THE IMPACT OF MICROFINANCE ON RURAL POOR HOUSEHOLDS'
INCOME AND VULNERABILITY TO POVERTY: CASE STUDY OF MAKUENI
DISTRICT, KENYA

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von
Joy Mueni Maina Kiiru
aus
Machakos, Kenia.

ABSTRACT

Microfinance has become very important in global poverty reduction debates. The popular assumption is that enabling poor households access to credit helps households begin micro entrepreneurship which would enable them improve their incomes and eventually escape poverty. Evidence from research so far has been scanty, and many results have been highly contested.

The main objective of the thesis was to analyze the impact of microfinance on household income as well as measure household vulnerability to poverty after access to microfinance. The study is an experimental case of Makueni district where participants in microfinance programmes and non participant households were studied over time; thus yielding a rich pooled data for analysis. On integrating time dynamics in the analysis, the results indicate a positive and significant impact of microfinance on household income. To this end the thesis argues that there is a role of microfinance on the improvement of household incomes. The thesis also re asserts that providing affordable financial services to the rural population still remains to be an important component of development strategy.

On the other hand the thesis emphasizes that there is need to come up with innovative microfinance institutions that are supportive of their own role in assets accumulation and wealth creation for their clients. This will involve innovative targeting of potential clients, as well as streamlined microfinance regulations to protect their clients. In particular the study cautions that the ability of households to begin informal sole micro entrepreneurships should not be assumed to be adequate for the improvement of household income. There is need to create a policy framework to spur growth not only in the micro enterprises but also in the overall rural economy that would lead to the creation of employment opportunities and an increment in the agricultural output. This is quite a big task to accomplish and may require more than one particular policy intervention. In essence this calls for both private (microfinance) and public partnerships to create the environment where such poverty reduction objectives could be realized.

ZUSAMMENFASSUNG

Mikrofinanzierung ist in der globalen Debatte zu Armutsbekämpfung sehr wichtig geworden. Eine weit verbreitete Annahme ist, dass das Ermöglichen von Zugang armer Hauhalte zu Krediten diesen Haushalten die Möglichkeit gibt, sehr kleine Unternehmen zu gründen, die ihnen helfen, ihr Einkommen zu verbessern und unter Umständen der Armut zu entkommen. Wissenschaftliche Nachweise dessen waren bisher dürftig, und viele Forschungsergebnisse sind angefochten worden.

Das Hauptziel dieser Dissertation war die Analyse des Einflusses von Mikrofinanzierung auf Haushaltseinkommen sowie die Untersuchung der Anfälligkeit für Armut von Haushalten mit Zugang zu Mikrofinanzierung. Es handelt sich um eine experimentielle Fallstudie im Makuemi Distrikt in Kenia, für die Teilnehmer an Mikrofinanzierungsprogrammen und solche, die nicht an entsprechenden Programmen teilnehmen, über einen bestimmten Zeitraum beobachtet wurden. Dies resultierte in einem umfangreichen Datenpool. Nach der Einbindung aller gesammelten Daten in die Analyse zeigt sich ein positiver und signifikanter (allerdings schwacher) Einfluss von Mikrofinanzierung auf Haushaltseinkommen. Deshalb wird in dieser Dissertation argumentiert, dass Mikrofinanzierung eine Rolle in der Verbesserung von Haushaltseinkommen spielt und die These unterstützt, dass die Bereitstellung bezahlbarer finanzieller Dienstleistungen für die ländliche Bevölkerung eine wichtige Komponente von Entwicklungsstrategien bleibt. Darüber hinaus wird festgestellt, dass so lange Unternehmen immer noch eine Rolle für wirtschaftliches Wachstum spielen und so lange Mikrofinanzierung als Grundlage für Kleinst-Unternehmen zur Verfügung steht, weiterhin ein Bedarf an Mikrofinanzierung besteht.

Andererseits soll durch die Studie hervorgehoben werden, dass es nötig ist, innovative Institutionen zur Mikrofinanzierung zu entwickeln, die ihrer Rolle sowohl in der eigenen als auch bei der Vermögensbildung ihrer Kunden gerecht werden. Dies bedingt, die Zielgruppe, also potenzielle Kunden, innovativ anzusprechen, aber auch, einheitliche Regelungen für Mikrofinanzierung festzulegen, um die Kunden zu schützen. Die Studie stellt insbesondere heraus, dass die Fähigkeit von Haushalten, eigenständig informelle Kleinstunternehmen zu starten, nicht als alleiniger Garant für eine Verbesserung der Haushaltseinkommen gesehen werden kann.

Die Schaffung von politischen Rahmenbedingungen, die Wachstum nicht nur im Bereich der Kleinstunternehmen sondern auch allgemein die Wirtschaft im ländlichen Raum fördern, würde zur Schaffung von Beschäftigungsmöglichkeiten und zur Erhöhung der landwirtschaftlichen Leistungsfähigkeit führen. Das ist eine große Aufgabe, die es zu erfüllen gilt. Möglicherweise bedarf es mehr als eines speziellen politischen Eingriffes. Im Endeffekt sind Private(Mikrofinanzierung)–Public-Partnerships gefragt, um eine Umgebung zu schaffen, in der Armutsbekämpfungsziele umgesetzt werden können.

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LIST OF ABBREVIATIONS

CGAP: Consortium Group to Assist the Poorest

JLL: Joint liability Lending

MRFC: Malawi Rural Finance corporation

UNCDF: United nations Capital Development Fund

UNDP: United Nations Development Program

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DEDICATIONS

This dissertation is dedicated to my extremely supportive family: David, Samuel and Natasha

CHAPTER ONE

INTRODUCTION

1.1. General Introduction to the Study

The word microfinance is being used very often in development vocabulary today. Although the word is literally comprised of two words: micro and finance which literally mean small credit; the concept of microfinance goes beyond the provision of small credit to the poor. Christen (1997) defines microfinance as 'the means of providing a variety of financial services to the poor based on market-driven and commercial approaches' (Christen R.P., 1997)[1]. This definition encompasses provision of other financial services like savings, money transfers, payments, remittances, and insurance, among others. However many microfinance practices today still focus on micro-credit: providing the poor with small credit with the hope of improving their labour productivity and thereby lead to increment in household incomes.

Joint liability lending (JLL) which is the main focus of this study is the sort of microfinance model that is targeted to the very poor in society who can not even borrow individually but must borrow within a group of other borrowers. Participants of joint liability lending must organize themselves in groups, and act as security for each others loans. In reality, the group not the individual is responsible for loan repayment to the microfinance institution. The groups use peer pressure and peer monitoring to ensure that loans acquired by members are repaid. This study is mainly focused on participation and access to loans by the poor through Joint Liability Lending microfinance programs. The main interests of the study was to understand how members organized themselves in to borrowing groups; and how these groups operated as institutions, facilitating household access to credit. It was also the interest of this study to understand how households used the credit, and to measure the impact of that credit on household income.

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[1] Thus going by this formal definition, it is clear that the industry is not limited to the NGO MFIs but also include other institutions like financial co-operatives, ROSCAs, Savings Associations/Clubs, some welfare associations etc.

1.1.1 The current global Perception of microfinance

In the global arena there is already the impression that microfinance is successful in reducing poverty. Many policy makers are therefore engaged on how to make microfinance sustainable and available to many poor households in the future. Many stake holders in the microfinance industry especially donors and investors argue that, "Microfinance can pay for itself, and must do so if it is to reach very large numbers of poor households" (CGAP). The overall message in this argument is that unless microfinance providers charge enough to cover their costs, they will always be limited by the scarce and uncertain supply of subsidies from governments and donors. The main underlying assumption in this argument is that microfinance is already good for the clients, and therefore what is really urgent is to make the financial service available to as many poor people as possible. Morduch (2000) correctly points out that this kind of enthusiasm for microfinance rests on an enticing win-win proposition that: Microfinance institutions that follow the principles of good banking will also be the ones that alleviate the most poverty. The assumption being that with good banking practices it is possible to cover costs and operate in a sustainable manner to continue serving clients and alleviating poverty (Morduch 2000).

The "win-win" situation both for the investor and the poor can be explained as follows: The investor in microfinance programs follows good banking practices with the possibility of some profit, while the poor continue to benefit by accessing reliable credit that is assumed to be beneficial to their welfare. The supporters of the "win- win" proposition stress (mainly by assumption) that the ability to repay loans by the poor is a good indicator that whatever investments the poor make with their micro credit loans must be giving back profits. Given the assumption that microfinance is already beneficial to the poor, the "win-win" proposition further assumes that the amount of household poverty reduced is directly proportional to the number of households reached with microfinance. The "win-win" vision has been translated in to a series of "best practices" circulated widely by a number of key donors including the Consultative Group to Assist the Poorest (CGAP). CGAP is a consortium of NGOs hosted at the World Bank. Other donor organizations that embrace "best practice microfinance" include, United States

Agency for International Development (USAID) and the United Nations Development programme (UNDP) among other key donors. It is important to note that the proposal of a commercial approach to microfinance for the poor has been questioned by socially oriented service providers. Especially the assumptions underlying the "win-win" proposition have raised eye brows among socially oriented service providers who question the validity of such assumptions in the real world.

1.1.2 *The microfinance hype*

The 1997 Microfinance Summit called for the mobilization 0f $20 billion over a 10 year period to support microfinance. The United Nations proclaimed 2005 as the "Year of Micro-credit" while 2006 went a score higher to award a Nobel Peace Prize to the largely acclaimed founder of modern microfinance: Prof. Muhamad Yunus and the Bank he founded in the 1970s: the Grameen Bank. The recent publicity accorded microfinance potentially creates an image of an institution that is all success, thus lacking critique. To justify such significant hype and investment in the name of poverty reduction compared to other alternative investments for the same cause in other programs; it is important that the proposition that "microfinance reaches and helps the poor most" be proven and not just assumed.

Until very recently much of the enthusiasm about the positive impact of microfinance had been a matter of assumption. Most of the excitement was based on the great stories on the benefits and success of microfinance that have been told from around the globe and have gone a long way to turn microfinance from a few scattered programs in to a global movement. For example, there are the ever repeated stories of women and their families living at the verge of poverty and desperation, then eventually the lives of the household members take a turn for the better once these women are given the opportunity to access credit. The women usually do not get in to very sophisticated enterprises but rather they may buy some yarn and other sawing supplies, or start any other such humble business venture, and they are already off in to a route course that will see their households lifted out of poverty and can afford better nutrition, health and education for their children.

Aghion and Morduch (2005), observe that great anecdotes like these should not be substitutes for careful statistical investigations; there is need to have statistical information if indeed the success stories generally apply to most of the microfinance clients across the board. It is important to understand that these great stories are generally meant to illustrate the potential of microfinance while statistical investigations and analysis are meant to show typical impacts across the board. To many policy makers and donors, anecdotes like the ones described above, coupled with the fact that poor client are able to borrow and repay imply that whatever investments that the poor are involved in are good enough and therefore benefiting them.

1.1.3   Recent Studies and the Current Research Problem

Rigorous empirical analysis in the issue of statistical impact of microfinance began in the 1990s. The studies so far remain few and the results of these studies are highly provocative. The first school of thought questions the relevance of microfinance as a poverty reducing policy in the first place. (Adam & Von Pische, 1992) argued that "debt is not an effective tool for helping most poor people to enhance their economic condition be they operators of small farms or micro entrepreneurs". The main argument of Adam and Von Pische (1992) is that there are other more important constraints that face small agricultural households and they include product prices, land tenure, technology, market access and risk. Also in support of the same view is Gulli (1998) who argues that credit is not always the main constraint for micro enterprises´ growth and development, and that poor people demand a wide range of financial, business development and social services for different business and household purposes. In a close rejoinder Mayoux (2002) argues that the logical assumption of virtuous spiral[2] of economic empowerment to the household due to microfinance does not in reality exist. This is particularly so given that there exists gender relations in society in relation to loan uses; a scenario that more often that not leaves poor women borrowers highly indebted, and not much wealth to show for it (Mayoux 2002).

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[2] Virtuous spiral of economic well being refer to the positive chain of economic wellbeing that is assumed to originate from access to credit by a poor household. For example, access to micro credit may lead to micro entrepreneurship, leading to increase in household income, leading to increased household demand for goods and services and the alleviation of poverty.

Rigorous studies have shown that micro entrepreneurs below the poverty line experience lower percentage income increases after borrowing than those above the poverty line. Studies have also demonstrated that households below the poverty line tend to use the loans for consumption purposes to a greater extent than households above the poverty line; thus their income should be expected to increase less (Gulli 1998). Research findings that poor households are likely to use micro credit loans for consumption purposes yet their loan repayments rates are higher than repayment rates for the formal financial institution, which are normally used by the well off in society (Ghatak et al 1999) is quite intriguing.

As though to counter the negative arguments against the impact of microfinance on poverty reduction, other studies have found that microfinance is relevant to poverty reduction not just for the beneficiaries but also there are positive spill over effects to the rest of the community (Khandker 2006). In his study Khandker (2006) uses a panel household survey from Bangladesh and observes that access to microfinance contributes to poverty reduction, especially for female participants, and to the overall poverty reduction at the village level. Pitt and Khandker (1998) find, using data from three programs in rural Bangladesh, that borrowing from group-lending schemes increased consumption of poor households. However, Morduch 1998b has argued that Pitt and Khandker's result reflect program selection effects rather than the impact of borrowing per se.

There are also other studies that seem to support to some extent the relevance of microfinance in poverty reduction. Morduch (1999) argues that microfinance has had positive impact on poverty reduction. However he is keen to add that "Even in the best of circumstances, credit from microfinance programs helps fund self employment activities that most often supplement income for borrowers rather than drive fundamental shifts in employment patterns. It (microfinance) rarely generates new jobs for others and success has been especially limited in regions with highly seasonal income patterns and low population densities (Morduch 1999)".

Other similar studies have shown that microfinance may be relevant for poverty reduction, but does not reach the poorest as often claimed. The results from these studies

have identified beneficial impacts to the "active poor" but argue that microfinance does not assist the poorest as it is often claimed mainly because it does not reach them (Hulme and Mosley, 1996, Sharma 2000, Kiiru and Mburu, 2007). This group of studies often report mixed results suggesting the possibility of both positive and negative impacts for different households. Coleman (2006) found that microfinance programs have a positive impact on the richer households but the impact is insignificant to the other poorer households. In Coleman's (2006) study, richer households were able to commandeer larger loans to themselves because they sat in influential positions in the village banks as committee members. Coleman (2006) argued that it is the size of loans that households were able to acquire that was very important in determining the impact of those loans in household incomes. In the same study, many poor women borrowers dropped out of the borrowing programs citing the size of loans as too small to make any significant investments that that can significantly improve their incomes. In his study of Bolivia's Bancosol, Mosley (1996) reports that in any given cohort roughly 25 % showed spectacular gains to borrowing , 60-65% stayed about the same, and 10 to 15% went bankrupt (Mosley 1996). Kiriti, (2005) argues that microfinance tends to indebt too poor women leaving them more vulnerable and exposed. In the study, Kiriti (2005) concentrates on the impact of microfinance repayment on household assets. The findings are that poor households depleted livelihood assets in the course of loan repayment since the income generating activities were not raising enough profits to repay the loans on time.

Aghion and Morduch 2005, observe that microfinance can make a real difference in the lives of those served, but microfinance is neither a panacea nor a magic bullet against poverty, and it can not be expected to work every where and for every one. Much as there have been mixed statistical impacts of microfinance, there also has been no widely acclaimed study that robustly shows strong impacts, but many studies suggest the possibility of good welfare impact (Aghion and Morduch 2005). More research should therefore be directed towards not just specific results but also the context within which particular results are expected. What worked in a particular socio cultural and economic context may not necessarily work the same if the socio cultural and economic conditions

are changed in another context. This kind of focus for future research will contribute more to knowledge, for the purposes of policy.

It is within this background that this study is conducted. Specifically the study focuses on the impact of microfinance on poor rural households´ income, and household's future vulnerability to poverty. To achieve this the study keenly focuses on household participation and access to credit through Joint Liability Lending (JLL) programs, household credit (cash) allocation and subsequent loan repayment. There is a special reason why the study chose to concentrate on joint liability lending programs other than other models of microfinance. This is because joint liability lending model targets the much poorer population. Poverty reduction is clearly spelled out in many of the objectives of such microfinance models. Not all microfinance institutions have poverty reduction as a primary mission. The microfinance industry today consists of a wide range of institutions serving different market niches with the sole aim of providing small scale financial services to businesses and households traditionally kept outside the financial system; without necessarily having a poverty reduction mission.

In particular there are four main objectives of the thesis. All the objectives are closely interrelated if we were to have a systematic understanding of the impact of microfinance on household's incomes and household future vulnerability to poverty. To this end, there is need to really understand the attributes of the households that participate in these programs. This will help us to understand whether it is really the poor households that participate or not, there is also need to understand why the households need the loans along the objectives of the lending institution. Finally it is also important to know the impact of the loans on household incomes as well as the participants´ future vulnerability to poverty. The objectives of this study could be formally spelled out as follows.

1.2   Study objectives

The general objective of the study was to analyze the impact of microfinance on household income and household future vulnerability to poverty. To achieve this there are four specific objectives:

(1) To understand the socioeconomic attributes of households that participate in the Joint Liability Lending microfinance programs

(2) To understand what determines household decisions for the loan sizes that they acquire.

 (3) To analyse the impact of microfinance on household income using both cross sectional and pooled data.

(4) To investigate if participation in microfinance programs significantly reduces household vulnerability to poverty.

Another very important research questions was: How do joint liability groups operate to ensure high loan repayment rates? Understanding this question was expected to shed light on the resulting impact of microfinance on household incomes and vulnerability to poverty.

1.2.1   *Study hypothesis*

Our study hypothesis include

(i)   Microfinance has had a significant positive impact on household income

(ii)   Participation in Microfinance programs significantly reduces household vulnerability to poverty.

(iii)   Joint liability lending institutions attract the poorest of society

1.3   Overview of Research methodology

To address the empirical objectives of the study, primary data was collected in 3 cross sections within Makueni district Kenya. The data was collected for the same households after every six months for a period of 18 months; thus giving us a rich pooled primary data for analysis. The data was collected using questionnaires that focused on household access to microfinance, household uses of the credit, as well as fluctuations of household income over the period. To achieve a more accurate data about household incomes and expenditure and also to be able to capture any changes including marginal changes over the relatively short period, we used relative measures of income and poverty. These

measures mainly focused on household access and ownership of assets, and the fluctuations therein within the period.

The overall study is designed as an experimental case study. A randomised sample of 200 treatment households (participants of Microfinance programs) and 200 control households (non participants of microfinance programs) in every cross section was used. Data in this study is analysed using both qualitative and quantitative techniques.

1.4. Organisation of the thesis

The rest of the thesis is organised as follows: Chapter two reviews the current issues of microfinance that are especially relevant for understanding its impact. The chapter begins by highlighting to the reader the plight of rural households in developing countries. In particular the chapter discusses how rural household are caught up in dire poverty, and how labour - the biggest asset of the poor ceases to be productive. The first section of the chapter sets the stage for the microfinance intervention.

Once the stage has been set, the next section discusses further the potential role of microfinance in fighting rural poverty. In particular the section argues that as long as microfinance has a potential to restore productivity to poor peoples' labour; be it by enabling purchase of farm inputs or direct entrepreneurship, then it has a role to play in poverty reduction. The chapter does not end here as it may be expected; rather the next sections discuss the practical issues that policy makers have had to deal with in trying to provide financial services to the poor. The thesis discusses the earlier policies of credit subsidization to rural households and why they eventually failed. "Modern microfinance" is then introduced in to the picture by tracing its humble beginnings in the early 1970s in Bangladesh. The re-entry of modern microfinance restored hope in reaching the poor with financial services; especially after the collapse of subsidized credit.

The sections that follow discuss the rise in popularity of microfinance programs. In particular there is a keen interest on the current global publicity and the image given to

the role of microfinance in poverty reduction. There is also the opinion that the current global projection and publicity accorded to microfinance has almost overshadowed any other poverty alleviation policy. The thesis proposes that there is need to prove empirically some of the assumptions surrounding the high level publicity accorded to microfinance as a way of informing policy. Chapter Two is the chapter that mainly motivate the need for impact measurement which is the central focus of the thesis.

Chapter three is mainly a theoretical chapter dealing with conceptual and methodological issues. In particular the chapter conceptualises rural poverty and bring in microfinance as an intervention policy for the alleviation of rural poverty. Given the study context there is an attempt to justify why relative measures of poverty and income have been preferred other than the absolute measures. The general methodologies of measuring the impact of microfinance as they have been previously applied by earlier researchers have also been discussed in this chapter.

Chapter four which is the longest chapter in the thesis mainly produces results and discussions. The chapter begins with a rich qualitative analysis mainly focussing on the JLL groups as institutions and how households are organised and transact within the institution. The practical issues of loan acquisitions, usage and repayment, are discussed here. Group formations and activities are also discussed in some details. The qualitative section mainly generates hypothesis as opposed to hypothesis testing and helps understand the quantitative results as later analysed. The qualitative analysis is followed by a rigorous quantitative analysis. There are four sections in the quantitative analysis section corresponding to the four main objectives of the study. The first section analyses the determinants of household participation in microfinance JLL programs. The main result is that joint liability lending microfinance programs attract the relatively poor in society though the poorest may not participate due to selection biases in group formations. The second section analyses the determinants of household decisions in to loan choices. The results indicate that pre existing household income, as well as dynamic incentives by the microfinance institution are very important determinants of the loan size that a household receives from the microfinance institution. In the third section we

measure the impact of microfinance on household income. The results are mixed. After controlling for selection and endogeneity biases, cross sectional analysis fails to show any positive significant impact of microfinance on household income. However on pooling the data and still controlling for selection and endogeneity biases, we find even more interesting results. In the initial period after household access to credit we find overall insignificant impact of the credit on household income; with possibility of negative impacts to some households. However in the later period (after 18 months) of household participation in microfinance programmes there is a positive significant impact of microfinance on household income. In the fourth and the last section of the quantitative analysis we deal with the question whether participation in microfinance programs significantly reduce household vulnerability to poverty. The main result is that participation in joint liability lending microfinance programs does not significantly increase household vulnerability to poverty neither does access to microfinance loans significantly reduce household vulnerability to poverty.

Each of the four quantitative analysis sections begins with a short introduction to the problem; then the methodology used for the analysis is discussed in details; followed by the results and discussion. At the end of all the quantitative analysis there are some general concluding remarks to the section. An important policy implication that arises in the analysis is that market oriented microfinance programs may not be the policy of choice for reaching out to very poor households. In the first place the very poor households may not be selected to participate due to selection biases in group formations. Even when some poor households get selected by their peers they are likely to use the loans for consumption purposes and are likely to deplete their household assets in the course of loan repayment.

Normally the thesis would have more or less ended after chapter four. Ending the thesis there would have only served to fuel the already hot debate in the international arena about the effectiveness of microfinance in poverty reduction. Given the importance of the policy questions involved in the thesis, it was generally felt that there is a need to actively participate in shaping future research in an attempt to find a more or less

conclusive policy action framework for microfinance and poverty reduction. Chapter five motivates future research in the area by proposing a theoretical propagation of how microfinance would fit in the bigger picture of rural development and poverty reduction. The goal of the chapter is mainly to generate hypothesis; but empirical research in the future would be useful to generate conclusive information. Theoretically the chapter demonstrates that high concentrations of informal entrepreneurships within a locality may not necessarily be a sign of economic empowerment of the households; Rather it could as well indicate a non performing economy, or that that there are many bottleneck to the formalisation of enterprises.

Chapter six concludes the thesis and discusses key policy implications. In particular there is the conclusion that providing affordable financial services to the rural population still remains to be an important component of development strategy. On the other hand there is need to come up with innovative microfinance institutions that are supportive of their own role in assets accumulation and wealth creation for their clients. This will involve innovative targeting of potential clients, as well as streamlined microfinance conditions to protect the clients.

CHAPTER TWO

OVERVIEW OF CURENT ISSUES OF MICROFINANCE AND HOW THEY RELATE TO IMPACT ON RURAL HOUSEHOLDS INCOMES

2.1   Rural Poverty: A Challenge to the Provision of Financial Services

About 1.3 million people of the world live with less than one dollar a day (World Bank). About half of the world's people (nearly three billion people) live on less than two dollars a day. The total wealth of the world's three richest individuals is greater than the combined gross domestic product of the 48 poorest countries; (about a quarter of the entire world states (Ignacio 1998). Little wonder that poverty and inequalities have become global concerns. Poverty can be generally defined as the inability to attain a certain predetermined minimum level of consumption at which basic needs of a society or country are assumed to be satisfied. The core concept of this general definition of poverty is the fact that to be poor is defined by access to basic goods and services like food, shelter, healthcare and education. The food concept in this definition goes beyond just food passé but also includes clean water and sanitation services.

Given this definition it is not surprising at all that in Kenya poverty is mainly a rural phenomena while urban poverty is mainly concentrated in slums[3] and other informal dwellings. About 65 % of Kenyans live in the rural areas deriving their livelihoods mainly from agriculture. However over the years the subsistence agriculture sector has continued to suffer declining productivity. The declining agricultural production for small scale farmers has to a large extent been caused by erratic rainfall since most of the subsistence agricultural productivity in Kenya is rain fed. However, on the other hand even when the rural areas receive a reasonable amount of rainfall peasant farmers who form majority of farmers still have to content with low yields and food insecurity due to lack of proper or non utilization of farm inputs to enhance productivity and also lack of proper storage and preservation of farm produce. Low agricultural production has serious

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[3] The concept of slum in Kenya refers to informal urban settlements characterized by congestion, lack of electricity, water and sanitation facilities. Many slum dwellers comprise the unemployed or lowly paid urban workers otherwise know as the "working poor".

implication on welfare not only in terms of food insecurity but also in terms of lost incomes thereby leading to inability to afford social services like health care and education. The effect of this decline has been lost incomes, food insecurity and widespread poverty. The poor constitute slightly more than half the population of Kenya, and three quarters of these poor population lives in the rural areas. Women constitute the majority of the poor and also the absolute majority of Kenyans (GOK 2003).

Many public policies in the recent times have been focused towards poverty reduction, finding ways to improve household productivity and thereby incomes. Apparently the thinking that rural poverty is a consequent of liquidity constraints has not changed much since independence. More than ever before, policy makers in Kenya believe that empowering the poor with financial resources may be the key to their economic empowerment. Since the 1960s and 70s, there have been policies on the role of microfinance in the rural development process. These policies focused on the provision of agricultural credit as a necessary support to the introduction of new, more productive agricultural technologies that would ensure that farmers improve their incomes and feed the nation (Moll 2005). Given the argument that labor productivity could be unleashed by removing or reducing the liquidity constraints, the approach to micro credit broadened to include individuals involved in both small and micro- enterprises like handcrafts and home based business. The following figure explains the general perception of the poor emphasizing on the interlink to low productivity within the vicious cycle of poverty,
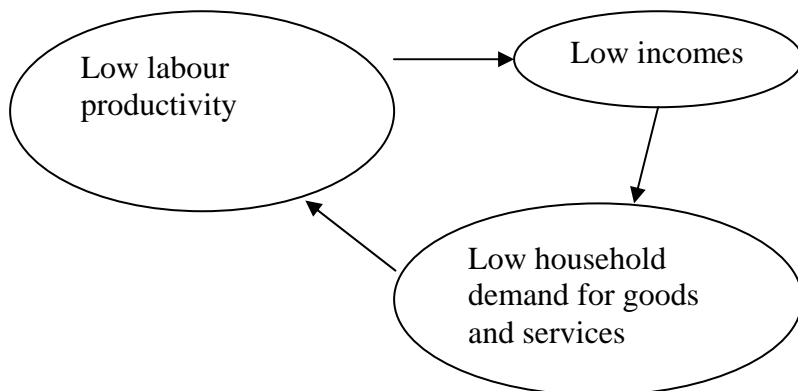
Figure 1: the poor are held up in a vicious cycle of poverty:

2.2 The Role of Microfinance in Fighting Rural Poverty

The forgoing figure has that household labor, which is an important household resource, becomes unproductive[4] due to different constraints including a liquidity constraint. As already discussed, many governments and donor communities believe that the liquidity constraint is the most important constraint impeding poor households and that if it is addressed it will be possible for households to escape poverty. Economists argue that to break the vicious cycle of poverty, there needs to be an outside force that will intervene at some point of the cycle to improve demand for goods and services. This could be done by injecting some liquidity that is believed to unleash the productivity of household labour. Microfinance promises not only to break the vicious chain of poverty by injecting liquidity in to the vicious chain, but also it promises to initiate a whole new cycle of virtuous spirals of self enforcing economic empowerment that lead to increased household well-being. Figure two is illustrates the microfinance promise.

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[4] Imagine a household that depends on tilling the farm for subsistence. Without the ability to afford farm inputs, the household's labour could be very unproductive and the yields per hectare could be small.
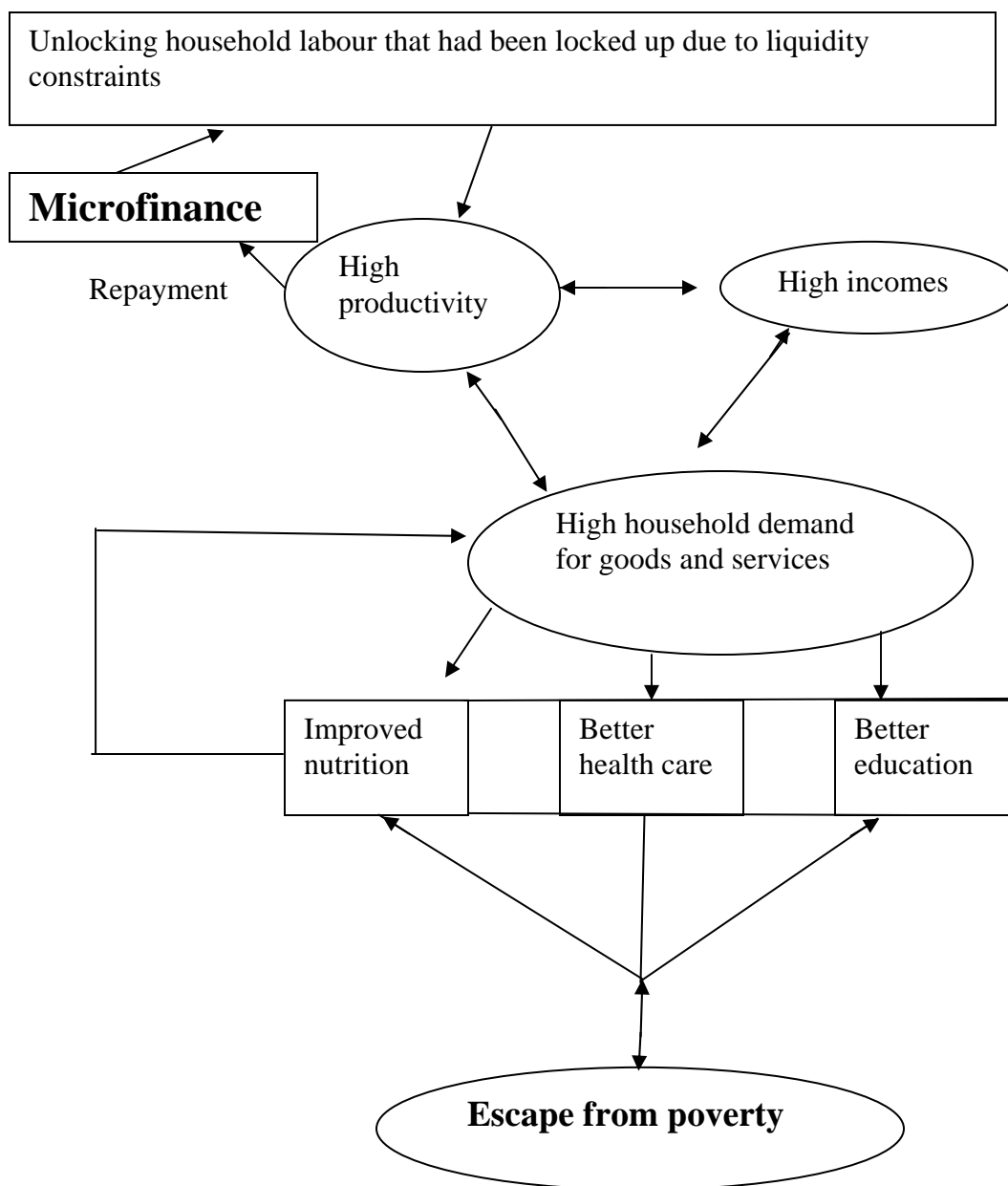
Figure 2: Microfinance promise

Such is the model that has promoted the microfinance institution and given it the "polite and respectable" image it currently enjoys. There are several assumptions that go with this model; first it is assumed that poor people can become micro-entrepreneurs if only they were given a chance through credit. In essence this implies that the level of entrepreneurship and managerial skills required is already given or can be easily acquired

by the poor. The model further assumes that there is a vibrant market for goods and services and that it is possible for micro-entrepreneurs to get linked up to markets for their products. Lastly some proponents of the model also assume that the fact that the poor can repay at market interest rates or slightly above market rates is a good indication that they are improving their financial status; and therefore it is a sign of good impact of microfinance. The irony of the this assumption being that even before the microfinance revolution many governments and non governmental organisations believed that informal money lenders were exploiting the poor by charging high interest rates; and that is why it was justified to bring to the poor a cheaper alternative; yet the poor were still paying for the money lender services.

The forgoing are the assumptions upon which the "microfinance promise" of poverty reduction and economic empowerment stands. If any of the assumptions does not hold true in any given context then the whole promise stands compromised and the potential of microfinance as a poverty reduction policy may not be realised. It is very important for policy makers to realize that the issue of how and when poverty can be reduced through microfinance depends among other things on whether and how successfully microfinance programs address the real constraints faced by the poor in a certain context. Making good use of microfinance in the task of reducing poverty requires understanding both the strengths and limitations pf micro credit and recognizing that other tools and measures are needed to complement it (Gulli, 1998).

2.3   Lending to the Poor and the Challenges to Overcome

Diminishing marginal returns to capital suggest that enterprises with relatively little capital should be able to earn higher marginal returns from an extra unit of capital invested than enterprises that already have a great deal of capital. This is derived from the strict concavity of the production function as illustrated in figure 3**.** Due to the same concept of the strictly concave production function it would be the case that poorer entrepreneurs have a greater return on their next unit of capital than the richer entrepreneur and therefore the poorer entrepreneur would be willing to pay higher interest

rate per extra unit of capital. This kind of logic offers a partial explanation to why microfinance interest rates are high and provides a rational case for the removal of usury rules in order to set interest rates that reflect not only the ability to pay but also the risk of dealing with poorer borrowers.

Output

Marginal return for richer entrepreneur

Marginal return for poor Entrepreneur
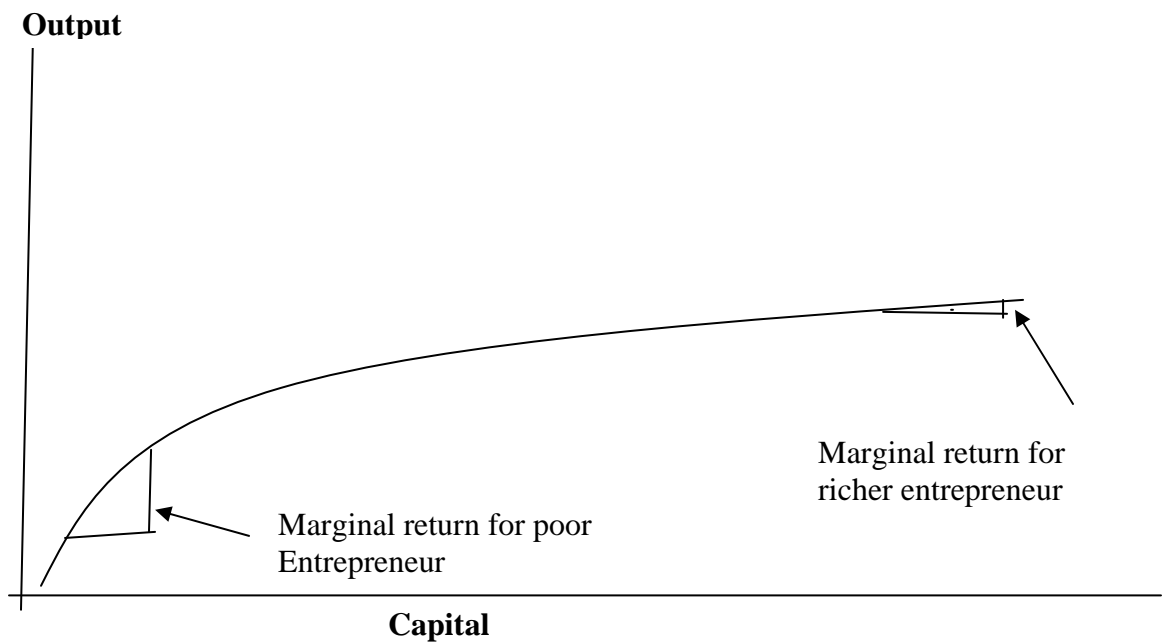
Capital

Figure 3: Marginal returns to capital with concave production function.
Source: De Aghion and Morduch (2005)

The principle of diminishing returns to capital in essence means that small undercapitalized entreprises are expected to have higher marginal returns from extra units of capital investment in their enterprises and therefore their ability to pay higher interest rates per unit of capital *ceteris paribus* should be unquestionable. If this were the case, then it would be logical to expect *ceteris paribus* that banks would naturally lend to these groups of entrepreneurs not only out of social concerns but also out of the good business prospects.

The reality of issues is however very different. Poor entrepreneurs have for a long time been isolated by formal credit institutions. The common perception of poor micro entrepreneurs is that they are risky and too costly to lend to. De Aghion and Morduch (2005) argue that the problems of lending to the poor has been aggravated by information asymmetries, and usury laws such that banks can not use appropriate interest rates to compensate for the risks and higher costs. Trying to deal with problems originating from information asymmetry may lead to other problems like credit rationing, adverse selection and moral hazard. These problems are not necessarily confined to the informal financial institutions but they also affect the formal financial institutions.

2.3.1 Credit rationing

Access to credit does not imply that the demand for credit will be satisfied. Lenders determine how much credit is allocated to clients based on the probability of loan default, often resulting in credit rationing. Credit rationing in this sense refers to the inability for financial institutions to grant as much loans as may be demanded by the clients based on a set of criteria. The probability of default may be influenced by a number of factors that include the expected returns of the project, the terms of the loan, market imperfections and borrower characteristics. If the expected return is less than the principal loan amount plus interest (the terms of the loan), then the probability of default will be high. In such a scenario, the optimal lender's decision will be either to ration the borrower by granting a smaller amount than originally applied for or to completely reject the loan application.

2.3.2 Adverse selection

Information asymmetry in credit markets arises because borrowers have better information about their potential risk of default than the lenders. Lenders may choose to increase the lending rate (interest rates) to compensate for the higher cost of information gathering or the level of reliability of the information. Also in many instances in the financial institutions interest rate may play the role of a screening device where Investments with high returns may attract lower interest rates than investments with lower returns as the lenders anticipate default rates based on business returns. This may

lead to the problem of adverse selection. Adverse selection occurs when borrowers with safe (and low default risk) projects decide to opt out of the credit market in the face of rising interest rates, while more risky projects with potential higher returns but with higher probability of default are attracted into the market (Okurut et al 2004).

Studies have shown that imperfect information may disable interest rates from playing their classical market-clearing role (Baydas *et al.* 1994: 280). Information asymmetries are more complicated in informal credit markets because of the fact that the credit histories of borrowers are not documented and pooled. Given the huge number of prospective clients in the informal financial institutions, the cost of acquiring this information is prohibitively high, both in terms of time and financial resources. The other complication is its reliability. If lenders try to collect such information from the potential borrowers themselves, borrowers are likely to give an exaggerated view of their creditworthiness.

2.3.3   *Moral Hazard*

Moral hazard in the formal financial institutions could also arise as lenders try to deal with the problem of information asymmetry by manipulating interest rates so that they reflect the true costs of information gathering and reliability. A rise in the lending rate may create a moral hazard problem, where in order to compete for loans, borrowers with low risk projects shift to high risk projects that promise higher returns but with high probability of default.

To solve the problem of moral hazard by the formal financial institutions, lenders faced with information asymmetry and lack of control over actions of borrowers tend to design credit contracts that will induce borrowers to take actions that enhance the likelihood of repayment and also attract low risk borrowers. The lenders may therefore find it optimal to charge lower than equilibrium interest rates and use non-price mechanisms like collateral to ration credit (Hoff and Stiglitz 1990: 238). The use of collateral will mean that poor people who may have the potential to invest in a viable project will not be able to access credit from formal financial intuitions because they may lack collateral. Also

the poor may also need credit for other non investments uses, but as long as they have no collateral then they will be shunned by the forma financial institutions.

Given the forgoing problems facing both the formal and the informal markets, the fundamental question is: how can we understand the reality of credit markets, and what kinds of interventions are required to realize the predictions of the concave production function? This would be useful in devising policies that make it rational that in reality the poor get financial services and indeed their enterprises have higher returns per unit of capital.

Roodman and Quresh (2006) argue that the need for the poor to borrow and save is greater than the need for such services by the better off people. This is because the incomes of the poor are tight and often volatile, thus financial markets that help them fill these gaps are a matter of survival. Their argument boils down to the same conclusion that in commercial terms there is a market for microfinance, however the challenges are immense. According to Roodman and Qureshi (2006) the real genius in microfinance is about the ability to find a suite of techniques in product design and management that solve the fundamental problems of controlling costs, building volume, keeping repayment rates high and preventing fraud all while operating with poor people.

2.4   Earlier credit market Interventions by Government subsides

The role of Microfinance in development is demonstrated through the crucial role that savings and credit play in economic growth. The idea that financial structure and output determination are interrelated can be traced to the earliest work in financial sector-economic growth done by Schumpeter (1959) who argued that financial services are paramount in promoting economic growth and that one 'can only become an entrepreneur by previously becoming a debtor'. Little wonder that when low income economies attempted to develop their economies after World War II, rural finance emerged as a big concern. Large state agricultural banks were given the responsibility of allocating funds with the hope that by availing subsidized credit, farmers would be induced to irrigate,

apply fertilizers and adopt new crop varieties and technologies. The aim was to increase land productivity, increase labor demand and their by increase agricultural wages (Armendariz de Aghion and Morduch 2005).

This was the early micro credit practice which was a reaction to sound theory that in order to improve output in the rural areas, farmers needed credit for them to increase output. Since the farmers were poor, the credit had to be below the market rates to make it affordable. For example India's Integrated Rural Development program tried to allocate credit according to social targets, where by 30 % of loans targeted members from a scheduled tribe or caste and another 30 % targeted women. Governments operated on well thought of plans of capital allocation in order to deliberately target specific groups of borrowers (Aghion and Morduch 2005).

From a social point of view this is a good thing to do and it makes good sense to deliberately target weaker sectors of the economy to catalyze growth. If poor households were to access credit it would be possible to generate high incomes by starting small micro enterprises or simply being able to adopt more profitable and more productive agricultural practices. To realize the dream of lending to the poor, earlier credit market interventions had to focus on the now familiar set of three constraints: The first is high transactions cost per loan when lending at small scales. The second is determining the risk of potential borrowers and monitoring the progress of clients which is particularly difficult when clients are poor and in the informal sector, and the third is that many low income households lack assets and collateral. In order to address these constraints, governments took it upon themselves to subsidize bank loans to poor households, thus providing the banks with incentives to lend to the poor. This was a purely social mission and interest rates had to be kept low. Heavy subsidies were deployed to compensate the banks for entering in to markets where they feared taking huge losses due to high transactions costs and inherent risks. Government subsidies were used to keep interest rates low in order to make credit affordable by poor borrowers.

Providing loans below the market rates is in essence a distortion to the credit markets. Interest rates are ideally a way of credit rationing such that only those with viable

projects are the ones willing to pay for it. Given subsidies the cost of credit is driven below market rates and the rationing is likely to break down creating an   excess demand for loans. When interest rates are not allowed to reflect the costs of financial intermediation due to government subsidies, wealth and political power are likely to replace profitability as the basis of loan allocation (Aghion and Morduch 2005) and this did happen in many states. Many writers argue that even with subsidized credit, the poor rural small scale farmers were excluded from the credit markets (Morduch 2000). The end result was high costs of state backed banks and little benefit for the indented beneficiaries (Khandker *et al* 1993).

Diverting loans to wealthier persons may not have been necessarily a bad thing to do. From efficiency point of view, efficiency is only achieved if loans are given to those who can invest them wisely and get the most returns out of them. It is not efficient to give loans to simply anybody based on their socio economic background, because then returns from investments may not be maximized. In reality, the major problems with the state backed programmes arose because of the political nature that surrounded state backed loans. Many borrowers especially the rich and well politically connected individuals defaulted and soon most borrowers were defaulting. This led to pressure that government forgive the loans especially before elections. Braverman and Guasch (1986) conclude that credit default rates in countries within Africa, Middle east, Latin America, South Asia, and South East Asia ended up with default rates of between 40 to 95%. The programs either ran out of money or they drained government accounts (Morduch 2000). Not surprising that subsidized credit failed almost universally. Experts argue that the costs of government subsidies were so high that they nearly swamped whatever economic benefits realized: if any (Khandker *et al* 1993). It is credible to argue that the failure of subsidized credit hinges on the failure to account for the incentives that could arise out the fungibility of loans and the politics associated with government subsidies that channel direct funds to the citizens. This led to a situation where by rural financial markets were highly distorted creating monopolies and removing market tests (Aghion and Morduch 2005). The general end feeling was that poor rural households would have been better off without the subsidies. McKinnon (1973) argued that government restrictions on the

banking system (financial repression) restrain the quality and quantity of investment and therefore economic development.

2.5   The Microfinance Revolution

The real genius in microfinance is about the ability to find a suite of techniques in product design and management that solve the fundamental problems of controlling costs, building volume, keeping repayment rates high and preventing fraud all while operating with poor people (Roodman and Qureshi 2006). Microfinance institutions have to find suitable solutions to the same set of now familiar constraints if they are to deliver financial services to the poor: They must address the challenge of high transactions cost per loan when lending at small scales. Second, they must find a way to determine the risk of potential borrowers and monitor the progress of poor clients in the informal sector; and thirdly, they must find away to deal with the lack of collateral in order to minimize risks.

Perhaps the best known story in microfinance is that of Mohammed Yunus, the founder of the Grameen Bank that has inspired many other microfinance institutions world wide. The Grameen Bank started during the aftermath of the country's war of independence. During this time Bangladesh was plagued by desperate poverty that was made worse by very high birth rates. The economy was still very rural, coupled by a government that was perceived to be weak and corrupt.

In order to deal with the poverty situation, there was a strong preference for non bureaucratic 'grass roots' and other collective approaches. This prompted the formation of self help groups for equally disadvantaged groups in order to pool resources for mutual benefit of the group members. It was in this environment that Muhammad Yunus, an Economics professor at the University of Chittagong, began an experimental research project providing credit to the rural poor of Bangladesh. He began by lending little money from his pocket and realised that it was enough for villagers to run simple business activities like rice husking and bamboo weaving. He later found that borrowers were not only benefiting greatly by accessing the loans but they were also repaying

reliably even though they could offer no collateral. Later with the support of the Central Bank of Bangladesh and donor support, that humble experiment developed in to the world's most famous microfinance institution; the Grameen Bank, and institutions that replicate its pioneering methodology world wide. The Grameen Bank today boasts a Nobel Prize, 1,700 branches, 16000 employees, and six million customers of which 96 % of them are women (Roodman and Qureshi 2006)

Over 120 million people currently benefit from the services of over 10,000 microfinance institutions paying interest rates of between 15 and 35 % (Planet finance). In November 2006 the official Microfinance Information exchange, Inc. (*MIX Global 100*) released some thought provoking statistics from the leading microfinance institutions. The most profitable microfinance institution in 2006 was from Africa with an average of 30.90 percent return on assets, followed by another in Asia with an average of 30.2 percent return on assets. On average the top 100 most profitable microfinance institutions world wide have an average of 10.44 % return on assets. The second largest microfinance institution, after Grameen in terms of client outreach is ASA with over 4 million clients; according to *MIX Global 100*, ASA has a 14.53 percent return on assets and it is among the top 15 global microfinance institutions in terms of profitability. The top 5 Microfinance institutions in terms of outreach are all in Asia where high population density is the norm coupled with high level of poverty and lack of alternative finance. These unfortunate social characteristics are the ones that make Asia a prime market for microfinance (*MIX Global 100, 2006).* Roodman and Qureshi (2006) argue that the real genius in microfinance is not because they firmly believe that the poor can pay, but rather it is because they have been able to come up with clever solutions to the problems of building volume, keeping loan repayment rates high, retaining customers, and minimizing scope for fraud and to be able to deliver cost effective microfinance deliveries to thousands and millions of poor clients.

2.6   Overview of the Economics of Lending to the Very Poor by Joint Liability

Sharma (2000) writes that the spectacular growth of microfinance industry has been fuelled not by market forces but by conscious actions of national governments, non-governmental organizations (NGOs), and donors who view microfinance as an effective tool for alleviating poverty. Even with Sharma (2000) explanation, there still remains a very intriguing question: How has it been possible that microfinance institutions have achieved such tremendous growth within the last three decades? How is it that microfinance institutions have succeeded in serving the poor with financial services while the formal financial institutions have constantly failed? Kiiru and Mburu (2007) argued that poverty and desperation of households make them a prime market for microfinance services. The writers argued that the poor are a prime market for credit services because of their liquidity needs for either consumption smoothing or for micro entrepreneurship purposes. Little wonder that Asia where high population density coupled with high level of poverty and lack of alternative finance is a prime market for microfinance (*MIX Global 100, 2006).*

To reach economically disadvantaged clients with financial services requires innovative strategies. Joint liability lending institutions use "unconventional" methods to lend successfully to the poor. There is evidence that in many circumstances an unconventional lender such as the Grameen Bank can lend to poor people that no ordinary commercial bank would want for a customer. The unconventional lender can do so with a reasonable degree of financial self sufficiency and achieve repayment rates that are significantly higher than for comparable loans by conventional lending institutions (Schreiner 2003, Ghatak et al 1999). This thesis identifies four distinct but complementary reasons for this success. First, many (but not all) of these lending programmes ask borrowers to form a group in which all borrowers are jointly liable for each others loans. Second, individual group members engage in intensive monitoring to each other. Third, microfinance institutions rely heavily on the promise of repeat loans (dynamic incentives) for borrowers who perform well. Finally microfinance institutions impose forced savings by individual group members to lower the risks of moral hazards.

In analyzing joint liability lending institutions, economists have focused on either the effects of joint liability on the pool and behavior of borrowers, or on the fact that lending to groups as opposed to individuals is a way to reduce transactions costs for the microfinance institutions. If the socioeconomic characteristics of the borrowers are comparable to a large extent, it would be possible to put them together in a group to save on processing, screening and loan collection costs. This way the group enables the microfinance institution to avoid the cost of performing a costly audit every time an individual borrower declares inability to pay due to low output. This is because the microfinance institution will induce the rest of the group to undertake liability for the defaulting member. The microfinance institution will only audit when the whole group declares inability to repay. That group lending enables a reduction in transactions costs per loan for the microfinance institution. The most hailed advantage of group lending is that it makes it possible for the poor in the informal sector who have no collateral to access credit as long as they can be able to join a group. Some writers have even described it as "the apparent miracle of giving solvency to a community composed almost entirely of insolvent individuals"[5].

Poverty reduction researchers have a distinct question of whether joint-liability lending really helps the poor. As a logical matter, a microfinance institution could function very well in terms of repayment rates but have little impact on poverty. This question, which is also the focus of this thesis, has also been asked before. Pitt and Khandker 1998 find, using data from three programs in rural Bangladesh, that borrowing from group-lending schemes increased consumption of poor house-holds. However, Morduch 1998b has argued that Pitt and Khandker's result reflect program selection effects rather than the impact of borrowing per se.

Given the objectives of the thesis it is better to focus on the effects of joint liability on the pool and behavior of borrowers rather than analyze joint liability as a costs mitigation measure by the microfinance institution. For readers who are interested on the latter issues Ghatak et al 1999, have a detailed theoretical framework that would be useful to consider.

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[5] Plunkett 1904 , quoted in Ghatak et al 1999 . Horace Plunkett was a pioneer in the credit cooperative movement in Ireland at the turn of the 20th century.

2.6.1 Joint Liability Group functions

Critics have argued that by use of group lending, micro-finance institutions have innovatively shifted two classic banking obligations to the borrowers; it is the poor who decide the credit worthiness of borrowers through peer selection in to the groups (Roodman and Qureshi 2006). Second, the poor bear most of the contract enforcement costs for all the individual group members while being governed by innovative contracts that are too costly to breach (Kiiru and Mburu 2007). Shifting of these costs to borrowers has been innovatively achieved by use of joint liability lending, peer monitoring and peer pressure, dynamic incentives and forced savings.

Within the context of joint liability lending literature, dynamic incentive reffers to the promise of bigger loans once the current loan has been repaid. Dynamic incentives motivate the clients to finish repaying their current loan with the hope of qualifying for a larger one. Schriener (2003) argues that dynamic incentives is supposed to make microfinance for the poor to work in a similar fashion as the credit card in developed countries; where clients repay because they want to access more credit in the future. On the other hand critics argue that dynamic incentives is a great incentive for poor clients to get caught up in a debt spiral as they seek new loans to clear older loans in an attempt to qualify for larger loans. Poor and unsuccessful entrepreneurs are likely to keep borrowing in order to repay, until the ultimate face to face with excess debt. Excess debt can lead to depletion of household capital assets as well as other basic livelihood assets, thereby leaving the household exposed and vulnerable.

Joint responsibility lending as already discussed is also very important in serving the poor especially those with no collateral with financial services. another important aspect of joint laibaility lending is the principle of peer monitoring and peer pressure. The individuals within a group monitor and pressurise each other to ensure that all loans are repaid on time. Incase the individual is not able to repay due to wrong investments decisions or some other reason, then all the members of the group have a moral obligation to help in the repayment. Forced savings comes in very handy especially in reducing risks for the microfiance instituion. Individual borrowers are forced by the microfinance instituion to save a fixed amount of money every month. Neither the group nor the individual can access the forced savings at will, but it can be used as security for

future laons and can only be paid back if the individual borrower is dropping out and has been cleared by all members of the group. The more the forced savings accumulate the easier it becomes for the borrower to access more loans in future as long as the group continues to support the borrower. It is also worthy noting that the forced saving is not only a guarantee for loans borrowed by an individual but can also be ceased by the microfiance instituion if any other member (s) of the group defaults on their loan repayment.

2.6.2 *Joint Liability Lending in Practice: The Genius of Microfinance*

The capacity of the poor to borrow and save may not be so obvious, yet one thing that can be least disputed is that their need to borrow and save may be greater than for better off people. This is because their incomes are tight and even volatile. Given the volatility of incomes, it would be very useful to have financial institutions that can help the poor manage their finances in a way that they can save when for example they receive remittances, or have sold some farm product or whenever they receive any extra money. On the other hand they would also borrow when there has been a shock in the household or just for consumption smoothing. Such a financial institution would be a matter of survival for poor households. Although they seem opposites, saving and borrowing could help the poor cope with the volatility in their incomes and maintain more stable consumption habits (Roodman and Qureshi 2006). This implies that there is already the opportunity to serve the poor with financial services, since in principle they need the service; yet availing these services to the poor has been quite a challenge for formal financial institutions. Roodman and Qureshi (2006) observe that the genius of microfinance is the ability to find a suite of techniques that solve the complex business problems of building loan volumes, maintaining high repayment, retaining customers and minimizing the scope for fraud while dealing with very poor borrowers.

This section concentrates purely on microfinance credit services that purely target the poorest in community through joint liability lending. We pose a fundamental question of

how these institutions excel in lending to poor borrowers where other financial institutions have failed.

Serving the poor with financial services requires providing small loan amounts to very many poor clients in the context of information asymmetries about borrowers' credit worthiness. Logically, the costs of such services would be high and little wonder that formal financial institutions have for a long time sidelined the poor. We could conceptualize the idea of serving the poor with loans as an array or a spectrum. At one end of the spectrum we have very many poor clients, needing small loans, in a context full of information asymmetries. Then in between there is the "transformation matrix" by the microfinance institution that would lead to the other end of the spectrum where loan volumes build up, the clients become fewer, and the transaction costs are lowered and it is therefore possible to offer financial services to the poor. The following figure illustrates the point:
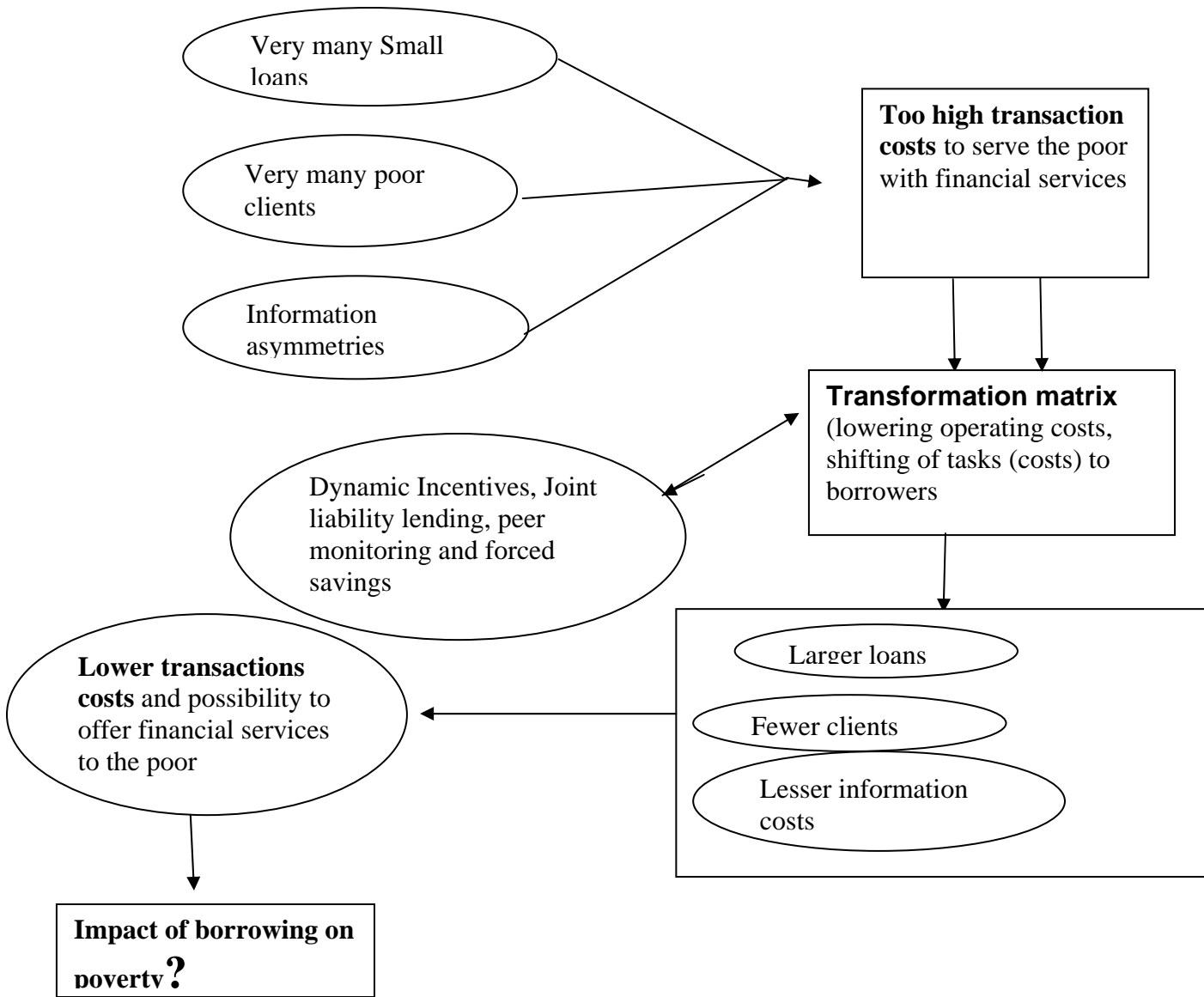
Figure 4: the genius of microfinance in availing credit the poor

Providing such small loans to very many poor borrowers without collateral is only made practical by squeezing the operating costs as well as shifting certain tasks (costs) onto clients. This helps the microfinance institution to lower information costs and translate the loans sizes into larger ones that are cheaper for the MFI to administer, and more convenient for the individual client who basically has no collateral to offer the

Microfinance institution. The costs of monitoring of loan use and repayment, enforcement, as well as under writing costs (loan approval) are usually shifted to borrowers in group lending. Borrowers in such groups will accept these costs as long as they need the loans and have no other alternative. Whereas the poorest will have fewer alternatives and must therefore accept these conditions as long as they need the money, the better off poor may prefer individual lending as well as larger loans. Group borrowing is perceived to be too burdensome by the better off poor; whereas individual borrowing is perceived to be too expensive by the poor.

2.6.3 *Cross regional Comparison of Loan Acquisitions, Use and Repayment*

The Grameen Bank of Bangladesh which is also the largest microfinance institution in terms of outreach is mainly known for pioneering the formal joint liability lending to poor clients. Apparently research has shown that at least the Grameen Bank if not necessarily other micro lenders is a worthwhile social investment. This is so given that surplus for Grameen products users exceeded subsidy by non users (Schreiner, 2003). Behind the encouraging story of the Grameen Bank in Bangladesh and its success, it is important to consider the context both in terms of culture and socio economic setting. This is important especially for those countries and societies wishing to replicate the Grameen model to help alleviate poverty by availing financial services to the poor. This is because socio-cultural and economic conditions of different settings affect results to the extent that whatever model worked well in one setting may not necessarily work the same in another setting.

Mohammed Yunus began his small lending program to poor households at a time when poverty in Bangladesh was quite rampant especially after the war and perennial floods that worsened the situation. Moved by the desperation of his people, Yunus who was then an economics professor at a university began lending some small amounts of money to poor women who would invest them in small micro enterprises. He discovered that the women were not only able to repay but they also paid on time. In the initial period, Grameen lend to both men and women in almost equal proportions. However in 1985

Yunus and his team refined the methodology to shift their lending pattern towards lending to more women than men.

The women operated in small groups and they recruited their members based on trust and sometimes close family ties. The groups were jointly responsible for loan repayments as far as the microfinance institution was concerned. Normally they applied peer pressure and peer monitoring to ensure that every individual was responsible and accountable to the group for their own loan repayment. For cultural reasons, women were more sensitive to protecting the reputations of their families and were very sensitive to moral issues concerning shame, honour and reputation. The sensitivity to shame, honour and reputation turned to be a great asset for group members. For example Roodman and Qureshi (2006), found that "if a woman failed to make her instalment on time, she experienced humiliation through verbal aggression from fellow members and bank workers in the loan centre. Such humiliation was believed to bring a bad reputation *(durman)* to the males in the households and women were very careful about this. But if a man is humiliated no one talked about it because it does not bring a bad reputation *(durman)* to the household" (Roodman and Qureshi 2006). Loan officers testified that "it is very hard to work with male members in the field. They do not come for meetings and they are arrogant they even argue with the bank workers and even threaten to scare the bank workers" (Roodman and Qureshi 2006). In this respect, the cultural setting and the social norms and values influenced loan repayment in Bangladesh. Based on the same socio cultural setting it was much more practical from a business perspective to work with women than men.

Sensitivity to shame honour and reputation by women in communities has worked well to encourage loan repayment especially in Asia. Roodman and Qureshi (2006) observed that even MFIs that do not employ either joint liability or regular group meetings for transaction purposes still tapped into this sensitivity to reputation for delinquency control. For example XacBank in Mongolia posts names of clients and their installment repayment reports on the walls of its branches. In this context then peer pressure could also be defined as pressure arising from public transactions in communities where individuals worry about reputations. This discovery is not really new to micro credit.

Money lenders too have used public honor to motivate repayments. For example when interviewed, a woman street vendor who was a client of a group of moneylenders called "the Bombays" in the Philippines said that "the Bombays always picked the busiest hour of the day to collect so that there would always be witnesses to her embarrassment" (Roodman and Qureshi 2006).

The forgoing not withstanding, research has shown that income accruing to women in the household has a great impact on household expenditures unlike income accruing to males. There is therefore likely to be a positive externality to the household in the process of focussing more on women for credit delivery, as long as the credit is able to improve household incomes. Another important gain is defined by the fact that women have an opportunity to gather week after week to conduct business in group meetings. This alone is a mile stone in changing norms about women's use of public space. Another important gain is that NGOs and microfinance institutions have had an opportunity to channel other non financial services to women during the group meetings. These financial services included adult literacy where members learnt how to sign documents and operate simple arithmetic and book keeping. Other services channelled through women groups included family planning services, nutrition education among other services. For example, in the initial Grameen joint lending programs, each group meeting began my members chanting slogans to the effect that hey would have smaller families, and educate their girl children among other empowering slogans (Schriener 2003).

Unlike in Asia, tapping in to shame, honour and reputation for delinquency control does not always work in other communities. For the period we were in the field collecting data for this study we witnessed several cases and heard many more cases of women who took the loan money and ran away to big cities and other towns, leaving behind their peers to repay on their behalf. This kind of precedence if not addressed is likely to lead to domino effects, where borrowers who would have repaid may choose to default because they would either loose access to future loans anyway due to the default of others or they would have others repay on their behalf. The apparent lack of trust lead to caused joitn liability groups to ask for "collaterals and guarantors from prospective members.

According to Diagne 2000, Joint liability groups with the Malawi Rural Finance Corporation (MRFC) were not allowed to repossess each others assets due to non repayment of loans. They were also not required to impose any more costs on their members and definitely they did not have to join any other informal credit group as a precondition to participate in the microfinance program. MRFC is a state-owned financial institution that seeks to offer agricultural credit to small farmers in the rural areas through joint liability lending. Results from studies focussing on the MRFC Corporation have contrasted to conventional wisdom and assumptions regarding the informal advantage of the joint liability lending and its implications for incentives for peer selection, peer monitoring and peer pressure with respect to loan repayment. Research findings did not support the widely held presumption that joint liability is responsible for high repayment rates. In particular the study found that no affective peer monitoring was taking place in the credit groups because of the social costs associated with it (Diagne, 2000). The study also found that peer pressure took place less frequently. Even when peers pressurized defaulters, in most cases they failed to induce defaulters to repay their loans (Diagne, 2000). Once again these particular results could be understood in the light of what has already been discussed about the pitfalls of state backed loans.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1   Profile of the project area

Makueni district is located in the Eastern province of Kenya. It lies in the Arid and Semi-Arid Lands (ASAL) zone and it is divided into 16 divisions and has a population of about 778,000 people. The district has semi-arid vegetation, with low and erratic rainfall. Hence the people rely on an inadequate, fragile and uncertain resource base under constant threat of drought, resulting in food insecurity and under nutrition. Using both the Welfare Monitoring Survey System (WMS 1998), and the Participatory Poverty Ranking Method (PPRM), over 70 percent of households were classified as poor or very poor. These characteristics make the district good for any experimental poverty reduction intervention.

The main livelihood of the people is subsistence agriculture, of which 90 percent is rain-fed and about 10 percent with irrigation. Livestock rearing and apiculture (bee-keeping) are also common. Other income generating activities include hired labour, mainly in small towns, and the irrigation schemes, selling of charcoal and fire-wood, brick making, petty trading, selling of vegetables (by those who have irrigation) and, when available, food aid. Women do most of the agricultural activities. Men are largely involved in other income generating activities in and out of the vicinity. There is a serious concern about the environment. The forest is being depleted, owing to the massive burning of charcoal, which leads to desertification and worsens the drought situation, and thereby aggravates food insecurity. Several efforts are under way to counter deforestation but so far they have achieved limited success owing to the demands of household food security. For a map of Kenya showing the exact location of the district refer to the appendix section.

The exact villages studied are at the South Western part of the province and they border Kajiado district which is in the Rift valley Province. The area had been hit by a severe drought since previous 5 years prior to the study. Only few better off families had dug

wells and were involved in irrigated garden farming. Majority of the other households had taken in to non agricultural income generating activities like micro enterprising to earn a living. Little wonder that 88% of all the respondents said that business was their primary occupation even though they were in a rural setting. Many of the economic activities included micro enterprising, hired or casual labour, bicycle taxiing commonly known as "boda boda". No cash crops had been grown in the area for the last 5 years due to the drought.

Microfinance is thriving in the area, this could be influenced by the fact that the main highway (Mombasa-Nairobi) passes through the study area cris-crossing small shopping centers like Makindu, Emali and Simba. The shopping centers had influenced the economic activities of the surrounding rural villages as more and more households took up micro entrepreneurships to earn a living. The research area is served by three major microfinance institution KWFT (Kenya women Finance trust) that served 60% of all microfinance participants studied, KRep served 20% and Kadet (Kenya Agency to Development of Enterprise and Technology) served 20%. KWFT gave loans to women entrepreneurs only. Except KRep Bank that could offer saving services as well as both individual and group loans, the other microfinance institutions could only provide credit services and they mainly relied on joint liability lending.

3.2   The Methodology

The study is designed as an experimental case study using panel data. A randomized sample of respondents from 16 villages in Makueni district was used. There were two sets of respondents; one set consisted of 200 respondents who were microfinance recipients. The criterion for choosing the microfinance participants was that the respondent should not be older than two months in the program at the beginning of the survey. The idea was to capture household socioeconomic welfare before and after the micro credit loans. A list of all new lending groups (up to two months old) was obtained from the local offices of the microfinance intuitions operating in the area. From this list respondents were selected randomly. It turned out that the respondents were from 16 different villages, all within proximity of up to 10 kilometers radius from the microfinance institution's local field offices, which were mainly located within the main

shopping centers. The other set of respondents was for control purposes. It consisted of a random sample of 200 respondents who did not receive micro credit loans at the beginning of the survey.

Formal Structured questionnaires were administered every six months to both participants of microfinance and non participants. For the microfinance participants, the idea was to capture, group participation, new loans, uses, and loan repayment as well as household incomes. While for non participants the idea was to keep up with households' socioeconomic activities and understand any welfare changes in the absence of microfinance.

Rapid appraisals in the form of focus group discussions with joint liability borrowing groups and semi structured interviews with key informants were used. The rapid appraisal provided a platform where issues related to microfinance like group lending and group activities were discussed openly and respondents were able to check each other to avoid situations of exaggerations or misreporting. Participant observation was also quite helpful in accessing in-depth detailed information about the operations of solidarity groups. Participant observation in this sense refers to the informal interaction of the researcher and the local community in the study area by way of temporary stay within the community. This way, it was possible to observe the respondents go about their day today activities without them fearing that they are being studied. This makes it possible to learn first hand the realities of household, community and individual behavior towards microfinance. Most importantly through participant observation it was possible to observe practical issues of how some individual household attributes and Lending Groups influence loan uses, repayment and general household activities that affect household incomes.

3.2.1   Why focus on assets in measuring household welfare

Economies of developing countries are characterized by an acute lack of integration of both the rural and urban economies. Poor rural households have to do with poor infrastructure if any; they are mainly subsistence farmers usually consuming most of what they produce and commercial activity in the rural areas is very low. Formal saving

and banking institutions are rare and as such households invest for the purposes of "saving" in highly liquid assets like livestock, or other highly liquid capital assets like ploughs. If the household's welfare improves significantly they acquire other assets that are not very liquid like solar panels among other electronic assets. For very well off households they may add other expensive investments like water boreholes or own small scale wind powered electricity generators. It is for these reasons that ownership of and access to assets is a very important socioeconomic indicator in the rural areas.

In this particular study ownership of assets[6] was particularly important even for the issue of microfinance. The socio cultural setting is such that people do not just trust each other by word of mouth alone. Because of the lack of trust, if a household wanted to participate in a microfinance program, ownership of assets is of utmost importance. To join a group in order to access microfinance services, group members demanded to be shown what assets could be liquidated by the group incase of default to pay individual loans. The informal guaranteeing of individual loans is a way of reducing financial risks to the group members since they are all jointly responsible for each others loans. To be able to compile a legitimate[7] list of assets which could be used for measuring poverty in the context of this study, borrowers in lending groups were asked to write down all the assets that are available among members and that could be used to secure their loans. The result of this exercise was that the poor don't have many assets and virtually every asset they had apart from land was eligible to act as "collateral" depending on its condition, "good or bad". These assets included kitchenware, simple electronics, clothing, furniture, and livestock among other basic household assets.

The other advantage of this approach in the study is that in case a household has had problems of repayment of their loans the same assets would be liquidated (in most cases). On the other hand, if a household was successful, it was likely to accumulate more assets, both highly liquid and "non liquid". Barnes et al (1993), observes that there is a strong case that assets are particularly useful indicator of impact because their level does not

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[6] The wealth index compiled in this study is only relevant to the study area and therefore the same relative poverty measure can not be used for another study.
[7] The list of assets that is relevant in the study context

fluctuate as greatly as other economic indicators and it is not simply based on annual estimates.

Apart from ownership of assets focus group discussions revealed that the general condition of a homestead is also a strong indication of the social economic status of that particular household. In light of this, other variables like walls, roofing and floor of main house among other well being indicators were used to explain household socioeconomic status. For both theoretical and practical reasons, poverty indictors based on consumption were preferred than those based on income. This is more the case because households are likely to provide information easily on what they consume than on what they earn (Zeller et al 2006).

Table 1 is a list of the indicators used in this study to construct a relative poverty measure. The important thing that the reader should bear in mind while reading this section is that this list is based on what is already available in the study context and if the context changes then it is possible to change the indicators as well as the specific list of assets.

Table 1: Poverty Indicators Used in the study

Poverty Indicator at household level	Definition
Human Capital	
Literate household members	**% of household members with some basic formal education (primary education)**
Adults who are wage laborers within the household	**Members of households who bring in extra income to the households excluding children**
Education level of household head	**Number of years spent in "progressive" formal education**
Dwelling	
Size of dwelling	**Number of rooms**
Walls	**Type: whether temporary or permanent and cost**
Flooring materials	**Type: whether temporary or permanent and cost**
Type of cooking materials	**Type: firewood with open fire, firewood with modified saving cooker, Charcoal, Kerosene and gas.**
Latrines	**Availability of a bathroom facility within the household**
Water source	**Open river, borehole, water vendoring**
Assets	
Livestock (goats, chicken, sheep, cows, oxen, donkey)	**Number**
capital assets (ownership of donkey cart,	

sawing machines, plough, rental houses and oxcart)

household cutlery like china ware and aluminum cooking pots and furniture such as sofa chairs, tables, stools, beds, clothing such as "good" bed linen, and "good" clothing fabrics).	**Number**
electronics (mobile phones, radios and televisions)	**Number**
Irrigated land owned by household	**Size in acres**
electronics (mobile phones, radios and televisions); domestic animals and hen);	**Size in acres**
Irrigated land owned by household	**Size in acres**

Food security and vulnerability

Ability to grow enough basic food supplies	**Number in months household produced staple food lasts**
Meals in a day	**Number**
Expenditures of basic processed food products like sugar tea leaves and cooking fat	**Monthly expenditures averaged by number of household members**
Food expenditures on "luxury" food like meat and chicken in this context	**Monthly expenditures averaged by number of household members**

3.2.2 The Empirical Link between Assets and Household Spending

Asset-based welfare has provoked much attention in recent times. The argument for asset based welfare is based on the notion that the stocks of wealth that an individual holds and not just their income or consumption should be seen as important when assessing their wellbeing (Paxton 2003). Asset-based welfare emphasizes the importance of individuals acquiring and accumulating assets of various sorts as a way of promoting economic and social economic development. Studies have shown that wealth is positively associated with physical health and socio emotional behavior (William 2003). In their contribution to the subject, Zhan and Sherraden (2003) found that single mothers' assets have been proven to be positively associated with children's education attainment. Acquisition and possession of assets is therefore very important for social protection and economic development.

Depending on the conceptual framework, the relationship between possessions and the condition of poverty can be either a poverty profile or an attempt to understand the determinants of poverty (Escobal, *et al,* 2000). Based on the static model of optimization of household decisions on production and consumption, it is possible to derive a relationship between household poverty and possession of assets, which is susceptible to empirical evaluation.

Assuming that households as producers maximize benefits subject to technological restrictions of the production function and as consumers maximize their welfare by optimizing their consumption and work decisions subject to the gains, we could establish a direct connection between possession of and access to assets and levels of spending by the household or individual (Escobal, *et al.,* 2000). The reduced form of this optimization problem can be represented in the form of a spending equation:

$$Y = Y(M;A) = Y\left(M; A_{hum}, A_{fis}, A_{fin}, A_{pub\&org}\right) \tag{1}$$

Where Y is total household income, M is the price vector and A is the vector that includes all the assets that the household has access to. The assets are classified under four (multidimensional) categories: those associated with human capital (A_{hum}), physcical

capital (A_{fis}), financial Capital (A_{fin}), and public and organizational capital ($A_{pub\ \&org}$). Given a relative definition of poverty, equation one can be written as

$$E(Z_i) = P_i(Z_i) = f(\alpha X_i) \tag{2}$$

$$P_i(Z_i) = f\left(A_{hum}, A_{fis}, A_{fin}, A_{pub\&org}\right) \tag{2´}$$

Where $E(Z_i)$ is the expected relative poverty index for individual household which is a function of access to assets. P_i denotes individual household probability, X_i is a vector of household assets. In this regard, the original possession of assets, their process of accumulation and the existence of external shocks would be the determinants of the transition of individuals or households along the scale of income or spending. It is therefore possible to derive an equation that represents the transition of a household from one level of spending to another, or put otherwise from one level of poverty to another.

$$\Delta Z_i = f\left(A_{i0}, A_{j0}, A_{k0}, A_{l0}; \Delta A_i, \Delta A_j, \Delta A_k, \Delta A_l, \eta\right);$$
$$i \in A_{hum}, j \in A_{fis}, k \in A_{fin}, l \in A_{pub\&org} \tag{3}$$

Where all variables have been defined, except ή which represents a vector of short term shock which might have an effect on current income.

3.2.3   Why use Relative Poverty

Poverty encompasses not only income for the satisfaction of basic needs but also human, physical, environmental, social, and political capital as a means of achieving income (Zeller et al 2005). On the same note, poverty may expresses itself in a multidimensional outcome; being conditioned by the socioeconomic, cultural, institutional and political environment. The outcome indicators of poverty relate to the various dimensions of poverty that include food security, health, nutrition, education, housing, clothing, human and civic rights, the quality of social networks as well as psycho-social indicators such as self esteem (Zeller et al 2006).

To capture the multiple dimensions of poverty (as causal or outcome) requires both qualitative and quantitative indicator variables. Development practice has three major types of poverty assessments. The first is the construction of the absolute poverty line. This involves taking in to account the way household expenditures fall short of the poverty line. The data requirements for this method are quite steep, costly to meet, as well as it is time consuming.

 The other approach to poverty measurement is the rapid appraisal method. In this method, households are ranked with respect to their wealth by community members. A simple rapid appraisal method may involve only focus group discussions or key informant interviews. Rapid appraisal method is usually grouped together with the participatory wealth ranking method. Participatory wealth ranking involves the participation of the general community, to define what it means to be poor and to give a definition to indicators that are used to measure poverty. A relative poverty index is then computed and households socioeconomic status is ranked based on this index. Both rapid appraisal and participatory wealth ranking are highly subjective, but they are very helpful if the policy maker is to understand what the community really understands as development and poverty reduction. This piece of information is specifically important in terms of implementing development projects that are likely to gain support and adoption by the local community.

Both rapid appraisal methods and participatory wealth ranking have been widely used and accepted as methods for identifying vulnerable groups in a given community (Zeller et al 2005). Kiiru and Mburu (2007) used rapid appraisal method to measure relative poverty in their attempt to measure vulnerability. The major weakness of these methods is their subjectivity and their regional orientation that makes comparison across regions impossible. But for all practical purposes, to be poor is relative; and therefore for the purposes of policy and evaluations, then it is the relativity in poverty that really matters most to the policy maker.

This thesis prefers to use a relative poverty measure for several reasons: First, there is both a time and a resource constrain to perform a detailed, costly and cumbersome procedure as the absolute poverty index. Second, even if secondary data was used, it may

not be the best data for the objectives of this study where the intention is to capture marginal income changes within a short period of time. Third, a relative poverty measure is perceived to be the better option in this context because it makes it possible to capture marginal welfare changes for both microfinance participants and non participants within the relatively short period.

3.2.4   Measuring Vulnerability

Vulnerability could be defined as the probability or risk today of being in poverty or to fall into deeper poverty in the future. It is a key dimension of welfare since a risk of large changes in income may constrain households to lower investments in productive assets. High risk can also force households to diversify their income sources, perhaps at the cost of lower returns. For example, due to the high risks involved in microfinance, poor borrowers may invest in over-exploited business ventures with fast though marginal returns. This way they are able to manage their monthly or sometimes weekly payments and contributions (Kiiru and Mburu 2007).

Vulnerability could pose a challenge in measurement in that anticipated income or consumption changes are important to individuals and households before they occur— and even regardless of whether they occur at all—as well as after they have occurred (Hoddinot and Qusumbing 2003). For the empirical analysis of vulnerability it is conventional that the analysis of household poverty dynamics and variability of other welfare outcomes be used as proxies for vulnerability.

In the measurement of vulnerability in this study, vulnerability is defined as expected poverty, or the probability that a household falls in to poverty in the future. The vulnerability of household h at time t denoted as V_{ht} is the probability that the household poverty index will be below the poverty mean index for the overall population which for this case is defined as the relative poverty line z; (Chadhuri et al 2002).

Following Chadhuri et al (2002) vulnerability of household h for n periods denoted as R(.) for "risk" is the probability of observing at least one spell of drop below a relative poverty line for the n periods which is one minus the probability of no episodes of dropping below a relative poverty line:

$$R_h(n,z) = 1 - \left[\left(1 - \left(P(y_h, t+1) < z \right), \ldots \left(1 - \left(P(y_h, t+n) < z \right) \right) \right) \right] \tag{4}$$

A household is therefore said to be vulnerable if the condition holds true, zero otherwise

Y in this case could be the outcome, for which its variability determines household vulnerability..

3.2.5 *Econometric Issues in Measuring Impact*

Determining whether the benefits of microfinance programs are sustainable and large enough to make a dent in the poverty of participants and society at large is important for guiding policy. However efforts to assess the impact of microfinance programs can be biased by non random program placement and participation. This is so mainly because microfinance programs tend to be placed in areas where the incidence of poverty are high and therefore lack formal banking institutions. Therefore a simple comparison of the incidence of poverty in program and non program areas may lead to the mistaken conclusion that microfinance programs have increased poverty. In the same note, those who participate may self-select into a program based on unobserved traits such as entrepreneurial ability. In that case, simply comparing such outcomes as per capita consumption or the incidence of poverty between program participants and non participants may lead to the mistaken conclusion that the programs have a high impact on poverty reduction, when indeed the effects are due to the unobserved abilities of participants. Thus the estimated effects may be under, or overestimated depending on the type of analysis.

Coleman (1999) uses the following empirical specification to illustrate the bias potentially arising from self-selection and endogenous program placement:

$$B_{ij} \equiv X_{ij}\alpha_\beta + V_j\beta_B + \varepsilon_{ij}, \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (5)$$
$$Y_{ij} \equiv X_{ij}\alpha_Y + V_j\beta_Y + B_{ij}\delta_Y + \mu_{ij}, \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (6)$$

Where B_{ij} is the amount borrowed from the microfinance institution by household i in village j; X_{ij} is a vector of household characteristics; V_j is a vector of village characteristics; Y_{ij} is an outcome for ith household living in village j on which we want to measure impact; $\alpha_B, \beta_B, \alpha_Y, \beta_Y$ and δ_Y are parameters to be estimated: and ε_{ij} and μ_{ij} are errors representing unmeasured household and village characteristics that determine borrowing and outcomes, respectively. δ_Y is the primary parameter of interest as it measures the impact of microfinance on outcome Y_{ij}. Coleman (2006) observes that econometric estimation of this equation system will yield biased parameter estimates if ε_{ij} and μ_{ij} are correlated and this correlation is not taken in to account. The source of the correlation of the error terms could arise from both self selection and the endogenous placement of the microfinance institutions.

Another source of bias in impact estimation could be an oversight in engendered borrowing. Pitt and Khandker (1998) find that impact of microfinance on poverty varies by gender, and therefore it is misleading to look only at the impact of borrowing by the household. In order to control for selection bias, Coleman (1999) uses the following specification,

$$Y_{ij} = X_{ij}\alpha + V_j\beta + M_{ij}\gamma + VBMOS_{ij}\delta + \eta_{ij} \tag{7}$$

Where Y_{ij} is an outcome of household i in village j on which we want to measure program impact, X_{ij} is a vector of household characteristics, V_j is a vector of village fixed effects; M_{ij} is a membership dummy variable equal 1 if household ij is selected in to the microfinance program, and 0 otherwise; and $VBMOS_{ij}$ is the number of months the microfinance institution has been available to members. Coleman (1999) uses the membership dummy M_{ij} to proxy the unobservable characteristics that are relevant for households to self select in to the microfinance programs, and that might affect outcomes. The variable $VBMOS_{ij}$ measures the extent of program availability to members who have

self selected. Unlike the amount borrowed it is exogenous to the household. For the control households it equals zero while for participating members it is positive in varying amounts. The inclusion of non microfinance participants in the sample combined with the use of fixed effects, controls for the possible endogenous program placement. In this specification, δ is an unbiased or consistent measure of impact per month of program availability. Controlling for biases as explained above made a lot of difference in the results. Coleman (1999) found that average program impact was not significantly different from zero after controlling for endogenous member selection and program placement.

Later on Coleman (2006) extended the estimating frame work to differentiate impacts on households with different socioeconomic background. One group of the household was relatively better off, more powerful and tended to be selected in to microfinance program committee boards where they could influence larger loans for themselves (if they so wished). The other group was composed of ordinary households (who he calls "rank and file" members). Coleman (2006) further estimated the impact by number of months of program availability to each of the two groups of households as follows:

$$Y_{ij} = X_{ij}\alpha + V_j\beta + MR_{ij}\gamma_R + MC_{ij}\gamma_C + RMOS_{ij}\delta_R + CMOS_{ij}\delta_C + \mu_{ij} \qquad (8)$$

Subscripts i and j indicate individual households and village placements respectively. Subscripts R and C denote if a household is classified as a rank and file member or a committee member respectively. MR_{ij} is a dummy variable equal to 1 if the household is a rank and file member, 0 otherwise; MC_{ij} is a dummy variable equal 1 if household has a village bank committee membership and Zero otherwise; $RMOS_{ij}$ is the number of months of rank and file membership while $CMOS_{ij}$ is the number of months of committee membership and the other variables are defined as before. In this specification δ_R measures the impact of an additional month's program availability to a rank and file

member, and δ_C measures the impact of an additional month's program availability to a committee member. An F test could be used determine whether $\delta_R = \delta_C$.

With this model Coleman found that most impacts were not statistically significant for the rank and file members but there were some noted significant impacts for the committee members particularly on wealth accumulation. The loan sizes accessed by the rank and file members were an issue in this particular survey. Coleman argues that the loan sizes were too small to make any significant differences in household welfare. The size of loans even prompted some women to leave the microfinance programs arguing that the loans were too small for any meaningful income generating activity (Coleman 2006). Coleman argues that one reason why wealthier borrowers may have experienced larger impacts was because they could commandeer larger loans.

It may be also useful to try the differencing method as proposed by Aghion and Morduch (2005). Equation (9) could be modified to specify that the variables are measured in a given time period t:

$$Y_{ijt} = X_{ijt}\alpha + V_j\beta + M_{ij}\gamma + T_{ijt}\delta + \eta_{ijt} \tag{9}$$

We are interested in estimating the value of δ, which is the coefficient on the variable that measure impact. Y_{it} is the dependant variable and it is the household level outcome for household i in village j at time t. The variables X_{ijt} capture household characteristics at t (and a constant term), and V_j is a vector of village dummy variable that are assumed fixed over time. M_{ij} is a vector of individual specific variables that capture non random individual selection in to the program and they are also fixed over time. The same set of indicators could be collected once again in time period $t+1$, and make the following model specification.

$$Y_{ijt+1} = X_{ijt+1}\alpha + V_j\beta + M_{ij}\gamma + T_{ijt+1}\delta + \eta_{ijt+1} \tag{10}$$

Then we could subtract equation 9 from 10 to obtain:

$$\Delta Y_{ij} = \Delta X_{ij}\alpha + \Delta C_{ij}\delta + \Delta \eta_{ij} \qquad (11)$$

Where Δ indicates the difference in the variables between period t and t+1. In this equation the village dummies drop out as do the fixed (and unobservable) individual specific characteristics. Alexander (2001) used a similar difference in difference approach with data from Peru. Her findings were that the estimated impacts on enterprise profits fell after controlling for reverse causality. Controlling for reverse causality in the study Alexander (2001) used an instrumental variable approach and the result was that the estimated impacts shrank and were no longer statistically significant. Instrumental variable method allows researchers to address problems caused by measurement error, reverse causality and some omitted variables.

Given the sensitivity to instruments used to measure impact of microfinance, there are compelling reasons to use alternative approaches to confirm the results. For this purpose it may help to introduce time dynamics in the forgoing estimations and estimate a pooled data regression model with fixed village and individual effects. The main reason for using pooled data over cross-sectional data in impact assessment is because cross-sectional results may not be robust. In this model it is assumed that current household income depends on both current and past characteristics, including access to loans.

$$Y_{it+1} = X_{it}\alpha + X_{it+1}\varphi + S_{it}\sigma + S_{it+1}\kappa + V_{j}\beta + T_{it}\delta + T_{it+1}\phi + M_{i}\gamma + \eta \qquad (12)$$

Where Y_{it+1} is the current individual household income (X_{it}) is the previous vector of individual household characteristics, X_{it+1} is a vector of current household characteristics, S_{it} is the previous total loan size that the household acquired in the previous period, S_{it+1} is the current loan size that the household has acquired from the microfinance institution, V_{j} is the village effects, T_{it} is the variable whose coefficient measures the impact of microfinance on household income in the previous period., T_{it+1} is

the variable whose coefficient captures impact in the current period and η is the error term. We use a participation M dummy to control of unobserved and unmeasured household characteristics that determine household income. $\alpha, \varphi, \sigma, \kappa, \beta, \delta, \phi, \gamma$ are coefficients to be estimated.

The initial impulse in impact estimation would be to use the coefficient of the loan size that the household acquired as the proxy of the impact of microfinance on household income. Coleman 1999 correctly points that the demand for loan is highly correlated with household income and therefore the coefficient for loan access may be a biased estimator of impact.

In the context of this study the number of times borrowed would be a better candidate as an estimator for impact. Unlike the amount borrowed it is exogenous to the household since it depends on first how long the microfinance program has been available to the household and also peers in a joint liability group determine how many times they would allow one member to borrow. We are therefore interested in ϕ and δ as the measure of the impact of microfinance on household income for both the current and the previous credit.

3.3   Conceptual Framework

3.3.1   Conceptualizing Impact Chains and Measurement

The overriding assumption of all microfinance programs is that the intervention will change household access to productive resources in a way that lead to achievement of higher household consumption of goods and services and overall economic well being. The biggest challenge in impact assessment is to separate and capture the assumed causal role. To capture the impact of an intervention program, one must control for selection and reverse causation. For example, even if there seems to be improvements in household access to goods and services after the intervention, there still remains questions about whether the improvements are significant as without the intervention. On the same note if it is observed that richer households access more loans, the important question is whether

the loans made the households richer or is it because they are rich that they can access more loans. The latter is the so called reverse causation. Selection bias has a lot to do with pre-existing attributes associated with participants in microfinance programmes. For example, a household may already have good entrepreneurship skills or managerial capabilities or better education that may already give them some advantage even without the microfinance programme. This means that without control for such selection biases and reverse causation then impacts could be over estimated or underestimated. McKernan (as quoted by Aghion and Morduch 2005) finds that failure to control for selection bias can lead to overestimation of the effect of microfinance on profits by as much as 100%. In other cases controlling for these biases reverses conclusions about impacts entirely (Aghion and Morduch 2005). A simple model for impact chains can be illustrated as follows:-

Microfinance Intervention → Household A → "Modified" household economic practices → Modified Outcomes

No intervention → Household B → household economic practices → Outcomes

Difference between the two could relate to impact

Controlling for biases
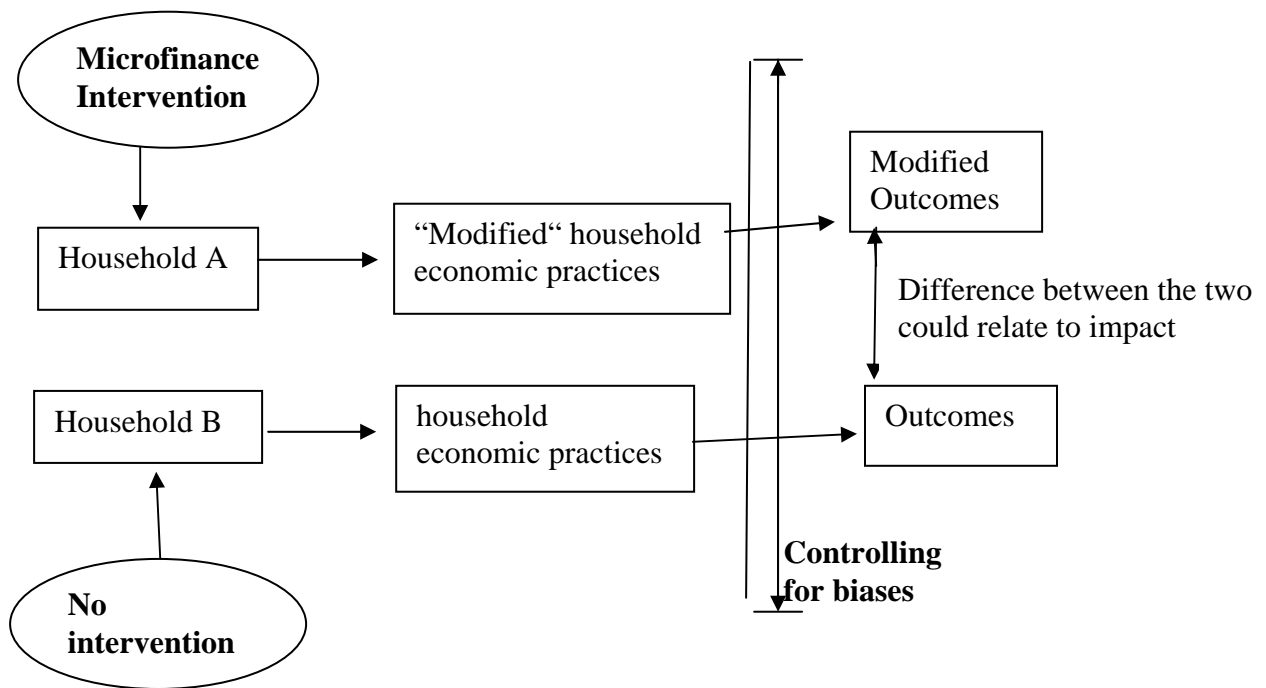
Figure 5: Model of the Impact chain: Adapted from Hulme 1999

The impact chain provides a very simplified notion of capturing impact. In reality, income depends on many different attributes and not just microfinance alone. Some of the attributes like participants age, education status, among other attributes can be

observed and measured. However there are other attributes that are very difficulty to measure as well as observe. These may include entrepreneurship capability, organizational ability and persistence in entrepreneurship. Yet calculating the impact of microfinance requires that we disentangle the role of microfinance on incomes and the role played by the other attributes both measurable and un-measurable.

Consider figure 6. T1 refers to the treatment households before intervention and T2 refers to the same household after intervention. C1 refers to the control households in the initial period of the study and C2 refers to the control households at the later period of the study. For measurement purposes we assume that impact is experienced only by those households that participate in microfinance programmes after some time. Lets call the time when impact is experienced T_2. For the purposes of this study, T_2 is taken to be 18 months since the household joined the programme. The initial household income is reflected by position T_1. The difference between T_2 and T_1 shows the combined effects of both measurable and un measurable effects on income by all attributes that do not change over time including location related attributes. However the same way that the difference captures impact due to microfinance it also captures impact due to broad economic changes that have occurred to all households both microfinance participants and non participants over the same period. For example good rainfall and therefore good harvests by all households may mean improved incomes for all households regardless of their participation status in microfinance programmes; similarly flooding or other natural disasters may mean that all households will suffer negative effects regardless of their participation in microfinance programmes. This implies that attributing the entirety of T_2-T_1 difference to microfinance may be quite misleading.

To control for selection biases we include a control group from households that do not receive microfinance. The base income levels for the "control group" (the non participant households) may be different from the base income levels of the "treatment group" (the participant households). What this means is that comparing the difference between T_2 and C_2 will help address biases due to the broadly felt economic and social changes, but it will not account for differing base levels. Isolating the true impact of microfinance

requires comparing the difference T_2-T_1, with the difference C_2-C_1, which has also been referred to as the difference-in-difference approach (Aghion and Morduch 2005).
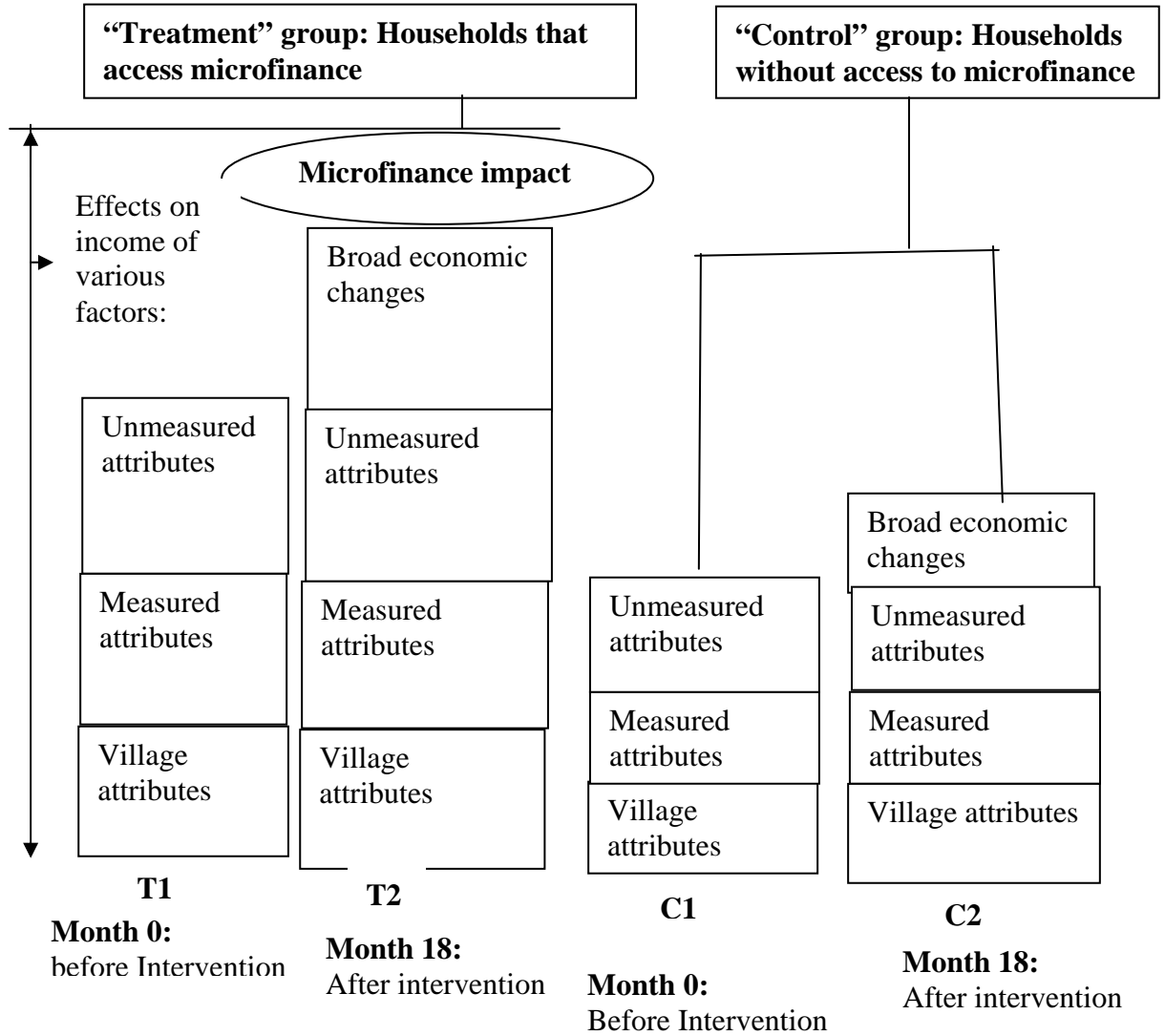
Figure 6:   Sources of Income for treatment and control group: Adapted from Aghion and Morduch 2005

3.3.2 *Conceptualizing Microfinance Participation, Household Assets and Vulnerability*

Sustainable livelihood approaches have focused on assets to measure vulnerability (Dercon, 2001). Quantitative work has also found that access to assets is an important determinant of poverty and of the ability to cope with hardship. Depending on the conceptual framework, the relationship between ownership of assets and the condition of poverty can be either a poverty profile or an attempt to understand the determinants of poverty (Escobal, *et al,* 2000). All assets share a common characteristic, namely that alone or in conjunction with other assets they produce a stream of income over a period of time (Hoddinot and Quisumbing 2003). Some assets have a second characteristic namely they are a store of value. The availability and the subsequent allocation of assets in to income generating activities results to income, which is a determinant of consumption, poverty and vulnerability.

Field work for this study established that there is a strong positive link between ownership of assets by households and probability of being selected or accepted in a joint ~~liability~~ lending. Before accepting any new member, group members have a vetting process. The vetting process ensures that they recruit members with the capability to repay loans or at least own some assets. There already exists some "formal agreements" within groups that allows group members to seize the property of a defaulting member and help recover any money they may loose due to the default. For this reason joint liability members are always at risk of loosing livelihood assets in case of bad investment decisions or a negative shock that may affect business returns. This is especially the case if the household has no other source of income. Already studies exist that show that debt for vulnerable households could make them worse off due to their effects on livelihood assets incase of inability to repay or gender biases in the control of household recources, (Mayoux 2002, Kiiru and Mburu 2007, Kiriti 2006, Gulli 1999).

The shifting of costs to the poor in the pursuit of sustainable lending institutions that cater for the poor could instead fuel insecurity amongst the borrowers. Insecurity is an important component of welfare and can be understood as vulnerability to a decline in

well-being. To formally conceptualize the issue of microfinance Participation, household Assets and vulnerability we need to focus on three components namely; settings, assets and activities. Settings for microfinance participation refer to all the intra group insurance activities and the working environment. Assets in this case encompass a broad definition as discussed under section 3.2.1. The allocation of assets in to activities to generate income and therefore a livelihood is conditioned by the settings in which the households find themselves.

We first link microfinance participation with the activities involved, risks, and the risk coping strategies available to households. Consider a new entrant in to the microfinance joint lending program. The intra group insurance and joint liability lending is characterized by weekly meetings, monthly contribution both for loan repayment and other contributions. There are also other activities related to debt recovery from defaulted peers, as well as vetting of new members.

All Members also have capital endowments and labour which in this case is broadly defined as household assets which is a key *ex ante* risk coping strategy. Figure 8 is an attempt to link microfinance participation in to the general household endowment and allocation across a number of activities, mainly agricultural and non agricultural activities which depend on the household perception of the level and variability of the various activities and the associated returns of every activity. The liquidity of household assets has a high positive relationship with the probability of being selected in to joint a microfinance lending program. For example, Dercon (1996) finds that in Ethiopia and Tanzania , the possession of more liquid assets such as livestock is a precondition for entry in to higher return , but higher risk activities.

The relationship between microfinance participation, household endowments and household choice of activity to generate income is affected by the likelihood of shocks. The shocks may include non repayment by some peers, failed business venture, sickness or any other unexpected activity that can affect household income. These kind of shocks in return affect household capability of future loan repayment and further affect household consumption of goods and services. Income generation and consumption in the presence of loan repayment obligation is likely to adapt to *ex post* risk management.

For example, households may incur other debts to offset the already mature debts (Roodman and Qureshi 2006) or households may alter investments in human capital.

In conclusion therefore, household welfare and thus vulnerability depends on the nature of shock, the availability of additional sources of income and the extent of public assistance (Hoddinot and Quisumbing (2003). The ex post responses to shocks generate feedback mechanisms which may affect household consumption decisions

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                    ┌─────────────────────┐
                    │    MICROFINANCE     │
                    └─────────────────────┘
                               │
                               ▼
         ┌──────────────────────────────────────────┐
         │  HOUSEHOLD ASSETS (Broad                  │
         │  definition of assets)                    │
         └──────────────────────────────────────────┘
                               │
                               ▼
    ┌──────────────────────────────────────────────────┐
    │                  ACTIVITIES                        │
    │   ┌──────────────────┐   ┌──────────────────────┐ │
    │   │ Farming activities│   │ Off farm activities, │ │
    │   │                  │   │ including micro-     │ │
    │   │                  │   │ entrepreneurships    │ │
    │   └──────────────────┘   └──────────────────────┘ │
    └──────────────────────────────────────────────────┘
                         ▲
                  ┌──────────────┐
                  │   Shocks     │
                  └──────────────┘
                         │
                         ▼
                  ┌──────────────────┐
                  │ Response to shocks│
                  └──────────────────┘
                         │
                         ▼
                  ┌──────────────────┐
                  │ Savings/ dissavings│
                  └──────────────────┘
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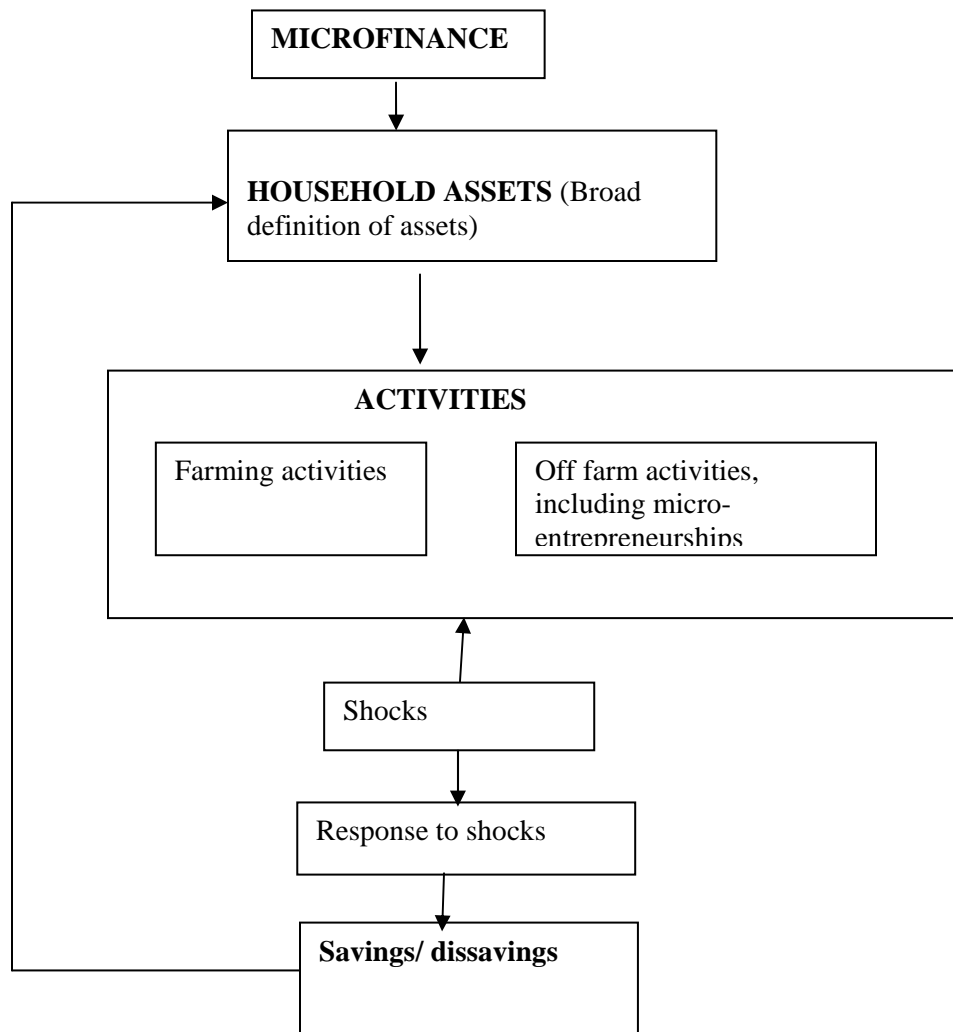
Figure 8: The link between microfinance, assets and vulnerability

Adapted from Hoddinot and Quisumbing (2003)

3.3.3 *Conceptualizing the joint liability group as an institution*

The joint liability lending group could be conceptualized as an independent institution that operates with the following assumptions:

(i)   Individuals join the groups and are already aware of the risks involved in terms of information asymmetries.

(ii)   Each group consists of members with some information about each other but the information is not complete, therefore prompting the need for some rules of conduct within each group.

(iii)   Each individual in the group has their own utility maximization function that may not necessarily be in line with other utility functions of other group members.

(iv)   The microfinance institution embraces a market approach in the supply for loans and has a production function that aims at maximizing revenue through loan repayments subject to costs of dealing with many poor borrowers.

These assumptions would imply that there are user costs both on the microfinance institutions and for individual participants within the joint lending groups. User costs for microfinance participants include all expenses and opportunity costs, fixed and variable, which arise due to being a member of a joint liability-borrowing group. While user costs for microfinance institutions include all expenses and opportunity costs, fixed and variable, that arise due to availing financial services to economically risky clients. In New Development Economics, user costs are considered to be of substantial interest for development finance.

In light of the for going discussion, the joint lending group is be perceived as a legal entity, in which the members are jointly responsible for the costs and benefits arising out of loan acquisitions, uses and repayments[8]. In this section we strive to understand why the joint lending groups behave the way they do. This is particularly important in understanding the consequences of the preferred delinquency controls both by the lenders

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[8] Joint lending groups stand to save time and money if every one invested in the "right" projects and repaid their loans on time.

and clients. This understanding would help policy makers to design and implement policies that support microfinance as a poverty reduction tool among the economically disadvantaged population.

The theory of transactions costs may hold a key to understanding the operations of a joint lending group as an institution. There are three main assumptions underlying transactions cost theory. The first assumption is that Individuals behave in an opportunistic manner. This is so because there exists an asymmetry of information between business-partners in a way that information may be passed on incompletely or not at all. This scenario allows that in case of goal conflicts individuals adopt opportunistic behaviors. The second assumption is that individuals are characterized by bounded rationality. Bounded rationality is due to lack of competence, knowledge and information processing capabilities in all necessarily areas and as such human individuals are not always able to act in a rational manner even if they plan to do so. Due to bounded rationality it is impossible to write complete contracts that take care of every possible environmental state or action of transaction partners. And thirdly, uncertainty and specificity of investments necessary to carry out transactions are relevant factors. Investment specificity refers to possible alternate use of investments made.

Microfinance borrowers within a joint liability group are the decision makers and are assumed to behave in a way consistent with bounded rationality, in that they consider a restricted range of alternatives but in a rational way. They also may behave opportunistically in some situations. However when making such a decision, they weigh the costs and benefits of defaulting from the expected behavior. Finally, individual group members may have varying preference for risk. As with opportunism, one need not assume a single preference for risk among all actors. Transactions within the solidarity group operations may be affected by uncertainty and opportunities for opportunistic behavior among members. The source of this uncertainty may be either opportunistic behavior of the individuals or an uncertain environment. Information may not be distributed equally among all individual group members. Where one member has more or better information than the other, again the possibility of opportunistic behavior presents

itself. Information problems are clearly more acute when the members involved have low trust for each other.

The central question is: How is JLL group operations shaped by the attributes of actors and transactions in the context of market driven approaches to loan supply? It is reasonable to expect that as long as the microfinance institution pursues financial sustainability in the absence of a formal insurance agency to shoulder risks of financial losses, then most of the insurance costs will be shifted to borrowers. This in practice occurs through the forced savings; risk insurance premiums, frequent financial transactions with the microfinance institution, as well as weekly meetings to review individual progress in loan arrears. Given the lack of empowerment of the poor as well as their economic vulnerability, they will accept these conditions as long as they have no other alternative and for as long as they still need the money. There is a danger that joint lending groups are likely to prioritize loan repayment since it gives them more utility as a group.

Rationally we expect that the group as an institution works towards minimizing the costs of dealing with an uncertain future given possible opportunistic tendencies of members, and the pressure of loan repayment from the microfinance institution. Costs to the Lending groups are mainly time costs and financial costs. Research has shown that the poor unlike the well off have highly discounted time costs. This implies that joint liability groups being composed mainly of poor people may discount their time costs and pursue to minimize their financial costs. This will indeed raise the efficiency in loan repayment to the lending institution. There rises a very important empirical question: Is it statistically the case that the opportunity costs of loan repayment by the poor are statistically insignificant to the welfare of the poor? The answer to this question is very relevant to enable the policy maker draw regulations for microfinance institution that are in line with poverty alleviation objectives.

Critics would like to argue that individuals in a joint liability borrowing groups would rationally wish to maximize on their loan returns through appropriate investments. On the contrary, even the concept of "appropriate investment" is not an individual decision in a

joint liability borrowing group since peers would like to see their group members investing in programs that convince them that it will be possible for them to repay the loans in time. Another reason why it is not possible to maximize JLL loan productivity through "appropriate investments" for borrowers especially those without other sources of income is because of the frequent financial transaction with the microfinance institution. The frequent transactions discourage borrowers from investing in long term projects even though they may have better returns because the borrowers may risk default. Default by one member is costly to the group as a whole. In this case it is possible to shift priorities of borrowers from maximization of incomes through appropriate investments to priorities of loan repayment. The following figure attempts to capture this conceptualization:

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┌─────────────────┐                    ┌──────────────────────────┐
│  Microfinance   │ ◄────────────────► │ Financial sustainability, │
│  Institution    │                    │ Maximize outreach and     │
└────────┬────────┘                    │ maximize revenues         │
         │                             └──────────────────────────┘
         ▼
┌─────────────────────┐                ┌──────────────────────────┐
│ Joint lending Group │ ◄────────────► │ Discounted time costs,   │
│ (With limited       │                │ minimize financial costs │
│ information         │                └──────────────────────────┘
│ about individuals)  │
└──────────┬──────────┘
           │
           ▼
┌─────────────────────┐
│ Threat of           │
│ opportunistic       │
│ behaviour by members│
└──────────┬──────────┘
           │
           ▼
┌─────────────────────┐    ┌──────────────────────┐    ┌──────────────┐
│ Strict Rules to     │ ─► │ Voluntary or         │ ─► │ Loan         │
│ ensure individual   │    │ involuntary          │    │ Repayment    │
│ loan repayment      │    │ compliance by members│    └──────┬───────┘
└─────────────────────┘    └──────────────────────┘           │
                                                               ▼
        ┌──────────────────┐                     ┌──────────────────┐
        │ Impact on        │ ◄────────────────── │  COSTS TO        │
        │ household income?│                     │  BORROWERS?      │
        └──────────────────┘                     └──────────────────┘
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Figure 9: Operations Lending group as an institution

CHAPTER FOUR

RESULTS AND DISUSSION

4.1   Qualitative and descriptive analysis

Introduction

The reason for this qualitative section in a study that is mainly considered quantitative in nature was to provide more information of the underlying issues pertaining to household participation in microfinance programs in order to understand and interpret the quantitative results.

The study benefited from a rich qualitative data through focus group discussions and key informant interviews. The nature of the interviews and discussions was open ended, exploratory and focused on the practical issues of joint liability lending and their effect on household income. This section relies mainly on inductive reasoning process and basic exploratory statistics to interpret and structure the meanings that can be derived from the data collected. The main objective of this section is to use qualitative data in a process of inductive reasoning within the context of economic theory in order to generate ideas (hypothesis generating), as opposed to hypothesis testing. Much of the qualitative analysis is focused on the structural organization of the joint liability lending (JLL) group as an institution and was mainly interested on three core issues: First, the role of individual group members in enabling each others´ access to credit; Second: Intra-household credit allocation to different household expenditures including entrepreneurship; and finally the overall effects of the credit on households´ ability to improve their incomes.

4.1.1 General descriptive statistics for both microfinance participants and non participants

Many microfinance institutions particularly those that serve the poorer clients purport to have a social mission. Their purported goal is to help in the fight against poverty by empowering households to raise their incomes and improve their standards of living in a version similar to the one explained in section 2.2. The general nature and the extent of poverty in society has been described as engendered, and some researchers and policy

makers describe poverty has having a "woman's face". This is because empirical studies have shown that many more women than men tend to be more economically disadvantaged. In their mission to reduce household poverty and also as confirmed by this study, micro credit institutions target more women than men. In the study area one microfinance institution: the Kenya women Finance Trust (KWFT) lend exclusively to women. Not only is lending to women believed to have an overall greater impact on household welfare in terms of nutrition and education, but also women have been found to be better payers. Lending to women is therefore believed to contribute not only to alleviating household poverty and improving human capital formation, but it is also efficient in terms of sustaining microfinance institutions by ensuring good repayment rates.

In this study 75 % of the random sample of all the borrowers was female while 25% was male. In some microfinance institutions like the Grameen Bank which is the biggest microfinance institution in terms of outreach, 96% of their clients are women. The difference in the clients' gender proportions between the Grameen Bank and our study sample could be explained by the socioeconomic and cultural context that determine group formations and access to loans. The following is a table of important socio economic statistics for both microfinance participants and non participants

Table 2: Household Socio economic statistics

	Microfinance participants	Non Participants
Mean age of household head	**34.81**	**35**
Mean household size	**4.30**	**4.10**
% of female headed households	**46.80**	**22.20**
Mean years of formal education for household head	**10.2**	**10.05**
Source: field data		

About 88 % of all the respondents both participants and non participants said that business was their main occupation, while the rest were civil servants, i.e teachers, casual laborers and peasant farmers. This result seems to be against the expectations of a typical rural setting, where the majority of households are expected to be relying on farming as their main occupation. How ever this could be explained by the fact that prior to the study the eastern province of Kenya and other arid and semiarid regions had suffered a prolonged drought for about 5 years. Many peasant farmers had therefore looked for other opportunities like entrepreneurship to earn a living. Of all the enterprises studied, 85 % were located within the main shopping centers while the rest were local canteens and tea kiosks. About 58% of the entrepreneurs operated small retail shops and tailoring shops while the rest were involved in micro entrepreneurship activities like food vending 11%, and vegetable / grocery stands (30%).

All the three major microfinance institutions found in the study area were officially giving loans for only micro entrepreneurship related activities. Borrowers were expected to either boost existing business or to start one with the microfinance loans. However, there was no strict enforcement of this regulation and it was possible for individuals to join a joint lending group and access loans for what ever reasons as long as they were accepted in to the group by the existing peers.

4.1.2   *Household access to credit through Joint Liability Lending*

In order to accept a new member in to their group, peers only considered the ability to repay loans by the prospective member. Group members judged the ability to repay the loans by new members depending on two criteria; the first is ownership of assets that act as "collateral" to the group and the second is the ability to provide the group with a guarantor incase the borrower's collateral falls short in the future. Non repayment by an individual client because of death was formally insured by the microfinance institution and every borrower contributed to this insurance. The other risks due to non repayment were borne jointly by the group.

The provision of a guarantor and "collateral" is just the beginning of the vetting process by peers. The next vetting hurdles are purely financial: they begin with the group membership fee, ranging from a minimum of Ksh 500 (7 USD) to 1000 (14 USD) depending on the prospective group. Another charge is the pass book fee (a fee charged by the microfinance institution in order to issue a passbook to the borrower) which ranges between Kshs 65 (1 USD) to 200 (2,5 USD) depending on the lending institution. A charge of about 1% of the loan applied for by the client is also paid to the bank as insurance fee incase of death of the client. Every individual borrower must become a member of the microfinance institution and for this they must pay another 150 Ksh (2 USD) as membership fee to the microfinance institution.

The prospective member was also required to join the rotating credit arrangement of the solidarity group and start by paying the contribution for the current recipient. Focus group discussions revealed that membership to a rotating credit group was also a precondition for being a member of a microfinance institution. Different solidarity groups had different contributions for each recipient per month that range from between Ksh 500 (7 USD) to 1000 (14 USD). After fulfilling all the financial requirements related to participation in a joint lending group, the prospective borrower had to pay in advance the first monthly loan repayment installment even before the loan is advanced; failure to which the loan could not be processed. The actual amount paid for the first loan installment depended on the amount of loan sought and the interest rate. The interest rates for the three microfinance institutions studied ranged between 24 to 30 %.

 In case a new member was perceived to be weak in terms of their ability to repay, they were advised by the group members to be submitting their loan arrears to the group treasurer on a weekly basis. The treasurer would in turn keep all the installments till the

end of the month and then pay to the microfinance institution on behalf of the group. To understand the logic behind the already discussed tedious list of endless "bills" that a poor client has to pay before they can access any funds, one must consider the risks involved with dealing with low income persons while at the same time pursuing financial

sustainability for the microfinance institution. Whereas it is true that microfinance institutions have to ensure their own sustainability if they were to continue serving their clients in the future; there are social questions that may need to be addressed. For example: To what extent does the transfer of financial risks to the poor borrowers under strict market oriented business imperatives really are meant to help the poor?

About 70% of the participants surveyed were not able to raise the initial financial price to become microfinance clients from their own pre existing income sources. Majority of the borrowers (about 80 %) relied on bridge loans from friends and relative with the promise to pay back when their loans get processed by the microfinance institution. The other 20% relied on financial transfers mainly from own older children or from close relatives.

4.1.3   Loan repayment and debt recovery procedures

Group meetings to discuss repayment issues among other issues like debt recovery and information sharing took place on a weekly basis. Other group activities like seminars and trainings were also discussed in the meeting that was usually attended by a loan officer. Focus group discussions as well as participant observation revealed that the top objective for the loan officer to be present at the group meeting was to primarily ensure that all due loan installments were collected.

The loan officer would not agree to end a meeting until all the installments had been repaid. In many times it took the group officials (chairperson, treasurer and secretary) to use the groups' joint funds to pay up for those who could not submit their contributions on time. The joint group fund came from regular contributions from every member, and also from fines paid by members who could not pay their loan installments on time or those members who were late in attending meetings. If the funds were not enough to settle the outstanding arrears the group officials would borrow from other sources. The group considered repayment of any outstanding loan installment for any of their members as most urgent in order to avoid the consequences imposed by the microfinance institution. If a group did not repay any loan installment on time the microfinance institution would not only impose fines but may also stop lending to the group altogether

and cease their compulsory savings. Based on this consequence, joint liability groups will naturally exclude very poor borrowers from their groups for fear of their eminent default.

If the group happened to pay a loan installment (s) on behalf of a defaulting colleague they will first pressurize them to reimburse the group and coerce them to pay the appropriate fine. If this did not work, the group would result to impounding the assets of the defaulted borrower till every coin is repaid. Literally speaking there was no way a borrower would default without repercussions. It was also not possible for every member in the group to decide to default at the same time and thereby avoid peer sanctions. Microfinance institutions had devised such a plan as to avoid moral hazard using several techniques: First, the microfinance institution does not give loans to every member at the same time, the institution delays the turns in releasing loans such that at every moment some group member has already paid or is almost finishing or is just beginning their loan repayment. That way there is always pressure from those who have already repaid to those that are beginning their loan repayments to pay up. The second reason why it would be difficulty for a group member (s) to default without repercussion is that; incase of default by an individual group member, every other individual member risks their forced monthly savings which could be legally seized by the microfinance institutions. Successful microfinance institutions dealing with poor borrowers have managed very high repayment rates up to 97 % and most times up to 99% or more. On the other hand, the poor may not necessarily be repaying their loans because they have improved their incomes, rather they could be repaying because they must pay. The ability for the poor to repay should therefore not be "a big worry" to the policy maker. What should instead be the "big worry" to the policy maker is the social costs at which these loans are being repaid.

4.1.4   Uses of micro credit loans by households

Rural areas in Kenya are characterized by low household incomes. This implies a low demand for goods and services and therefore limited markets for rural micro entrepreneurs. Given this scenario, micro-entrepreneurs must make difficulty decisions in

terms of loans uses. More often than not micro entrepreneurs must face the question of whether to invest all the loan money in the enterprises given the business prospects or to use some of it to settle immediate domestic needs. The following table explains how the household allocates the loan money. Domestic use in this case includes such expenditures as debt repayment among other basic but urgent household expenditures like food and medication and sometimes school fees for children who have already been send home from school. "Entrepreneurship use" in this context refers to loan uses that involve investment in some household entrepreneurship activity.

Table 3: Household credit allocation

Borrowers (%)	Domestic Uses (% of total loan)	Entrepreneurship use (% of total loan)
5	100	0
5	75	25
37	25	75
20	20	80
33	~0	100

Source: Field data

From a social point of view, it is not be necessarily bad that households would borrow to smooth consumption. While on the other hand, saving opportunities for poor households would offer more viable alternative since they would equip households to manage income volatility without the stress of debt.

The next question in this study relates to how the participants were repaying the loans given that majority of the respondents did not use them for the expected entrepreneurship purpose. The following is a summary of the results regarding to household loan repayment:

Table 4: Household Loan Repayment

Method of Loan repayment	Borrowers affected (%)
Duress	62
Property confiscation by peers	4
Sale of pre-existing property	17
Business Profits	17

Source: Field data

Repayment by duress in this context meant repayment merely due to excessive peer pressure. Duress coping mechanisms included entrepreneurship de- capitalization and bridge loans. Property confiscation by peers in this case meant that the group member lost some assets through peer confiscation. In case of non repayment by a member, peers resorted to confiscation of the assets pledged by the individual at the time of joining the joint liability borrowing group. Domestic animals (cows, goats chicken etc), house furniture, and electronic goods and sometimes clothing were some of the major assets sold or confiscated to repay the loans. Sale of pre existing property meant that the individual chose to sale their own assets to repay the loan, other than wait for the peers to impound the property. Repayment by means of business profits meant that the respondents were able to invest and reap returns and were therefore able to repay from business profits.

All group members were responsible for loan recovery from any individual defaulter in their group. Two of the three microfinance institutions experienced and maintained almost 100% loan repayments through out the study period while the third microfinance institution experienced between 90 to 75% repayment rates during the study period and the trend was on the decline. Focus group discussions revealed that the financial burdens for participants were so overwhelming to the extent that members more often than not found themselves in viciuos debt circles. The participants had to borrow to conceal debts and there by postphone the debt problems until they finally could not borrow anymore and it was time to face the "debt monster", a scenario that was in most cases fatal to household welbeing. By the 18th month of the study period, 33% of initial microfinance particpartnts had dropped out citing

repayment problems while surprisingly another 10% of non participants had already joined the borrowing groups. New groups were also forming.

4.1.5 Sources of labour for micro enterprises

In light of the forgoing discussion, it is possible to understand that being a participant in a joint lending group has serious implications in terms of opportunity and financial costs. The next question is: How do the participants manage their micro enterprises in terms of labour requirements during group meetings which are held on a weekly basis as well as during loan recovery activities? To answer this question we compare the labour utilization statistics for all micro entrepreneurs regardless of their participation in micro credit programs.

Table 5: Utilization of labor by rural micro- enterprises

	Enterprises by Microfinance participants	Enterprises by Non Participants
Utilization of unpaid labor	**33%**	**19%**
Labor from own children	**17%**	**9%**
Paid labour	**25%**	**39%**

Source: Field data

4.1.6 Household income changes before and after microfinance intervention

The following table describes household poverty indices both at the beginning and at the end of the survey:

Table 6: Welfare changes for both participants and non participants

	Beginning of Survey		End of Survey	
	% Poor	% Non poor	% Poor	% Non poor
Microfinance participants	56	44	52	48
Non participants	61	39	59	41

During the period of the study, positive welfare changes were observed for both participants of microfinance and non participants. Later in the quantitative analysis the impact of microfinance "per se" on the change in household income will be measured.

In light all of the for going discussion, there are several questions that future research in the area would help to address: What is the cost benefit analysis of microfinance participation by poor borrowers? Is participation in microfinance programs by the poor always socially benefiting? Is it justified to invest big amounts of resources toward micro credit programs as compared to other poverty alleviation initiatives?

4.1.5   Concluding remarks

The for going analysis has mainly dwelled on the issue of access to loan, uses and repayment and changes on household income before and after the microfinance intervention. Statistically it is not possible to make any concrete conclusions concerning impact of microfinance at this point but several hypotheses about implicit costs to borrowers and risk management by microfinance institutions have been raised so far.

Microfinance institutions serving the poor operate in very risky contexts. Most of the risk arises due to the economic disadvantage of their clients and also because these institutions work in areas with poor or no basic infrastructure. Aiming for sustainability in such a context would involve a question of risk sharing between the microfinance institution and the clients. In the present scenario, many of the costs pertaining to risk have been shifted to the borrowers who bear them as long as they need the loans and have

no other alternatives. The shifting of costs to the poor should call for a policy to address over indebtness and debt management by the poor. Although the issue of indebting the poor has been raised in the section, it has not been conclusively discussed and the actual causes have also not been conclusively determined. However it has been identified that loan repayment pressure contributes to the household debt levels. This is particularly so given the finding that borrowers acquire bridge debts to conceal due debts. Excess debt can deplete household capital assets as well as other basic livelihood assets, thereby leaving the household exposed and vulnerable. Excess debt can also increase the propensity for financial crises.

The poor mainly go for loans with different motives; some may be looking for immediate funds to smooth consumption while other households may be interested in operating small scale enterprises. On the practical side of things, it has been easy for rural households to acquire capital for micro enterprises through microfinance. However one major challenge that still remains unsolved is the issue of effective demand for the products. Without the demand for goods and services, then the potential for micro entrepreneurship to improve household incomes is highly compromised.

4.2   Determinants of Participation in Micro credit Programs

Introduction

The reasons why the poor go for joint liability microfinance loans can be put under two broad categories: The first is that the household could be looking for immediate survival funds for the household since no other opportunity is available. Entrepreneurship which is as a result of household lack of better alternatives to raise income shall be hence forth referred to as "survival driven entrepreneurship". Assuming that poor households discount the future highly; it is the case that household decisions in this context will only lay emphasis on the present household socioeconomic conditions, with the "hope" that the future will be "equally met". But not all households would be "survival driven entrepreneurs". The second reason why a household would opt for joint liability lending microfinance loans would be to acquire credit; but not necessarily because the credit is the only way they could ever make a living for the time being but because the household

views credit as an opportunity to acquire the capital that is needed to exploit a "good" income generating idea. This will mainly depend on the household managerial and risk taking capabilities. This kind of approach to credit and entrepreneurship we call "opportunity driven entrepreneurship". Overall each household decides whether to join a borrowing group based on individual preferences and prevailing household income conditions. Households join the JLL groups and access loans when utility of participation exceeds utility without participation.

4.2.1   *The econometric model*

The driving factors for household decision of whether to participate or not to participate in JLL micro credit programs are assumed to be socio economic considerations. It is not straight forward to measure household desperation level as a determinant for both survival and opportunity driven entrepreneurship, because of variable measurement problems that are likely to arise. Conventionally, it is possible to proxy the determinants of household participation in to JLL micro credit programs using measurable household socioeconomic variables. Rationally households are assumed to maximize utility and they would participate in JLL micro credit programs if the utility of participation outweighs the utility of non participation.

The expected utility of participation in JLL micro credit programs is determined by the individual characteristics of the programs as perceived by the borrowers, the characteristics of the borrower, the intended micro business, and the business environment. These can be depicted as blocks of vectors.

$$EM_i = P_i(M_i) = f(B\pi, X\beta, mrk\alpha) \tag{13}$$

Where E denotes expectation and P_i denotes individual probability

M_i is a discrete dependent variable that equals 1 if the household i participates in JLL micro credit programs 0 otherwise

$B\pi$ is a vector of perceived benefits of participation in JLL micro credit programs

$X\beta$ is a vector of household characteristics

mrkα is a vector of village characteristics. In this context village characteristics are assumed to be homogeneous in terms of infrastructure and social facilities. The only significant difference in socioeconomic facilities and infrastructure is found at the major shopping centers that attract both travelers and locals for a variety of business activities. To capture the impact the economic changes in the major shopping centers may have on surrounding households, we use the distance for different household   access to these major shopping centers that are located along the main highway as proxy for market access for micro enterprise goods and services.

Assume that business set up costs for micro financed businesses are minimal. Then the decision to participate in JLL micro credit programs is determined by household socioeconomic characteristics, perceived benefits, as well as village characteristics.

By employing the model as specified in equation 13 above, the Logit model can be applied to provide information to the determinants of household participation in JLL micro credit programs.

$$E(M_i) = P_i(M_i) = f\left(\pi B_i + \beta X_i + \alpha mrk_i\right) \qquad \qquad 14$$

Where M_i denotes individual household participation as a discrete variable, E denotes expectation, and P_i denotes individual probability, and X_i denotes a vector of individual household socioeconomic characteristics that can be hypothesized to affect participation. mrk_i denotes individual household market access and it is proxied using individual household distance to the nearest main shopping centre along the main highway, β_i denotes perceived benefits of participation by individual households, and π, α and β are coefficients to be estimated. The Logit model is usually specified as follows:

$$E(M_i) = P(M_i) = \frac{e^{A+\pi B_i+\beta X_i+\beta mrk}}{1 + e^{A+\pi B_i+\beta X_i+\alpha mrk}} \qquad \qquad (15)$$

$E(M_i) = P(M_i) = 1$, if the individual participates in JLL micro credit programs , 0 otherwise.

Equation 15 can be expressed as a linear equation where

$$E(M_i) = A + \pi B_i + \beta X_i + \alpha mrk_i + \varepsilon \tag{16}$$

A is a constant and $i \in 1,2,3,\ldots\ldots.n$

and ε is a white noise error term.

The following table shows a list and the definitions of variables that have been used in the actual model

Table 7: Variables used in the participation model

Variable	Name	Definition
Partc (M)	Discrete dependent variable	Whether a household participates joint liability lending micro credit programmes or not. M=1 if household participates, 0 otherwise.
Mrk	Distance to the nearest main shopping centre along the highway	It used as a to proxy household market access
Age	Age of head of household	In years
Sizehh	Size of household	Number of people living and cooking together in one household
Sex	Gender of household head	Male or female. Sex =1 if male, 0 otherwise
Edu	Level of education of household head	Number of years spent in formal schooling by head of household
Inc	Household income	Index of household income based on household access to and ownership of assets.
Employ	Paid employment	Availability of regular income from paid employment in the household. Employ =1 if either spouse is employed, 0 otherwise
Agesq	Squared age of head of household	
Sizehhsq	Squared size of household	
Incsq	Squared household income	
Edusq	Squared number of years spend in formal education by head of household	

4.2.2   Results

The following table shows the results of the logistic model:

Table 8: Determinants of household participation in JLL microfinance programs (Results)

Partc. (M)	Coefficient	Z	Marginal effects dy/dx	Z
Mrk	**-.6659435****	**-2.42**	**-.157874****	**-0.014**
	(.2751305)		**(.06422)**	
Age	**.027111**	**0.29**	**.0064649**	**0.772**
	(.0936568)		**(.02233)**	
Sizehh	**.3738512**	**1.58**	**.0891482**	**0.113**
	(.2361079)		**(..0488)**	
Edu	**.1530966**	**0.75**	**.0365073**	**0.454**
	(.2047127)		**(.0488)**	
Inc	**.885462****	**0.018**	**.1713025****	**0.017**
	(.0389605)		**(.06929**	
Employ	**-.928127*****	**-3.25**	**-.212818*****	**0.001**
	(.2860016)		**(.06173)**	
Agesq	**-.0004321**	**-0.37**	**-.0047909**	**0.713**
	(.0202818)		**(.00028)**	
Sizehhsq	**-.0200909**	**-0.99**	**-.0000425**	**0.322**
	(.0202818)		**(.00483)**	
Incsq	**-.0001783**	**-0.027****	**-.0000425**	**0.073****
	(0004225)		**(.0001)**	
Edusq	**-.0072338**	**-0.65**	**-.001725**	**0.518**
	(.0111873)		**(.00267)**	
Constant	**-2.88355**	**-1.53**		

N= 404

Prop >F=0.0029

Key*** Significant at 1 %, ** Significant at 5%, * Significant at 10%

Standard errors are in parenthesis

Source: Field data

.

The results indicate that participation in to JLL micro credit programs in rural areas is significantly explained by access to market, household income, and the presence of regular household income in to the household. Households that live close to the market are likely to participate than households that live far off. This could be explained by the presence of a market along the main highway shopping centers. Households with a regular household income are not likely to participate in JLL micro credit programs. On the other hand, Household participation in joint liability lending programmes increases with household income, but there is a limit beyond which participation decreases with household income. These results have a big implication on poverty reduction policies. For example, if the goal of policy is to reach the very poor households then a market driven micro credit program may not be the policy of choice since it will mainly reach the better off poor, missing out on the target.

4.3 What Determines the Loan Size that a Household Desires to Take

Introduction

Studies have shown that the size of loans that poor household acquire through micro credit programs are very important determinants of the impact of those loans on the household welfare. For example Mayoux (2002) argued that gender relations in the household made the issue of the loan size acquired by women in particular through the microfinance programs very important for the determination of the impact of that loan on household welfare. Mayoux (2002) argued that poor women acquired small loan sizes; due to gender relations in the household their husbands reduced their financial support to the household because of the impression that the wife has some extra resources through the microfinance programs. This meant that some of the loan money would be diverted to meet some household expenditure that would have been catered for by her husband if she had not taken the loan. Mayoux (2002) argued that in most cases the balance after these household expenditures was so small that it was impossible for the women to invest in significant projects that could improve their household welfare. According to Mayoux

(2002), the end result of the credit for such households was a matter of mere debt to the women without any significant changes in welfare.

In his study, Coleman (2006) found that the impact of microfinance on household income was not statistically significant for poorer households but he noted significant impacts for the wealthier households who were also committee members of micro credit programs particularly on wealth accumulation. The loan sizes accessed by poorer households were a big issue in Coleman's (2006) study. Coleman (2006) argued that the loan sizes were too small to make any significant differences in household welfare. The size of loans even prompted some women to leave the microfinance programs arguing that the loans were too small for any meaningful income generating activity (Coleman 2006). Coleman argues that one reason why wealthier borrowers may have experienced larger impacts was because they could commandeer larger loans.

Households determine the loan size they would like to take based on their prevailing socio economic conditions and also depending on what they needed to invest the money in. The official policy of the microfinance institutions in the study area was to give loans to households who already had existing businesses. Even households who did not want to reveal their real preferences with the loans had to misinform the microfinance institution that they indeed intent to use the funds for some entrepreneurship activity. The study found that households were in complete control of the allocation of the loan funds in what ever expenditures they deemed appropriate, as long as they assured their peers that they would repay. On the other hand, the study also found that households were not necessarily in control of the quantity of loan they demanded and acquired from the microfinance institutions. This is mainly because group members will not agree to sign papers for a particular quantity of a loan whose recipient capability to repay was contested. Credit rationing by way of credit ceilings by the micro credit organizations also served to limit the amount of credit that a household could access.

It is not just the visible characteristics that matter for the household acquisition of a particular loan size. In reality it is hard to observe, leave alone measure accurately household managerial or risk taking capabilities which are very significant in determining

the loan size that a household acquires. It is also difficulty to capture statistically the role played by peers in determining the loan sizes acquired by other group members. However, Some household characteristics like age, education level or the size of household among others that affect loan sizes are easy and straight forward to measure.

In reality we observe households and the loan sizes that they take. What we do not know is the extent of biases in household selection of loan sizes. To control for possible selection biases it is very important to include in the analysis households that do not participate in the microfinance programs. In this case it is better to use a data set that is censored in that there is full information in terms of loan sizes for households that participate in the microfinance programs; But there may be no information on loan sizes for households that do not participate. Modeling this problem requires the use of a model that is able to take care of the suspected selection biases by use of censored data.

4.3.1 *Economic and Econometric models of household decision with regard to Loan size*

In order to take care of selection biases for the household decision in loan sizes the problem is modeled using the Heckman procedure. The data includes both microfinance participants and non participants. In the regression model, loan size is used as the dependent variable. The dependent variable in this case will be censored for the non microfinance participants since we do not have their full information. In the selection model we shall use participation in microfinance program as a dummy dependent variable that equals 1 for participants of microfinance programs, zero otherwise. The probability of participating in a microfinance program depends on household characteristics that also include observed and unobserved variables.

An individual household would like to participate in the microfinance programs in order to maximize utility (U), which depends on household consumption (*C*) among other characteristics.

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$$U = U(C, h(X, Z, \phi)) \tag{17}$$

C is consumption and it is a continuous variable. The function *h(.)* reflects household preferences to loan sizes and depends on observables, *X* and *Z* , and unobservables ϕ. Each household participating in the microfinance programs has three types of attributes, first, there is a vector *X* of characteristics, such as education, and household size among other variables that are observable and measurable by the researcher. There are also two types of unobservable characteristics; μ_L represents entrepreneurial capacity, the ability to take risks, or managerial capacity and the other standard unobservable that favorably impact decision to demand a particular loan size. μ_H represents characteristics such as honesty and other business ethics that are more closely associated with entrepreneurship productivity.

The Econometric Model

To address the selection bias issue, it is better to use the Heckman procedure for the analysis. In the regression equation of the Heckman selection model we estimate the household loan sizes (we include both participants and non participants of microfinance programs), given the households observable and measurable characteristics as well as their unobservable characteristics. In the selection equation we estimate the determinants of participation in the microfinance programs. Microfinance institutions impose a trade off between what households desires as preferred loan sizes (α) and the loan sizes advanced to the household (*Q*). Individual households face a range of (Q, α) pairs, the fraction of Q and α, is negotiated prior to actual financing.

The choice is summarized by the expression:

$$\alpha = \alpha(Q, X, \mu_L, \mu_{H,} \pi) \tag{18}$$

where π represents group conditions favorable to receiving the desired loan size. α is increasing in *X, π*, and the μ's.

The household's consumption is described by the expression:

$$C_M = \alpha(Q, X, \mu_L, \mu_H).g(Q, X, \mu_L, \mu_H) \tag{19}$$

where $\alpha, g, Q, X, \mu_L, \mu_H \quad > 0$

and $g(Q, X, \mu_L, \mu_H)$ is expected returns from loan size and they depend on market conditions for the goods and services as well as household specific characteristics.

Given the individual household characteristics and market conditions, the maximum consumption for a household is the solution of the problem:

$$C_M = MaxQ \quad \alpha(Q, X, \mu_{M.}, \mu_H, \pi)g(Q, X, \mu_{M.}, \mu_H) \tag{20}$$

The solution of this problem is,

$$Q^* = Q^*(X, \mu_E, \mu_H, \pi) \tag{21}$$

The consumption of a household that does not participate in a microfinance program depends on its observables, X, and its unobservable characteristics:

$$C_S = f(X, \mu_L, \mu_H) \tag{22}$$

These households would like to participate in the micro credit programs if the utility from the loans outweighs the utility without the loans. i.e if:

$$M = U(C_M(Q^*), h(Z, X, \phi).1) - U(C_S, 0) > 0 \tag{23}$$

Or the reduced form

$$\tilde{M} = \tilde{M}(X, Z, \pi, \mu_L\mu_H, \phi) > 0 \tag{24}$$

The econometric model of household decision concerning loan sizes is obtained by linearizing equations (21) and (24):

$$Q^* = X\beta_Q + \pi\gamma_Q + \varepsilon_Q \tag{25a}$$

$$\tilde{M} = X\beta_M + \pi\gamma_M + Z\delta_M \tag{25b}$$

Where X, π, and Z are vectors of observables, and β_M, γ_M and δ_M $(K \in (Q, M)$ are the respective vectors of coefficients. $\tilde{M} > 0 \Leftrightarrow M = 1$ and indicates that a household participates in microfinance programs. The error terms in (25a) and (25b) can be expressed in terms of the unobservable μ_L, μ_H, and ϕ, and constants a, b, c, d and e:

$$\varepsilon_Q = a\mu_L + b\mu_H \tag{26a}$$

$$\varepsilon_M = c\mu_L + \mu_H + e\phi \tag{26b}$$

The selection model is estimated under maximum likelihood, assuming that ε_M and ε_Q are distributed bivariate normal. When ε_M and ε_Q are distributed bivariate normal:

$$E[Q | M = 1] = \beta_Q X_Q + \pi\gamma_Q + A[\varepsilon_Q M = 1]$$

$$= \beta_Q X_Q + \pi\gamma_Q + \text{cov}(\varepsilon_Q, \varepsilon_M)\lambda(X\beta_M + \pi\gamma_M + Z\delta_M) \tag{27}$$

Where $\lambda(X\beta_M + \pi\gamma_M + Z\delta_M)$ is the inverse mills ratio.

Because Z is included in (25b) but not (25a), the model is identified (in addition to the identification through nonlinearity). The strength of the identification assumption is gauged from a test of the joint significance of the variables included in Z. The covariance between the error terms can be expressed as:

$$\text{cov}(\varepsilon_Q, \varepsilon_M) = \text{cov}(a\mu_L + b\mu_L + d\mu_H + e\phi)$$

$$= ac\delta_{\mu L}^2 + (ad + bc)\delta_{\mu L, \mu H} + bd\delta_{\mu H}^2 + ae\delta_{\mu L, \phi} + be\delta_{\mu H, \phi} \tag{28}$$

When (28) is positive we have positive selection: On net, the unobservable associated with desire for credit are correlated with the unobservable affecting the propensity to attain a given loan size. In this case, households that already have credit have more favorable unobservable than households that do not have credit. However, if, say, c is sufficiently negatively, or if the two μ's are sufficiently negative correlated, then we have negative selection. Then, households that receive credit have less favorable unobservables than households that do not. A test for the presence of selection is a test of whether:

$$\rho(\varepsilon_Q, \varepsilon_M) \equiv \text{cov}(\varepsilon_Q, \varepsilon_M)/(\delta_{\varepsilon Q}\delta_M) \neq 0 \tag{29}$$

While we cannot estimate the parameters, a, b, c, d and e individually, we can conjecture about the sign and relative magnitude of (28) (and therefore (29) in various cases. For instance, by assumption, μ_L and μ_H increase value in entrepreneurship and ϕ measures preferences for credit. This implies that a, b and $e > 0$, respectively (Heckman 1990).

Table 9: Variables used in the model for household decisions in to loan sizes.

Variable	Name	Definition
Ince	**Frequency of household borrowing within the period**	**Ince. Is used as a proxy of dynamic incentives (promise of bigger after repayment of earlier loan). It is proxied by the number of times that a household has already borrowed from the microfinance institution.**
mrk	**Distance to the nearest main shopping centre along the highway**	**It used as a to proxy household market access**
Age	**Age of head of household**	**In years**
Sizehh	**Size of household**	**Number of people living and cooking together in one household**
Sex	**Gender of household head**	**Male or female. Sex =1 if male, 0 otherwise**
Edu	**Level of education of household head**	**Number of years spent in formal schooling by head of household**
Inc	**Household income**	**Index of household income based on household access to and ownership of assets.**
Agesq	**Squared age of head of household**	
Sizehhsq	**Squared size of household**	

4.3.2   *Results*

The following table summarizes the econometric results (regression model)

Table 10: Determinants of household loan size decisions (regression model)

Variable	Coef.	Z	Marginal effects	Z
Loansize				
Mrkt	**-.232728*****	**-2.73**	**-.232728****	**-2.73**
	(.0851112)		**(.08511)**	
Ince	**.231429*****	**6.12**	**.2304376*****	**6.12**
	(.0375725)		**(.03763)**	
Age	**.0499669***	**1.71**	**.0533895***	**1.71**
	(.0304005)		**(.03114)**	
Agesq	**-.000725***	**-1.81**	**-.0007704***	**-1.81**
	(.0004142)		**(.00043)**	
Sizesq	**-.0032255**	**-0.55**	**-.0032775**	**-0.55**
	(.0058512)		**(.00585)**	
Size	**.0797829**	**1.16**	**.0800425**	**1.16**
	(.0688764)		**(.06878)**	
Sex	**.0345394**	**0.43**	**.0339261**	**0.43**
	(.0805827)		**(.08062)**	
Edu	**.0034313**	**0.21**	**.0030978**	**0.21**
	(.0143766)		**(.01447)**	
Y	**.2714206****	**2.23**	**.2737702****	**2.28**
	(.1219273)		**(.03763)**	
Constant	**7.969119*****	**10.45**		
	(.7629369)			

The following table summarizes the econometric results (selection model)

Table 11: Determinants of household loan size decision (selection model)

Select	Variable	Z
Edu	**.0127257**	**0.13**
	(.0983627)	
Age	**.0132118**	**0.31**
	(.0423188)	
Employ	**-.4118695***	**-3.04**
	(.1352713)	
Agesq	**-.0002798**	**-0.51**
	(.0005488)	
Edusq	**-.0008652**	**-0.16**
	(.0053173)	
Y^2	**-.0000364**	**-0.39**
	(.0000922)	
Y	**.5049152***	**1.79**
	(.2814681)	
Constant	**-.766464**	**-1.54**
	(1.148284)	
Prob>chi2	**0.000**	
Chi2	**0.60**	
Sigma	**.5621982**	
Lambda	**.2125409**	

Key

*** Significant at 1 %, ** Significant at 5%, * Significant at 10%

Standard errors are in parenthesis

Source: Field data

The results indicate that access to market is very significant in explaining the loan sizes that household acquire. Households living nearer to the main shopping centers along the main highway will acquire significantly larger loan sizes than households living further away. Several reasons could be used to explain this result: The first is access to market by such households thus the ability to have bigger enterprises. The second could be that households near the main highway shopping centers may have more household incomes and thus the ability to convince their peers of their ability to repay bigger loan amounts. The age of household head has a significant positive relationship with loan sizes up to a certain maximum threshold. Increasing the age of household head beyond this threshold starts to have significant negative relationship with household loan sizes. This result could relate to household socio economic status. Households headed by younger heads may be better off in the rural areas than households headed by a head who is older than a given threshold. Dynamic incentives offered by the microfinance institutions have positive significant relationship with loan sizes. The more a household stays in the microfinance program the larger the loan sizes it can access in the future. This is because each time a household repays a loan successfully, they stand to acquire a larger loan the next time they borrow. Household income also has a significant positive relationship with loan sizes in that wealthier households are also likely to access larger loans.

The selection model results show that participation in a micro credit program is significantly influenced by employment status of spouse or head of household as well as household income. Household that have extra regular household incomes are not likely to participate in JLL programs. Household wealth has a significant positive relationship with Participation in JLL micro credit programs up to a certain threshold. After these thresholds households with more wealth are not likely to participate. Overall the results suggest that poorer households that participate in JLL micro credit programs acquire smaller loan as compared to other better off participants.

4.4 The Impact of Microfinance on Household Income

Introduction

Determining whether the benefits of microfinance programs are sustainable and large enough to make a dent in the poverty of participants and society at large is important for guiding policy (Coleman 2006). However efforts to assess the impact of microfinance programs can be biased by non random program placement and participation. This is so mainly because microfinance programs tend to be placed in areas where the incidence of poverty are high and therefore lack formal banking institutions. Therefore a simple comparison of the incidence of poverty in program and non program areas may lead to the mistaken conclusion that microfinance programs have increased poverty. In the same note, those who participate may self-select into a program based on unobserved traits such as entrepreneurial ability. In that case, simply comparing such outcomes as per capita consumption or the incidence of poverty between program participants and non participants may lead to the mistaken conclusion that the programs have a high impact on poverty reduction, when indeed the effects are due to the unobserved abilities of participants. Thus the estimated effects may be under, or overestimated depending on the type of analysis. Therefore while doing impact studies the endogeneity of microfinance program participation and placement must be taken in to account. Literature suggest that this problem could be resolved if the sample includes both participants and non participants of microfinance programs, as well as use of fixed village effects.

4.4.1 Econometric Model

The initial impulse in impact estimation for microfinance would be to use the coefficient of the loan size as the proxy of the impact of microfinance on household income. Coleman 1999 correctly points that the demand for loan is highly correlated with household income and therefore the coefficient for loan access may be a biased estimator of impact. To avoid this pitfall the study uses the coefficient of number of times borrowed as an estimator for impact. This estimator has been chosen mainly because, unlike the amount borrowed it is exogenous to the household since it depends on first how long the microfinance program has been available to the household and that peers in a joint liability group determine how many times they would allow one member to

borrow. To take care of the problem of endogeneity with respect to village placement, village level fixed-effects method with data from both microfinance participant and non participants is used. A model used by Coleman 1999 is adapted as follows:

$$Y_{ijt} = X_{ijt}\alpha + V_j\beta + M_{ij}\gamma + T_{ijt}\delta + \eta_{ijt} \tag{30}$$

Where Y_{ijt} is the individual household income. The household resides in village j at time t, X_{ij_t} is a vector of individual household characteristics in village j at time t, V_j is a vector of village fixed effects; M_{ij} is a membership dummy variable equal 1 if household ij is selected in to the microfinance program, and 0 otherwise; and T_{ij_t} is the number of times a household has borrowed from the microfinance institution at time t. We also use the membership dummy M_{ij} to proxy the unobservable characteristics that are relevant for households to self select in to the microfinance programs, and that might affect outcomes. The variable T_{ijt} is the variable whose coefficient measures the impact of microfinance on household income. In reality it captures the extent of the self selected households' participation in the microfinance programs. For the control households it equals zero while for participating members it is positive in varying amounts. The inclusion of non participants in the sample combined with the use of fixed effects, controls for the possible endogenous programme placement. The model is run using OLS.

It is important to check the results using a different method. Next the study uses, the differencing method using two sets of cross-sectional data that was collected for the same households at a nine months interval. The variables in equation (30) were measured after a time period t where t in this case is 9 months. In this regard the model could be re-specified as follows:

$$Y_{ijt+1} = X_{ijt+1}\alpha + V_j\beta + M_{ij}\gamma + T_{ijt+1}\delta + \eta_{ijt+1} \tag{31}$$

We are interested in estimating the value of δ, which is the coefficient that captures the impact of microfinance on household income. Y_{it+1} is the dependant variable and it is the household income. The variables X_{ijt+1} capture household characteristics at time t+1 (and a constant term), and V_j is a vector of village characteristics. M_{ij} is a membership dummy that equals one for microfinance participants, zero otherwise. T_{ijt+1} is the number of times the individual has borrowed at time t+1. Equation 31 is subtracted from equation 30 to obtain:

$$\Delta Y_{ij} = \Delta X_{ij}\alpha + \Delta T_{ij}\delta + \Delta \eta_{ij} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots.32$$

Where Δ indicates the difference in the variables between period t and t+1. In this equation the village dummies drop out as do the fixed (and unobservable) individual specific characteristics. Equation 32 measures the changes in household income due to the impact of microfinance and household characteristics.

Given the sensitivity to instruments used to measure impact of microfinance, there are compelling reasons to use alternative approaches to confirm the results. For this purpose we propose to introduce time dynamics in the forgoing estimate and estimate a pooled data regression model with fixed village and individual effects. The main reason for using pooled data over cross-sectional data in impact assessment is because cross-sectional results may not be robust. In this model we assume that Current household income depends on both current and past characteristics, including access to loans.

$$Y_{it+1} = X_{it}\alpha + X_{it+1}\varphi + S_{it}\sigma + S_{it+1}\kappa + V_j\beta + T_{it}\delta + T_{it+1}\phi + M_i\gamma + \eta \qquad (33)$$

Where Y_{it+1} is the current individual household income (X_{it}) is the previous vector of individual household characteristics, X_{it+1} is a vector of current household characteristics, S_{it} is the previous total loan size that the household acquired in the previous period, S_{it+1} is the current loan size that the household has acquired from the

microfinance institution, V_j is the village effects, T_{it} is the variable whose coefficient measures the impact of microfinance on household income in the previous period., T_{it+1} is the variable whose coefficient captures impact in the current period. and η is the error term. We use a participation dummy M to control for unobserved and unmeasured household characteristics that determine household income. $\alpha, \varphi, \sigma, \kappa, \beta, \delta, \phi, \gamma$ are coefficients to be estimated. We are interested in ϕ and δ as the measure of the impact of both the current and the previous credit. The following table defines all the variables used in the model:

Table 12: Variables used in the models for measuring impact of microfinance

Variable	Name	Definition
Lninc (ln Y)	**Log of household income**	**Natural log of household income**
Iamnt	**Initial amount**	**The amount of loan that the household had borrowed by the first period of the study**
Lamt	**Later amount**	**The amount of loan that the household had borrowed by the last period of the study**
Impact	**Variable used for capturing impact**	**Measured impact of microfinance on household income.**
Iimpact	**Initial impact**	**Measured impact of microfinance in the first period of household borrowing**
Limpact	**Later Impact**	**Measured impact of microfinance in the last period of household borrowing**
Partc	**Participation in microfinance programs**	**Whether a household participates joint liability lending micro credit programmes or not. M=1 if household participates, 0 otherwise.**
Ppartc.	**Non dropouts**	**Households that were persistent in participating in microfinance programmes through put the period of the study. Ppartc. Is a dummy variable equals 1 if household did not drop out, Zero otherwise.**
Mrk	**Distance to the nearest main shopping centre along the highway**	**It used as a to proxy household market access**
Age	**Age of head of household**	**In years**
Employ	**Paid employment**	**Availability of regular income from paid employment in the household. Employ =1 if either spouse is employed, 0 otherwise**
Sizehh	**Size of household**	**Number of people living and cooking together in one household**
Sex	**Gender of household head**	**Male or female. Sex =1 if male, 0 otherwise**
Edu	**Level of education of household head**	**Number of years spent in formal schooling by head of household**

Agesq	Squared age of head of household
Sizehhsq	Squared size of household

4.4.2 Results

The following table shows the regression results of the first cross sectional analysis of the impact of microfinance on household income. The initial period runs up to a period of 9 months since the household started participating in the microfinance program.

Table 13: Impact of microfinance on household income (first cross section)

Variable	Coefficient	Std.error	Z
Lninc (lnY)			
Age	0.0161776	0.01427	1.13
Agesq	-0.0000115	0.0001786	-0.06
Sizehh	0.1525696***	0.0383012	3.98
Sizehhsq	-0.0100133***	0.0034889	-2.87
Edu	0.0246523***	0.0078954	3.12
Sex	0.113181**	0.048827	2.32
Mrk	-0.2271299***	0.0471366	-4.82
Partc.	-0.9184083*	0.5520232	-1.66
Impact	0.0014682	0.0318898	0.05
lamnt.	0.0933021*	0.0556059	1.68
Employ	0.0135485	0.0480091	0.28
Constant	2.603476***	0.2780794	9.36

Summary statistics
R Squared: 0.2808
Adjusted R squared: 0.2600
Prob>F: 0.0000
Key :*** Significant at 1 %, ** Significant at 5%, * Significant at 10%

Source: Field data

The results indicate that there exists a significant positive relationship between the size of household and household income up to a certain maximum threshold. Beyond this threshold larger households have a significant negative relationship with household income. Education level of head of household is also positively related to household income. Female headed households tend to have lower incomes than male headed households. Access to market significantly increases household incomes. The results also show that households participating in joint liability borrowing had significantly lower

incomes than non parting households, and that the amount of loan borrowed in the initial period has a significant positive relationship with household income. However in this study we fail to show that microfinance has significant positive impact on household income.

While reading these results it is important to bear in mind that within the last five years before the study agriculture was not a main contributor of household incomes due to a prolonged drought. Eighty six percent of all the respondents both microfinance participants and non participants reported informal micro entrepreneurship as their main occupation. While 98 % of all microfinance participants were involved in some micro entrepreneurship activity.

The same estimation was repeated again in 18 months with the following results

Table 14: Impact of microfinance on household income (second crossection)

Variable	Coefficient	Std.error	T
Lninc (lnY)			
Age	0.0245318*	0.0139324	1.76
Agesq	-0.0001587	0.0001748	-0.91
Sizehh	0.1296524***	0.0375018	3.46
Sizehhsq	-0.0082168**	0.0034177	-2.40
Edu	0.0147896*	0.0078069	1.89
Sex	0.0934801*	0.0479336	1.95
Mrk	-0.2160787***	0.0463472	-4.66
Partc.	-0.4775297	0.5419591	-0.88
Impact	0.0251584	0.0206003	1.22
Lamt	0.043944	0.0549016	0.80
Employ	0.0023608	0.0475067	0.05
Constant	2.712935***	0.2724612	9.96

Summary statistics
R Squared: 0.2514
Adjusted R squared: 0.2300
Prob>F: 0.0000
Key: *** Significant at 1 %, ** Significant at 5%, * Significant at 10%

Source: Field data

Same as the previous period, there is a significant positive relationship between the size of household and household income up to a certain threshold after which larger households have a significant negative relationship with household income. Education level of head of household is also positively related to household income. Female headed households tend to have lower incomes than male headed households. Households that have a closer access to the market have significantly more income than households that are located far from the market. Once again we fail to show positive significant impact on household income due to participation in microfinance programs.

However after 18 months the following statistical changes have occurred within the same households. In the second cross section we fail to show that participants are significantly poorer than non participants. At this stage we can not make concrete claims to explain why this change has occurred but there are at least two possible explanations. The first is that it could be possible that non participants of microfinance programs have become poorer or that the participants of microfinance programs have significantly increased their incomes. Further, the results indicate that access to microfinance loans is no longer significantly related to household income unlike in the previous period. This could be explained from the organizational dynamics of group lending. Initially during group formations participants selected each other depending on the ability to repay loans. Once a household started to participate it accumulated some forced savings with the microfinance institution which they could borrow against. Also unlike in the previous period, age of head of household has a significant positive relationship with household income; however it is not the case that households headed by older heads are significantly poorer than the rest of the population. To explain this finding it may be worthwhile to investigate further, one suggestion would be to look further in to the issue of spill over effects of microfinance.

The next step in our impact analysis is to use the difference indifference method to isolate the impact of microfinance on household income. This we do by subtracting equation two from equation one. In this case the individual fixed effects drop out, so does the village fixed effects. It is then possible to measure the changes in household income due to the impact of microfinance and changes in household characteristics.

Table 15: Impact of microfinance on household income (difference in difference)

Variable	Coefficient	Std.error	T
Δinc (ΔY)			
$\Delta impact$	.6826694	.4805827	1.42
Δamt	.0000379*	.000017	2.23
Constant	**1.481129****	**.5586783**	**2.65**

Summary statistics
R Squared: 0.0249
Adjusted R squared: 0.0201
Prob>F: 0.0062
Key:*** Significant at 1 %, ** Significant at 5%, * Significant at 10%

Source: Field data

We are interested in the coefficient of the variable "impact" which is the isolated impact of microfinance after controlling for individual and village effects. The results fail to show that changes in household income are significantly determined by the impact of microfinance.

So far, cross sectional analysis has constantly failed to show any significant positive impact of microfinance on household income. Given the sensitivity to instruments used to measure impact of microfinance, there are compelling reasons to use alternative approaches to confirm the results. For this purpose we propose to introduce time dynamics in the forgoing estimate and estimate a pooled data regression model with fixed village and individual effects. The main reason for using pooled data over cross-sectional data in impact assessment is because cross-sectional results may not be robust. Using pooled cross sectional data instead of single cross sections is very important given that pooled data has a time component and is therefore dynamic, making it possible to discover new information concerning the impact of microfinance on household income.

Table 16: Impact of microfinance on household income (pooled data analysis)

Variable	Coefficient	Std.error	T
Lninc (ln Y)			
Age	.02719*	.0139424	1.95
Agesq	-.0001916	.0001745	-1.10
Sizehh	.1289926***	.037953	3.40
Sizehhsq	-.0082905**	.0035068	-2.36
Edu	.0142186*	.0078653	1.81
Sex	.0899966*	.0482221	1.87
Employ	.0064539	.047417	0.14
Iamnt	-.0844438	.074908	-1.13
Lamnt	.1997418**	.0699403	2.86
mrk	-.2261517***	0465774	-4.86
Partc.	-.178806**	.5842735	-2.02
Iimpact	-.0385077	.0396536	-0.97
Limpact	.0482254*	.0261307	1.85
Ppartc.	.2211252**	0868596	2.55
Constant	2.675824***	.2726416	9.81

Summary statistics
R Squared: 0.2751
Adjusted R squared: 0.2482
Prob>F: 0.0000

Key: *** Significant at 1 %, ** Significant at 5%, * Significant at 10%

Source: Field data

The results show that there is a significant positive relationship between the size of household and household income up to a certain maximum threshold after which larger households begin to have a significant negative relationship with household income. A similar relationship also exists between age of household head and income; Education level of head of household is also positive and significantly related to household income. Female headed households tend to have significantly lower incomes than male headed households. Households that have closer access to the market have significantly more income than households that are located far from the market. Participating households still tend to have a significantly lower incomes than the rest of the population.

We however are able to capture new information from the pooled data regression analysis. The impact of microfinance on household income in the "later period" is positive and significant. While in the "initial period" we fail to show significant negative impacts. The emerging story is that microfinance will attract the relatively poorer in society though not the poorest. If impact of microfinance on household income was to be measured within a relatively very short period, there is a possibility to report negative impacts for some households though not for all the households. However given time it is possible for households participating in microfinance programmes to experience positive impacts from microfinance as long as they still find it worthwhile to continue participating in the microfinance programs.

4.5   Vulnerability to poverty by JLL micro credit program participants

Introduction

In the for going quantitative analysis sections we have been able to understand why rural households participate in JLL programs. We have also been able to understand the determinants of loan sizes that households acquire. And finally so far we have been able to measure the impact of microfinance on household income. All the results so far generally suggest that the very poor are left out of participation in JLL programs with some results suggesting the possibility of a negative impact. However so far we do not have concrete empirical reasons to conclusively say that participation in market oriented micro credit programs by poor rural households may be a source of vulnerability.

Empirical studies have suggested the possibility of fuelling vulnerability among households by microfinance programs through indebting the poor. Hulme and Mosley (1996) found that there exists a trade off between changes in income and vulnerability for poor households: Poverty-as measured by income can be reduced by borrowing, but such debt can make the poor more vulnerable because of the added risks associated with borrowing. According to Hulme and Mosley (1996) this can be explained by the fact hat most joint liability lending institutions treat the poor as an undifferentiated group and focus on production credit rather than more diverse credit and saving services that are

better suited to improve the economic security of low income households (Hulme and Mosley 1996)

4.5.1   *Method for measuring vulnerability*

In our measurement we define vulnerability as expected poverty, or the probability that a household falls in to poverty in the future. Our sample size consists of both participants and non participants of microfinance programs. The reason why we choose both participants and non participants is not only for comparison purposes but also to address selection biases. We define the model as follows; Let the vulnerability of household h, be vh, and the poverty measure be w. We define the vulnerability of household h_i as

$$vh_i = f(wh_i, z, Ph_i) \tag{32}$$

where z is a relative poverty line Ph_i is the probability of household i falling below this bench mark.

Therefore vulnerability or decrease in welfare (v_i) can be defined as follows

$$E(v_i) = P_i(v_i) = f(\alpha X_i) \tag{33}$$

Where E (v_i) denotes expected individual household vulnerability as a discrete variable, $P_i(v_i)$ denotes the probability of individual household vulnerability and X_i denotes variables that can be hypothesized to affect vulnerability, while α are the coefficients to be estimated. By employing the model as specified above, the logit model can be applied to provide information about the determinants of vulnerability. The derivation of the logit model has already been done under section

4.5.3 Results

The following are the results of model
Table 17: Determinants of household vulnerability

	coefficient	Z	Marginal effects	
Vul.			$\left(\dfrac{dy}{dx}\right)$	z
Partc.	.4244819	0.16	.1056736	0.16
	(2.704296)		(.66817)	
Age	-.1129655	-1.50	-.0282291	-1.50
	(.0751314)		(.01877)	
Sizehh	-.6975584***	-3.48	-.1743137***	-3.49
	(.200274)		(05002)	
Sex	-.4375553*	-1.78	-.1093412*	-1.78
	(.2464972)		(.06159)	
Edu	.3022687	1.61	.0755343	1.61
	(.1877902)		(.04693)	
Borr	-.159186	-1.45	-0397792	-1.45
	(.1098029)		(.02744)	
Agesq	.0009639	0.99	.0002409	0.99
	(.0009692)		(.00024)	
Sizehhsq	.0402057**	2.21	.0100471**	2.21
	(.0181941)		(.00454)	
Edusq	-.0218885**	-2.261	-.0054697**	-2.16
	(.0101546)		(.00254)	
Amnt	-.000356	-0.00	-.000089	-0.00
	(.2739555)		(.06846)	
Constant	3.824171**	2.260		
	(1.468682)			

Key: *** Significant at 1 %**,** ** Significant at 5%**,** * Significant at 10%

Standard errors are in parenthesis

Source: Field data

Where borr is the number of times that the household has borrowed, borr is zero for the control household and varies for the participating households.

We fail to show that participation in JLL microfinance significantly increases vulnerability to poverty. We also fail to show that the number of times that a household

had borrowed from microfinance programs significantly reduces vulnerability to poverty. In the same note we also fail to show that access to loans through JLL significantly reduces vulnerability to poverty. However from this study we can conclusively say that vulnerability to poverty for both participants and non participants of JLL micro credit programs is determined by the size of household, sex of head of household and education level of head of household.

4.6   Concluding remarks

In the quantitative section it was possible to show that participation in joint liability lending microfinance programs in our study context is mainly influenced by household desperation for lack of other sources of a regular income. It was also established that joint liability lending programmes that are supposed to target the poorest in society does not reach the very poorest who do not have individual household assets. This is mainly due to peer discrimination in to the borrowing groups. There are policy implications if microfinance can not reach the very poor. There may be a need to re-examine the real issues contributing to household poverty and re evaluate how microfinance could be integrated with other poverty reduction policies to form a sustainable synergy.

Dynamic incentives by microfinance institutions are very important in determining the loan sizes that households acquire. All else constant, it is a good sigh especially if households continued to get bigger credit after repayment of their earlier loans. But the problem in the study context is that households were involved in debt spirals as they sought more debts to conceal due loan instalments and end up acquiring bigger debts. The problem here may not be the loan incentives by the microfinance institution, but rather the same question of why the households needed the loans and the best way to meet the household welfare maximising point without necessarily going in to excess debt.

Cross sectional analysis failed to show any significant positive impact of microfinance on household income. Though the study region had been plagued by five years drought and almost a complete failure of all agricultural activity, there had been lot of support coming from government a and donors. On the average, all households both participants and non

participants of microfinance programmes registered increases in household welfare. On controlling for selection biases and endogenity issues then the real increase in household income due to microfinance was insignificant; at least with cross sectional analysis. However after the inclusion of time dynamics in the analysis we were able to show significant impact (though weak) of microfinance on household income but only in the later period. This implied that it is possible for microfinance to have positive impacts on household incomes. Further positive impacts on household incomes would only come after persistence participation in the programmes. In the initial period we failed to show significant negative impacts of microfinance on household income. This implied that some households may have experienced negative impacts, though on the overall this is not significant. The drop out rates of households from microfinance programmes was 33 %. Negative impacts of microfinance are associated with high drop out rates from programmes by households.

The study also failed to show that on the overall participation in JLL microfinance significantly increases vulnerability to poverty, as implied by some earlier studies. In this study context microfinance did not have significant impacts in either increasing or reducing household vulnerability to poverty.

The overall aim of the thesis was not to qualify or disqualify the use of microfinance for poverty reduction; but rather to enrich the knowledge base on how microfinance impacts on household income. The next chapter motivates future research in the area by proposing a theoretical propagation of how microfinance would fit in the bigger picture of rural development and poverty reduction. The goal of the chapter is mainly to generate hypothesis; but empirical research in the future would be useful to generate conclusive information. The section is not only supposed to provoke further empirical research but also shape the direction of further research in to the role of micro entrepreneurships in rural development. Especially the section is aimed at provoking future research in to a sustainable role of microfinance and rural household poverty reduction.

CHAPTER FIVE

THE THEORETICAL ROLE OF MICRO ENTREPRENEURSHIPS IN RURAL DEVELOPMENT AND THE IMPROVEMENT OF HOUSEHOLDS´ INCOME

5.1   Introduction

Microfinance for poverty reduction has currently become a global issue that has even been acknowledged with a Nobel Peace Prize. It is also interesting to note that the current global projection of the role of microfinance in poverty reduction has left the impression of some magic powers of poverty reduction through microfinance. For example, by use of inspiring stories about the effect of microfinance for a certain household; combined with immense publicity, policy makers and donors have unquestioningly come to believe that microfinance is the way out of poverty. So far research has not done much to demystify the role of microfinance and poverty reduction in any meaningful objective way. For example, researchers are still engaged on explaining particular specific results in specific contexts; for example: Some researchers would say that "microfinance has negative impacts on women's welfare (Mayoux, 2002), or it had significant positive impacts in Bangladesh (Khandker, 2006), or it has had mixed results in Thailand (Coleman, 2006) and has had insignificant impacts in Kenya (Kiiru, 2007)". This trend of research has continued to make the debate on microfinance extremely provocative and has the potential to make it difficulty for policy makers who would like to use research to guide further policy on microfinance.

The issue that needs to be stressed to policy makers is the fact that microfinance interventions do not happen in a "policy vacuum". A microfinance intervention would have to not only interact with other pre-existing interventions but also the existing socioeconomic infrastructures. The realization that microfinance outcomes are potentially shaped by other pre existing or co existing interventions and socioeconomic infrastructure should make it clear that it is possible to have different results or even contradicting results for different microfinance intervention scenarios. It is therefore

naïve to imagine that a couple of studies or anecdotes should be used to generalize the overall global impact of microfinance on poverty reduction.

Arguments in favor of microfinance and poverty reduction emphasize that micro credit enhances entrepreneurship among poor households leading to an improvement on household incomes. Proponents also argue that the returns to micro enterprises are potentially high but are often impeded by lack of access to finance; and therefore access to credit by poor households could unleash a lot of potentials in household incomes. On the other hand skeptics question the assumptions underlying the supposed positive impact of microfinance on household incomes. In particular skeptics argue that all the assumptions underlying the supposedly good impact of microfinance may not hold in all places and therefore it is a serious fallacy to project microfinance as a global poverty reduction tool. These counter arguments have set the stage for an extremely polarized debate on microfinance that unfortunately overshadows the real issues in development research.

There are serious questions that beg for answers if we were to move the microfinance debate forward. The first question would be: What other policy interventions are relevant for poverty reduction in a given scenario, the second question would be: What is the role of microfinance in poverty reduction, and the third question would be: How does microfinance relate to other existing policy intervention to build a synergy scenario for poverty reduction? These questions have got serious implications for policy. For example if microfinance is projected as more significant to poverty reduction than other policies then there is the danger that policy makers and donors may withdraw or reduce resources from other poverty reduction policies in to microfinance. The objective of this section of the thesis is not to answer these questions but rather to provoke future empirical research in to the broader issues of microfinance, rural development and poverty reduction.

5.2   Economic Empowerment Through Informal Micro entrepreneurships?

To jump-start the debate we could pose a pretty straight forward question: Is persistent increase in informal micro entrepreneurship in the rural areas a good sigh of the

economic empowerment of the households?[9] This question may not necessarily have an obvious simple answer like yes or no. Many stakeholders would like to argue that as long as micro entrepreneurs create new businesses and new businesses in turn create jobs and intensify competition, and may even increase productivity through technological change, then high numbers of informal micro enterprises in the rural areas will thus translate directly into high levels of economic well being. The reality about persistent high levels of informal sole proprietorship in the rural areas and what it would theoretically imply in terms of economic well being could be much more complicated; at least in theory.

Setting the stage…..

Many rural economies in developing countries are in such a scenario that, the limit to productivity is inputs and not labour. Some studies have however shown that it is possible to have labour constraints to productivity even in areas with high population densities and small farm holdings (Kamau, 2006). How ever this type of result has been criticized for failing to account for the causal relationship in that critics think that it is the lack of inputs that would lead to low yields thus causing households to withdraw labour from unproductive farms; other than low yields being caused by labour constraints. Another characteristic of the rural setting in developing countries is high incidences of absolute poverty.

In a strictly theoretical analysis it is possible to distinguish three major stages in transforming rural economies in developing countries from poverty stricken to relatively better off thorough the use of micro entrepreneurships. Initially, the households engage in subsistence farming, spending most of their expenditures on food; Sachs, (2005) describes such households as follows "farm households in the rural sector live pretty much in economic isolation. There are no roads within the villages, and there is no electricity. Households are mainly subsistence farmers consuming most of what they produce and commercial activity in the village is very low". The first stage in our theoretical analysis is characterized by disease, hunger and general poverty.

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[9] In modeling this rural economy I was greatly inspired by the works of ACS (2006) where he models entrepreneurship and economic growth. For a complete reference refer to the reference section.

If microfinance was to be used as the policy of intervention to boost micro entrepreneurship practice in the rural setting, each household chooses whether or not to accept microfinance depending on utility preferences. They accept microfinance if the utility of accepting microfinance exceeds the utility of not accepting. Depending on household characteristics and socioeconomic status of the household, there are two main reasons why microfinance and informal micro entrepreneurship becomes attractive to households in poor rural areas. The first reason has to do with the possibility to exploit a potentially good business opportunity given microfinance as a source of capital (opportunity–driven- entrepreneurship), while the other reason has to do with raising fast finances for household survival (survival- driven- financing).

Households looking for fast cash for household survival would consume most of the small loans (or part of it). If a household uses all the loan funds in non productive household activities it may increase its chances of depleting household assets in the process of repayment. On the other hand not all "survival driven households" would consume all the loan money. Some households may invest part of it in some kind of informal micro enterprises. Usually many of the enterprises would be in over-exploited business ventures with marginal but fast returns (Kiiru and Mburu, 2007). The fast returns would enable the households cope with the short term loan repayment requirement of microfinance.

Research has shown that whether a household gets in to either "survival or opportunity driven financing" mainly depends on the socioeconomic status of the household and (or) household entrepreneurship capability (Kiiru, Mburu 2007). Microfinance (which is in most cases supply driven) is likely to thrive where households are trapped in poverty for two major reasons. The first reason is that households are willing to comply with the strict credit conditions due to lack of alternatives. The second reason is that households are desperate to improve their wellbeing either through consumption smoothing or through small informal micro entrepreneurships to either survive or exploit a potentially good business venture.

……beneficial micro entrepreneurships…

Theoretically it is rational to point that regardless of whether the household is involved in either "survival or opportunity- driven-entrepreneurship" real income improvements due to micro entrepreneurships will be realized depending on whether the following preconditions are met.

(i)   There is entrepreneurship capability within the household,

(ii)   There must be at least some reasonable infrastructure facilitating easy inter-village and inter shopping-centre movements in order to improve local demand and provide a market for locally produced goods and services. Overall there must be adequate demand for goods and services from the informal micro entrepreneurships.

(iii)   The rate of return from micro enterprises must be greater than the rate of loan repayment.

Although some studies have shown that there could be positive spill over effects due to microfinance (Khandker, 2006), it is naive to assume that spill over effects will always hold in all contexts and are able to reach all households. To this end it is advocated the use of conscious policy actions to improve the demand for goods and services among the very poor that may not directly benefit from market oriented intervention policies. Some researchers have suggested that social safety nets in kind (food for work) or "work for cash"[10] or just simple charity would go along way in improving the overall demand for goods and services for all households in a rural setting (Morduch, 2000).

……increasing or decreasing rate of sole proprietorship micro entrepreneurships?

Theoretically if the forgoing preconditions are met then it is possible for the rural households to move in to another stage of their economic empowerment. It is rational to expect that *ceteris paribus* there is going to be enterprise growth in line with income maximization principle. Theoretically this stage should be marked by decreasing rates of household micro sole-proprietorships. There are reasons to expect that entrepreneurial

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[10] Work for cash in this context may involve that local authorities pay some targeted households for doing some community work including making and maintaining local infrastructure or any other local projects that may not require big contractors.

activity in terms of number of enterprises should decrease as rural economies pick up. To understand how this would happen, assume that individuals have different endowments of managerial ability. This would theoretically imply that as the rural economy becomes wealthier, the average enterprise size should increase as better managers run enterprises (Acs 2006). Average enterprise size is an increasing function of the wealth of the rural economy if capital and labor substitute. When capital and labor are substitutes, an increase in the capital stock increases the returns from working and decreases the returns from managing. In other words, marginal managers find they can earn more money while being employed by somebody else (Acs 2006). The overall expectations is that as the rural households as well as the overall rural economy becomes wealthier, with lower absolute poverty incidences then theoretically it is expected that the rate of people starting informal micro sole proprietorship decreases. This would imply that the number of informal micro sole entrepreneurships would decrease with time.

There is also another explanation as to why it would be expected that the quantity of household sole proprietorships decrease with rural economic development. With more options of earning an income to enable the purchase of inputs then it would be possible for households to achieve more utility from agricultural activity or other economic activities where the household has a comparative advantage. Households will only shift from micro entrepreneurship fully or partially to other economic activities and wage employment depending on returns and household welfare maximization principle.

….overall welfare improvement……

The for going describes a diversified rural economy where there is a steady improvement in household welfare. Within this context, theoretically it is rational to expect low risks in terms of investments. It is also rational to theoretically expect capital inflow in to the rural setting given the theory of diminishing marginal utility. The theory suggests the possibility to earn more returns from an extra unit of capital invested in a firm which already is undercapitalized. This is derived form the strict concavity of the production function as illustrated in the figure below.

Output
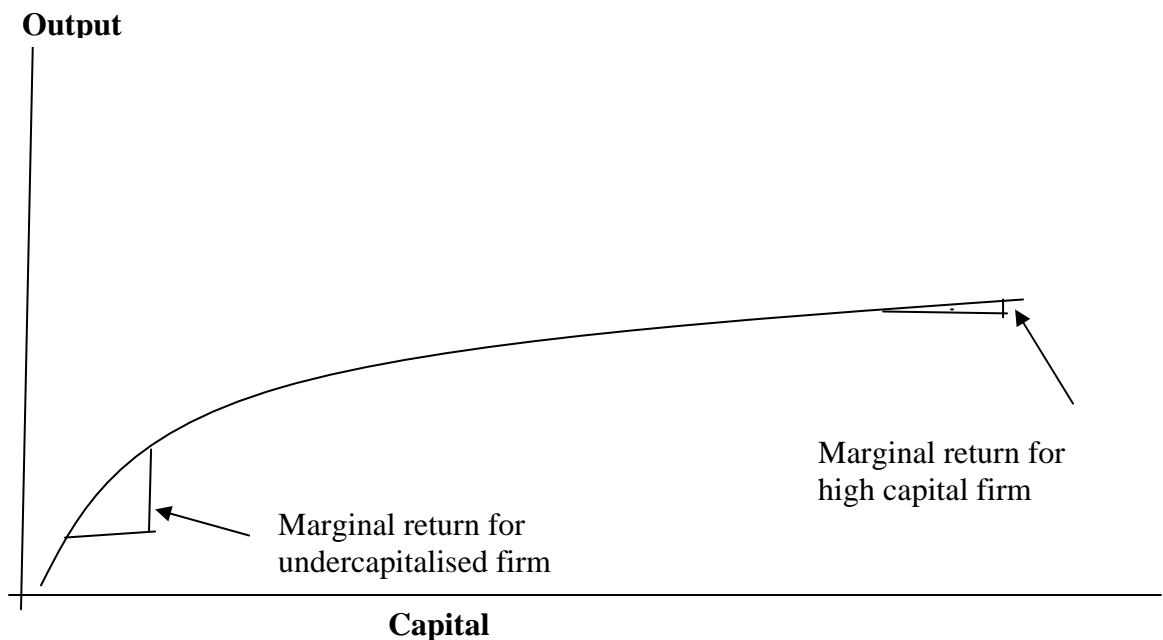
Figure 10: The concavity of the production function illustrating Marginal returns to capital

Is persistent increase in informal micro entrepreneurship in the rural areas a good sign of the economic empowerment of the households?

At this point we are now ready to answer the question that we asked in the beginning: The discussion so far is in favor that "high concentrations of informal entrepreneurships within a locality may not necessarily be a sign of economic empowerment of the households but rather it could as well indicate a non performing economy, or that that there are many bottleneck to the formalisation of enterprises."

It is imperative for policy makers to distinguish when households are using micro-sole proprietorships to "adapt to poverty" as opposed to escaping poverty. The for going discussion was mainly intended to provoke empirical research in to the issues of rural development and the role of microfinance. Research has to focus more in finding an effective and sustainable mix of policies that could work to alleviate rural poverty.

CHAPTER SIX

CONCLUSION AND POLICY RECOMMENDATIONS

The debate about microfinance still goes ahead and the United Nations Capital Development Fund (UNCDF) has estimated that the global demand for microfinance ranges from 400 to 500 million of which only around 30 million are reported to have access to sustainable microfinance services in 2002. The number of customers that use microfinance has grown between 25 to 30% annually over the last five years (UNCDF 2007), and the trend is expected to continue. These statistics revoke mixed feelings among different stake holders. Skeptics are worried that the huge publicity accorded microfinance does not commensurate with empirical findings on the actual role of microfinance and poverty reduction. The fear for the skeptics is that donors and policy makers may withdraw resources from other poverty alleviation policies in favor of microfinance; an action that has been feared to be a possible policy blunder especially if there is no proven history of a strong role of microfinance in poverty alleviation. In particular it has been argued that the demand for micro credit is supply driven mainly by donors and NGOs and that micro credit is likely to thrive in areas where there is high population growth rates and high levels of poverty. In this light, skeptics argue that "the fact that more and more households are embracing microfinance should not be interpreted to mean that they are improving their welfare; especially given that no study so far has shown any strong and robust impact of microfinance on poverty reduction".

In conclusion to this study it is argued that there is a role for microfinance as a poverty reduction policy tool. However it is emphasized that if microfinance is chosen as an intervention policy for poverty reduction there is need to set clear objectives for the indicators of economic empowerment for the people. More importantly the ability of households to begin informal sole micro entrepreneurships should not be assumed to be adequate for the improvement of household income. There is need to create a policy framework to spur growth in the enterprises as well as the rural economy as a whole through the creation of employment opportunities and an increment in the agricultural output. To achieve such objectives more than one policy intervention may be required. In

essence this calls for both private (microfinance) and public partnerships to create the environment where such poverty reduction objectives could be realized. Overall there is need to have a sustainable mix of both market and non market policy interventions for poverty reduction if the impacts due to an intervention policy are to be sustainable. This is so because the structure of markets in which households operate is critical in shaping household response to exogenous policy changes. The existing market structure is also very important in determining the impact of policy interventions on the target output.