(2.96)	(3.93)
land per capita squared	-0.01**	-0.01***
	(-2.61)	(-3.60)
Oxen	0.06*	0.06**
	(2.46)	(2.95)
Branch (DECSI)	0.32***	0.07
	(8.40)	(1.75)
Micro-dam	0.20***	0.08*
	(5.51)	(2.25)
Non-farm income	-0.00	0.08*
	(-0.10)	(2.14)
Dummy 2000		-0.02
		(-0.39)
Dummy 2003		0.00
		(0.07)
Dummy 2006		0.84***
		(15.39)
Constant	5.99***	6.13***

	(26.78)	(29.79)
Observations	1,404	1,404
R-squared	0.17	0.37
Adj. R-squared	0.17	0.37

Program participation

Table 4.2 clearly indicates keeping other factors constant, access to credit or program participation has a positive and highly significance effect on per capita food consumption or food poverty. As the marginal effect suggest program participation increase the household per capita expenditure by around 10 percent which is much higher than the impact on per capita household total consumption expenditure. In addition, the awareness of people about the existence of microfinance branch in their area has a positive impact on household's consumption expenditure. This is because rural households are tending to participate and get access to credit from the branch nearby their village during critical time.

Assets

As far as the land as important asset, the table shows that it has a positive and

significant effect on household's expenditure. Households with more land per capita have a higher household expenditure than households with less land per capita. A rise in cultivated land by 1 hectare, will increases household food consumption expenditure by 12 percent which is higher than the impact on total consumption expenditure. Another important asset in agriculture with a significant and positive effect is the number of oxen owned. Oxen are the main source of agricultural power. The study tells us that an increase in oxen ownership by one animal increases welfare by 6 percent.

Community level characteristics

Among the community level characteristics, Non-farm income has a positive significant impact on household consumption expenditure. The access to non-farm income is positively related to consumption expenditure with a statistically significant coefficient at 10 percent. Another community level characteristic considered is access to micro-dam or irrigation. The household fixed effect result indicates that access to irrigation has positive and significant effect. It is statistically insignificant at the 10 percent level. Finally, the dummy variables entered to control year specific variability in consumption are significant. This could be partly due to

a response to the good harvest in those particular years.

4. CONCLUSION

The thesis assesses the long-run impacts of Dedebit Credit and Savings Institution (DECSI) on rural household consumption expenditure and poverty based on panel data from Northern rural Ethiopia spanning for ten years from 1997 to 2006. The panel nature of the data enabled to estimate a model of consumption poverty determinants by controlling for unobservable individual specific characteristics and other issues of endogeniety. Having this purpose, the study attempted to investigate the channel through which program participation may affect poverty. This are found to be through percapita consumption expenditure and percapita food consumption expenditure.

The household level fixed effect suggest that controlling for household demographic characteristics and other factors, access to credit or program participation has a significant and highly positive impact on the household per capita consumption expenditure and per capita food consumption expenditure. As the marginal effect shows that program participation increases the per capita consumption expenditure and per capita food expenditure by 7.3 and 10 percent

respectively. The evidence points to the fact that microfinance plays an important role in poverty reduction through consumption smoothing during critical seasons. In general, access to microfinance program has a positive and significant effect on long-term permanent consumption implying that microfinance is a critical ingredient of consumption based poverty level and hence, it is pro-poor as it enhances the welfare of households. Finally, from this preliminary finding, we can conclude that Credit and Savings Institution (DECSI) has a long term positive impact on poverty reduction in rural area of Tigray.

In addition to program participation, household assets like land per capita and number of oxen owned have a positive and significant impact on the long term consumption poverty in rural Tigray. As the marginal effect shows, a rise in cultivated land by 1 hectare, will increases household consumption expenditure by 11 percent and household food expenditure by 12 percent. At the same time an increase in oxen ownership by one animal increases household consumption or welfare by 6 percent.

The results are resounding. Microfinance continues to reduce poverty among poor borrowers and within the local economy. It raises per capita household consumption for both participants and nonparticipants. In general, Microfinance is not a panacea for poverty and related development challenges, but rather an

important tool in the mission of poverty reduction.

BIBLIOGRAPHY

Alex, Joe, Weldehana and Tassew. 2003. *Credible Credit: Impact Study of the Dedebit Credit and Savings Institution (DECSI)*. Tigray, Ethiopia: Norwegian Institute of International Affairs.

AEMFI. 2009. “Ethiopia: Association of Ethiopian Microfinance Institutions”, Occasional Report.

Amha, Wolday. 2000. " Review of micro finance industry in Ethiopia: regulatory frameworks and performance." Occasional Paper No. 2 ,, Addis Ababa, Ethiopia.

Asmelash., B. 2003. "The Impact of Microfinance in Ethiopia: the case of DCSI in Ganta Afeshum Woreda of Eastern Tigray. M.A. Thesis, Department of RLDS, AAU." *M.A thesis, Department of RLDS, AAU.*

Banerjee and Duflo. 2006. " The Economic Lives of The Poor." *Journal of Economic Perspectives.*

Barnes, C. 2001. "Microfinance Program Clients and Impact: An Assessment of Zambuko Trust." Zimbabwe.

Berhanu. T. 1998. "Micro enterprise Lending Program and its Contribution to income in Urban Ethiopia: The case of Debre Berhan and Assela Branches of the Development Bank of Ethiopia." *A Master Thesis, Department of Regional and Local Development Studies (RLDS)*.

Boudreaux, K. C., and Cowen,T. 2008. "The Micro magic of Microcredit." *The Wilson Quarterly 32.1*: 27-31.

Daley-Harris, and Sam. 2009." Microcredit Summit Campaign: ." State of the Microcredit Summit Campaign Report, Washington, DC.

Fiona. M. 2000. " Impact of Micro Credit at Household." *Proceeding of the Conference on Microfinance Development in Ethiopia.* Awassa.

Fisherand Sriram. 2002. " Putting Development back into Microfinance." *Oxfam Publishing*.

Getaneh. G. 2005. " Can Impact on Poverty and Food insecurity be Improved up on?" *Proceedings of the International Conference on Microfinance Development in Ethiopia*. Awassa.

Hulm, D. and P. Mosely. 1998. " Micro Enterprise Finance: Is there conflict between growth and poverty alleviation? ." *World development*: 783-790.

Kejela. G. " Analysis of Financial Returns to Resources for Financing Farm Enterprises in Central Zone of Tigray. 2005 ." *Proceedings of the International Conference on Microfinance Development in Ethiopia*. Awassa.

Kondo, T., Orbeta, A., Dingcong, C., and Infantad, C. 2003. "Impact of Microfinance on Rural Households in the Philippines ." *University of Manchester USA,MIT Press*.

Montgomery, R. 1996. "Disciplining or Protecting the Poor? Avoiding the Social Costs of peer pressure in Micro credit Schemes." *Journal of international development 8(2)*: 289-305.

Morduch, J. 1995. " Income Smoothing and Consumption Smoothing", The Journal of Economics Perspectives 9(3): 103-114.

Morduch, J. 1998. “Does microfinance really help the poor? New evidence from flagship programs in Bangladesh,” manuscript, Princeton University.

Moti, Daba. 2004. " The Impact of Micro-financing on Poverty Reduction: A case Study of Oromia Credit and Saving S.Co." *International conference on Microfinance Development in Ethiopia* . Awassa, Ethiopia .

National Bank of Ethiopia (2006/07), Annual Report, Addis Ababa, Ethiopia

PASDEP: 2005/06-2009/10, Addis Ababa

Padma M. and Getachew A. 2005. " Women Economic Empowerment and Microfinance: A Review on Exercises of Awassa Women Clients." *'Proceedings of the International Conference on Microfinance Development in Ethiopia.*

Razario., S. 2007. " The Dark Side of Microcredit: Pathways of Women's Empoowerment Against Gender Violence."

REPOA. 2005. " Access to Formal and Quasi-Formal Credit by Smallholder Farmers and Artisan Fishermen: A Case of Zanzibar." *Researching Poverty in Tanzania*.

Schreiner, M.J. 2002. "Aspects of Outreach: A Frame Work for Discussion of the Social Benefits of Microfinance." *Journal of International Development*: Vol.14, No.5.

Shimeles, A. 2005. *Essays on poverty, risk and consumption dynamics in Ethiopia.* PhD thesis, Sweden: University of Goteborg .

Simanowitz and Walters. 2002. " Appraising the Poverty Outreach of Microfinance." *A Review of the CGAP Poverty Assessment Tool (PAT)*. Routledge, London: Institute of Development Studies, Sussex University, Brighton Small Farmers and Microenterprises In Developing Countries.

Tassew.W. 2002. " The Impact of the Dedebit Credit and Savings Institution on Poverty Reduction and Community Development ." *Proceedings of the International Conference on Microfinance Development in Ethiopia,*. Awassa.

Tsehay T and Mengistu B. 2002. *The Impact of Microfinance Services among Poor Women in Ethiopia.*.Occasional Paper No. 6, Addis Ababa: AEMFI, Addis Ababa University Press.

Yunus, M. 2007. *Creating World without Poverty: Social Business and the Future of Capitalism.* New York: Public Affairs.

Wooldridge, J.M., 2002. "Econometric analysis of cross section and panel data." MIT press, USA.

Zaid, N. 2008. " Microfinance Loan Delivery, Utilization and Impact", With Specific Reference to Tigray, Ethipia. ." PhD Dissertation Micro finance Development in Ethiopia, Bahr Dar, Ethiopia.

APPENDIX A

Table-2.1 Micro Finance Institution Operating in Ethiopia as at June 2007

No	Micro-Financing Institutions	Regions	Total Capital		Saving		Credit		Total Assets	
			Amount	%	Amount	%	Amount	%	Amount	%
1	ACSI	Amhara	268,251.00	27.39	447,649.00	43.04	874,160.00	31.95	1,044,256.00	29.98
2	DECSI	Tigray	234,840.20	23.98	261,329.60	25.13	853,259.60	31.19	1,134,615.30	32.58
3	OSCA	Oromia	135,878.70	13.88	135,087.80	12.99	407,271.30	14.89	495,427.00	14.23
4	OCSI	SNNP	21,255.00	2.17	62,768.80	6.04	135,418.50	4.95	178,958.60	5.14
5	SFPI	A.A	11,988.30	1.22	10,691.00	1.03	24,602.80	0.90	30,322.90	0.87
6	Gasha Micro-fin. Ins.	A.A	4,557.90	0.47	5,128.20	0.49	13,448.20	0.49	18,645.00	0.54
7	Wisdom Micro-finacing Ins.	A.A	22,732.60	2.32	14,374.00	1.38	57,194.00	2.09	69,277.60	1.99
8	Sidama Micro-fiancing Ins.	SNNP	11,865.90	1.21	7,096.80	0.68	20,781.40	0.76	29,922.70	0.86
9	Aser Micro-financing Ins.	A.A	366.20	0.04	245.20	0.02	311.40	0.01	651.50	0.02
10	Africa Village Financial Serv.	A.A	7,207.10	0.74	2,458.00	0.24	7,924.40	0.29	11,922.50	0.34
11	Bussa Gonofaa Micro-fin	Oromia	10,374.50	1.06	3,379.00	0.32	18,474.00	0.68	24,446.20	0.70
12	Peace Micro-finance Ins.	A.A	9382.8	0.96	7,091.20	0.68	30,024.80	1.10	32,002.20	0.92
13	Meket Micro-financing Ins.	Amhara	2,069.30	0.21	507.80	0.05	2,165.10	0.08	2,935.60	0.08
14	ADCSI	A.A	158,183.00	16.15	51,529.00	4.95	166,037.00	6.07	238,188.00	6.84
15	Meklit Micro-finaning Ins.	A.A	4,743.60	0.48	4,948.00	0.48	14,181.90	0.52	16,219.40	0.47
16	Eshet Micro-financing Ins.	Oromia	11,447.00	1.17	3,554.50	0.34	33,004.60	1.21	36,662.50	1.05
17	Wasasa Micro-financing Ins.	Oromia	9,956.60	1.02	6,487.70	0.62	29,809.80	1.09	32,603.10	0.94
18	Benishangul-Gumz MFI	Banishing	18,015.90	1.84	7,687.80	0.74	25,004.40	0.91	32,778.80	0.94
19	Shashemene Idir Yelmat MFI	Oromia	2,939.70	0.30	819.10	0.08	2,581.10	0.09	3,784.50	0.11
20	Metemamen MFI	A.A	6,004.00	0.61	820.10	0.08	4,984.70	0.18	6,847.10	0.20
21	Dire MFI	Dire Dawa	16,199.50	1.65	1,457.90	0.14	4,295.70	0.16	23,801.40	0.68
22	Agar MFI	A.A	3,097.20	0.32	1,720.30	0.17	3,807.10	0.14	5,659.90	0.16
23	Harbu MFI	Oromia	1,200.00	0.12	1,612.00	0.16	3,849.00	0.14	4,383.70	0.13
24	Ghion MFI	Amhara	242.90	0.02	310.60	0.03	348.10	0.01	555.30	0.02
25	Leta MFI	Oromia	754.10	0.08	57.50	0.01	464.20	0.02	815.10	0.02
26	Diga MFI	A.A	218.80	0.02	778.50	0.07	583.40	0.02	1,078.10	0.03
27	Harar MFI		5,493.20	0.56	372.20	0.04	1,673.90	0.06	5,897.00	0.17
28	Lefayeda MFI									
	Total		**979,265.00**	**100.00**	**1,039,961.60**	**100.00**	**2,735,660.40**	**100.00**	**3,482,657.00**	**100.00**

Source: ***NBE Annual Report (2006/07)***

Note: A.A: Addis Ababa

- Recently established and hence data was not available