Microfinance: a step forward?

Impact assessment of microfinance of Foncresol on poor households in (sub)urban areas of Potosí, Bolivia

"Nos sentimos con el derecho de creer que todavía no es demasiado tarde para emprender la creación de la utopía contraria. Una nueva y arrasadora utopía de la vida, donde nadie pueda decidir por otros hasta la forma de morir, donde de veras sea cierto el amor y sea posible la felicidad y donde las gentes condenadas a cien años de soledad tengan por fin y para siempre una segunda oportunidad sobre la tierra..."

Gabriel García Marquez

Student:	Sabina Gietema
Supervisor:	Dr.Ir. Marrit van den Berg, Wageningen University
	Prof.Dr. Robert Lensink, Wageningen University & University of Groningen
Department:	Development Economics
Date:	Wageningen, October 2008

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Acknowledgement

It is the battle that poor families have to fight that gains my major interest. With this thesis I would like to see if, and how, a small loan can improve the lives of the poor. Very poor people face more difficulties in terms of vulnerability; financial compensation might reduce this exposure. The limited focus of studies on poor urban populations made me interested to see what kind of effects a financial injection in the form of microfinance has on urban households possessing a non-agricultural business.

During my stay in Potosí, I met many interesting people that supported me in carrying out my research but moreover, showed me how to share the little one has. I would like to thank my colleagues of Foncresol-Potosí, Bolivia, who introduced me to their customs of food, drinks and religion, and their understanding of time. First of all, my sincere thanks go to Gustavo who gave me the opportunity to accomplish this analysis at Foncresol-Potosí. To Moises, who invested time in explaining the practices of Foncresol and who introduced me to the best empanadas in town. Special thanks to Roxana, for her care, laughs and cooperation. Thanks to Fernando for being patient with the dataset of the institution and to the credit officials Carlos, Marvin, Cecilia, Betty, Silverio and Francisco for their support in the meetings. Thanks to Patricia, Pamela and Waldo for their help with the questionnaire and their full commitment. And thanks to all who completed the questionnaire, enabling me to fulfil my research. To the borrowers I interviewed who shared their opinions and showed me their great hospitality. It was a great pleasure for me to temporarily form part of the Bolivian society and tradition. I would also like to thank Paulina and Ali for their very warm welcome at Potosí and to Hanna through whom I started rewarding life in Potosí and for being the one giving me many inspiring evenings!

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Finally, special thanks go to Olivier of TunaFish, for his financial support for my trip to Bolivia.

The issue to tackle poverty is very close to my heart. I therefore hope, with this piece of work, to contribute to a better understanding of microfinance practices and its impacts on the lives of the poor. Thanks to all who contributed to the accomplishment of this report!

Abstract

Despite the increasing number of microfinance institutions in Potosí, Bolivia, during the last fifteen years, and despite their well defined objectives to benefit living conditions of poor households, their impact on proving welfare of households is unclear. This thesis challenges to examine whether the microfinance programs of Foncrsesol brings about the intended positive impact on the lives of the poor in the urban surroundings of Potosí. The impact of microfinance is measured on some selected household welfare indicators, i.e. children education, doctor visits and housing conditions. The findings reveal that no impact is measured due to participation in microfinance, except for private doctor consults that is positively affected by microfinance. I believe that the small impact measured cannot solely be attributed to ineffectiveness of the program. I argue that it is the urban settings that complicate the implementation of evaluations. In the discussion part of this thesis, I therefore elaborate on methodological considerations that may be taken into account in future evaluations.

Key words: microfinance, impact assessment, households, welfare

Contents

Tables

Figures

Boxes

Abbreviations

AIMS	Assessing Impact of Microenterprise Services
Caja comunal	Self Help Group
Dropout	Client exit
SHG	Self Help Group
HDI	Human Development Index
HHEP	Household Economic Portfolio Model
IMF	International Monetary Fund
MDG	Millennium Development Goal
MFI	Microfinance Institution
NGO	Non Governmental Organization
UBN	Unsatisfied Basic Needs

CHAPTER 1 Introduction

1.1 Background

Poverty is a major problem in Bolivia and makes the country one of the poorest of South America. From the Human Development Report of 2007 (UNDP) we know that 62.7% of the total population lives below the national poverty line. A substantial part (42.2%) of the population has to cope with less than $2 a day and almost a fourth (23.2%) lives of less than $1 a day. Potosí is considered to be the poorest department of Bolivia, with a human development index (HDI) of 0.514. The HDI for Bolivia is 0.695, ranking the country as 117th out of 177 countries (UNDP, 2007).

To support the national economy of the country, Bolivia was part of structural reform programs in 1986, sponsored by the International Monetary Fund (IMF). However, there are few signs of improvement. Bolivia is confronted with high population growth and a weak economy. As well as with the closing of state-owned mines and the rejection or closing of state enterprises taking care of the provision of public services or railroads, making many people migrate to the cities due to high unemployment rates (Brett, 2006). Figures emphasize that population in urban areas has grown from 58% in 1992 to 62.43% in 2001 (INE, 2001). I personally experienced this unprecedented form of migration in the suburban areas of Potosí, where overcrowding and living on former refuse-dumps is not an unknown phenomenon.

Another response from the international community to tackle poverty issues in developing countries is the formulation of Millennium Development Goals (MDG) in 2000. The first goal defined is: "eradicate extreme poverty and hunger" (UNDP, 2000)). Poverty can be defined in many different ways. The World Bank (2000:34) views the main cause of poverty as the lack of assets of poor people: human (access to education), natural (access to land), physical (access to infrastructure), social (access to networks) or financial (access to credit) assets. In fact, the real meaning of poverty may differ among countries (Khandker, 2001). In this thesis poverty is viewed as a "welfare level below a socially acceptable minimum" (Montgomery & Weiss, 2005:5). Based upon research done by Bruce (1989); Jacobson (1993) and Dreze & Sen (1995), Nanda (1998:1) concludes that "economic constraints and poverty limit individuals' well-being in terms of nutrition, disease, health seeking, and ability to pay for health care." Hence a person's health and quality of life is determined by the relative ability to meet basic needs. Basic needs include a steady and reliable income, food security, proper housing, and safety, but also access to health care and opportunities for educational development.

1.2 Problem statement

One can argue that poor people will remain poor if they have no access to finance. Since the poor hardly possess any collateral, access to credit for poor people is restricted to informal sources such as moneylenders that borrow at high interest rates, up to 30% a month (personal interview, 2008), or family and other relatives. Microfinance institutions (MFIs) provide loans at smaller interest rates and offer group lending and savings schemes which may help to overcome the lack of financial capital. It is often claimed that microfinance can be an effective tool to reduce poverty (Morduch, 2002; Jha & Bawa, 2007), because small credits makes the poor involved in such programs better off due to an increase in economic capacity that helps to fulfil basic needs and reduces risk (Khandker, 2001; MkNelly & McCord, 2002; Nanda, 1998).

Microcredit and microfinance are often used interchangeably, but in fact, there is a difference in meaning. Both notions refer to a small loan targeted at low-income clients. Microcredit is only the provision of a small loan, whereas microfinance includes, next to the loan, additional services as savings and trainings offered to the poor. In this study the term microfinance will be most relevant and hence will be used[1]. Joint liability schemes are a widely used concept in the provision of microfinance. Group lending schemes give information advantages given that monitoring of group members is done by peer evaluation (Pitt & Khandker, 1998). A Self Help Group (SHG) is formed by individuals that voluntary form a group with the objective to aim at an improvement of fulfilment of their needs with a focus on self-reliance (Bhattacharya, 2008).

Before the microcredit summit in 2005, little attempt has been made to assess the impact of microfinance and therefore only little was known about the effects of these programs (Hulme, 2000; MkNelly & McCord, 2002; Gobezie & Garber, 2007). Nevertheless, impact assessment of microfinance gains more importance as a tool to prove that microfinance contributes to poverty reduction (Hulme, 2000). The outcomes of studies are mixed. Studies of MkNelly & McCord (2002), Murdoch (2002), Khandker (2001) and Nanda (1998) showed a positive effect of microfinance on income of poor people. Sebstad and Cohen (2001) argue that it is not necessarily improvement of income level. It may also be an increase of assets that makes poor people less vulnerable and protects them against risk. Gobezie & Gardner (2007) revealed that at household level basic living conditions improved for clients receiving microfinance services in Ethiopia. The authors compared mature borrowers to new borrowers[2], and found that mature borrowers had less or no problems in terms of food security and send more schooling age children to school. Furthermore, a substantial difference was measured in spending on housing improvements, benefits that new borrowers did not yet gain from the microfinance program. However, the study of MkNelly & McCord (2002:16) did not provide the same evidence; no significant impacts on school expenses or housing improvements were proven. Other researchers measured only the impact on children's education, either by evaluating changes in school attendance, school expenses or educational attainment. Studies held in Indonesia (Sutoro, 1989 cited in Sebstad & Chen, 1996) and Kenya (Buckley, 1996 cited in Sebstad & Chen, 1996) showed positive impacts: participants of a microfinance program were more likely than a control group to pay for school fees. However, there are also several studies done that found no evidence to support the hypothesis that credit has a positive impact on children. A cross regional study of Peace & Hulme (1994) does not show a significant effect of microfinance on school attendance. Pitt & Khandker (1995) studied the impact of the Grameen Bank and found that credit only contributes to boy's schooling, while there is no impact measured on girl's schooling. Coleman (2006) also reveals that village banking in Bangladesh had no significant impact on expenditures related to education. Only the spending on education for boys discloses a small impact. Maldonado & González-Vega (2005) studied the effect of microfinance participation on children's education in Bolivia. One of their findings is that the formation of human capital contributes significantly to a decrease in poverty for the members of a microfinance program, especially to women living in urban areas. However, Maldonado & González-Vega (2005) found no evidence for the effect of participation in a microfinance program. A change in human capital formation and empowerment is mainly attributed to the availability of job opportunities (i.e. commerce). Measuring impacts of microfinance participation on the health situation of poor households is difficult since health aspects are often not considered as primary objectives of microfinance programs (Sebstad & Chen, 1996), and if they do, a significant relationship between borrowing and health expenses is often not proven (Coleman, 2006; MkNelly & Watetip *cited* in

[1] If in this thesis microcredit is used, it refers to other studies.

[2] New clients formed the control group for the study of Gobezie & Garber (2007).

Sebstad & Chen, 1996). On the other hand, Gobezie & Garber (2007) did prove that participation in microfinance is positively related to more frequent doctor visit. Several impact studies of microfinance have intended to show benefits to the poor in terms of fulfilment of basic needs; nevertheless exact effects attributed to microfinance remain unclear.

1.3 Objectives

The self help groups (SHGs), called *cajas comunales*, of the MFI Foncresol in Bolivia have the objective to improve socio-economic living conditions of poor people in the semi-urban and rural areas of Potosí. The core objective of this study is to investigate whether borrowing in a SHG of Foncresol indeed has a positive impact on the lives of the urban poor in terms of living conditions. These living conditions are measured in fulfilment of basic needs of a household, defined as quality of shelter, educational development of children and access to health care facilities.

To explore whether the *cajas comunales* of Foncresol indeed fulfil their intention, the main objective of this thesis is:

- To identify welfare in terms of fulfilment of basic needs of mature borrowers of Foncresol. In this regard, I try to assess whether participation in a SGH positively contributes to the fulfilment of basic needs of poor households.

Then, specific objectives are defined as:

- To examine differences in household socio-economic status between new and mature borrowers in terms of access to health, education and food, and conditions of shelter.
- To investigate how members experience participation in a SGH. I will try to explore how participants view (future) benefits from participation in a SHG.
- To come up with suggestions to increase or improve beneficial outcomes of the *cajas comunales* of Foncresol.

1.4 Hypotheses

In order to achieve the set objectives of this study, I formulated three hypotheses that examine the effect of participation in a SHG of Foncresol on the welfare indicators education, health and housing conditions. The impact will be evaluated by making use of a statistical description or regression analysis. To check whether education of children differs significantly due to participation in a SHG, a first hypothesis is devised. *Hypothesis 1*) Education is positively correlated with participation in a microfinance program. The second hypothesis should dedicate a change in health situation of borrowers due to participation. *Hypotheses 2*) It is assumed that access to health care facilities is positively correlated with participation in a microfinance program. And to be able to give a representation of difference in quality of dwellings of participants the last hypothesis is formulated. *Hypotheses 3)* Housing conditions are positively affected by participation in a SHG.

1.5 Limitations of the study

The primary data source for this study is households participating in a microfinance program. It is expected that households may be reluctant to provide detailed information. Based upon experience, Brett (2006:9)

suggests that confidential information should not be gathered by structured survey methodology; therefore it is decided to gather only less sensitive data based on a structured survey. More sensitive information is gathered through semi-structured, in-depth interviews about changes occurred due to microfinance and about perceived personal welfare (or poverty) of the participant. During all practices of data gathering, the state of neutrality of me as a researcher was clearly introduced and the respondents was given the guarantee that results are treated confidentially (suggestion of Henry et al., 2002). Time constraints formed the major determinant of the representativeness of the sample of the quantitative assessment. Due to planning constraints, not every SHG could be included in the sample, however the set targets of 200 households was reached. Secondary data was gathered from the MFI Foncresol. Though, data collection of the institution is limited. No data on poverty level of borrowers is collected at start of the programs. This could have been a useful indicator to measure the initial economic situation of borrowers. Moreover, evaluations of the microfinance programs of Foncresol are not held on a regularly basis, especially not in the urban areas[3].

Another limitation of this thesis is the fact that improvement of basic facilities is considered to be a long-term impact that might be difficult to measure over a short period of time. Studies assessing the impact of credit on fulfilment of basic needs show that no strong or direct impacts were observed – especially not for health and nutrition, at least not in the short run (Sebstad & Chen, 1996). Here, it may be noteworthy to mention that effects on health and nutrition are often not primary objectives of microfinance programs.

Dropouts – clients leaving the SHG due to several reasons, form an important source for critical reflection upon findings. One might overestimate the effect of a microfinance program in case the poorer families leave the SHG, whereas underestimation of the impact is the result when the better-off families decide to exit the program[4]. However, due to practical inconveniences it was not possible to submit the survey by clients that had already left a SHG.

1.6 Outline of thesis

After the introduction of this section, I will address theoretical considerations through a literature review on impact assessment of microfinance in chapter 2. After that a short description of the research settings is given, to give the reader a better insight in understanding the context (chapter 3). Then, in chapter 4, I will come to the methodology applied in this thesis, including a description of motivations and implementation of data collection in the field, and an explanation of statistical analysis. Chapter 5 gives an overview of the results of the quantitative analysis. The main conclusions are found in chapter 6. In light of the results, I will discuss and elaborate on the difficulties in the analysis of impact assessment in the discussion chapter (7).

[3] The focus of evaluations carried out in the past was on rural areas.

[4] In chapter 2 I elaborate more on the issue of dropouts.

CHAPTER 2 Theoretical framework

2.1 Introduction

In this chapter I will first give an overview of previous studies related to impact assessment of microfinance. After that I will refer to the theories used for my research.

2.2 A theoretical framework for impact assessment

From 1950 on, studies were done to predict possible outcomes of a development project (Roche, 2000). After a project is finished, an impact study can be carried out with the objective to see whether a project has brought about substantial changes on the lives of the poor. It is therefore often claimed that impact assessment has become an important instrument to guarantee that funds of donors are well spend (Hulme, 2000; Khandker, 2001). But despite defined improvements of human well-being on paper, the poverty situation in the world still remains. Roche (2000) pinpoints that NGOs and governmental institutions are therefore often criticized upon their functioning and outcomes thus generating a new need for impact assessment.

Another reason why impact assessment is considered to be important is that it might create insight in specific needs of clients so that social performance of microfinance institutions can be improved. With regard to these reasons, Hulme (2000) makes a distinction between 'proving' impacts and 'improving' interventions. Proving impacts means the practice to measure the effect of an intervention such as microfinance. Improving interventions aims at understanding the processes of intervention to be able to improve those processes. The latter mentioned is out of scope of this research and therefore will not be discussed in more detail.

The impact chain addresses the impact that is analyzed. According to Hulme (2000:81) impact assessment tries to measure "the difference in the values of key variables between the outcomes on the agent". The author refers to a comparison over a period of time of agents in a microfinance program –affected by the program intervention, with agents that are not in a microfinance program and thus receiving no treatment. Then, the difference in outcomes of both agents is the impact. Figure 1 represents the conventional model of the impact chain designed by Hulme (2000). In the impact chain it has to be taken into account that all outcomes are influenced by mediating processes. Mediating processes refer to characteristics beyond the visual change in outcome such as different characteristics of the unit of analysis and of the economic, physical, social and political environment. These processes are difficult to predict, but do have a real influence on outcomes (Sebstad et al., 1995).

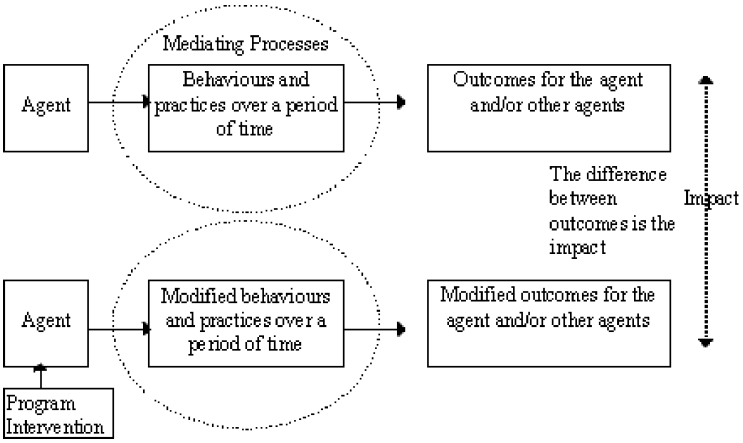

Figure 1: Impact chain of Hulme (2000)

In order to be able to determine whether an effect has taken place, a relevant control group is chosen (Ravallion, 2001). Different approaches are used to compare groups. The AIMS approach supports the comparison of "old borrowers" to "new borrowers" within a same area (*see also* the conceptual framework of the AIMS approach described in this chapter). Coleman (2006) manages to examine the impact of microfinance in Thailand by choosing a control group that exists of targeted participants in a village where a MFI is about to start operating. A more common method is to compare a sample drawn from a treatment village (i.e. village where the microfinance intervention takes place) with a sample drawn from a control village (i.e. village without microfinance intervention) (Armendáriz de Aghion & Murdoch, 2005).

2.2.1 Household Economic Portfolio (HHEP) model

A useful model in examining the effect of credit within the household economy is the Household Economic Portfolio (HHEP) model developed by Chen & Dunn (1996). In appendix 1 of this report, the HHEP model is represented. The model counts three elements: household resources, economic activities undertaken by household members and continuous flows between these resources and activities (Cohen, 2001). The HHEP model recognizes the interrelations between individual, household, enterprise and community. According to Hulme (2000) the model covers the complexity of impacts, since it gives insight in linkages between the different units. For the same reason Cohen (2001: v) states that the HHEP model is "useful in examining the role of credit within the household economy". The model gives insight in how credit is allocated – to what resources and activities. It may be unnecessary to mention that the use of credit depends upon factors such as presence of economic opportunities, socio-economic constraints of the household and preferences and decision making power of individual household members.

2.2.2 AIMS conceptual framework

The HHEP model is adjusted for the AIMS (Assessing the Impact of Micro-enterprise Services) conceptual framework. The conceptual framework of AIMS identifies impact paths towards intended goals of the microfinance intervention in which the household gains the main focus of analysis (Sebstad et al., 1995). Besides the household level, Sebstad et al. (1995) distinguished three other levels upon which change along impact paths can be analyzed, including enterprise, individual or community level. Within these levels of analysis, the authors identified different "domains of impact" in which changes are expected to be seen. At household level primary effects are economic security and well-being (Sebstad et al., 1995). The

domains of impact at household level are income, consumption and assets. The impact domain of income refers to changes in income level or to diversification of income sources. Effects on consumption refer to changes in expenditures, especially food expenditures and debt reduction. Moreover, assets are categorized into three groups: financial, physical, and human (Barnes, 1996 *cited* in Cohen, 2001) that can be affected by microfinance. Financial assets at household level encompass liquid or semi-liquid assets such as savings in cash or at deposit accounts. Examples of household physical assets are real property or other goods or durables. Human assets comprise educational attainment, experience and skills of household members. Assets are important determinants to household welfare (Cohen, 2001). They play a role as economic reserves to cope with family emergencies, to start a business activity or to make investments to improve housing; thus assets reduce vulnerability of households (Tilakaratna, 2006; MkNelly & McCord, 2002). Credit forms an additional resource for households and may contribute to asset accumulation either in a direct, by the purchase of assets, or an indirect way through the creation of income generated activities that form a surplus of income to be able to allocate assets.

The effect of a microfinance program is assumed to result in a change of welfare of poor households or to an increased ability to cope with risks through improved economic capacity (Barnes *et al*., 1998; MkNelly & McCord, 2002). Different indicators are chosen to measure welfare. Gobezie & Garber (2007) did a study in Ethiopia and measured the effect of participation in a microfinance program on welfare of poor households, referring to food security, health, education, housing and empowerment. Tilakaratna (2006) studied the impact of microcredit on household income, assets, expenditure, housing conditions and employment in Sri Lanka. In Bolivia Maldonado & González Vega (2006) studied the effect of three different microfinance programs on the education performance of children. For my thesis, welfare is defined as an increase in fulfilment of basic needs of poor people measured by three key attributes: human capital formation (education of children), access to health care and quality of housing (Navajas et al., 2000).

2.2.3 Potential biases

The design of impact assessment is subject to different sources of bias: self-selection (Sebstad & Chen, 1996; Gaile & Foster, 1996) and placement bias (Pitt & Khandker, 1998), non-random attrition (Armendáriz de Aghion & Murdoch, 2005; Karlan, 2001), fungibility and attribution (Gobezie & Garber, 2007; Cohen, 2001; Sebstad et al., 1995). I am very much aware that biases affect the reliability of the results. Below, I will elaborate on the different types of potential biases and will provide the reader with suggestions from literature to reduce or even exclude possible biases.

Self-selection may influence the direction of change of the outcome of a microfinance program (Sebstad & Chen, 1996). Self-selection is caused because of unobservable characteristics of subjects (i.e. households) such as “entrepreneurial spirit” that influence the composition of lending groups. Clients participating earlier in a microfinance program may be the ones with major entrepreneurial skills over the ones that recently joined (Armendáriz de Aghion & Murdoch, 2005; Maldonado & González-Vega, 2005; Montgomery & Weiss, 2005; Karlan, 2001). Since unobservable variables are difficult to capture, a chance for self-selection bias exists in impact assessment.

In measuring impact Pitt & Khandker (1998) warn for a placement bias when programs are evaluated in more developed areas where for example, infrastructure such as roads and means of communication are present. Comparison of groups from different areas would then lead to a potential bias. The inclusion of

village characteristics in econometric analysis may reduce placement bias (Armendáriz de Aghion & Murdoch, 2005).

Sebstad & Chen (1996) criticize that former participants, individuals no longer part of the SHG, *dropouts*, are often neglected in impact analysis of microfinance. This problem is also referred to as non-random attrition (Armendáriz de Aghion & Murdoch, 2005). When successful borrowers leave the group, because of no need for small amounts of cash from a microfinance institution, the group is left with the 'weaker' clients. However, it is maybe more likely that the poorest participants dropout due to repayment problems, meaning that wealthier participants remain. The first scenario – the poor borrowers stay – gives an underestimation of the impact whereas the second scenario – the wealthier participants are left – results in an overestimation of the impact of microfinance. To omit possible attrition bias, Karlan (2001:9) supports the inclusion of borrowers that had already left in the assessment. Moreover, Karlan (2001) and Armendáriz de Aghion & Murdoch (2005) come up with the suggestion to calculate a weighted measurement of the likelihood of new participants to exit a group, in order to enable the researcher to verify the correct impact.

The aspect of interchangeability of credit before it flows into the household capital and the poor traceability of credit when circulating in the household economy is called fungibility (Cohen, 2001). The HHEP model, and thereby the AIMS conceptual framework, recognizes that credit or profit, like any other resource in the model, can be allocated to any household activity. MkNelly & McCord (2002) also emphasize that poor microfinance participants are not expected to distinguish between household' and enterprise' capital and expenditures. Profits out of business for example may also be used for expenditures not related to the enterprise. Fungibility in impact evaluation is important to acknowledge so that "the evaluation can attempt to measure a full range of impacts without making any prior assumptions about how credit is allocated within each household" (Cohen, 2001:13). By treating the different units household and enterprise, as part of the larger household economy, the HHEP model deals with the concern of fungibility.

The problem of attribution addresses the difficulty of predicting a plausible cause-and-effect relation. The problem of attribution is especially challenging in social sciences. First, because statistical methods might 'prove' an impact of which the correlation is not logical in reality. Second, in practice it would never be possible to keep all explanatory variables in a regression constant except for the treatment variable (i.e. participation in microfinance). The HHEP model is referred to as a useful model in addressing the issue of attribution (Cohen, 2001). Due to the consistency of the HHEP framework it is possible to identify potential impacts of a microfinance intervention.

2.3 Theoretical considerations

The conceptual framework of AIMS is regularly used to assess the impact of microfinance, and so does it also serve as a starting point to design a useful framework for this thesis. In general it is assumed that credit and other financial services cause an increase in economic capacity (*among others* Khandker, 2001; MkNelly & McCord, 2002; Gobezie & Garber, 2007). Economic capacity was defined by Chen & Dunn (1996) and includes income and consumption levels. Improved economic capacity is considered to be a direct impact. Indirect impacts are assumed to be the results of a direct impact (i.e. an increase in household income generated activities). The AIMS conceptual framework recognizes both, direct and indirect impacts at household level.

MkNelly & McCord's impact investigation (2002) on credit in combination with education showed indeed increased livelihood security, empowerment of women and a better health status rather than only an increase in income level. Moreover, the results demonstrate diversified loan-use strategies that enable borrowers[5] to asset accumulation in the form of purchasing basic needs at household level. Hulme and Mosley (1996) also declare that microcredit may lead to important non-income related benefits, rather than only income gains. Gobezie & Garber (2007) also provided evidence on food security and improvement of housing conditions due to microfinance. Another example of the credit impact mechanism on education is extensively described by Maldonado & Vega (1995). The authors define five ways through which microfinance might contribute to the formation of human capital by education. First, an increase in income (through microfinance) has a positive effect on expenditure on education. Second, as vulnerability of households decreases due to microfinance, households will opt for strategies that include sending their children to school. Women are a third channel through which microfinance brings forth a positive contribution to child education. From other studies (Thomas, 1990; Behrman and Rosenzweig, 2002; Sallee, 2001 cited in Maldonado & González-Vega, 2006:28) it is recognized that when microfinance is provided to women, relatively more is spend on education then when the same amount of credit is supplied to men (MkNelly & McCord, 2002). Fourth, the more educated the parents are (i.e. mediating process); the more likely it is that they will send their children to school. Hence small loans provided to poor that are slightly better educated is assumed to contribute positively to the amount of children attending school. Finally, it is hypothesized that microfinance generates new business related activities that might affect the opportunity costs of child labour and consequently on school attendance. The functioning of the impact mechanisms studied by different authors in different contexts provide sufficient evidence for me to assume that through increased economic capacity (reflected in the HHEP model), a microfinance intervention may cause an effect human capital formation, access to health care, housing, vulnerability (i.e. the ability to cope with risk) and empowerment. Therefore I decided not to take into consideration how credit exactly has altered income or how household decisions concerning the micro enterprise are taken; based upon evidence from previous studies I will treat the impact mechanism as a black box and assume that the attribution problem is sufficiently dealt with.

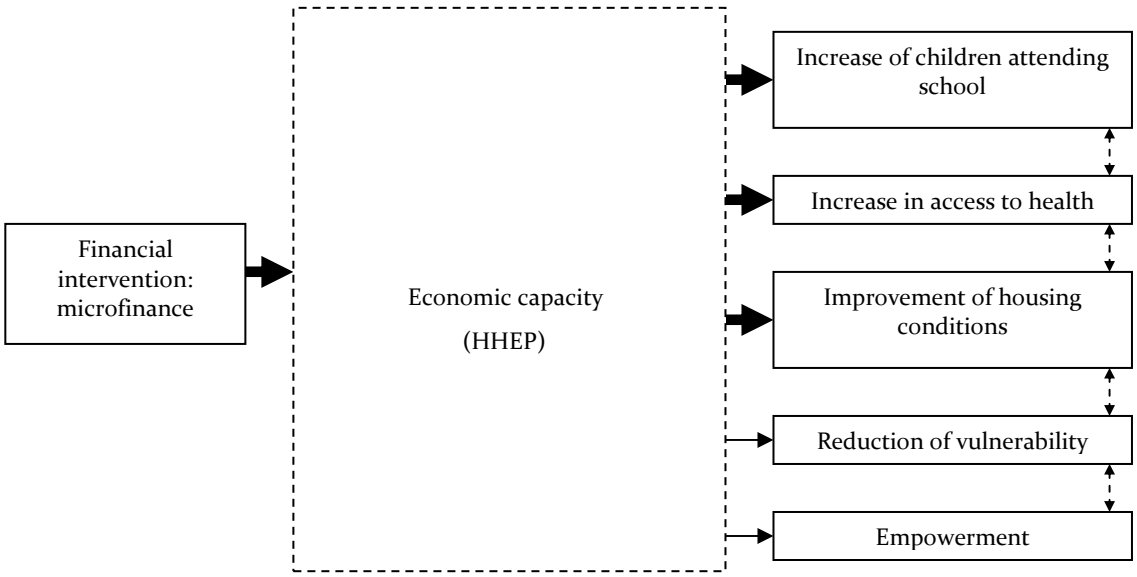

Figure 2: Conceptual framework: the impact path of microfinance programs on beneficiaries

[5] MkNelly & McCord (2002) used non-borrowers as control group.

Figure 2 symbolizes pathways of potential impacts of credit at household level. The bold arrows show the pathways of the impacts that will be examined in this study. That means that I will try to detect changes in impact measured on children schooling, doctor visits and housing due to microfinance. These outcomes are considered to be long-term indirect effects of the allocation of microfinance. Khandker (2001) supports the inclusion of long-term impacts in analysis in order to obtain a reliable picture of the effect of microfinance on well-being of the poor. The interactions between different outcomes are represented with the arrows in between the different outcomes. For example more healthy children (due to an increase in doctor visits) may increase the number of children attending school.

CHAPTER 3 Research settings

3.1 Introduction

This chapter aims at creating a better understanding of the research area. First, it starts with a characterization of the microfinance institution (MFI) Foncresol and is followed by a description of the research area Potosí, including country level information on education and health care.

3.2 Foncresol

The research was investigated for and accomplished in consultation with Foncresol-Potosí, a microfinance institution operating in the area of Potosí, Bolivia[6]. Characteristics of a loan contribute considerably to the way in which small credits are used (Dunn & Arbuckle, 2001:27). To get a clear picture of the type of loan offered to the poor by Foncresol, this section contains information on institutional aims and functioning of the SHGs. Additionally, features of the institution are briefly described in table 1.

Table 1: Foncresol - institutional features (December, 2007)

Original name of MFI	Foncresol
Founded	1997, NGO part of CARITAS
Total number of employees	28
Total number of active borrowers	5910
Organisational form	NGO
Design features	
Real interest rate	2% per month
Organisation of borrowers	SHG (size > 10 persons) Credit unions Solidarity loans Individual loans
Savings and insurance arrangements	Compulsory savings of 0.5% of the loan value
Method of loan collection	Monthly visit of credit officials to area of borrowers

Foncresol, *Fondo de Crédito Solidario* (Organization of Jointly Held Credit), is a financial entity offering adequate credit and saving services to the needs of marginalized people while securing strategic alliances with institutions providing services that complement the provision of credit. The institution was established in 1997 and therefore has experience in microfinance services over 10 years. The main objective of Foncresol is to bring about positive impact on the lives of the poor. Its vision is to aim for economic, social and financial development of disadvantaged rural and urban sectors mainly through jointly held financial services.

Foncresol offers four types of credits: *cajas comunales*, Self Help Groups (SHG) – joint credits, including savings services, *asociaciones*, credit unions – joint credits for small entrepreneurs forming small co-operations, *solidarios*, jointly held financial credits without savings and *individuales*, individual credits. The idea of group-lending is based upon joint liability of the members. All members are guarantee for the total amount that is borrowed. Loan sizes vary between $100 and $600 and the adjusted average loan balance of the organisation is $381. The interest rate of the *caja comunales* is 2.5% of which 0.5% is saved at a

[6] Wherever in this report Foncresol is written, it is referred to the part of the organization that works in the (sub)urban and rural areas of Potosí, unless specified differently.

savings account, called a *cuenta interna*. The 0.5% that is saved is managed by members of the Self Help Group themselves and can be lend to their own members again. Borrowers with an immediate cash need can get a loan from the group, from its members' savings. The same system is also offered to *e.g.* group members of MFIs[7] in Bangladesh (Coleman, 2006).

Box 1: Credit use

Maria Elena borrows already for eight years with Foncresol. Although the first loans were very small, according to her, she is optimistic about the loans she received. The loans made it possible that she, together with her husband, could construct a bigger kitchen with more facilities. Now, the kitchen is already in full use, to prepare food to sell on the Sunday market. Meanwhile her business is doing well; she started working on a new idea to build a space in which parties can be held, for example to celebrate marriage. She discovered that there is a demand for this kind of service, so her next loan will be used to continue building that room. It is supposed to be finished before the end of the year so that she can celebrate the birthday of her daughter that will turn fifteen years.

Alejandra has recently joined a SHG of Foncresol and will use her credit to buy fresh ingredients to sell at secondary schools. She has already some contracts with schools, but she faces some difficulties in having sufficient money to buy the ingredients needed. Since she has a fixed contract, the loan is very much appreciated by her. To put it in her own words: "the credit will help me to ensure that I can deliver my product on time".

Source: personal interviews, 2008

Since 1998, the institution provides small loans to groups in the rural areas of Potosí. From 2002 on, Foncresol started also to work with SHGs in urban areas of Potosí. In the area of Potosí, urban portfolios count for 31% of the total amount of loans and 69% are households in rural areas receiving a group loan (Wilson, 2007:10). In the area of Potosí women represent 78% of the total amount of borrowers in rural and urban areas together, male borrowers account for 22% of the borrowers (Wilson, 2007:9). The total portfolio of Foncresol has on average 62.9% of female borrowers and 27.1% of male borrowers. The clientele of Foncresol is considered to be poor, because if the clients had money they would not be attracted by a small loan for which they have to attend regular obligatory meetings, they rather would get a loan provided by more commercial banks (personal interviews, 2008).

Box 2: Reasons for joining a SHG

Women join a *caja communal* (SHG) of Foncresol for different reasons. The main reason is to be able to borrow. The saving element is a second motivation for clients to participate in a SHG. Other reasons are socially related; to be in contact with other women. Especially the mature borrowers put a lot of effect in the preparation of dinners at payment meetings, so that they can share, talk and eat together.

Source: personal interviews, 2008

[7] The MFIs referred to are: Rural Friends Association (RFA) and Foundation for Integrated Agricultural Management (FIAM).

Foncresol has the aim to include the poor in their microfinance programs. Targeting of the program is at area as well as household level and gender focused. To become a member of a SHG, one only needs at least 10 persons that form a group and are willing to take the joint liability for a credit. Then, the institution only investigates whether or not the borrower has debts in other financial institutions and how many other credits one has. By providing very small loans (first loan equals $100) it is assumed that the better-off would not even participate, or at least will be less eager to participate. Regular obligatory meetings held each month might also discourage the ones better off' to participate. No records are gathered about, for example, the percentage of clientele under the poverty line, income generating activities or networks involved.

The effects of SHGs of Foncresol on poor people have been analysed in the rural areas and measured positive impacts (Wilson, 2007). I believe it is of interest to see whether a similar positive effect is revealed in (sub) urban areas. The interest of Foncresol in this investigation is to see whether the organization does accomplish its objective for the households in the *cajas comunales*, in the (sub)urban areas of Potosí.

3.3 Research area

As was mentioned before, the study was executed in the (sub)urban area of Potosí in Bolivia, located in the South-western highlands, *Altiplano*, of Bolivia. In the colonial times, the city of Potosí was known for its wealth of the silver mine *Cerro Rico* (see also figure 4). Nowadays, the city remains to be one of the poorest of the country. The productivity and salaries are as low that 45% of the working class people in the city earn less than 1 dollar a day (Duyea and Pagés, 2002 *cited* in Maldonado & González-Vega, 2006:42).

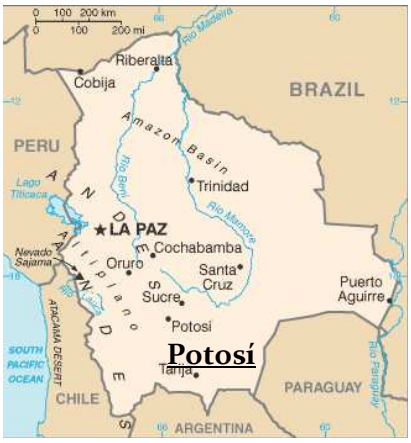

Figure 3: Map of Bolivia (source: CIA World fact Book)

In general there is difficult access to credit for the poor since they rarely possess any collateral, but microfinance might open up access to credit. In Potosí operate many different microfinance institutions, especially when talking about the urban area in the capital Potosí. During the last fifteen years, Bolivia has experienced a considerable development of microfinance organisations (Maldonado & González-Vega, 2006:42), among others the most frequent mentioned by borrowers are Crecer, Promujer, Prodem, Caja Los Andes, Fie and Fades (personal interviews, 2008). Official data report that Bolivia counted 35 microfinance institutions in 1999 (Mosley, 1999:9).

Figure 4: Cerro Rico, Potosí

3.4 Unsatisfied Basic Needs (UBN)

To get an impression of the area in terms of access for the poor to education, health care and housing conditions, the Poverty Reduction Strategy Paper (IMF, 2000) provides some statistics at national level. The department Potosí is ranked as second in terms of unsatisfied basic needs (UBN) index. Comparing the UBN index for Potosí with the country as a whole, there is a considerable difference, 83.3 and 69.8 respectively.

With regard to education, 55% of the poor (over 15 years) completes only elementary school, 29% of the poor reaches high school level, compared to 58% of the ones considered to be non-poor in high-school level.

Health conditions in Bolivia are deficient, due to a considerable lack of medical services. On average there are only three health establishments per 10.000 habitants, one hospital bed per 1.000 habitants, and five doctors per 10.000 habitants (IMF, 2000). As can be derived from table 2, the poorer one is, the less a doctor is consulted when one is considered to be ill.

Table 2: Health conditions and type of attention of population over 15 years (source: National Employment Survey, 1997) (IMF, 2000)

	Non-poor	Poor	Extreme poor	Overall
During the last four weeks was:				
Healthy	84.5 %	83.3 %	78.8 %	82.1 %
Ill	15.5 %	16.7 %	21.2 %	17.9 %
If ill, visited a doctor:				
Yes	65.4 %	55.1 %	42.8 %	52.8 %
No	34.6 %	44.9 %	57.8 %	47.2 %

Indicators revealing quality of dwellings are presented in table 3. The poor have about two times less access to water, sanitary and electricity services, compared to the non-poor.

Table 3: Housing indicators 1997 (source: National Employment Survey) (IMF, 2000)

	Non-poor	Poor	Overall
Housing lacking water services	22.2 %	44.8 %	35.1 %
Housing without sanitary services	24.9 %	53 %	40.9 %
Housing without sewerage services	45.5 %	73.9 %	61.7 %
Housing without electricity	19.0 %	43.1 %	32.7 %
Average people per room	1.53	2.42	2.03

Differences in access to water and basic sanitation services are shown when examined by type of area (see table 4). Although people living in urban areas have higher coverage of basic sanitation services than the population of the rural areas, still a substantial part in urban areas lacks a proper sewerage system (21.1%) and 11.7% lacks running water inside the dwelling.

Table 4: Coverage of basic sanitation services per area 1997 (INE, 2001)

	Rural area	Urban area
Population by water supply system		
Connection inside the house	29.3 %	88.3 %
Connection outside the house	7.7 %	5.5 %
Without connection, other sources	63.0 %	6.2 %
Population by sanitation service system		
Public sewerage	1.7 %	43.9 %
Other with water	1.8 %	11.6 %
Other without water	29.2 %	23.3 %
Without treatment	67.3 %	21.1 %

Information obtained in this section forms part of the choice of relevant indicators that I will describe in the next chapter.

CHAPTER 4 Methodology

4.1 Introduction

In this chapter the design of the research methodology is described. My choices are made based upon the literature review of chapter 2. One can read which research tools are used, how the sample of this study is determined and what approach is followed to obtain desired results. After that, I point out how the data will be analyzed.

4.2 Unit of analysis

Much of an individual's wealth is shared with and is influenced by the household in which that individual lives. Therefore it is believed that the effect of microfinance is not only beneficial to the individual, but to the whole household, either directly or indirectly, and the evaluation is carried out with the household as being the unit of analysis. Since this study is based upon the AIMS conceptual framework, the definition of Barnes *et al*. (1998:4-Annex A) of households will be used: "a household is defined as a single person or group of persons who usually live and eat together, whether or not they are related by blood, marriage or adoption. The individuals recognize each other as members of the same household. Included in this definition are persons who do not live fulltime at the dwelling because they are away at school. Living and eating together implies sharing at least some resources."

4.3 Research tools

Quantitative assessment forms the basis of this research upon which statistical analysis is based. Therefore a household survey was carried out among 200 respondents. I designed a questionnaire that captures information on households' welfare in terms of living conditions and it contains information on the following sections[8]: 1) Family characteristics, 2) Dwelling, 3) Food expenditures, 4) Education, 5) Health and 6) Credit. The results of the quantitative assessment are used in the analysis to assess if there can be any impact observed on fulfilment of basic needs due to participation in the program.

In literature social performance of MFIs is gaining more importance (Wright, 2004; Wright & Cohen, 2003) for which qualitative research techniques becoming more common. Wright (2004) argues that a qualitative approach enables a researcher to measure social outcomes of microfinance by exposing causal links between events and outcomes. The identification of a plausible cause-and-effect relationship – the chain of events from the intervention (i.e. microfinance) to the impact strengthens the case for attribution[9] (Gobezie & Garber, 2007). Investments in education, housing and health concern often indirect impacts of microfinance, since the loan regenerates itself through investment in small businesses of borrowers. Therefore I chose for a qualitative approach to enlighten these indirect impacts of microfinance. First, I did semi-structured interviews with credit officials and managers of Foncresol to identify the practices of the microfinance programs and its targets and to analyze their view on expected outcomes on improvement of

[8] The complete survey (in Spanish) is included in appendix 2 of this document.

[9] Attribution is identified as one of the main causes of bias in impact assessment and was discussed in the previous chapter.

living conditions for the participants. Besides, I interviewed 9 randomly selected group lenders (of new and mature borrowers) in a semi-structured way so that their future expectations and benefits due to program participation are known. Based upon individual discussions with members of a SHG, one also gets a better insight in reasoning behind joining a SHG, benefits obtained and difficulties confronted with. Topics that covered the qualitative interviews concern motivation to receive a small loan, use of credit, functioning of the SHG, motivation for being a member of a SHG and future expectations on borrowing and on opportunities for development of their families. Also, views on quality of education, health care facilities and materials used for shelter were discussed. Whenever information from these conversations adds in-depth information to the quantitative analysis, it will be represented in boxes[10]. To be able to give at least a critical reflection upon positive or negative findings it is also tried to obtain information about *dropouts* of the program in the semi-structured interview with participants. Hence another goal of the information exchange with borrowers is to understand reasons behind client exit.

Additionally, the study is based upon personal observations and desk research to be able to obtain missing information or to strengthen findings from the quantitative assessment. The triangulation of quantitative and qualitative research (see also Gobezie & Garber, 2007; Hulme, 2000; Baker, 1999; Sebstad et al., 1995) is desirable to obtain reliable answers to the research questions. Except for desk research, data were gathered during a period of fieldwork in Bolivia from mid-January until mid-March 2008.

4.4 Sampling

For this study new borrowers are chosen to form a control group, based upon the methodology used by Gobezie & Garber (2007) and Maldonado & González-Vega (2006). Gobezie & Garber (2007) argue that the selection of a comparison group of mature clients and incoming clients is the most valid cross-sectional approach to avoid self selection bias. For the quantitative assessment therefore two types of clients were interviewed, one group to be researched for, mature clients, and a control group formed by new clients to see the difference in outcomes brought about by the microfinance intervention (Gobezie & Garber, 2007; Maldonado & González-Vega, 2006). New clients are clients that recently joined the SHG that did not receive a first loan yet, or that received a first loan in the last six months. Mature borrowers consist of borrowers that obtained at least six times a loan. The cross-section methodology for this research is chosen for cost efficiency reasons (Karlan, 2001).

[10] In the boxes pseudonyms are used to protect privacy of the borrowers.

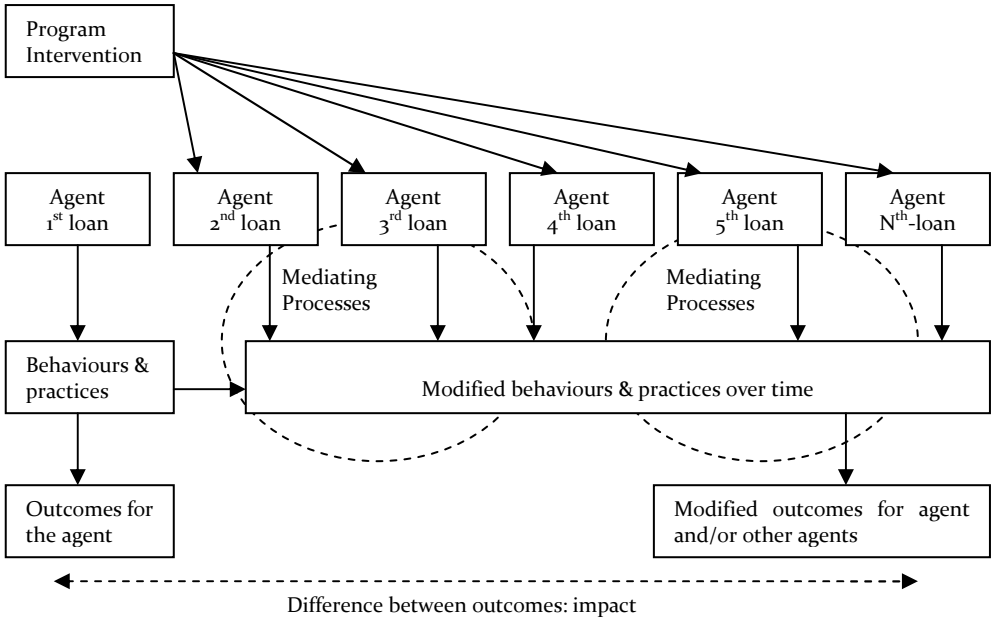

Figure 5: Impact chain based upon the conventional model of the impact chain in Hulme (2000)

I applied the impact chain of Hulme for the choice of control group (see figure 5). Behaviour and practices of mature clients –agents receiving a n^{th} loan, are compared with behaviour and practices of new clients – agents receiving only a 1^{st} loan. It is assumed that mature clients will be affected by the program intervention, resulting in modified behaviour and so will outcomes for mature clients. Because new clients recently joined a microfinance program (i.e. less than 6 months), it is assumed that the effect of program intervention is still too small to measure a change of household behaviour on fulfilment of basic needs (Gobezie & Garber, 2007) and thus represents a useful baseline of outcomes for agents for this study. For example a change in attitude towards importance of educational attendance needs time (Maldonado & González-Vega, 2006). I will also be able to compare the two types of clients, since socio-economic characteristics of the households with regard to participation requirements (i.e. motivation for receiving credit) can be assumed to be the same. The difference between modified outcomes of mature clients and the outcomes of the baseline is the impact; the long-term effect of microfinance on mature clients.

To reduce self-selection bias, I chose to include a proxy that captures information on this unobservable characteristic of entrepreneurship: a dummy variable that specifies whether parents or parents in law have or had a (small) business. I assume that borrowers with parents with a business possess more entrepreneurial skills over the ones of which the parents do not have a small enterprise. Hence in this study it is recognized that self-selection bias might not be fully addressed, but is sufficiently deliberated in the choice of control group and the choice of a proxy to gain reliable results.

4.4.1 Stratified random sampling

To obtain data from a relevant sample, stratified random sampling has been used. So each SHG has been treated as an independent stratum, resulting in a total of 18 SHGs of new borrowers and 48 SHGs of old borrowers. Unfortunately, due to practical contingencies not all groups could be consulted, therefore 12 out of 18 new SHGs and 15 out of 48 existing SHGs were targeted. Then randomly, within these groups, a sample was taken. It is believed that this technique adds to a good representation of the clients.

It is assumed that distribution of variance among new clients and among mature clients will be equal, since both types were selected for the same microfinance program (Henry *et al*., 2000:31). Therefore both groups are considered to be homogenous and there is no need to take a larger sample size for one of the groups. The sample size is calculated and described in table 5.

Table 5: Sample size

Total sample size N = 200		
n = 100	Treatment group	Mature clients (> 6 loans received)
n = 100	Control group	New clients (receiving 1st loan)

4.5 Modelling quantitative analysis

To evaluate the effect of participation in a microfinance program on fulfilment of basic needs of poor households, I will investigate the difference in situation of mature borrowers and new borrowers, with regard to chosen indicators. I make an attempt to model the existing relationship among the key variables using regression analyses: Ordinary Least Squares (OLS) and logistic regression. First, I will elaborate on the general OLS model and logistic model. After that I will elaborate on my choice for variables and will give the statistical representation of outcome variables related to control variables.

OLS is a simple technique that measures a relationship between two or more variables by predicting one variable from another (Field:143) in order to be able to measure the magnitude of the impact while controlling for other determining variables. In formula this is represented as follows:

(4.0) $Y_i = \beta_0 + \beta_1 P_i + \beta_2 X_i + \varepsilon_i$

Where the dependent variable for borrower *i* is denoted as Y_i; P_i stands for participation (1= mature participant, 0= new participant); X_i stands for other variables attributing to change in outcome; β's are coefficients; and ε is the residual term that includes all other determinants of the measured outcome of participant *i*. Thus, the regression analysis identifies the relation between the outcome variable and the set of independent variables, which allows for a differentiation of the impact of participation in a SHG.

In logistic regression, instead of predicting the value of a variable Y from a predictor variable X, or several predictor variables (Xs), we predict the probability of Y occurring given known values of X (or Xs). A binary dependent variable (i.e. a discrete variable with either value 0 or 1) can be estimated by, among others, a logistic model. This model assumes that individuals are faced with a choice between two alternatives and that the choice is dependent upon characteristics of that individual. Logistic regression predicts the probability of Y occurring given known values of P_i and X_i. In formula this is depicted as:

(4.1a) $P_i = Pr_i(Y_i=1) = 1 / [1 + e^{-(Z_i)}]$ in which

(4.1b) $Zi = \beta_0 + \beta_1 P_i + \beta_2 X_i + \varepsilon_i$

4.6 Selection of variables

Table 6 on the next page specifies how variables in the model are coded for regression analyses in chapter 5[11]. After the representation of the table I elaborate on my motivations for selection of the variables.

[11] Only the variables that will be included in the models are presented in table 6. A complete list of variables obtained from the survey is presented in the appendix 3 of this report.

Table 6: List of variables, abbreviations and measurement units

Variables indicating socioeconomic and demographic status	Variable abbreviation	Measurement unit description
Participation	P	Type of borrower: 0=new borrower, 1=mature borrower
Age of borrower	AGE	Age of the borrower
Gender of borrower	GENDER	0=male, 1=female
Partner	PARTNER	Borrower has a partner: 0=no, 1=yes
Education level	EDUCLEVEL	Average education level of adult household members
Area	AREA	Type of area where household lives: 0=urban, 1=suburban
Parents business	PARENTBUSS	Parents (in law) have/had a business: 0=no, 1=yes
Inheritance	INHERIT	Household possesses inheritance: 0=no, 1=yes

Additional control variables for education	Variable abbreviation	Measurement unit description
Dependency ratio children	DEPRATCHLD	Relative percentage of children in a household (%)
Distance to school	EDUCDIST	Distance to school: 0=less than 1 kilometre, 1=more than 1 kilometre

Additional control variables for health	Variable abbreviation	Measurement unit description
Family size	FAMSIZE	Number of household members
Child under 5	CHLD5	Family has children under 5: 0=no, 1=yes
Habitability	HABITAB	Density of persons per room[12]
Access to water	WATER	Household has a tap inside: 0=no, 1=yes
Access to toilet	TOILET	Household has a toilet: 0=no, 1=yes
Access to electricity	ELECTR	Household connected to electricity network: 0=no, 1=yes

Dependent variables for education	Variable abbreviation	Measurement unit description
Enrolment of schooling age children	ENROL	Number of children in the schooling age (6-18) attending education
Children attending private education	EDUCPRIV	Children attending public or private education: 0=public, 1=private
Expenditure on education for children	EDUCEXP	Monthly expenditure on education for children (in $)

Dependent variables for health	Variable abbreviation	Measurement unit description
Family members being ill	ILLNESS	Illness of one of the family members: 0=no, 1=yes
Doctor consult	DOCTOR	Household with ill family members visits a doctor: 0=no, 1=yes
Private consult	DOCPRIV	Type of doctor visited: 0=public, 1=private
Health expenditures	HEALTHEXP	Expenditures on health care

Dependent variables for housing[13]	Variable abbreviation	Measurement unit description
Quality material walls	MATWALL	Quality of material of walls: 1=low, 2=average, 3=high
Quality material floors	MATFLOOR	Quality of material of floors: 1=low, 2=average, 3=high
Quality material roof	MATROOF	Quality of material of roof: 1=low, 2=average, 3=high
Access to water	WATER	Household has a tap inside: 0=no, 1=yes
Availability of proper sanitation	TOILET	Household has a toilet: 0=no, 1=yes
Access to electricity	ELECTR	Household connected to electricity network: 0=no, 1=yes

[12] The respondents were asked not to include kitchen, bathroom, corridors and garage in the number of rooms.

[13] To give values to the quality of materials used for house construction, a distinction of three categories is made: low, average and high quality. The division made by Krishnakumar & Ballon (2008:1009-1010) was adapted and used here. For the walls: bricks and concrete are defined as high quality materials; cement blocks or *adobe* (clayblocks) are considered to be average quality material; and quarry or other materials are dedicated to low quality. For the floors: wood or parquet wood are valued of high quality; cement or concrete brick is defined as average quality; and earth and other materials are considered to be of low quality. For the roof counts: roof tiles are of high quality; zinc falls in the category of average quality; and straw or other materials are defined as low quality materials.

Outcomes are expected to be different among new and mature borrowers. Therefore a dummy variable (i.e. variables that take value zero or one) is used to control for participation status (Maldonado & González-Vega, 2006). I assume that new and mature borrowers do not experience the same impacts of microfinance, since mature borrowers have been borrowing repeatedly and receive bigger loan sizes compared to new clients. In general impacts are more likely to be observed with repeated borrowing in the long run (Barnes et al, 1998).

It can be expected that not only participation in microfinance but also features of a household influence the ability of households to fulfil basic need. X_i captures variables that contribute to change in outcomes. Therefore demographic information such as age and gender of the borrower, dependency ratio (number of children divided by the number of adult household members) and location of housing is gathered. For reasons of endogeneity, variables should not be directly related to program participation, and comprise socio-economic features of borrower's households (Tilakaratna, 2006). The choice for additional lender characteristics with no relationship to the outcomes is referred to as the instrumental variable (IV) approach (Armendáriz de Aghion & Morduch, 2005). Financial capital is approached by using such an instrumental variable for income, since the income level of mature clients would be endogenous in the regression model. This means that a change in income is directly influenced by participation in microfinance, either in a direct or an indirect way. Credit contributes directly to an additional income source or indirectly through investment in 'new' income generating activities. Unfortunately, I did not possess data of income levels of participants at the start of the program, so I chose to use two proxies: possession of inheritance and parents (in law) having a business that indicates families' wealth before taking part in the microfinance program. Finally, I address human capital by the average education level present in the household. Values count at household level, so I argue that education is best addressed by taking the average level of education rather than the highest level present in a family, since the average reflects better the decision power among the household members. It is not only the one with the highest level of education in a family that decides.

4.7 The effect of microfinance

To see whether participation in microfinance has a positive impact on fulfilment of basic needs, three different outcomes (Y_i^*) – equal to the defined hypotheses in the first chapter (i.e. education, health and housing) – are measured. In this section I will present the models (in formula) that I will test for each of the different outcomes. Thereby, I will explain the inclusion of the variables that I chose as indicators to measure changes in outcome.

4.7.1 Modelling outcomes on education

Cohen (2001) recognizes, among others, the number of schooling age children in school and expenditures on children's education, as indicators to measure human capital development. Moldonado & González-Vega (2006) also examined the effect of microfinance on human capital of poor families by measuring children's schooling. I would expect private education to indicate a better level of education, since a tuition fee (at least $20 per month per child) is charged. So, I assume the more children attending school, especially private ones, the better off the household is in terms of education. To detect a change in education, I selected the variables school attendance of schooling age children, as well as enrolment in private education and expenses on children's education. Besides general socio-economic and demographic

characteristics, distance to education and dependency ratio of children are put in the model as additional control variables. It is expected that distance to education has a negative effect on attendance of education; the further away one lives, the less likely a child will attend education (Maldonado & González-Vega, 2006).

To check for changes in enrolment due to participation in an SHG I make use of an OLS model. OLS is possible since none of the observations (i.e. of the households having children in the schooling age) has the value zero. In formula this is represented as:

(4.3) $$ENROL_i = \beta_0 + \beta_1 P_i + \beta_2 AGE_i + \beta_3 GENDER_i + \beta_4 PARTNER_i + \beta_5 EDUCLEVEL_i + \beta_6 AREA_i + \beta_7 PARENTBUSS_i + \beta_8 INHERIT_i + \beta_9 DEPRATCHLD_i + \beta_{10} EDUCDIST_i + \varepsilon_i$$

To approach whether microfinance has an effect on the probability of children attending private education, I make use of a logistic regression, which is expressed in the following formula:

(4.4a) $$P_i = Pr_i\,(EDUCPRIV_i=1) = 1 / [1 + e^{-(Z_i)}] \text{ in which}$$

(4.4b) $$Zi = \beta_0 + \beta_1 P_i + \beta_2 AGE_i + \beta_3 GENDER_i + \beta_4 PARTNER_i + \beta_5 EDUCLEVEL_i + \beta_6 AREA_i + \beta_7 PARENTBUSS_i + \beta_8 INHERIT_i + \beta_9 DEPRATCHLD_i + \beta_{10} EDUCDIST_i + \varepsilon_i$$

To find changes in expenses on education for children due to microfinance participation I will use OLS. In formula represented as:

(4.5) $$EDUCEXP_i = \beta_0 + \beta_1 P_i + \beta_2 AGE_i + \beta_3 GENDER_i + \beta_4 PARTNER_i + \beta_5 EDUCLEVEL_i + \beta_6 AREA_i + \beta_7 PARENTBUSS_i + \beta_8 INHERIT_i + \beta_9 DEPRATCHLD_i + \beta_{10} EDUCDIST_i + \varepsilon_i$$

It may be that insufficient observations for educational expenditures are obtained, since public schools are free of charge in Bolivia. In case less than 20 observations is gathered, I will only present descriptive information.

4.7.2 Modelling outcomes on health

The identification of a health situation of a household compromises the status of well-being of households in terms of illnesses and access to health care facilities. First, I will attempt to determine the effect of microfinance on illness. Then, to measure a change in access to health care facilities, I chose to examine the amount of doctor visits (in case of illness), private clinic visits and expenditures on health care. Cohen (2001) acknowledges changes in health expenditures as one of the determinants of human capital formation.

To examine the effect of participation in microfinance on the probability of having ill household members I use a logistic regression model. A probability of 0 represents that a household has no ill family members and a probability 1 show that the household has family members that are ill. The reason why I do not chose an OLS estimate here is because I expect to obtain a substantial number of zero values (i.e. no sick household members). An OLS model would then give a biased result. The general socio-economic and demographic indicators are expected to have an effect on being sick or not. Additionally, a dummy for having children younger then 5 years is put in the model as an additional control variable since children younger than 5 usually have more chance to get sick (personal interviews, 2008). Other control variables that I consider important to include in the model are variables that indicate the status of the dwelling. I believe that households with proper housing are protected from becoming ill more than households living in vulnerable houses. I therefore add the variables habitability, access to water, sanitation and electricity to the model. This logistic regression is then symbolized in the formula:

(4.6a) $$Pr_i\,(ILLNESS_i=1) = 1 / (1 + e^{-(Z_i)}) \text{ and}$$

(4.6b) $$Z_i = \beta_0 + \beta_1 P_i + \beta_2 AGE_i + \beta_3 GENDER_i + \beta_4 PARTNER_i + \beta_5 EDUCLEVEL_i + \beta_6 AREA_i + \beta_7 PARENTBUSS_i +$$

β_8INHERIT$_i$ + β_9CHLD5$_i$ + β_{10}HABITAB$_i$ + β_{11}WATER$_i$ + β_{12}TOILET$_i$ + ε_i

Whether households go to a doctor does not solely depend on socio-economic and demographic features of a household. The dummy for having children younger then 5 years in the family is used in the model to check for doctor visits. Borrowers tend to go sooner to a doctor with very young children (i.e. under the age of 5) (personal interview, 2008). Additionally family size determines the resources available in a household to be able to visit a doctor. I use a logistic regression model since this method will provide a proper approximation to the probability that a doctor is visited due to microfinance. This is expressed in the formula:

(4.7a) Pr_i (DOCTOR$_i$=1) = $1 / (1 + e^{-(Z_i)})$ and

(4.7b) $Z_i = \beta_0 + \beta_1$Pi + β_2AGEi + β_3GENDERi + β_4PARTNERi + β_5EDUCLEVELi + β_6AREAi + β_7PARENTBUSSi + β_8INHERITi + β_9CHLD5i + β_{10}FAMSIZEi + ε_i

To estimate the effect of participation of microfinance on the access to health in terms of private doctor consults, I apply the same logistic model as the one used to determine doctor visit, except for a change in dependent variable. In formula this is represented as follows:

(4.8a) Pr_i (DOCPRIV$_i$=1) = $1 / (1 + e^{-(Z_i)})$ and

(4.8b) $Z_i = \beta_0 + \beta_1$Pi + β_2AGEi + β_3GENDERi + β_4PARTNERi + β_5EDUCLEVELi + β_6AREAi + β_7PARENTBUSSi + β_8INHERITi + β_9CHLD5i + β_{10}FAMSIZEi + ε_i

Finally I will check the effect of participation in a SHG on health expenditures by the use of an OLS model. Also here, control variables included are socio-economic and demographic variables, a dummy for children under 5 and family size. In formula this gives:

(4.9) HEALTHEXP$_i$ = $\beta_0 + \beta_1$P$_i$ + β_2AGE$_i$ + β_3GENDER$_i$ + β_4PARTNER$_i$ + β_5EDUCLEVEL$_i$ + β_6AREA$_i$ + β_7PARENTBUSS$_i$ + β_8INHERIT$_i$ + β_9CHLD5$_i$ + β_{10}FAMSIZE$_i$ + ε_I

In case the observations are not normally distributed I may compute the variable in such a way that it becomes normally distributed, for example by transforming the values into log-values.

4.7.3 Modelling outcomes on housing

Living conditions refer to the conditions of housing in which a family lives, or to put it in other words "being able to be adequately sheltered" (Krishnakumar & Ballon, 2008:992). Housing conditions assess the type of dwellings of households, including type of materials used for floors, walls and roofs. Housing quality is as a good indicator of household well-being (Tilakaratna, 2006) so I use material of walls, floor(s) and roof to point out the quality of materials of the dwelling. I assume that the better and more expensive materials used, together with a lower value of habitability, a higher ranking in terms of housing (Krishnakumar & Ballon, 2008). With use of OLS I attempt to pinpoint whether the quality of materials used for walls, floor(s) and roof are determined by participation in a SHG. Control variables included in the model are only socio-economic and demographic characteristics of the household. In formula the OLS are given for walls:

(4.10) MATWALL$_i$ = $\beta_0 + \beta_1$P$_i$ + β_2AGE$_i$ + β_3GENDER$_i$ + β_4PARTNER$_i$ + β_5EDUCLEVEL$_i$ + β_6AREA$_i$ + β_7PARENTBUSS$_i$ + β_8INHERIT$_i$ + β_9FAMSIZEi + ε_I

The formula for floor(s):

(4.11) MATFLOOR$_i$ = $\beta_0 + \beta_1$P$_i$ + β_2AGE$_i$ + β_3GENDER$_i$ + β_4PARTNER$_i$ + β_5EDUCLEVEL$_i$ + β_6AREA$_i$ + β_7PARENTBUSS$_i$ + β_8INHERIT$_i$ + β_9FAMSIZEi + ε_i

And for roof the formula is illustrated as:

(4.12) MATROOF$_i$ = $\beta_0 + \beta_1$P$_i$ + β_2AGE$_i$ + β_3GENDER$_i$ + β_4PARTNER$_i$ + β_5EDUCLEVEL$_i$ + β_6AREA$_i$ + β_7PARENTBUSS$_i$ + β_8INHERIT$_i$ + β_9FAMSIZEi + ε_i

Furthermore I presume that availability of public services has a positive effect on overall housing conditions. Therefore, access to water, sanitation and electricity are chosen as good indicators to measure living conditions (Cohen, 2001). According to Tilakaratna (2006), microfinance allows households to improve housing quality and to obtain access to facilities. However, I value it noteworthy to mention that improvement of housing may not be driven by microfinance *per se* (Barnes et al., 2001). A logistic model can be used to verify whether participation in microfinance positively contributes to the probability of having access to public facilities. The availability of electricity may differ by location, therefore the model should control for area, in addition to the socio-economic control variables. The formulas (3.12), (3.13) and (3.14) represent access to water, sanitation and electricity, respectively.

(4.13a) $Pr_i\ (WATER_i=1) = 1 / (1 + e^{-(Z_i)})$ and

(4.13b) $Z_i = \beta_0 + \beta_1 Pi + \beta_2 AGEi + \beta_3 GENDERi + \beta_4 PARTNERi + \beta_5 EDUCLEVELi + \beta_6 AREAi + \beta_7 PARENTBUSSi + \beta_8 INHERITi + \beta_9 FAMSIZEi + \varepsilon_i$

(4.14a) $Pr_i\ (TOILET_i=1) = 1 / (1 + e^{-(Z_i)})$ and

(4.14b) $Z_i = \beta_0 + \beta_1 Pi + \beta_2 AGEi + \beta_3 GENDERi + \beta_4 PARTNERi + \beta_5 EDUCLEVELi + \beta_6 AREAi + \beta_7 PARENTBUSSi + \beta_8 INHERITi + \beta_9 FAMSIZEi + \varepsilon_i$

(4.15a) $Pr_i\ (ELECTR_i=1) = 1 / (1 + e^{-(Z_i)})$ and

(4.15b) $Z_i = \beta_0 + \beta_1 Pi + \beta_2 AGEi + \beta_3 GENDERi + \beta_4 PARTNERi + \beta_5 EDUCLEVELi + \beta_6 AREAi + \beta_7 PARENTBUSS_i + \beta_8 INHERITi + \beta_9 FAMSIZEi + \varepsilon_i$

4.8 Data reliability check

In this study, the statistical package SPSS is used to analyze the data. After entering the data in SPSS, the data should be cross-checked to reduce biases hence to be able to obtain reliable data upon which analyses can be made (Field, 2005). Henry et al. (2000) provide a set of general guidelines that is followed to clean the data. The need for correction of data and the way in which to correct the data depends on the cause of error. Wild codes refer to responses that reveal unrealistic values and it is recommended to correct these values. Consistency checks means that data in the data sheet should provide information in a logical manner. For example when a family has no children in the schooling age, it would not indicate any children attending school. Frequency tests reveal any inconsistent information (Henry et al., 2000:71). To clean the data, the value N.A. (i.e. not applicable) is given to the responses that for logical reasons, would be empty.

Already during field work I was able to check the questionnaires to see if all fields were filled and to check if reliable and logical answers were given. Since I entered the data myself, I could revise the data and detect any inconsistencies. To make sure that all information is valid, the data is cross checked in SPPS and data are checked for missing values and outliers, for example by using a box plot.

CHAPTER 5 Quantitative assessment

5.1 Introduction

This chapter reveals findings and interpretations of the information obtained by the survey. First I will kick off with descriptive information, to detect differences among new and mature borrowers. After that I will present the results of the regression analyses. My goal here is to check whether participation in microfinance has a positive effect on the fulfilment of basic needs.

5.2 Descriptive analysis

A first check for differences between characteristics of new and mature borrowers might create a better understanding of client profile (Henry et al., 2000). Therefore I did a simple t-test to detect whether there are significant differences among borrowers due to participation. For categorical variables I used a Pearson chi-square to test whether there is a significant difference among new and mature borrowers (Field, 2005). The average values of socio-economic, demographic and control variables with related standard errors (in parentheses), together with the p-values of the tests are presented in the table below.

Table 7: Descriptive values variables

Variable	New	Mature	New	Mature	Pearson Chi-square	t-test
	N		*Mean*			
Socio-economic and demographic variables						
P	100	100	.00 (.000)	1.00 (.000)	N.A.	N.A.
AGE	100	100	35.17 (1.201)	40.82 (.958)		**.000**
GENDER	100	100	.93 (.026)	.93 (.026)	1.000	
PARTNER	100	100	.57 (.050)	.74 (.044)	**.011**	
EDUCLEVEL	100	99	1.685 (.0861)	1.298 (.0793)		**.001**
AREA	100	100	.59 (.049)	.53 (.050)	.393	
PARENTBUSS	99	99	.33 (.048)	.24 (.043)	.158	
INHERIT	100	100	.45 (.050)	.30 (.046)	**.028**	
Additional control variables						
DEPRATCHLD	100	100	.4089 (.02399)	.4787 (.02034)		**.028**
EDUCDIST	62	89	.24 (.055)	.36 (.051)	.125	
FAMSIZE	100	100	4.95 (.197)	5.40 (.195)		.106
CHLD5	100	100	.66 (.073)	.59 (.078)		.512
HABITAB	100	100	2.2551 (.15914)	2.6248 (.18718)		.134
WATER	100	100	.75 (.044)	.88 (.033)	**.018**	
TOILET	100	98	.86 (.035)	.90 (.031)	.413	
ELECTR	100	100	.96 (.020)	.98 (.014)	.407	

Table 7 reveals that only the variables age, partner, education level, inheritance, dependency ratio of children and access to water are significant difference at $\rho<0.05$ among the two type of borrowers. The average age is for new borrowers and mature borrowers 35 and 40, respectively. When comparing the relational status of the borrowers, new borrowers tend to live less with a partner than older borrowers do, respectively 57% and 74%. Then, there is a substantial difference in literacy among the two selected type of borrowers. Of the new borrowers 86% knows how to write whereas only 66% of the mature borrowers are literate. This can be explained by the difference in school attendance. 30% of the mature borrowers did not attend primary school, while this counts for only 14% of the new borrowers. Furthermore, more than 40% of the new borrowers completed secondary school; only 28% of mature borrowers finished this level. Comparing new and mature borrowers in terms of inheritance, new borrowers tend to have more heritage goods such as a house, plot or goods[14]. The dependency ratio gives a higher value for mature borrowers, indicating that mature families are represented by a higher number of children.

Habitability refers to the number of people per room (Krishnakumar & Ballon, 2008). In developed countries, the standard for overcrowding is one or more persons per room (Fiadzo et al., 2001:145). Country figures show that for poor people, the average people per room are 2.42. Hence in this perspective new clients as well as mature clients can be considered to belong to the category of being poor since the room density is 2.55 for new clients and 2.62 for mature clients[15].

5.2.1 Educational descriptives

Table 8: Descriptives education

Variable	New	Mature	New	Mature	Pearson Chi-square	t-test
	N		*Mean*			
Education: dependent variables						
ENROL	64	90	2.20 (.143)	2.23 (.122)		.873
EDUCPRIV	64	90	.00 (.000)	.09 (.031)	**.014**	
EDUCEXP	64	90	.0000 (.000)	3.0667 (1.11515)		**.007**

I find very high percentages of children attending school for both types of borrowers, new and mature. On average almost 96% of the children in the schooling age (children between 6 and 18) attend school. This is higher than the enrolment rate for the total country, counting for 95% of the children in school (UNDP, 2007). I argue that a reason why enrolment is not significant is probably because there is almost no variance in the variable. Enrolment in private education and educational expenses are significant. Of the mature households 9% have children enrolled in private schools and educational expenses comprise $3,07 each month. None of the children of new participants are enrolled in private education; all attend public schools for which no tuition fees are charged.

[14] Although I have tried to gather data about the value of inheritance, only 14 observations were obtained with a wide range in values. Therefore, it is not really functional to present the average value of heritage here.

[15] Note that the variable is non-significant among both types of borrowers (see table 7).

5.2.2 Health descriptives

Table 9: Descriptives health

Variable	New	Mature	New	Mature	Pearson	t-test
	N		*Mean*		Chi-square	
Health: dependent variables						
ILLNESS	100	100	.43 (.050)	.35 (.048)	.246	
DOCTOR	42	35	.90 (.046)	.77 (.072)		.124
DOCPRIV	38	27	.24 (.079)	.15 (.070)		.428
HEALTHEXP	42	35	22.7599 (9.0597)	53.8438 (24.0896)		.234

Variables that will be included in the model to detect whether access to health has improved due to participation are found in table 9 above. The table shows that 43% of the households of new borrowers had to cope with at least one of the family members being ill last month (referring to February 2008). For the mature borrowers this was lower on average, namely 35%. It seems easy to deduce that among the mature borrowers less family members got ill last month. A smaller amount of mature members tend to visit a doctor (75.7%), compared to 87.8% of the new borrowers. Even though mature clients visit on average less health care clinics, the expenditure on health is considerably higher, namely $53.84 compared to $22.76 of new clients. However, this difference in average may be explained by the minimum and maximum values representing a wider range for mature borrowers, namely ranging from $0 to $676 whereas for new borrowers the maximum is $347.60 with a minimum of $0.

5.2.3 Housing descriptives

Table 10: Descriptives housing

Variable	New	Mature	New	Mature	Pearson
	N		*Mean*		Chi-square
Housing: dependent variables					
MATWALL	99	100	2.35 (.056)	2.31 (.046)	-[16]
MATFLOOR	100	100	2.23 (.053)	2.07 (.041)	**.017**
MATROOF	100	100	2.13 (.046)	2.21 (.054)	.562
WATER	100	100	.75 (.044)	.88 (.33)	**.018**
TOILET	100	98	.86 (.035)	.90 (.031)	.413
ELECTR	100	100	.96 (.020)	.98 (.014)	.407

New and mature borrowers live in dwellings with similar features, when taking the neighbourhood into account (personal observations, 2008). Of the materials used for house construction, only the choice for floors is proven to be significant. However, more new borrowers (28%) live in houses with high quality floors (i.e. wood or parquet) whereas only 12% of the mature borrowers do so. But in terms of access to public

[16] A Pearson chi-square test is not shown since there are two cells that have an expected count less than 5 and that makes the outcome of the test not reliable.

facilities, mature borrowers seem better off (i.e. average values are higher). However, a Pearson chi-square test reveals that only for access to water a significant relationship is shown regarding type of client at $\rho<0.05$.

5.3 Analysis of results

Even though I found significant differences among borrowers for some of the variables, a change in fulfilment of basic needs is probably not caused by participation in microfinance alone. I therefore suggested to do some regression analyses (see chapter 3 methodology) to find prove for the contribution of microfinance on fulfilment of basic needs. In the next section I will continue with the results of these models and will attempt to interpret the findings.

5.3.1 Participation and education

Table 11: Results education

	$ENROL_i$ Coefficient	$EDUCPRIV_i$ Coefficient	$EDUCEXP_i$ Coefficient
(Constant)	.446	-6.394	-
P	-.059	-18.641	-
AGE	.004	.065	-
GENDER	-.193	-19.023	-
PARTNER	.308*	-.333	-
EDUCLEVEL	-.187*	1.471**	-
AREA	-.132	1.015	-
PARENTBUSS	-.187	-.006	-
INHERIT	.266	1.225	-
DEPRATIOCHLD	3.684***	-4.300	-
EDUCDIST	.113	-.489	-
N	149	149	
Type of model	OLS	Logistic	OLS[a]
Model ρ-value	.000	.005	-
R^2	.379		-
Adj. R^2	.334		-
Cox & Snell R^2		.157	

*** Significant level ρ<0.01; ** Significant level ρ<0.05; * Significant level ρ<0.10

[a] OLS estimation would not be interpretable since the control group has for all observations a value of 0.

Table 11 presents non-significant models for enrolment and attendance of private education (i.e. meaning that the variables included in the model together do explain some change in dependent variable), the coefficient for participation in a SHG is non-significant (i.e. does not contribute to a change). The OLS model to detect changes in educational expenditures has no meaning since all of the observations for new borrowers are equal to zero. This gives biased estimates to the slope of the regression line (i.e. biased parameters). In addition, education expenditures are not normally distributed which forms one of the basic assumptions for OLS. Hence here it is not proven that participation in microfinance contributes to a change in educational attainment of children. Two remarks are noteworthy to mention here. First, education institutions are well developed in the urban areas of Potosí and facilitate easy access to schools that may explain the high enrolment rates (van Dijck, 1999:22). Public primary and secondary education are found within a distance of a maximum of 30 minutes walk (or a 10 minutes bus ride). In the sample taken there is only limited amount of children not attending school, and this concerns only children older than 15. Reasons for these children not attending school is being employed in a fulltime job. Motivation for these

children to work is driven by a lack of interest in education rather than a financial need of the parents (personal interviews, 2008). Hence as a second remark, one could assume that the opportunity cost of sending children to school is quite low (Sebstad & Chen, 1996), that is the cost of sending children to school is lower than the cost of children working.

5.3.2 Participation and health

Table 12: Results health

	$ILLNESS_i$ Coefficient	$DOCTOR_i$ Coefficient	$DOCPRIV_i$ Coefficient	$Ln(HEALTHEXP_i)$ Coefficient
(Constant)	-.626	-2.938*	-7.006	-1.047
P	.328	1.478*	2.159*	-.029
AGE	-.009	.082	.179**	0.090***
GENDER	.336	19.507	.730	-.473
PARTNER	-.625*	.539	-.491	-.057
EDUCLEVEL	.255	.662	.134	-.371
AREA	-.029	.091	1.197	0.256
PARENTBUSS	.256	-.469	1.987	0.523
INHERIT	-.068	1.104	.648	-1.114**
CHLD5	-.100	-.260	-2.076*	-.069
HABITAB	.029			
WATER	-.176			
TOILET	.463			
FAMSIZE		-.065	-.999**	0.869*
N	195	77	65	77
Type of model	Logistic	Logistic	Logistic	OLS
Model ρ-value	.704	.253	.015	0.016
R^2				.269
Adj. R^2				.158
Cox & Snell R^2	.045	.150	.287	

*** Significant level ρ<0.01; ** Significant level ρ<0.05; * Significant level ρ<0.10

The logistic model estimating the effect of participation of microfinance on illness is non-significant. Probably to become ill is determined by more factors than social-demographic characteristics and financial assets of a household.

I decided to use a logistic regression model to see whether microfinance contributes positively to the probability of a household going to a doctor. However, the model turns out to be a non-significant model. This means that a change in outcome (i.e. doctor visit) is not better predicted with the model than without. However, the coefficient for participation is significant at ρ<0.10. The related parameter is positive, indicating that being a mature member (Pi=1) has a positive effect on doctor visit (albeit the model is non-significant).

The logistic model estimating the probability of private consult (instead of public consult) is significant at ρ<0.05. The model predicts almost 29% (Cox & Snell R2) of chance in outcome due to changes in the variables included in the model. Participation has a positive parameter and is proven to be significant at ρ<0.10, meaning that participation in a microfinance program has a positive effect on the probability that a private doctor is visited (instead of a public doctor). This is interesting since the averages for private consults are lower for mature borrowers.

Values for health expenditure are not normally distributed. To obtain normally distributed health expenditures I computed the logistic value for health expenditure and this gives a distribution that approximates more a normal distribution.

Using the log-value of health expenditure as a dependent variable does make the OLS model a significant model at $\rho<0.05$. Note that, regardless the outcomes, the model should be treated with care (adjusted R2 is 15.8%). Participation is not proven to be a significant variable, so I cannot conclude that being a mature client has an effect on health expenditures.

5.3.3 Participation and housing

Table 13: Results housing (I)

	$MATWALL_i$ Coefficient	$MATFLOOR_i$ Coefficient	$MATROOF_i$ Coefficient
(Constant)	2.382***	2.496***	1.622***
P	-.009	-.082	.075
AGE	-.002	-.002	.005
GENDER	.055	-.258*	.356**
PARTNER	.156*	-.069	-.150*
EDUCLEVEL	.041	.106**	.039
AREA	-.032	-.001	-.179*
PARENTBUSS	.076	-.026	-.024
INHERIT	.048	.004	.033
FAMSIZE	-.041*	-.018	.022
N	196	197	197
Type of model	OLS	OLS	OLS
Model ρ-value	.276	.008	.041
R^2	.056	.110	.088
Adj. R^2	.011	.067	.044

*** Significant level ρ<0.01; ** Significant level ρ<0.05; * Significant level ρ<0.10

The OLS model applied to quality of materials used for house construction give significant models (at $\rho<0.05$) for quality materials of floors and roof, the OLS model for quality materials of walls is not significant (see table 13). For both remaining significant models participation in microfinance is not proven to be significant, thus does not contribute statistically to a change in outcome (i.e. use of better quality materials for floors or roof).

Table 14: Results housing (II)

	$WATER_i$ Coefficient	$TOILET_i$ Coefficient	$ELECTR_i$ Coefficient
(Constant)	2.597*	-.342	19.298
P	-1.170**	-.586	-1.343
AGE	-.005	.036	-.007
GENDER	-.428	18.299	-1.732
PARTNER	-.045	.089	1.625
EDUCLEVEL	.483*	1.384**	1.001
AREA	-.164	.845	.056
PARENTBUSS	-.464	-.256	-17.645
INHERIT	-.098	-.006	.130
FAMSIZE	-.071	-.104	.213
N	197	195	197
Type of model	Logistic	Logistic	Logistic
Model ρ-value	.169	.001	.298
Cox & Snell R^2	.063	.134	.053

In table 14 it is also depicted that no significant model is shown for access to water and electricity, but for having a toilet it does (at $\rho<0.05$). However, participation in microfinance is also here not proven to be significant. In the non-significant model for access to water, participation is shown as a significant variable, however the coefficient indicates a negative probability and therefore, at least no positive, effects can be attributed to microfinance.

5.4 Interpretation of the results

In the interpretation of the results it is important to take into account the information on client exit in order to prevent under- or overestimation of the impacts. From the personal interviews I got insight in the main reasons for borrowers to leave a SHG. These motivations are represented in the box3 below. Borrowers confirmed that borrowers leave mainly because of repayment problems. This means that the better-off borrowers are the remaining ones in the SHG. This may lead to overestimation of the impact.

Box 3: Reasons to dropout

Reasons for expulsion:

- Failure to repay loan

Irregular attendance to obligatory meetings

Reasons for voluntary dropout:

- Failure to repay loans
- Other NGOs provide more interesting services
- Family problems
- Problems with other members

Source: personal interviews, 2008

I found no prove for a significant effect of microfinance on education for children, for none of the indicators. Also for indicators measuring housing improvements, I was not able to detect a positive contribution due to microfinance. In the light of these non-significant results, it is not quite logical to believe that there is overestimation of the impact. Indicators measuring access to health care, represent a lower average percentage of household members becoming ill for mature than for new clients. However a statistical significant effect of microfinance is not proven. The probability of visiting a doctor (in case of illness) has a significant parameter; however the complete model is not significant. Yet I did find prove that private doctor consults are positively affected by microfinance participation.

CHAPTER 6 Conclusion

6.1 Introduction

I will conclude with the main findings of this thesis, related to the objective of this research: to verify whether participation in a SHG of Foncresol delivers benefits in terms of fulfilment of basic needs of borrowers. In order to gain insight in changes in fulfilment of basic needs of poor urban households in Potosí, I carried out a household survey, supplemented by semi-structured interviews with borrowers, qualitative interviewing of credit officials, literature research and personal observations. I gathered information on socio-economic, demographic and additional control variables for two types of clients: new and mature. New borrowers recently received a first loan, whereas mature borrowers have been provided at least six times a loan (see chapter 3 for considerations for this approach). By use of statistical analysis I tried to assess differences in educational development of children, access to health care and in status of housing conditions.

6.2 Conclusion

In the first place, borrowers differ in socio-economic characteristics. Variables that significantly differ among the two types, new and mature, borrowers are age, living together with a partner, education level and possession of inheritance. Mature borrowers are older, have more children and represent a higher percentage of living together with a partner than new borrowers. New borrowers on the other hand have received higher levels of education and have more often inheritance goods. The main empirical findings of my statistical analysis on the three aspects education, health and housing are listed here.

I found no proof for the first hypothesis –a positive effect of microfinance on educational development of children– to be true. On average 95% (in rural and urban areas) of the children in the schooling age of 6 to 18 attend school in Bolivia. The school enrolment rate of children of both type of borrows of Foncresol is higher than the average percentage of the country, counting for almost 96% of the children going to school. OLS estimation does not show a positive effect on the outcome variable (i.e. enrolment) due to participation in microfinance. Comparing average numbers for private education, mature borrowers have more children enrolled in private institutions. However, also here a logistic regression does not provide proof for a significant contribution attributed to microfinance. I would say there is no indication that membership in microfinance has an impact on children's education.

The models to test the second hypothesis –whether participation in microfinance contributes positively to access to health care facilities– showed a significant positive parameter for private doctor consults due to participation. In other words, participation in microfinance increases the probability that a household chooses to visit a private doctor (instead of a doctor of a public clinic). Averages also show that mature members have less ill family members. However, of the households with sick family members, more new borrowers visit a doctor than do mature borrowers. The probability that a doctor, either a public or a private one, is consulted does not reveal that participation is significant.

Features of houses of both type of borrowers are similar and the area in which borrowers live are not significantly different. Though, relative percentages show that more new borrowers live in houses with higher quality materials. Higher quality materials refer to a house with roof tiles instead of zinc or with

parquet floors and no cement. Comparing the averages of households having access to amenities such as water, toilet and electricity, mature borrowers are better off. Nevertheless logistic regression models show no evidence that participation in microfinance contributes significantly to increased probability of having access to public facilities water, toilet and electricity. OLS estimations of quality materials used for house construction neither exposes a significant positive effect due to participation in microfinance. So for the third hypothesis –housing conditions are positively affected by program participation– I was not able to detect a positive effect because of microfinance.

The given facts show that, according to my analysis, almost no prove is found that participation in microfinance does contribute positively to fulfilment of basic needs. In other words, I cannot conclude that borrowing in a SHG of Foncresol is beneficial to poor urban households of Potosí in terms child education, doctor visits and housing improvements. Nevertheless, it is proven that participation in microfinance has a positive effect on private doctor visits instead of public doctors.

CHAPTER 7 Discussion

7.1 Introduction

In this final chapter I would like to put some attention to the fact that I found little proof for microfinance to have a positive effect on welfare aspects of the urban poor in Potosí. I will kick off with reasons that in my opinion contributed to the few significant effects of participation in microfinance obtained. I will also provide the reader with some additional insights gained from literature that may explain non-significance. Finally, I will present some ideas on methodological considerations for future research in impact evaluation, of which I hope this thesis will contribute to.

7.2 Urban area settings

For me, it is of interest to verify what reasons explain the non-significance of my results. I consider the urban settings of Potosí as the main reason. The scope of my research was only on clients of Foncresol, but Foncresol is just one of the operating MFIs in the urban area of Potosí. To illustrate, 40% of the chosen control group has a second loan provided by another MFI. In order to be able to predict what contribution can be attributed to microfinance, especially in a complex setting such as an urban area, Karlan (2001) suggests to create understanding of the broader context of the area where the microfinance institution operates. With this Karlan (2001:9) refers to "the selection process, economic environment and institutional dynamics". Also Coleman (1999 *cited* in Armendáriz de Aghion & Murdoch, 2005) advocates that results obtained should always be interpreted in perspective of the context of the research area with special focus to the broader financial landscape. Taken the financial landscape into account in the analysis of microfinance services of Foncresol, credit is already quite accessible to urban dwellers because of low entrance requirements of Foncresol and the presence of many other MFIs in the area. Hence the presence of many MFIs makes it difficult to detect what part of changes in outcome (i.e. on education, health and housing) is attributed to operations of Foncresol. Moreover, it is not only of importance to see whether microfinance works, it might even be as interesting under what circumstances microfinance is considered to be an effective tool. Also therefore I consider the inclusion of contextual factors as important.

Urban settings do not only complicate the attribution of microfinance to a change in outcome due to presence of many MFIs, also due to presence of other institutions such as schools. In the urban area of Potosí school density is high (i.e. maximum of 30 minutes walk to encounter a primary or secondary school) and public schools are free of charge in Bolivia, hence creating high opportunity costs for child labour in the urban setting. In other words, it is more interesting to send children to school than to work – and this is illustrated by the high enrolment percentage of 96% (household survey, 2008). In the urban area, I argue that it is not the lack of financial resources *per se* determining school attendance. In addition, borrowers confirmed that it is a lack of interest that forms the major reason for children not to attend school (personal interviews, 2008). In fact, since I doubt whether credit is the main determinant for school enrolment, I reconsider whether a problem of attribution may be considered here (i.e. a plausible cause-and-effect relation). Due to already high opportunity costs for child labour and lack of motivation as main reason for no attendance I do not expect microfinance to contribute to a change in school enrolment. Moreover, I expected enrolment in private education as a good indicator for educational attainment of children. However, borrowers are of the opinion that private education is expensive and does not deliver additional

benefits more then fewer strikes. It is even commonly agreed upon that the quality of education is better in public education. Because of my misinterpretation of the importance of private education, a problem of attribution comes in. Since I cannot be sure that microfinance explains a change in outcome on school enrolment (either in public or private education), I conclude that there may be a problem of attribution that should be addressed.

Also for doctor visits a problem of attribution may exist. In the urban areas hospitals are free of charge and relatively close. From personal interviews (2008) I know that households often do not visit a doctor since they expect to know themselves what kind of disease one has and medicines of the pharmacy are considered to be sufficient for recovery. Only in some exceptional situations a lack of money does not allow for a doctor visit. But in emergency situations, households manage to overcome the problem of finance, either by borrowing from family members or other relatives. Based upon these facts I argue that financial resources are not explicitly the main determinant for households' decision to consult a doctor. For me, it turns out that it is not clear whether the microfinance intervention is related to a change in access to health. I therefore see a need to reconsider the problem of attribution.

7.3 Microfinance not as a single credit provider

Morduch (2002) argues that there is sufficient prove to state that microfinance services offered in combination with other services is beneficial to clients. *Among others* Gobezie & Garber (2007), Sebstad et al. (1996), Tilakaratna (2006) and Khandker (2001) caution also that it is not credit alone that improves living conditions of households. Qualitative interviewing of Tilakaratna (2006:14) reveals that poor clients face a difficulty in gaining market access rather due to a lack of information, training and technology than to a lack of credit alone. Tilakaratna talks about the provision of "credit plus" so that new small business just set up by the poor have more chance to become sustainable profitable enterprises. Khandker (2001) mentions investment in human capital as important means to empower the poor. Sebstad et al. (1996) advocate that participation in microfinance should go accompanied with practicing leadership skills, sharing of information and training in finance. Gobezie & Gardner (2007) refer, next to Business Development Services, also to health education.

7.4 Challenges in further research

Although decisions related to my analysis were well-considered, I would reconsider some decisions in future research.

A first methodological consideration I would think of is the inclusion of dropouts in the sample (Karlan, 2001; Armendáriz de Aghion, 2005). In this thesis it was, for practical reasons, not possible to include clients of Foncresol that already had left a SHG. However, I would consider this as a requirement for impact assessment. Gathering information on the features of the dropouts forms a proper basis for judgment of obtained results (i.e. judging whether results tend to under- or overestimate the effect of microfinance). In his work Karlan (2001:9) he suggests "to include observable variables such as distance to the meeting place, number of family members in the lending group, age of business, history of prior credit use and history of prior savings". These features will help to calculate the chance for dropout.

Second I would reconsider the choice of control group. I still believe that new clients can form a proper control group, but the fact that many new clients have additional loans, complicates the comparison of borrowers. Therefore it would be necessary, in my opinion, to rethink of the composition of the control sample. A solution could be to start with a greater sample size so that, after all information is obtained, the borrowers receiving a second loan can be ruled out.

In relation to the problem of attribution detected, for future research I would suggest not to treat the AIMS conceptual framework as a black box. A better insight in the functioning of the impact mechanism in the context of Potosí would possibly have enabled me to solve the problem of attribution (i.e. would have provided me with clearer information about cause-and-effect).

As I already mentioned in the beginning of this section, I would put greater attention to the context of households (van Dijck, 1999; Karlan, 2001). Thus not only the household economic environment but also the broader institutional environment so that it will be made easier to estimate what contribution is attributed to a microfinance intervention. Sebstad et al. (1996:16) support the emphasis of the financial environment, i.e. interest rates, program design and performance, that may create better understanding of how the context influences outcomes. In the urban area of Potosí I considered village characteristics to be the same since all households are relatively close to schools, hospitals and had the possibility to be connected to electricity and water network, even in the newer suburban areas. However, after implementing this study, I discovered there are in fact some additional variables I should have had included in the evaluation that probably may have had changed the outcomes. With regard to access to health care, in my opinion, a better insight in the supply of health care facilities would have been gained through variables such as distance to hospitals and prices of health care. The inclusion of supply variables might have had changed outcomes. Talking about the health status of borrowers, an additional factor to measure wellbeing of humans in terms of illness is food security; food security may contribute to relative health of a person. To determine food security quantity (i.e. expenses) and quality (i.e. nutritional value) of a household diet should be measured (Gobezie & Garber, 2007; MkNelly & McCord, 2002). For housing I think the analysis would have provided different outcomes when variables on additional wealth would have been included in the model. It makes a difference whether one possesses a house or rents a house; renting a house means a considerable expenditure each month. Wealth indicators (e.g. income) may therefore create a proper baseline to compare changes related to housing. However, as I mentioned already as a limitation, improvements in terms of housing are difficult to measure since these concern long-term effects. Moreover, a comparison is difficult, since I would expect borrowers renting a house to consider buying a house rather than investing in improvement of a rented house. Nevertheless, in future impact assessment I would include the initial wealth position of borrowers in the quantitative analysis as it may form a better baseline to evaluate changes created by microfinance. Tilakaratna (2006) especially looked at the attribution of microcredit on income among different income groups. He considers the information about the different quintiles as important knowledge to take into account in the design of microfinance as a more effective financial instrument. In line with Tilakaratna, I argue that some positive contributions, such as visits to a doctor, may not be seen because financial capital is not included in the model. A decision whether or not to visit a doctor may partly be determined by the possession of sufficient financial resources. Decisions concerning education (e.g. whether to send a child to school or not) may also be determined by the level of economic resources. And similar, little effect shown on improvement of housing may also be because a classification of poor in terms of wealth is not taken into account. Based upon my findings from qualitative interviews (2008) I argue that the initial wealth status of borrowers forms a major determinant of the

decisions families are able to take. Hence as long as differences in impact are not measured across different types of socioeconomic poverty levels of borrowers, it will be difficult to predict how the outcome is affected by microfinance (Sebstad & Chen, 1996:21). However, as Hulme & Mosley (1996) caution, complex empirical findings will be complicated to interpret in a simple model, since baseline information on the economic and social situation of borrowers and the wider economic environment they live in continuously fluctuate.

7.5 Microfinance: a step forward?

Although no significant effect of participation is measured in the quantitative analysis of this research, MFIs such as Foncresol do facilitate access to credit for many poor (small entrepreneurs) that are in need of small credit against reasonable interest rates. To come back to the question whether microfinance brings people a step forward? I would say yes, provided that microfinance should go along with other services such as capacity building courses (i.e. alphabetic or business related courses). Credit is only one asset that poor people lack. To break through the vicious circle of poverty I believe that a complete box of ingredients (credit, education, health care and access to opportunities) is needed. For me, only then poor people are given the ability to benefit from available opportunities.

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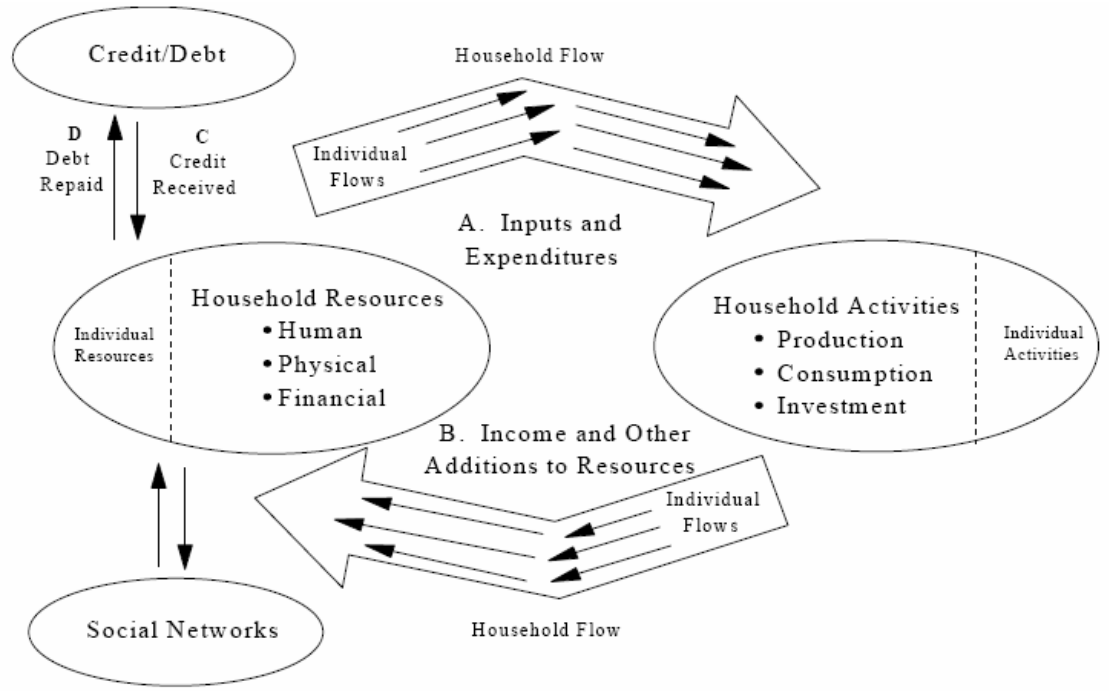
Appendixes

Appendix 1	HHEP model
Appendix 2	Questionnaire
Appendix 3	List of variables

Appendix 1 Conceptual framework of the Household Economic Portfolio (HHEP) model



Appendix 2 Questionnaire

Febrero 2008

INTRODUCCIÓN

Quisiera invitarle a contestar un cuestionario sobre sus experiencias del crédito de Foncresol y su vida aquí en la comunidad. El cuestionario tarda entre 20 minutos y una media hora.

Como estudiante de la universidad, espero poder usar los resultados para entender mejor la experiencia de los micro créditos.

Su participación es **voluntaria.** Si usted está de acuerdo en participar, la información que usted nos proporciona será completamente **confidencial.**

Los datos recogidos a través de esta encuesta serán utilizados sólo para fines estadísticos para cumplir los objetivos de este estudio. En caso de presentar o publicar los resultados, los datos serán presentados en forma agregada así que no será posible individualizar ni identificar ninguna casa o persona por sus respuestas.

Si tiene algúna duda en formular las respuestas por favor preguntela.

Gracias de antemano para su cooperación.

SECCIÓN 0: IDENTIFICACIÓN

No de formulario | codigo comunidad | codigo caja comunal

Ubicación de la vivienda

Comunidad

Nombres y Apellidos de Ud.

Primer Nombre	Segundo Nombre	Primer Apellido	Segundo Apellido

Datos del Encuestador

Primer Nombre	Segundo Nombre	Primer Apellido	Segundo Apellido

Visita | mes | dia

SECCIÓN 1: IDENTIFICACIÓN DE SU FAMILIA

Miembros de la vivienda: personas que vivían por lo menos 3 meses del último año en la vivienda y comparten comidas y dinero. Si tiene dudas si alguien forma parte de la vivienda, por favor preguntala.

Quisiera hacer una lista compléta de todas las personas que viven habitualmente [illegible] alimentos en su casa. Por favor llenar el cuadro 1.1:

1.1 COMPOSICIÓN DE SU FAMILIA

	Codigo personal	Por favor ponga los nombres de todos los miembros de su familia o pareja, sus hijos, papas o otros familiares que habitualmente y comparten sus alimentos e Luego formular las preguntas para cada miembro de su fa Ud. ha mencionado. Para los miembros de la familia que tienen más que 10 años, por favor formular también las preguntas 2A-2C.	¿Cual es la relación que [illegible]d. con esta [illegible]a?	¿Cual es el sexo de ...?	¿Cuantos años [illegible] pu[illegible] le[illegible]?	¿...	nivel de último [illegible] que	¿Cuál es su ocupación principal?	¿Además de trabajar en su ocupación primaria, tuvo otro trabajo durante el ultimo año?	¿Además de trabajar en su ocupación secundaria tuvo otro trabajo durante el ultimo año?
		nombre y appelido	CODIGO	CODIGO	años	CODIGO	CODIGO	CODIGO	CODIGO	CODIGO
		1A	1B	1C	1D	1E	1F	2A	2B	2C
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										

1=participante 2=pareja 3=hijo(a) 4=padres, suegros 5=yerno/nuera 6=nieto(a), bisnieto(a) 7=hermano(a), cuñado(a) 8=otros parientes del jefe 9=sin parentesco 10=empleada domestica 11=pensionista 12=otro, especifica r _____

1=mujer 2=hombre

1=leer y escribir 2=solo sabe leer 3=no sabe leer ni escribir

0=ninguno 1=preescolar 2=educación de adultos 3=primaria 4=secundaria 5=técnico básico 6=técnico medio 7=técnico superior 8=universitario 9=post grado

0=no tiene trabajo 1=trabajo agropecuarios en propia finca 2=obrero agricola 3=obrero industrial 4=empleado servicio domestico 5=obrero otro 6=negocio propio commercio 7=negocio propio procesamiento de productos 9=negocio propio servicios (albañil, carpintero, electricista) 10=profesional 11=estudiante 12=labores domesticas 13=otro, especificar _____

USO LOS CODIGOS DE LA PREGUNTA 2A

USO LOS CODIGOS DE LA PREGUNTA 2A

NO Siguiente persona

NO Siguiente persona

1=si, mis papas 2=si, mis suegros 3=ambos 1 y 2 4=no

3 ¿Sus padres o sus suegros tenían negocios propios? CODIGO

SECCIÓN 2: SU VIVIENDA

1 A ¿En qué tipo de vivienda vive su familia?
1=casa o quinta
2=apartamento o pieza
3=cuarto en cuartería
4=local usado como vivienda (negocio, bodega, etc)
5=otro tipo, especificar____
CODIGO

B ¿Cuantas habitaciones tiene su vivienda? No incluya cocina, baños, pasillos y garajes.

C ¿Cuantas habitaciones son usadas por su familia para vivir?
1=si
2=no, es alquiler
0=no pago
CODIGO

2 A ¿La casa está propiedad de la familia?

B ¿Cuánto se paga por mes? O si tuviera que pagar por el alquiler de la vivienda que ocupa su familia, ¿cuánto tendría que pagar al mes?
Bs.

3 ¿Me podría decir de qué material está construida su vivienda? Llenar el cuadro 2.1.

	3A	3B	3C	3D	3E	3F
	¿De qué material predomina en las paredes exteriores?	¿En qué estado se encuentra los paredes?	¿De qué material predomina la construcción del techo?	¿En qué estado se encuentra el techo?	¿De qué material predomina la construcción de los pisos?	¿En qué estado se encuentra los pisos?
	CODIGO	CODIGO	CODIGO	CODIGO	CODIGO	CODIGO

1=ladrillo o bloque de barro
2=bloque de cemento o concreto
3=adobe o taquezal
4=piedra cantera
5=madera y concreto
6=otro, especificar___
1=bueno
2=regular
3=malo
1=calamina
2=teja de barro
3=teja o similares
4=tejidos o desechos
5=otro, especificar___
1=madera, tambo
2=semi-adosado
3=ladrillo de barro
4=ladrillo de cemento, terrazo
5=tierra
6=otro, especificar_

4 A ¿Su familia tiene acceso a agua potable dentro de su vivienda?
1=agua potable dentro de la vivienda
2=agua potable fuera de la vivienda
3=puesto público
4=pozo público o privado
5=río, manantial o quebrada
6=camion, carrejo o pipa
7=de otra vivienda/vecino/empresa
8=otro, specificar_____
CODIGO

B ¿Con qué tipo de servicio higiénico cuenta su familia?
1=letrina sin tratar
2=letrina con tratamiento
3=inodoro
4=no tiene → Pregunta 4D
1=dentro de la vivienda
2=fuera de la vivienda
CODIGO

1=si, todo el día
2=si, parte del día
3=no
CODIGO

C ¿Dónde está ubicado el servicio higiénico?
1=si, telefono domiciliar
2=si, telefono celular
3=si, ambos
4=no
CODIGO

D ¿Ud. tiene luz (energía eléctrica) en su casa?
1=si
2=no
CODIGO

1=si, terreno
2=si, casa
3=si, muebles
4=no, ningún tipo de bienes → Sección 3
al servicio
CODIGO

0=no sé
CODIGO

5 A ¿Su casa o una casa anterior viene por herencia?

B ¿Tiene otros bienes que vienen por herencia?
CODIGO

C ¿Cuánto piensa Ud. que es el valór de esta herencia?

SECCIÓN 3: COMPRA DE ALIMENTOS

1 Después sigue una lista con los principales alimentos de consumo. Por favor, indica si su familia los compró en los últimos 15 días o los obtuvieron sin tener que comprarlos porque los producen, se los dieron como pago por el trabajo de algún miembro del hogar, se los regalaron o lo tomaron del negocio.

3.1 COMPRA DE ALIMENTOS LOS ÚLTIMOS 15 DÍAS

Por favor responde a las preguntas 1A-1D para cada alimento de consumo.
1=si, lo compró
2=si, lo produció
3=si, lo obtuvo
4=no → Siguiente producto

Durante los **últimos 15 días**, ¿algún miembro de su familia compró o obtuvo este producto?

¿Cada cuánto compra o obtiene este producto?
1=diario
2=semanal
3=quincenal
4=mensual
5=trimestral
6=semestral
7=anual

¿Qué cantidad de este producto compra o obtiene cada vez?
POR FAVOR INCLUYA UNIDAD DE MEDIDA

¿Cuánto pagó en total por esta cantidad que compró?
o
¿Cuánto tendria que pagar por esta cantidad si tuviera que comprarlo?

	Producto (alimento)	1A	1B	1C	1D
		CODIGO	CODIGO	cantidad y unidad de medida	valor
1	Arroz				Bs.
2	Fideos				Bs.
3	Papas				Bs.
4	Chuño				Bs.
5	Trigo maíz				Bs.
6	Harina				Bs.
7	Leche de vaca				Bs.
8	Leche en polvo				Bs.
9	Carne (charque)				Bs.
10	Carne de res				Bs.
11	Carne de cerdo				Bs.
12	Carne de pollo o gallina				Bs.
13	Atún, sardinas				Bs.
14	Jamón, salchichas, mortadela				Bs.
15	Manteca				Bs.
16	Queso				Bs.
17	Choclo, zanahoria, habas				Bs.
18	Repollo, lechuga				Bs.
19	Tomate, cebolla, pepino				Bs.
20	Ajo, perejil				Bs.
21	Condimentos				Bs.
22	Huevos				Bs.
23	Aceite				Bs.
24	Vinagre				Bs.
25	Mostaza, mayonesa, ketchup				Bs.
26	Pan				Bs.
27	Galletas				Bs.
28	Cafe instantaneo (nescafé)				Bs.
29	Platano				Bs.
30	Frutas				Bs.
31	Azúcar				Bs.
32	Gaseosas/agua mineral				Bs.
33	Comidas y bebidas preparadas fuera de su casa				Bs.
34	Otro, ¿cuáles?				Bs.

SECCIÓN 4: EDUCACIÓN

Por favor llenar el cuadro 4.1 sobre el tipo de educación de su familia, los gastos y la asistencia en las clases.

4.1 EDUCACIÓN DE LAS PERSONAS MÁS QUE 5 AÑOS

Codigo personal	ASISTENCIA	TIPO DE EDUCACIÓN			DISTANCIA	Codigo personal	INASISTENCIA	
	¿Cuántas personas de su familia que viven habitualmente en su c… asistirán a algún tipo d… educación después las… vacaciones? ¿Quién(es) son? Por favor ponga los nombres y responda a las preguntas 1A-2E para cada persona.	¿En qué tipo de centro educativo …ía?	¿Cuánto es la cuota **mensual** que cobra la escuela?	¿Cuenta la escuela con un programa de …limentación?	¿Qué distanc… de la viv… al centr… educati…		…ntos hijos en la …de 5-18 años …iven en su casa …istirán a la …ela o colegio …nés las …ciones? …en(es) son? …avor ponga los nombres y responda a la pregunta 3B	¿Por qué estos hijos no van a asistir las clases?
	nombre	CODIGO	CODIGO	CODIGO	CODIGO		nombre	CODIGO
	1A	1B	1C	1D	1E		2A	2B
			Bs.					
			Bs.					
			Bs.					
			Bs.					
			Bs.					
			Bs.					
			Bs.					
			Bs.					

SECCIÓN 5: SALUD

¿Cómo es la salud de la familia viviendo en su casa? Por favor llenar el cuadro 5.1

5.1 SITUACIÓN DE SALUD DE SU FAMILIA

Codigo personal	ENFERMEDADES O ACCIDENTES		CONSULTA			GASTOS			NO CONSULTA	SEGURO
	¿El mes pasado … alguien de su fa… se accidentió o … alguna enferme… ¿Quién era? Por favor ponga … nombre de la pe… y responda a las… preguntas 1A-1H … para cada persona	…fermedad o … tenía?	¿Para esta enfermedad ha usado	¿Consultó …. por la enfermedad o	¿Dónde atendieron al paciente?	¿Cuánto pagó por transp… de ida y v… para llega… consulta?	¿Cuánto pagó …	¿Cuánto gastó en medicamentos para la … e? Cuando ha respondido a la última persona Pregunta 3	¿Porqué no consultó?	¿Su familia está beneficiado por algún seguro de salud?
	nombre	CODIGO	CODIGO	CODIGO	CODIGO	valor	valor	valor	CODIGO	CODIGO
	1A	1B	1C	1D	1E	1F	1G	1H	2	3
						Bs.	Bs.	Bs.		
						Bs.	Bs.	Bs.		
						Bs.	Bs.	Bs.		
						Bs.	Bs.	Bs.		

SECCIÓN 6: CRÉDITO

1 A ¿Cuál es su función dentro de la c… comunal?

1=presidenta(e)
2=tesorera(o)
3=secretaria(o)
4=miembro de base

B ¿Hace cuánto tiempo está en esta función?

C ¿Cuánto es su crédito de Foncresol?

D ¿Cuántas veces ha c… Incluya… …avía…

MÁS QUE UNA RESPUESTA POSIBLE

1=sus negocios
2=producción agropecuaria
3=mejoramiento de la casa
4=fiesta o ceremonia
5=comida para la familia
6=educación
7=salud
8=ahorrar (aparte del ahorro del Foncresol)
9=otro, especificar ____

USO UNO DE LOS CODIGOS DE LA PREGUNTA 2A

2 A El últ… préstamo d… Foncresol, ¿para qué… usa?

CODIGO

CODIGO(S)

B ¿Qué es el destino principal del préstamo?

CODIGO

Quisiera saber sobre su préstamo y ahorro, formular las preguntas en el cuadro 6.1.

6.1 PRESTAMO Y AHORRO

¿A parte del …éstamo de …ncresol …tiene otro …	¿De qué instituciones o … este	¿Aparte del ahorro de Foncresol tiene … ahorro?	¿En qué tipo de institución ahorra?	¿Cuánto ahorró el mes pasado en este fondo?
1=si 2=no → Pregunta 4A	1=si 2=no → Pregunta 5	0=no sé		
1=banco privado 2=banco estatal 3=financieras 4=tarjeta de crédito 5=cooperativa ahorro/ crédito 6=asociación de productores 7=banco comunal 8=ONG 9=amigos/parientes/ vecinos 10=otro, especificar___	1=banco privado 2=banco estatal 3=financieras 4=cooperativa ahorro/ crédito 5=asociación de productores 6=banco comunal 7=ONG 8=en su casa 9=otro, especificar__			
CODIGO	CODIGO	CODIGO	CODIGO	valor
3A	3B	4A	4B	4C
				Bs.

5 Fin de cuestionario **¡MUCHAS GRACIAS!**

¿Tiene alguna pregunta para mí?

Appendix 3 List of variables

Variables indicating socio-economic status	
ID code	Each household member receives a separate identification number that is used throughout the questionnaire.
Participation	A value of 0 is given to households belonging to the group of new borrowers and a value of 1 to mature borrowers.
Age	Age gives the value of age for each of the household members. In case the age of an older household member is unknown, the approximate age is given.
Gender	The gender can either be female or male and is indicated by a dummy (0=male, 1=female).
Borrower has a partner	This variable reveals whether the borrower has a partner or not, therefore a dummy is created (0=no, 1=yes).
Average education level	This variable has a sequenced value. The higher the value, the higher the level of completion.
Area	Area refers to the area in which a household lives, this can either be in a suburban neighborhood (coded as 1) or urban area (coded as 0).
Parents have a business	This indicator indicates whether parents or parents in law of the borrower have (had) a business.
Inheritance	With a dummy is indicated whether a household possesses inheritance (0=no, 1=yes).
Family size	This variable counts all the household members that are considered to form one household.
Dependency ratio children	This variable gives the relative percentage of children in a family and is calculated by dividing the number of children in a family by the family size.
Main occupation	This is the type of activity that a household member does on a daily basis.
Second job	This variable tells which second job a household member has.
Third job	If a household member has a third job, this variable tells what job that is.
Literacy of borrower	This indicator refers to the ability to read and write of the borrower.
Number of loans obtained	This variable reflects how many times a borrower has obtained a loan from Foncresol.
Number of rooms	In this variable the number of rooms used by the family as living quarters are summed up.
Habitability	Habitability reflects the density of persons per room (Krishnakumar & Ballon, 2008) and is calculated by dividing the number of rooms by the family size.
Food expenditures	This variables measures how much is spend on food per household per month.

Additional control variables	
Distance to education	This variable is measured by using a dummy, where a value of 0 indicates that the educational institute is very close (i.e. less than one kilometer) and a value of 1 reflects that the school is more than one kilometer away.
Children under 5 years in family	A dummy variable is created to indicate whether a household there is family member younger than 5 in the household (0=no, 1=yes).
Ownership status	Ownership status reveals whether the house a household lives in is its own house.

Dependent variables for education	
Enrolment of schooling age children	Enrolment reflects the percentages of children of a family enrolled in school. The value for this variable is obtained by dividing the number of children (age 6-18) in a family by the number of children (age 6-18) attending school.
Children in private education	This variable gives the amount of children attending private education per household.
Expenditure on education for children	This variable reflects how much a household spends on education for children per month.
Adults attending education	The number of adults that attend education is reflected in this variable.
Adults in private education	This variable counts the number of adults that attend private education.

Dependent variables for health	
Sick household member	This variable indicates whether a household has to cope with ill family members the last month (referring to February 2008).
Doctor consult	This variable gives insight in whether a household visits a doctor when having (a) sick family member(s) in the household for which a dummy is created (0=no, 1=yes).
Private consult	When a doctor is consulted, private consult reveals whether a private doctor is consulted and for that a dummy is used (0=no, 1=yes).

Dependent variables for housing	
Access to drinking water	The source of drinking water is determined by local conditions and in general the water from the tap is not consumed without boiling. This variable reflects whether a family has a tap inside (considered as access to drinking water) and therefore a dummy is used (0=no, 1=yes).
Type of latrine	The variable type of latrine reveals the quality of the toilet. Here, a dummy is used for either having a toilet (=1) or not (=0).
Access to electricity	Access to electricity reveals whether a household is connected to the provision of electricity. Households that have access get value 1 and households not connected get value 0.
Type of material walls	The type of material used for the walls gives an impression of the quality of the materials used for housing.
Type of material roof	The type of material used for the roof gives an impression of the quality of the materials used for housing.
Type of material floor	The type of material used for the floors gives an impression of the quality of the materials used for housing.