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Does Microcredit Reduce Poverty?

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Abbreviations

CIA	US Central Intelligence Agency
IMF	International Monetary Fund
LA	Latin America
MFI	Microfinance Institution
MIX	Microfinance Information Exchange
OLS	Ordinary Least Squares
PPP	Purchasing Power Parity
SSA	Sub-Saharan Africa
UNCDF	United Nations Capital Development Fund

Figures and Tables

1. Introduction

Despite wide-ranging efforts, poverty still persists in the world. As many as 2.6 billion people live on less than two dollars a day. Sub-Saharan Africa (SSA) is the region worst affected by extreme poverty – according to the World Bank, more than half the SSA population lives on less than 1.25 dollars a day (World Bank 2008).

Theory and research assert that a well functioning financial sector is important to increase income and reduce poverty, but according to the United Nations Capital Development Fund (UNCDF) more than 90 percent of the population of the least developed countries is excluded from the formal financial sector.

Microfinance institutions (MFIs) try to remedy this and make credit accessible to poor people as well by using methods that distinguish them from conventional banks. The questions are 1) if these mechanisms are enough to rectify the market failures of the financial sectors of the developing world and 2) if it makes a big enough difference to have an impact on national poverty.

Microcredit has indeed received a lot of attention as an efficient way to alleviate poverty and 2005 was proclaimed the "International Year of Microcredit" by the UN. An important part of its appeal is that microcredit can give rise to synergy effects. It can raise income, allow people to diversify their production and help them smooth consumption over time. A more inclusive financial sector can also induce growth which optimally will allow governments to expand social services that can alleviate poverty.

However, recent research implies that the results are ambiguous. There are indications that microcredit does not benefit those who need it the most. And even if it does, it is not certain that it will lead to much higher incomes. For example a high degree of corruption or bad infrastructure can dampen the effect of the investment.

More empirical studies are necessary to offer policy makers, governments and organizations direction about how to proceed with microcredit schemes; there is a need for a more comprehensive analysis of the impact of microcredit on national poverty. Much of the existing research concentrates on a specific country or region to evaluate the effect of microcredit, while other studies compile the results of existing country studies to investigate any possible

patterns. A common feature is that they investigate poverty at the household or individual level.

The specific contribution of this study is the quantitative analysis that covers a wide range of, primarily developing, countries engaged in microcredit. The results are inconclusive, but indicate that microloans, though probably beneficial in other ways, up to date have had little effect on national poverty.

1.1 Purpose and Outline of the Study

The purpose of this study is to investigate whether microcredit has any effect on national poverty. To accomplish this, a quantitative data analysis has been conducted using an extensive dataset with observations from 107 countries over a period of eleven years. The question this study wishes to answer is:

- Has microcredit reduced national poverty?

The hypothesis is that microcredit has a positive effect on GDP per capita and contributes to reducing poverty.

Section 2 brings up the concept of poverty and how it can be measured. In section 3 the financial sector and its market failures are analyzed. The discussion offers a brief review of theories on the subject and discusses the difficulties associated with developing countries' financial sectors. In section 4 the possible solution of microcredit and its possible effects on poverty are investigated. The next section contains the empirical data analysis and the results it yields. Section 6 discusses these results and points back to the previously mentioned theories and research conclusions to get an idea about what causes this outcome. A summary follows in the seventh and final section that concludes the study.

2. Poverty

With the UN development goal to reduce poverty by half from 1990 to 2015, there has been an increased focus on poverty in the debate. This has also drawn attention to the need for more practicable definitions and measurements.

2.1 What Is Poverty and Can It Be Measured?

To analyze the impact of a more inclusive financial sector on poverty, it is necessary to discuss the concept of poverty. The World Bank defines poverty as "pronounced deprivation in well-being" (World Bank 2010). A straightforward description no doubt, but is this view of poverty possible to measure? In order to be able to analyze development and any progress made in poverty reduction, it is inevitable to simplify the complex reality and the concept of poverty. A common way to do that in economic analysis is to set up a poverty line. It can be in relative terms, for instance anyone is considered poor who has a disposable income that is below a certain percentage, say forty percent, of the average income in a specific country. It can also be absolute, for example people living on less than 1.25 or 2 dollars a day. This is a narrow view of poverty, as solely a monetary issue, and it misses out on many important aspects. However, this definition of poverty is easy to quantify and measure, and is therefore rewarding to use in quantitative research.

A broader view is to look at what commodities are attainable. In this context commodities imply many things such as food, shelter, education and health care (Haughton & Khandker 2009). Even though the scope is wider, there is still a financial aspect as those things generally cost money. Even where health care and education are supposed to be free of charge there can be expenses involved; children might be required to wear a school uniform and buy books, the opportunity cost of going to school or visit a hospital (that might be located far away with bad transport possibilities) can be great. This wider concept of poverty can be examined by analyzing literacy rates, malnutrition etcetera.

An even more extensive view of poverty is the one most associated with Nobel Prize winner Amartya Sen. In his interpretation poverty is a deprivation of fundamental capabilities. The definition is very inclusive; when people are not free to live a life they value they can be

considered poor. Thus poverty is not restricted to financial aspects, but includes social opportunities, political concerns and all kinds of freedoms (Sen 1999).

Sen also argues that leveling out differences in economic (as well as other kinds of) opportunities creates prosperity, both for the individual and for the society. He by no means dismisses the use of more monetary definitions of poverty for the purpose of quantifying and studying poverty. In fact he supports it by affirming a negative relationship between increased income and the deprivation of those fundamental capabilities that, in his view, constitute poverty (Sen 1999).

Some important concepts related to poverty and relevant to this study need to be mentioned. People tend to be risk averse – in general we avoid taking unnecessary chances. When it comes to income this usually means that people try to avoid "putting all their eggs in one basket". A diverse production, not depending solely on farming or exclusively on raising livestock for example, is a way to avoid risk.

An effect of diversification can also be income smoothing over time, which is often desirable. Income tends to fluctuate over a lifetime and even over a year. The more it varies the harder it can be to have an even consumption. People generally want to keep a relatively even consumption, for instance to be able to get something to eat every day. With high dependency on a specific crop, the risk is high of very varying consumption possibilities – when harvest is good the family can eat, but when the weather fails starvation might not be far away.

3. The Financial Sector

> "*When they work well, financial institutions and markets provide opportunities for all market participants to take advantage of the best investments by channeling funds to their most productive uses, hence boosting growth, improving income distribution, and reducing poverty*."
>
> (Demirgüç-Kunt et al. 2008:1)

As the focus of this thesis is the effect of microcredit on poverty, these last two aspects are of great interest. If well working financial institutions can level out income inequalities and reduce poverty, improving financial markets through microfinance schemes appears to be a promising way forward.

Merton & Bodie (1995) have listed the key functions of a financial sector:

- Providing payment services
- Pooling and allocating resources
- Transferring economic resources through time, across borders and among industries
- Managing risk
- Generating and distributing price information
- Dealing with incentive problems

Matching savers with investors is an important mission. In both older and newer economic theories improved technology is the driving force behind growth (see for example Aghion & Howitt 2009). New ideas and innovations are prerequisites for this technology development, but these could never occur unless someone was willing to finance them, since the people with the ideas are not necessarily identical with the people who have money to realize them. To this end financial actors assemble resources and allocate them where they will generate as large gains as possible. Banks, for instance, take the relative small amounts that savers deposit, pool them and distribute to larger enterprises (Stiglitz 1989).

Information plays a pivotal role in the financial sector. For example the stock market and the exchange rates contain and signal information to financial actors. If the stock market provides reasonably accurate information about the value of a company, it makes it easier

for the financial sector to allocate resources efficiently (Levine 1997). Policy makers also generate and distribute information. For example central banks can have as a main objective to keep economies stable and ensure a rather low and steady inflation rate. A reduction in interest rates can then be a signal that the economy is in a slump and needs to be stimulated. The global financial crisis of 2008 provided ample examples of this kind of behavior.

High profits are often a compensation for high risk. A long term investment, for example, can have great potential, but still people might be hesitant to invest because the reward is not due for a long time and therefore likely to be more uncertain. The financial sector sets a price on, pool and trade risk to make sure that also risky, potentially lucrative investments get funded (Levine 1997).

Another crucial task of the financial sector is to deal with incentive problems. These issues are very prominent in the credit market, which is a big and important part of the financial sector and of the utmost relevance to this study. It will therefore be examined separately in the next section where the incentive problems will be analyzed more in depth.

3.1 Credit

At almost every level in society there is a need for credit. Individuals may at some juncture want credit to counterbalance fluctuations of income or to smooth consumption over time. Most enterprises also need credit at some stage; even micro businesses may require financial input to make investments. A small scale farmer, for example, is dependent on getting seed and maybe fertilizer, pesticides and outside labor in order to be able to harvest at the end of the season.

On a larger scale, credit is needed to facilitate for inventors and entrepreneurs to realize their visions and implement their innovations, which is an important aspect of increasing income levels.

When money lenders consider extending a loan they have to take into account the risk of not getting repaid. That risk assessment determines whether the loan is granted or not and at what cost. The interest rate is the price of borrowing money and is supposed to cover the costs of managing the loan. If the bank had access to all relevant information there would be

no risk and the interest rate would be extremely low. However, this is very seldom the case. Information is often scarce and not completely reliable. That is one important reason as to why interest rates are often relatively high. Put differently, banks and other financial institutions face the problem of information asymmetry and transaction costs (Stiglitz & Weiss 1981). These concepts are synonymous to the previously mentioned incentive problems.

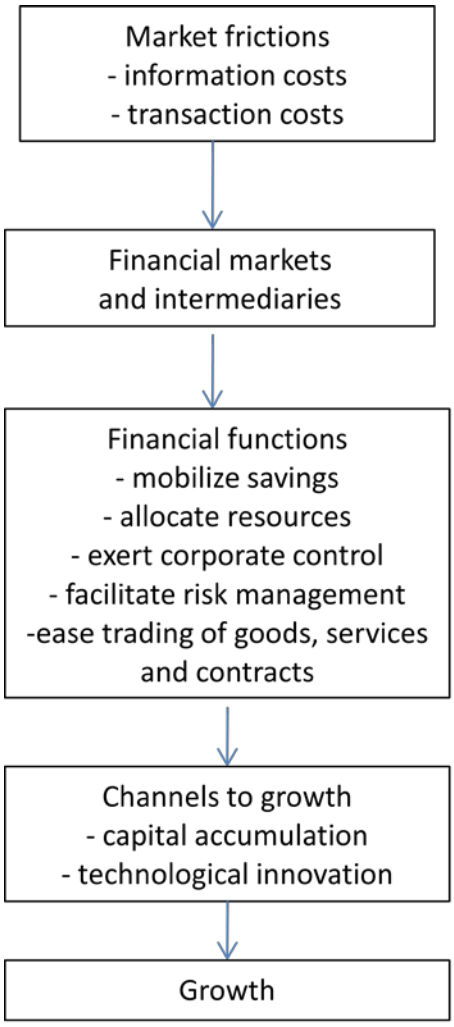
A bit simplified this asymmetry consists of the two concepts moral hazard and adverse selection. Moral hazard is when the borrower uses the money for imprudent investments that reduce the probability of repayment. It also signifies the incapability of the moneylender to identify and avert that kind of behavior. The incentive to engage in these risky investments stems from the limited liability of the borrower; since it is not his or her money at risk, the cost of a potential failure is very low (Armendáriz de Aghion & Murdoch 2004).

Adverse selection means that lenders cannot discriminate between high and low risk borrowers. If they could they would offer lower interest rates to the low risk borrowers, but since they cannot they have to charge everyone equally, which might discourage the "safe" borrowers from loaning money (see for example Stiglitz & Weiss 1981).

Another basic concept is default, which means that a loan is not repaid. Default can be either strategic or involuntary (Ray 1998). In the first case the loan taker is able to repay, but for some reason chooses not to. In the other case the default is caused by lack of money.

Moral hazard, adverse selection and the risk of default force lending institutes to incur costs gathering information about their prospect clients, evaluating and checking up on them – and if they break the contract take legal action against them. These costs need to be covered which in turn drives up interest rate and worsen the problem with adverse selection (Stiglitz 1989).

Figur 1: Finance and growth



Source: Levine 1997

Levine (1997) analyzes the financial sector and asserts that the need for financial contracts, markets and institutions arise from transaction and information costs. These costs that occur due to imperfect information and uncertainty can be reduced by financial intermediaries, basically through the six points mentioned above. When the financial sector thus facilitates capital accumulation and technological innovation, it increases GDP. Levine illustrates his point as seen in figure 1.

Hence the market failures do not only hurt the ones who are excluded directly, but the entire economy since it means that some viable, high yielding projects never get financed. High risk often implies high profit, so in totally disregarding all risky projects, the formal financial institutions fail to allocate resources efficiently and cheat the economy of potential growth that could further alleviate poverty.

3.2 Financial Market Failures in Developing Economies

A common way to deal with the risk of default is for lending institutions to demand some kind of collateral to ensure repayment. If a borrower is unable to repay, the collateral is kept by the lender. Another way is to inform the borrower that legal consequences will follow default. However, weak legal framework is a common feature of many developing societies and the threat of legal ramifications can therefore be easily disregarded. The poor state of those legal institutions is thus a major impediment to developing financial markets (Ray 1998). Stiglitz (1989) goes as far as saying that what is remarkable is not that developing country financial sectors work poorly – what is remarkable is that they work at all.

The increased costs that follow with weak legal institutions render the conventional banks unwilling to engage in small scale loans. This is one barrier to poor people and micro businesses borrowing money through formal institutions. Another impediment is lack of collateral, or rather the right kind of collateral. Informal moneylenders might accept collateral that conventional banks would reject. Ray (1998) takes the example of a small scale farmer who has a small piece of land: to a bank this collateral is useless due to the costs involved in selling it, but it can be a valuable asset to the owner of the adjoining land. He or she might even prefer it to getting the repayment. No bank would consider labor as collateral either, but a local employer might.

The formal credit market is hampered by the tradeoff between size and closeness. To deal with the high risk of granting uncertain loans to poor people without acceptable collateral, lending institutes need to be big and diversified. However, monitoring is easier for smaller companies that are located near the borrowers. This tradeoff sets the limits for traditional credit institutions (Aliber 2002).

Local moneylenders can thus be a supplement to counteract the rigidities of the conventional banks, but they often charge extremely high interest rates. With this follows the risk of the borrower getting caught in a debt trap where most of the income generated from the loan ends up in the money lender's pocket. Limited means is also a problem; even if the interest rates were lowered, the resources of local money lenders would probably not be enough to satisfy the demand for credit of all of those excluded from the formal financial sector (Aliber 2002).

Another attempt to create a supplement to the formal lending institutions is the founding of development banks. They do not, however, concentrate on extending credit to poor individuals to directly mitigate their poverty, but rather on businesses with the potential to grow and employ more people. If they succeed in inducing growth and create job opportunities these banks might have a positive impact on poverty in the long run. They do not, however, address the problem of the exclusion of poor people from the formal credit market.

4. Microcredit

Microcredit is a narrower term than microfinance, which also includes insurance, savings and a variety of services. Many MFIs have developed from dealing only with lending to handling various aspects of financial management and even training in farming practices, marketing etcetera. The empirical analysis in section 5 refers only to microcredit, i.e. small scale loans, but in the preceding sections microfinance is also discussed as most research deals with this broader concept.

The most famous MFI is probably Grameen Bank, which co-received the Nobel peace prize in 2006 along with its founder Mohammad Yunus. It started in 1976 when Yunus launched a research project about the effects of credit accessibility in a village near the university in Bangladesh where he worked as a professor. The project was very successful and soon gained support from conventional banks, which allowed it to grow. The idea behind Grameen Bank is to create "a banking system based on mutual trust, accountability, participation and creativity" (Grameen 2010).

The methodology of Grameen Bank has been an inspiration to many MFIs. At the Grameen Bank homepage there is a list of the characteristics of the bank's credit delivery system. Unfortunately it is very vague regarding the problematic selection process and only states that the bank clearly establishes "the eligibility criteria for selection of targeted clientele and adopt practical measures to screen out those who do not meet them"; easier said than done, no doubt.

The subsequent section about methodology is all the more concrete; it brings up group lending, peer pressure, small size loans, dynamic incentives and frequent instalments, but also that the loan takers should engage in "individual, self chosen, quick income generating activities which employ the skills that borrowers already posses". Other points are close supervision, voluntary or compulsory savings and transparency of all bank transactions. These are the microcredit ways of dealing with information asymmetries and strategic default, which will be discussed in further length later in the paper.

In the last decade microcredit has boomed. The diagrams below illustrate the development in the 107 countries included in this study. The first one shows the rise in monetary terms; more precisely the total sum extended by the MFIs divided by total population. The second

diagram demonstrates the increase in borrowers presented as a percentage of total population. In both diagrams each year represents an average of the country observations, meaning that all observations for 1998, for example, was summarized and divided by the number of countries. This serves the purpose of showing the development of microcredit over the years. It does not, however, say anything about the development in a specific country.

Figure 2: Development in relative portfolio size

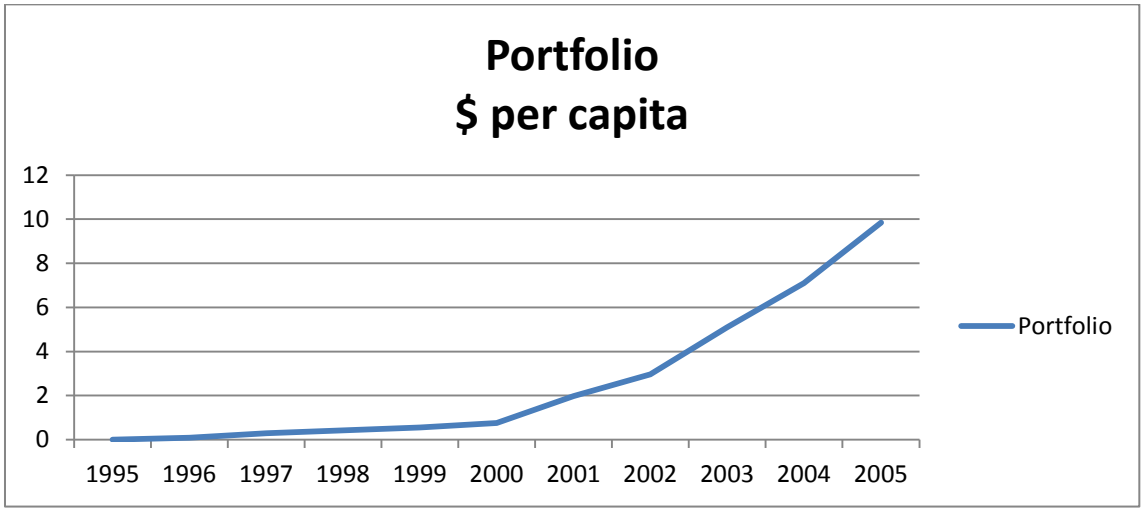
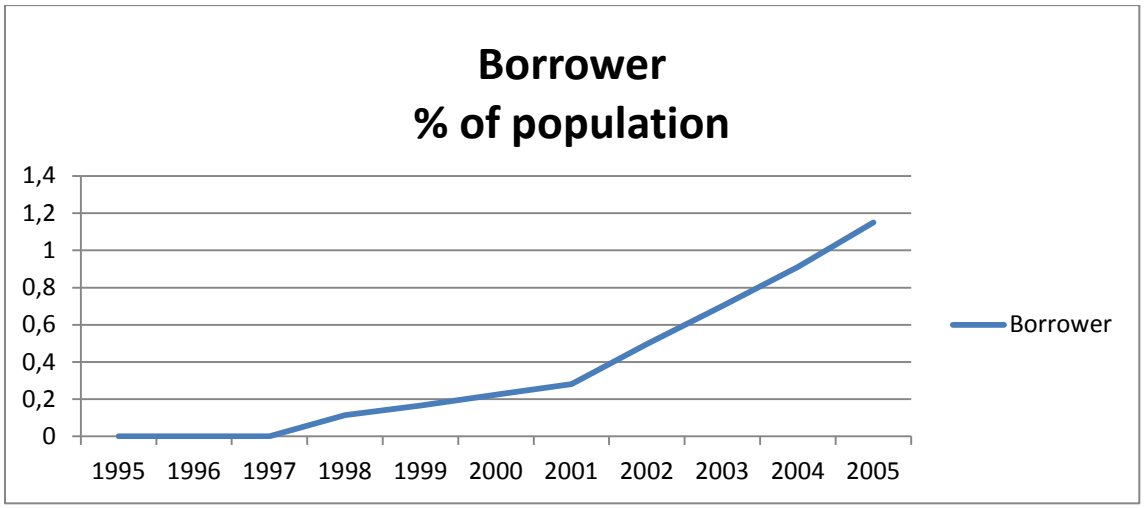


Figure 3: Development in the share of borrowers



The diagrams show that the extent of microcredit has increased substantially, but that there is still plenty of room for further growth. In 2005 MFIs were able to reach an average of 1.15 percent of the population in the analyzed countries.

This also offers some indication of what is reasonable to expect from microcredit reducing national poverty. With the outreach still being so limited, is it reasonable to expect any effect outside the household?

4.1 Methods and Objective of MFIs

There are different kinds of microcredit needs. Ray (1998) lists the need for fixed capital, working capital and consumption credit. Fixed capital is supposed to finance inputs such as machines, while working capital is more of an advance on payments to come. An example of working capital is contract farming where farmers get inputs on credit, which then gets deducted from the purchasing price. Another example is a buyer who pays for the goods before they even exist in order to enable the production. Consumption credit is a way to smooth consumption over time and help exposed people to deal with unforeseen events and shocks. It is probably this last aspect that is most commonly associated with microcredit.

Basically microfinance has three fundamental functions (see for example Zeller & Meyer 2002):

- It can improve production that raises income
- It allows individuals and households to diversify, for example keep cattle as well as engaging in farming
- It makes it possible to smooth income over time, whereby the loan takers are better prepared for financial slumps and shocks

MFIs differ from ordinary banks in several ways. For one they usually have an explicit goal to reduce poverty. Considering this, it is reasonable to assume that they would direct themselves to the poorest people offering them access to credit. This is not always the case though; MFIs have a tendency to not reach the ones who need it the most (Morduch & Haley 2002).

Zeller & Meyer (2002) write about the triangle of microfinance by which they mean its three objectives outreach, financial sustainability and impact. MFIs need to 1) reach the poor to get them involved in the financial system and 2) make sure that the services offered really improve on the quality of life for the loan takers. On top of this, the MFIs have to 3) be viable

and not be too dependent on governmental support and aid. This search for profit can cause the MFIs to stray a bit too far from the original objective of assisting people – a phenomenon called mission drift (Kono & Takahashi 2009). This is a dilemma, considering the opportunity cost of the governmental support; the money used to finance MFIs could go to other projects and programs; putting pressure on the microcredit scheme to be very efficient. If poor people are considered a riskier investment, this can explain some MFIs hesitance to extend credit to them. That reasoning, however, drives them closer to being regular banks when it comes to objective.

As to the methods, MFIs often demand weekly or monthly installments and employ other measures such as group lending and joint liability. Lending money to groups instead of single individuals is an attempt to circumvent the information asymmetry; if someone fails to pay, the entire group is punished, often by not being allowed to borrow anymore. This creates peer pressure that potentially can compensate for weak legal institutions and the lack of collateral.

By letting potential borrowers form the groups themselves, MFIs wish to avoid adverse selection; the people know each other and would not let a risky borrower enter a group. This implies that there will be two types of groups, those including only safe borrowers and those consisting solitarily of risky lenders. Considering that the *effective* interest rate depends on the likelihood of fellow group members defaulting, the circumstances will be more favorable for the safe borrowers. The intuition is straightforward: to compare different credits, all costs must be considered and an important part of the expected cost of taking a loan with joint liability is the risk of having to cover for other group members. This cost does not show in the agreement where the nominal interest rate is the same for everyone, but in practice it makes it more costly for risky borrowers to get a loan. This way the risky borrowers carry the cost for the information asymmetry themselves. Group lending can also reduce adverse selection through the fact that safe borrowers get an incentive to enter the credit market. This lowers the default rate, which decreases the cost of lending (Armendáriz de Aghion & Murdoch 2004).

A variation of group lending is sequential lending, which means that initially only a few members are granted loans and the rest will not get any money until the first ones have

repaid. This also creates peer pressure, but Kono & Takahashi (2009) warn that it might have unwanted side effects. They argue that if someone is an eligible borrower, they can probably get a loan at an MFI that does not require them to wait. That leaves only the borrowers who are unable to get credit anywhere else, which is an indication that they are prone to default. Sequential lending may thus *give rise* to adverse selection instead of reducing it.

Another attempt to encourage repayment is dynamic incentives, implying that repayment qualifies the borrower for another, often larger loan. MFI loans are smaller than conventional loans and people might therefore need to take new loans continuously, which enables the institutes to use such incentive methods.

To sum up:

MFIs differ from conventional banks in that one of their main objectives is to reduce poverty. However, the pressure on them to be financially sustainable can cause the focus to drift from this original objective to more business centered ones.

Group lending is supposed to prevent adverse selection by utilizing the extensive knowledge group members have about each other. It can also lessen the risk of moral hazard and strategic default because of the social pressure from the rest of the group.

Dynamic incentives work more as a carrot than as stick; meaning it is a way to reward repayment. Once a loan is fully repaid, the borrower is qualified for a new, often larger loan.

Frequent installments usually mean that a small sum is repaid weekly or monthly. This serves multiple purposes as it offers the moneylender an early indication of the borrower's repayment inclination as well as an insight in his or her financial situation on a regular basis.

4.2 Overview of Existing Studies

As the preceding discussion shows, the expectations on microcredit to impact poverty have some theoretical underpinning. Early research on the subject also yielded very positive results that further boosted expectations. Yet, microcredit schemes have been around for a long time without any conclusive evidence of their effectiveness; some researchers start to question the methods used in those early studies and newer research shows more mixed

results. So, ten years into the 21st century, more than three decades after Yunus started his project in Bangladesh, what are the results of microcredit schemes?

Several difficulties in assessing the impact of microcredit are discussed by Kono & Takahashi (2009). Some studies try to capture the effect of microcredit by comparing the financial situation of the household before and after the loan. The difference is then supposed to be the impact of microcredit. However, other factors such as external shocks are likely to have a part in this difference. The problem is therefore the inability to isolate the impact of microcredit.

Another method is to use control groups that do not gain access to credit and compare their situation to the one of those who were allowed to borrow. But that raises the question of selection. If participation is voluntary there is a chance that the ones choosing to participate are the ones who have a higher probability of success. This obviously risks corrupting the results.

Kono & Takahashi (2009) refer to a disagreement between Pitt & Khandker on the one hand and Morduch on the other. While Pitt & Khandker (1998) show a clear positive result of microcredit on poverty at household level in a study in Bangladesh, Morduch (1998), in another study also conducted in Bangladesh, finds that microcredit does not increase income in the short run. He disapproves of Pitt & Khandker's methods. In a response to Morduch's criticism, Khandker (2005) do robustness checks that confirm, and indeed strengthen, his and Pitt's previous results. This dispute is a telling illustration of the difficulties involved in measuring the outcome of microcredit. What Pitt & Khandker and Morduch agree on is that microcredit can smooth income variability; probably through diversification.

Many MFIs direct themselves directly towards women, which is commendable for at least three reasons: there is a great need for women empowerment; to support women has proved to be an efficient way of helping entire communities; it is good business since they generally repay their loans. No doubt, access to credit is a major constraint on small scale enterprises and the majority of microenterprises are run by women. Consequently there is a clear gender aspect to microcredit and women empowerment is expected. This is important enough in itself, but might also have a positive effect on development and poverty

reduction. Pitt & Khandker (2003) examines the effect of microfinance on women empowerment in Bangladesh, based on panel data from 1998/1999, and find that it has major positive effects when women borrow. However, when men received the credit the results were “at best, neutral and at worst, decidedly negative” (p. 30). In an earlier study they found that consumption increased by 18 units for every 100 units that were borrowed if the loan taker was female; otherwise it was 11 to 100 Pitt & Khandker (1998).

Khandker (2003), again using household panel data from Bangladesh, divides the effects of microfinance on poverty into short term benefits (consumption smoothing, employment, raised income, reduced poverty and vulnerability) and long term benefits (increased household and community asset, more human and social capital, empowerment). He writes that even though there are a substantial number of positive effects, they are not strong enough to cause a “large dent on national level aggregated poverty” (p. 21). To change this he suggests that microfinance should also provide training in order to help borrowers improve the quality, productivity and marketing of the produce.

Both microfinance institutions and borrowers are very diverse and heterogeneous. Zeller & Meyer (2002) mention a number of countries with different experiences of microfinance. Studies showed that in Bolivia joint liability schemes worked well for the poorest, while single loans were associated with lower transaction costs in Cameroon. In Mexico, a study found that wealthier people received more credit than poorer ones. An important point is that there are different determinants of success for microcredit schemes. A study in Latin America showed that the more external support the MFIs got the more poor people they could reach, while in Malawi the outreach was not successful if the loans were not accomplished by improved farming technology. Additional support like training and education can make the projects more successful, but it also means higher costs. As the MFIs need to be sustainable in order to stay in business and help more people, it is a dilemma (Zeller & Meyer 2002).

The authors go on to say that if microfinance programs are to be successful the government has a role to play; indirectly to create a favorable macroeconomic environment and good conditions for entrepreneurial activity. High quality institutions, stabile legal framework, transparent governance and predictability are other important factors. The state also has a

more direct role in supporting MFIs, especially in the start up phase. The problem with this, as mentioned before, is the opportunity cost of the government's financial support.

Zeller & Meyer are supported in their opinion by Zhuang et al (2009), who review different evaluations of microfinance. Earlier studies that tend to be very positive have recently received a lot of criticism because they did not use an experimental approach. Newer studies with a more extensive use of experiments show more mixed results and bring forth additional possible limitations to microenterprises, other than lack of credit. If there are other impediments such as deficient access to information, markets, skilled labor, technology and land, then maybe microcredit schemes need to be supplemented by governmental action to improve structures, institutions and policies.

Another point made by Zhuang et al. is that to benefit the poorest segment of the population, the microfinance programs need to be enhanced with training, social empowerment programs and other safety net measures. This kind of governmental action needs to be taken regardless of microfinance. It is costly, to be sure, but the consequences of inaction would be much worse. Hence it does not belong in the discussion about the opportunity cost of government spending. It does, however, raise the crucial question about selection of borrowers. There are basically two approaches: putting emphasis on the MFIs being financially sustainable or that the poorest people are reached. However, the two are not necessarily at conflict with each other. Research shows that poor people are no less capable entrepreneurs than richer groups; nor are they less prone to savings and investment, given a chance (Morduch & Haley 2002). Despite this, microcredit schemes tend to overlook the poorest segment of the population. It needs not be a conscious choice, but specific targeting might be necessary as the group can deem itself unqualified for the programs if they are not specifically designed to reach the poor. Regardless of this reservation Morduch & Haley (2002) conclude that microcredit is successful in reducing poverty. To come to this conclusion they have reviewed a number of studies on the subject – the majority being country studies that investigate poverty on an individual or household level.

Kono & Takahashi (2009) set out to analyze the MFI methods of credit management econometrically. Their conclusions are that the problem of adverse selection is lessened by

group lending and that dynamic incentives avert moral hazard and strategic default. They also add some conditional conclusions about group lending; moral hazard can be avoided if, but only if, the group members can coordinate their decisions.

To sum up:

There are doubts regarding the early non-experimental ways to measure the impact of microcredit on poverty. Newer research with a more experimental approach questions the effectiveness of microcredit if not other macroeconomic measures are taken. There is also a problem with outreach; the ones who need it the most are not always the ones benefiting from microcredit. But a bulk of research still affirms a poverty reducing effect of microcredit. The algebraically derived results provided by Kono & Takahashi give reason to believe that microcredit indeed is an efficient way to lessen the market failures of the developing countries' financial sectors. Other studies give empirical support to the theory that micro-credit has a positive effect on income, consumption smoothing and gender equality etcetera. One of the questions that remain to be answered is whether or not this has an effect on national poverty. Hopefully this study can shed some light on this matter by conducting a quantitative analysis on the impact on a national level across several countries and over a longer period of time.

4.3 The Effect on Poverty

> "*Formal financial development not only spurs growth, but it is also especially pro-poor.*"
>
> (Feyen 2009:39)

The failure of the formal financial sector to accommodate the low income segment of the population is particularly unfortunate because that is where the need is the greatest. The poor, and especially the rural, population is often exposed to a very uncertain environment with dependency on such fickle things as the market for a particular crop and the weather.

Getting credit can help poor households to diversify their production and other income generating activities, which can smooth income variations over time (Morduch 1998, Pitt &

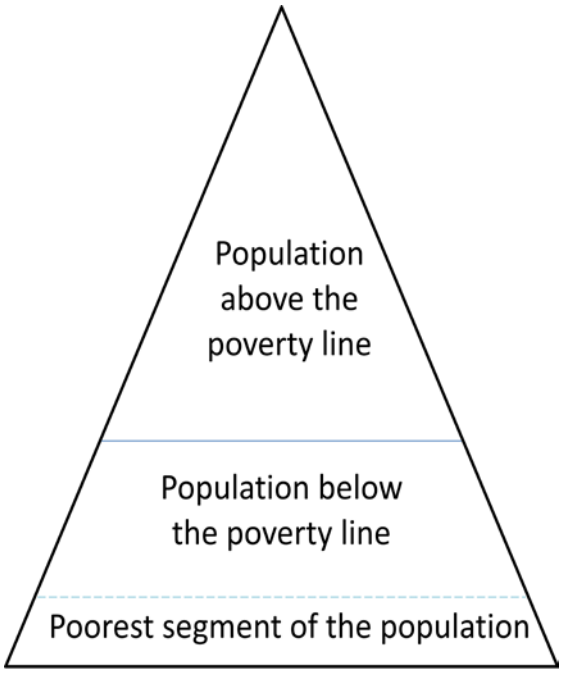
Khandker 1998). In doing so they avoid some of the risk associated with the above mentioned dependency; if a family relies only on agriculture a bad harvest is a disaster, but if it also keeps cattle the effect will probably not be as catastrophic.

This opportunity to diversify, along with the increased income that hopefully follows the investment in production due to the credit, is expected to reduce income at the individual or household level. With the expansion of credit accessibility, the aggregated effect ought to have an impact on a national level.

However, there are some reservations about this. Microcredit that is extended to the most deprived is usually not invested, but used for consumption. This is indeed a vital function, as it can be the difference between life and death, but it is questionable whether it has any effect on poverty (Demirgüç-Kunt et al. 2008).

But providing poor people with access to credit can reduce poverty through other channels. Feyen (2009) asserts that a more inclusive financial market will be especially beneficial for poor people. He refers to empiric research that shows that poor people are the prime beneficiaries of the ensuing work opportunities and increased income levels as well as the enhanced governmental support for social services. He is joined in his opinion by Sen (1999). It is by no means a certainty, but it is intuitive that the growth described in figure 1 can translate into reduced poverty, if managed properly.

Figure 4: Poverty line



The result might not always be noticeable, though. Consider figure 2; if the poorest of the poor benefit from getting access to credit, they might reach a higher income level without crossing the poverty line.

Some studies have also indicated that it is not poor people that benefit the most, but the ones who are pretty well off (Morduch & Haley 2002). In that case, poverty is not reduced because the people who get a higher income are

already above the poverty line. But even with this reasoning, it is assumed that properly working financial markets reduces poverty. It just does not show in statistics.

An imperfect financial market is often a stumbling block to growth and a cause of persistent inequality (Demirgüç-Kunt et al. 2008). A more inclusive credit market should thus be a priority in development efforts. The reasoning is that the extended credit in itself is a rectification of the financial market imperfection that will level out opportunities. This is a development goal in itself, but according to Demirgüç-Kunt et al. it will also generate a more equal distribution of assets. These conclusions are perfectly in line with Sen's reasoning.

If the quality of the financial sector is an important factor in reducing poverty, it is reasonable to ask what it is that causes financial market set-ups to differ since that would contribute to the explanation as to why countries experience different poverty levels. One possible answer is the dual causality between economic development and the quality of the financial institutions, a kind of catch 22. Levine (1997) mentions the development of telecommunication and reliable legal institutions as favorable conditions to the development of a well functioning financial sector. However, it is likely that the financial sector needs to be in place in order to finance the development of the institutions and the infrastructure.

5. Empirical Analysis

The study examines the effect of microfinance on national poverty by analyzing data that covers 107 countries from six regions (Africa, Latin America and the Caribbean, East Asia and the Pacific, Middle East and North Africa, Eastern Europe and Central Asia, South Asia) over a period of eleven years (1998 to 2008). The total number of observations adds up to 1177, which is quite a large sample. The extensiveness of the panel dataset is an asset in this analysis since many observations are lost due to lack of data in the different variables. This loss of data makes the panel unbalanced.

The most problematic parameter in this regard is the poverty measure. The data on poverty comes from the World Bank and is based on extensive household surveys. However, there are some countries that are not included and the others usually only have observations for a single or a few years. It is thus very hard to compare across countries and over time in order to say anything conclusive about the development of poverty and the impact of different variables. To enable an analysis with more observations GDP per capita was used as a proxy. The implications of this are discussed further in a following section.

5.1 Data and Variables

The fact that the focus of this data analysis is solely on microcredit is a bit problematic, since much of the research emphasizes the importance of the other aspects involved in microfinance. However, it is viable to assume that the two are related. If a large share of the population is involved in microcredit schemes and the portfolios are hefty, it is probably an indication that there is also some microfinance activity going on. Even if microfinance is more effective in affecting national poverty, it is likely that the impact could be seen by looking at microcredit data, since microfinance without credit is very rare.

Mixmarket has provided the statistics on microcredit – the gross loan portfolio and the number of active borrowers. Other studies have different data on the number of MFIs, the number of borrowers and the size of the portfolios, than the ones acquired from MIX market. There are several plausible explanations for this; definitions of what constitutes an MFI can differ, institutes can go out of business after such a short time that someone failed to register them. The method of gathering data is also likely to make a difference.

The MIX market "provides information to sector actors and the public at large on microfinance institutions worldwide" by collecting "financial, operational and social performance data on microfinance institutions from throughout the developing world" (MIX 2010). It is a non profit organization and among its funders are national banks, Oxfam Novib Fund, USAID Credit Guarantees and UNCDF.

In the poverty data set Argentina and Uruguay only include urban observations, while China, India and Indonesia only encompass rural poverty. They are not likely to be representative for the whole country, but because observations are scarce they are included in the regression analysis. Furthermore they can give an indication of the development of poverty reduction.

Information on GDP per capita was obtained from the International Monetary Fund (IMF). Due to differences in price levels, the GDP per capita data is adjusted using purchasing power parity (PPP).

The IMF has no population data on Montenegro, so the estimation for 2010 from the US Central Intelligence Agency (CIA) has served as an estimate for the entire period. It might not give a perfectly accurate picture, but it is likely to be close and the observations are useful.

The microcredit variables represent 1) the sum obtained when dividing the total gross loan **portfolio** with total population and 2) the share of **borrowers** in the population.

It might not be obvious why the total gross loan portfolio was not divided by the number of borrowers instead, but it depends on the fact that it is national poverty that is investigated. Had it been a microeconomic study average loan size would probably be a more relevant measure.

These variables are lagged since it is assumed that the effect is somewhat delayed. Therefore they range from 1995 to 2005, while the dependent variables and all control variables that are not lagged cover the years 1998 to 2008. Three years ought to be enough for the microcredit variables to affect poverty through the mechanisms previously described. However, for every year that the variables are lagged, information gets lost. Microcredit has increased with time so the most data is from the later years, but since it is impossible to know what GDP per capita will be in the future, the information about the last three years

cannot be used. In return, microcredit data for 1995, 1996 and 1997 were included. However, not many MFIs were active at that time and thus the observations from this period are few.

As the preceding discussion shows, the data analysis is expected to show that the microcredit variables have a positive effect on poverty reduction, i.e. that their coefficients are positive for GDP per capita and negative for poverty. However it is possible that they differ in their effects. It is feasible that the borrower measure has a bigger impact, which will be discussed further in sections 5.3 and 5.4.

Other factors that can impact poverty, and therefore needs to be controlled for, are inflation, investment, openness to trade, education, institutions and dependency on primary goods:

Inflation is likely to have a big impact on poverty. High levels indicate an unstable economy and flawed institutional framework. The decreased value of money is likely to be most harmful to poor people who generally hold much of their assets in ready cash. Those with their wealth invested in for example real estate are more protected from the depreciation of money. Zimbabwe offers an illustrative example. The hyperflation rendered money useless as it took unmanageable quantities to buy even a loaf of bread. Some resorted to barter economy instead. It is thus assumed that both GDP per capita and poverty reduction is negatively affected by high levels of inflation.

As discussed in section 3 capital accumulation and technological progress is of great importance to growth. **Investment** is thus a vital variable that is assumed to have a positive effect on GDP and a negative effect on poverty. The effect is probably somewhat delayed and the investment data has therefore been lagged by one year.

Theory and empirics affirm that **trade** affects economies in a decidedly positive manner as it allows countries to devote themselves to the area where they have a competitive advantage. When everyone produces what they do best and finds a way to exchange the output, welfare is improved. It is thus assumed that a high value for the trade to GDP ratio increases GDP per capita and reduces poverty.

Education is a key aspect of development; both as means and as an end (for a discussion on this see for example Sen 1999). As a means to development it increases human capital and can make people more productive. It is therefore assumed to have a negative impact on poverty and a positive effect on GDP per capita. In the wider views of poverty, the education measure could be used as a dependent variable.

It has been pointed out several times that **institutions** matter to development. Such an abstract and multifaceted concept is hard to capture, but this analysis uses a *government effectiveness* measure. It is a bit narrow, but it can offer a good indication about the quality of institutions in a country since it would be very hard for a government to be effective if the institutional quality were low.

Dependence on primary goods is usually seen as a hampering factor to an economy, which is intuitive; it is likely to be more profitable to sell a loaf of bread than to sell the ingredients separately. The same reasoning applies here, more value added increases profits and vice versa. The share of agriculture in GDP is an attempt to capture this. It follows that if the share of agriculture is high the share of manufactures is low. The expected result is thus a negative coefficient in the GDP regression and a positive in the poverty regression.

Dummy variables are used to control for the effect of business cycles and geographic parameters, such as what region a country belongs to and whether or not it is land locked. In the dummy variable for 2006, for instance, all observations from that year obtain the value 1. If the economy was booming during this time the variable has a positive coefficient in the GDP regression. 1998 is used as the point of reference. An example of a regional dummy variable is SSA that captures the effect specific to countries in Africa south of the Sahara. Since many of them struggle with high poverty rates and low GDP per capita levels, this dummy is expected to be positive in the poverty regression and negative in the GDP regression. The Middle East and North Africa-variable is the reference for the other regional dummies.

Table 1: Variables

Variable	Expected effect on poverty (GDP per capita)	Definition	Source
GDP		PPP per capita gross domestic product. *Logged*	World Economic Outlook Database
Poverty rate at 2 dollars		The share of total population that lives on less than 2 dollars a day PPP.	PovcalNet
Borrower	Negative (Positive)	Number of active borrowers divided by total population, presented as a percentage. *Lagged by three years*	MIX Market
Portfolio	Negative (Positive)	Gross loan portfolio in US dollars divided by total population. *Lagged by three years*	MIX Market
Openness to trade	Negative (Positive)	Trade as a percentage of GDP.	World Development Indicators
Inflation	Positive (Negative)	The annual growth rate of the GDP implicit deflator.	World Development Indicators
Investment	Negative (Positive)	Fixed capital formation as a share of GDP. *Lagged by one year*	World Development Indicators
Dependency on primary goods	Positive (Negative)	The share of agriculture in GDP.	World Development Indicators
Education	Negative (Positive)	The ratio of children of official school age who are enrolled in school to the population of the corresponding official school age.	World Bank EdStats
Quality of institutions	Negative (Positive)	Government effectiveness.	Worldwide Governance Indicators (WGI)
Landlocked	Positive (Negative)	1=landlocked, 0=coast	CEPII

5.2 The Model

To analyze the data the method of ordinary least squares, OLS, has been used. The aim of this study is to evaluate the impact of microcredit on national poverty. The OLS model suits the purpose well in that a positive effect of the microcredit variables on the proxy, GDP per capita, is captured by the coefficient β_2. The null hypothesis is that the tested variables have

no effect on national poverty. If β_2 obtains a significant positive value it means that the null hypotheses can be rejected and that microcredit has a positive effect on poverty reduction on a national level.

The regression equations are as follows:

$$\text{GDP per capita} = \beta_1 + \beta_{2} * \text{Portfolio} + \beta_{3,4,5,6\ldots} * \text{control variables} + \varepsilon,$$

$$\text{GDP per capita} = \beta_1 + \beta_{2} * \text{Borrower} + \beta_{3,4,5,6\ldots} * \text{control variables} + \varepsilon,$$

where ε is an error term and GDP per capita the dependent variable.

The reason for dividing the analysis into two regressions is to get a more clear-cut picture of the impact of the two different measures. As mentioned before it is possible, likely even, that the two variables have different effects.

OLS estimation provides the best linear unbiased estimator (BLUE) of the coefficients that capture the effect of the examined variable provided that the dependent variable is continuous and that the residuals all have the same variance and are uncorrelated.

The latter is tested in the robustness checks, but the former can create a bit of a problem in the poverty regression. The dependent variable is a share of the total population, i.e. restricted to the interval 0-100. It is not a binary variable, which would eliminate the possibility to use OLS, but its variation is somewhat limited. There is a slight risk that this has some impact on the outcome, but it is reasonable to assume that the effect is negligible.

Because of the limited supply of reliable poverty data, GDP per capita was used as a proxy. This solution undoubtedly has its pros and cons. One important reason that speaks in its favor is that it makes it possible to make use of much more of the available microfinance data. It is also a reasonably viable assumption that higher levels of GDP per capita imply lower levels of poverty. However, the argument can definitely be made that it is possible for a country to increase its GDP per capita without alleviating poverty as the GDP per capita measure does not say anything about how the income is distributed.

Furthermore, poverty encompasses much more than just lack of money; it is also about structures in society and the fact that people face unequal opportunities. In that sense GDP per capita is an inadequate measure of poverty as it only captures the monetary aspect, at

best. However, the same objection is valid for the poverty measure *share of population living on less than two dollars a day*. Undoubtedly it is a more direct and accurate measure of poverty than GDP per capita, but it is limited because it only captures one aspect of a multifaceted phenomenon. However, quantitative research calls for some simplification and income levels are undoubtedly a key aspect of poverty.

5.3 Portfolio

As previous sections yield, microcredit has potential to increase income and reduce poverty. It makes sense that if there is a positive connection between microcredit and poverty reduction the extent of microcredit in a country is an important factor. This intuition also explains why average loan size was not used as a variable. Taking the average loan size is likely to give a distorted measure of the extent of microcredit in a country. Consider China: in 2008 there were 45,708 active borrowers reported and total population amounted to 1.3 billion. With a total gross loan portfolio of 27,870,628 the difference between dividing it with the number of borrowers (609 dollars per capita) or with total population (0.02 dollars per capita) is immense. In Bangladesh, the difference between the two measures in 2008 was smaller (95 dollars and 13 dollars) since almost 22 million people out of the country's total population of 162 million was registered as active borrowers. Total gross loan portfolio added up to astounding 2,083,814,703 dollars. In the regression, using average loan size would implicate that the extent of microcredit was many times larger in China than in Bangladesh in 2008, which it was not. This example illustrates the necessity of using total population in order to separate the portfolio measure, and make it independent of the borrower measure.

Econometrically the portfolio coefficient is expected to have a significant, positive value in the GDP per capita regression. The more money the MFIs in a country distribute, the larger the effect ought to be on poverty reduction in that country. However, considering the preceding discussion about a more inclusive financial sector reducing poverty primarily through the levelling of opportunities, the size of the loans might be secondary to outreach. In other words it is possible that the *monetary* extent of the microcredit activity, here represented by the portfolio measure, does not have as big effect as the extent of the clientele.

5.3.1 Results

The portfolio variable shows no significant effect on GDP per capita, which is a bit disappointing, as it means that this data analysis does not support the hypothesis that more extensive microcredit schemes increase GDP per capita and reduces poverty. However, it is not completely unexpected considering the above reasoning about the relative importance of amount to outreach. It is also likely that the loss of information due to the lagging causes the analysis to miss out on the massive growth of microcredit schemes and the effect that has had on national poverty.

Inflation, institutions and the share of agriculture in GDP are significant and work in the expected direction. The effect on GDP per capita for a country to be located in South Asia or SSA as opposed to in the Middle East or North Africa is significantly negative. The opposite is true for Latin America and the Caribbean and East Europe and Central Asia. It appears as if the dummy variables for 1999, 2001, 2002, 2007 and 2008 systematically assumes the same value as another variable and are therefore eliminated. In 2005 and 2006 the economy seems to have been booming, while the other years have no significant effects. The model includes over 300 observations and explains 86 percent of the variations in GDP per capita, but the fact that neither investment, education, trade nor whether or not the country is land locked has any significant effect indicate that something is the matter with the set up. The results are therefore to be interpreted with some reserve.

Table 2: Results GDP

Variables	β	P
Portfolio	-,004	,373
Institutions	,405	,000
Inflation	-,005	,000
Education	,001	,559
Landlocked	-,054	,308
Openess	,000	,428
Agriculture (% of GDP)	-,043	,000
Investment	,001	,720
South Asia	-,476	,000
LA and the Caribbean	,207	,013
Eastern Europe and Central Asia	,299	,000
East Asia and the Pacific	-,061	,563
SSA	-,304	,000
2000	-,104	,292
2003	,026	,698
2004	,080	,236
2005	,158	,021
2006	,193	,008

Adjusted r^2: 0.86 N: 314

Because GDP was only used as a proxy, the same regression was done using poverty data as the dependent variable. The expected result was that the effects would remain basically the same, but the poverty data proved to be even more problematic than anticipated. It reduced the number of observations to 100. With so few observations it was not viable to keep all the variables. To that end, the time dummies are not likely to add much valuable information to this regression and were removed. One reason is that there are only a few countries that have poverty data for several years and there is therefore little need to control for those yearly variations. The intuition behind the effect of business cycles on poverty is also not as clear as with GDP per capita. A bust in the economy is for example usually associated with lower inflation which can benefit poor people who hold more of their money in ready cash and spend a large share of their income on food. On the other hand a downturn in the economy is likely to harm poor people as it temporarily can decrease job opportunities and reduce the room for government spending on social services.

The portfolio variable shows no significant effect on national poverty either. However, it does not necessarily mean that it does not have any effect for the same reasons as in the GDP per capita regression, but it can also be an effect of the insufficient poverty data.

If the country has a coast and good institutions it is likely to suffer from less poverty, while a country with a high share of agriculture in GDP is likely to suffer from more. Countries in SSA and Asia are likely to have more poverty than Middle Eastern and North African. However, the results are to be interpreted with extreme care as the lack of significant variables indicates that something is not quite right in this regression, most likely the dependent variable, i.e. the poverty data.

Table 3: Results Poverty

Variables	β	P
Portfolio	-,250	,402
Institutions	-7,681	,048
Inflation	,196	,326
South Asia	47,137	,000
LA and the Caribbean	5,091	,428
Eastern Europe and Central Asia	-3,815	,557
East Asia and the Pacific	36,795	,000
SSA	41,456	,000
Education	,002	,987
Landlocked	12,924	,000
Openess	,019	,644
Agriculture (% of GDP)	,481	,007
Investment	-,293	,122

Adjusted r^2: 0.82 N: 100

5.4 Borrower

An assumption this study makes about microcredit is that it levels out opportunities and thus promotes growth and a more equal distribution of assets. An important part of this is reaching the poorest segment of the population. Unfortunately this is a qualitative aspect that is not captured by the quantitative borrower variable. However, the primary failure of developing financial sectors is the exclusion of a large share of the population. If this is rectified by microcredit schemes it is viable to assume that the bigger share of the population that is reached, the bigger is the impact on the economy and on poverty. Hence a significant negative effect is expected on poverty and a positive effect on GDP per capita.

There is a slight discrepancy between the numbers of observations in the regression with portfolio and borrower respectively. MIX market has information about the portfolio size, but not the number of borrowers for Brazil in 2000 and Costa Rica in 1997. In the observation for Russia in 1999 the situation is reverse, which explains the divergence. MIX market is trying to get hold of the information, but has not yet succeeded.

5.4.1 Results

The analysis shows that the share of borrowers has a significantly *negative* effect on GDP per capita, which can seem surprising at first glance. However, it is possible that it is a correlation rather than a causal effect that has been captured, despite the lagging.

A negative correlation implies that the countries with low GDP levels had a large share of borrowers in their population three years prior. This is a most reasonable outcome that does not necessarily say anything about the potential of microcredit to reduce poverty. Until the effect of microcredit begins to show on GDP per capita levels and poverty rates the correlation is expected to be negative, since microcredit is more prevalent in poorer countries. The results indicate, most reasonably, that microcredit is more used in countries with lower GDP per capita.

In a way, this is an encouraging outcome. Assuming microcredit has a reducing effect on national poverty that for some reason does not show in this regression, it is positive that more people get to borrow in the countries where the need is the biggest. This is analogous to the discussion about outreach – it is important that the ones who benefit are the ones who need it the most. There is, however, no guarantee that the actual individuals who receive the loans are the poorest just because they live in the poorest countries.

The effect of the control variables remain basically the same as in the portfolio regression.

Table 4: Results GDP

Variables	β	P
Borrower	-,116	,000
Institutions	,392	,000
Inflation	-,005	,000
Education	,001	,383
Landlocked	-,037	,480
Openess	,000	,305
Agriculture (% of GDP)	-,042	,000
Investment	,001	,708
South Asia	-,488	,000
LA and the Caribbean	,252	,002
Eastern Europe and Central Asia	,291	,000
East Asia and the Pacific	,040	,700
SSA	-,403	,000
2000	-,126	,194
2003	,035	,592
2004	,092	,164
2005	,192	,005
2006	,240	,001

Adjusted r^2: 0.87 N: 313

Also here the regression is run with national poverty rates as the dependent variable with essentially the same results. In this setting borrower no longer has any significant effect. This is most likely due to the inadequate poverty data. Only some of the regional dummies and the share of agriculture in GDP show any significant effect. The same caution regarding interpretation that was recommended in the portfolio regression applies here.

Table 5: Results Poverty

Variables	β	P
Borrower	-,158	,931
Institutions	-7,313	,061
Inflation	,206	,305
South Asia	47,817	,000
LA and the Caribbean	4,553	,485
Eastern Europe and Central Asia	-3,470	,597
East Asia and the Pacific	37,057	,000
SSA	41,825	,000
Education	-,008	,945
Landlocked	12,511	,001
Openess	,025	,554
Agriculture (% of GDP)	,489	,006
Investment	-,300	,117

Adjusted r^2: 0.81 N: 99

5.5 Robustness checks

To make sure that the conditions that guarantee that the OLS regression provides the best estimates are fulfilled the data is tested for heteroscedasticity using White's test (Gujarati 2006). The result indicates that the residuals do not all have the same variation, which implies heteroscedasticity. As a remedy the regression is adjusted using White's robust standard error. This improves the fitting of the model, but might change the significance of variables. This did, however, not occur.

Excluding variables does not make any significant difference. However, the results differ depending on what variables are used to measure different phenomena. There are several indicators of a country's willingness to trade for example. But even if other variables get a more intuitive result, the trade to GDP ratio seems like the most straightforward.

6. Discussion

The results indicate that microcredit, though perhaps beneficial in other ways, does not have much effect on national poverty. The portfolio variable shows no significant effect at all and the share of borrowers only has a negative correlation with GDP per capita. This negative correlation is not very surprising as it shows that more people borrow from MFIs in countries with more poverty. Since MFIs are more common in developing countries this is to be expected.

Other studies (see for example Khandker 2003), also conclude that national poverty remains unaffected by microcredit, but it is not obvious what lies behind this partial failure. The results beg the question: assuming it is a solution to the financial market failures, why is microcredit not more effective in reducing national poverty?

It is possible that it, to some extent, can be attributed to the difficulties involved in dealing with poverty data. GDP per capita is used as a proxy for poverty, but maybe poverty is affected more than what is captured with this rough measure. Against this stands the fact that theory states that the increased GDP (in cooperation with leveling of opportunities) will in time reduce poverty. Poverty data was used to confirm (or refute) that GDP per capita is an acceptable proxy. Unfortunately the limited poverty data caused a major loss of observations, which rendered most variables insignificant.

Even if the effects are underestimated due to the coarseness of the indicators, it is viable to assume that the impact has not been great up until today. It is possible that it still is too soon to do this kind of quantitative analysis, since microcredit has not been around at a large enough scale long enough to have an impact on a national level. Consider the diagrams in section 4; despite the steep increase in share of borrowers in the population it only just reaches above one percent by 2005. In fact, the share is above one percent only in 120 of the 1177 observations. With this in mind it is hardly viable to assume any significant impact on national poverty.

But there is no reason to be discouraged; the diagram also shows an almost six fold increase in the share of borrowers in the first five years of the new millennium. With the continuing extension of microcredit it is possible that an effect on poverty can be noticeable within a foreseeable future. In fact, looking at the fast increasing extent of microcredit in the last four

years (that for econometrical reasons could not be included in this data analysis) it becomes obvious that doing the same regression in the future is likely to yield totally different results; especially if a more complete set of poverty data became accessible. With 2005 being the International Year of Microcredit the phenomenon got an extra boost. In a way it can be seen as the starting point for a fast acceleration. With the data on microcredit in this study having 2005 as an end point, the whole effect of this acceleration is lost.

That basically sums up the inadequacies of the research methods. There might, however, also be problems within the microcredit concept. The selection of borrowers for example; that it is not always those who need it the most that benefit from microcredit. As previously discussed there might be certain requirements in order for an individual to take advantage of the microcredit opportunity. MFIs might be reluctant to extend credit to the poorest people if they are considered a riskier investment. If this is actually the case it severely dents the assumption about microcredit leveling opportunities and thereby reducing poverty.

Neither does giving individuals and microenterprises money compensate for an inhospitable business climate. Microcredit might keep micro businesses and individuals afloat, but without good governance and high quality institutions, they are not likely to grow in a fashion that will allow them to hire a big staff or in other ways affect the macro economics of a country.

This implies conflicting interests; as mentioned before, the government needs to support MFIs, especially in the start-up phase. However, there is an opportunity cost of doing this – the money could be used to finance the improvement of institutions which probably would yield better results for existing MFIs.

7. Summary and Conclusions

This thesis set out to answer the question if microcredit had reduced national poverty. It was assumed that improving the financial sector is important to reduce poverty, but that market failures constitute an obstacle to that process. The hypothesis was that though microfinance is not likely to be a panacea, it might reduce poverty both directly by making it possible for poor people to increase their incomes and smooth consumption, and indirectly through increased growth and the leveling of opportunities. It would do this by reducing the failures of the developing financial markets and make credit accessible also to poor people.

The typical institutional environment in developing countries is flawed, which increases the transaction costs that come with moral hazard, adverse selection and the risk of strategic default. MFIs have developed very specific methods to circumvent these high costs, including group lending, dynamic incentives and frequent installments. Lower costs imply more favorable loaning conditions, which ought to benefit those who otherwise would be excluded from the credit market.

The quantitative analysis of this study, however, shows no positive effect of microcredit on national poverty. The only significant result was a negative relationship between the share of borrowers in the total population and GDP per capita.

There can be several explanations for this outcome:

In the empirical analysis GDP per capita was used as a proxy. This measure says nothing about distribution and is thus only a rough indicator. Even if it shows no positive development due to microcredit it is possible that poverty is indeed reduced. The fact that the regression with poverty as the dependent variable did not show any effect either is not very surprising considering the limited supply of reliable poverty data. It is also likely that the analysis picked up a correlation between the extent of microcredit and GDP per capita rather than a causal effect.

Even if microcredit has been around for quite some time it is first recently that it has really picked up speed. With this in mind and considering the problem with limited supply of reliable data it might be necessary to wait a while in order to gather more observations

before being able to accurately capture the effect of microfinance on a macroeconomic level.

It is also important to keep in mind that this kind of quantitative analysis of aggregated data has its limitations. Microcredit can have an affirmative impact on such separate factors as consumption smoothing and gender equality that is not captured by financial indicators – yet, anyway. Reality is not easily captured in numbers and most economic analysis is thus forced to some simplification and generalization. This does not render the results meaningless, but they are to be interpreted carefully. The results of this thesis do not state that microcredit cannot affect poverty and ought to be abandoned. With reservation for limitations within the data, they do, however, indicate that there is a risk of microcredit not being very efficient in reducing poverty on a large scale. More research on these aggregated data is necessary to give a fuller picture of the effect of microcredit on poverty.

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Appendix 1

Countries

Islamic Republic of Afghanistan
Albania
Angola
Argentina
Armenia
Azerbaijan
Bahrain
Bangladesh
Benin
Bolivia
Bosnia and Herzegovina
Brazil
Bulgaria
Burkina Faso
Burundi
Cambodia
Cameroon
Central African Republic
Chad
Chile
China
Colombia
Costa Rica
Côte d'Ivoire
Croatia
Democratic Republic of Congo
Dominican Republic
Ecuador
Egypt
El Salvador
Ethiopia
Former Yugoslav Republic of Macedonia
Gabon
Georgia
Ghana
Grenada
Guatemala
Guinea
Guinea-Bissau
Guyana
Haiti
Honduras
Hungary
India
Indonesia
Iraq
Jamaica
Jordan
Kazakhstan
Kenya
Kyrgyz Republic
Lao People's Democratic Republic
Lebanon
Liberia
Madagascar
Malawi
Malaysia
Mali
Mexico
Moldova
Mongolia
Montenegro
Morocco
Mozambique
Myanmar
Namibia
Nepal
Nicaragua
Niger
Nigeria
Pakistan
Panama
Papua New Guinea
Paraguay
Peru
Philippines
Poland
Republic of Congo
Republic of Yemen
Romania
Russia
Rwanda
Samoa
Senegal
Serbia
Sierra Leone
South Africa
Sri Lanka
Sudan
Swaziland
Syrian Arab Republic
Tajikistan
Tanzania
Thailand
The Gambia
Togo
Trinidad and Tobago
Tunisia
Turkey
Uganda
Ukraine
Uruguay
Uzbekistan
Venezuela
Vietnam
Zambia
Zimbabwe