

DETERMINANTS OF MICROCREDIT REPAYMENT RATE IN INDIA,
BANGLADESH, PERU, AND BOLIVIA

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การวิจัยนี้มีวัตถุประสงค์หลักเพื่อศึกษาว่าการแข่งขันในตลาดมีผลในแง่ลบต่อกำหนดอัตราการจ่ายชำระคืนเงินให้กู้ยืมแก่ผู้มีรายได้น้อย โดยการศึกษาได้มีการศึกษาในผลกระทบจากปัจจัยที่มีผลทำให้เกิดความแตกต่างในการกำหนดอัตราการจ่ายชำระคืนเงินให้กู้ยืมแก่ผู้มีรายได้น้อย ได้แก่ เพศ รายได้ อัตราดอกเบี้ย อายุของไมโครไฟแนนซ์(MFI) สถานะทางกฎหมาย และสถานะการกำกับดูแล เพื่อทดสอบความสัมพันธ์ของการศึกษานี้ได้ใช้สองประเทศจากเอเชีย ได้แก่ อินเดียและบังคลาเทศ และสองประเทศจากละตินอเมริกา ได้แก่ เปรูและโบลิเวีย จากการอ้างอิงข้อมูลสถิติในช่วงเวลา ปี 2546 ถึง 2555

ผลการศึกษาในประเทศกลุ่มตัวอย่างพบว่าตัวแปรการแข่งขันไม่มีผลกระทบในประเทศกลุ่มตัวอย่าง ในขณะที่เพศ อายุและสถานะทางกฎหมายเป็นตัวแปรที่สำคัญในประเทศกลุ่มตัวอย่างที่ระบุ การศึกษานี้แสดงให้เห็นว่าในกรณีของประเทศโบลิเวียอัตราการจ่ายชำระคืนเงินให้กู้ยืมแก่ผู้มีรายได้น้อยได้รับผลกระทบอย่างรุนแรงจากภาวะเศรษฐกิจของประเทศในช่วงเวลานั้น

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The main purpose of this study was to discover if competition has a negative effect on microloan repayment rates. In addition, this study tests the effects of gender, income, interest rate, age of microfinance institution, legal status, and regulatory status on loan repayment rates. In order to test the relationships, this study used two countries from Asia, India and Bangladesh, and two countries from Latin America, Peru and Bolivia. The years of the observations used varies from 2003 to 2011.

The results show that the competition variable is not significant in any countries studied while gender and legal status have a significant positive effect on repayment rates, whereas age has a significant negative effect in repayment rate in specific countries. This study also shows that in the case of Bolivia, the repayment rate is strongly affected by the economic condition of the country at the time.

Field of Study: International Economies and Finance

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Student's Signature

Advisor's Signature

Co-advisor's Signature

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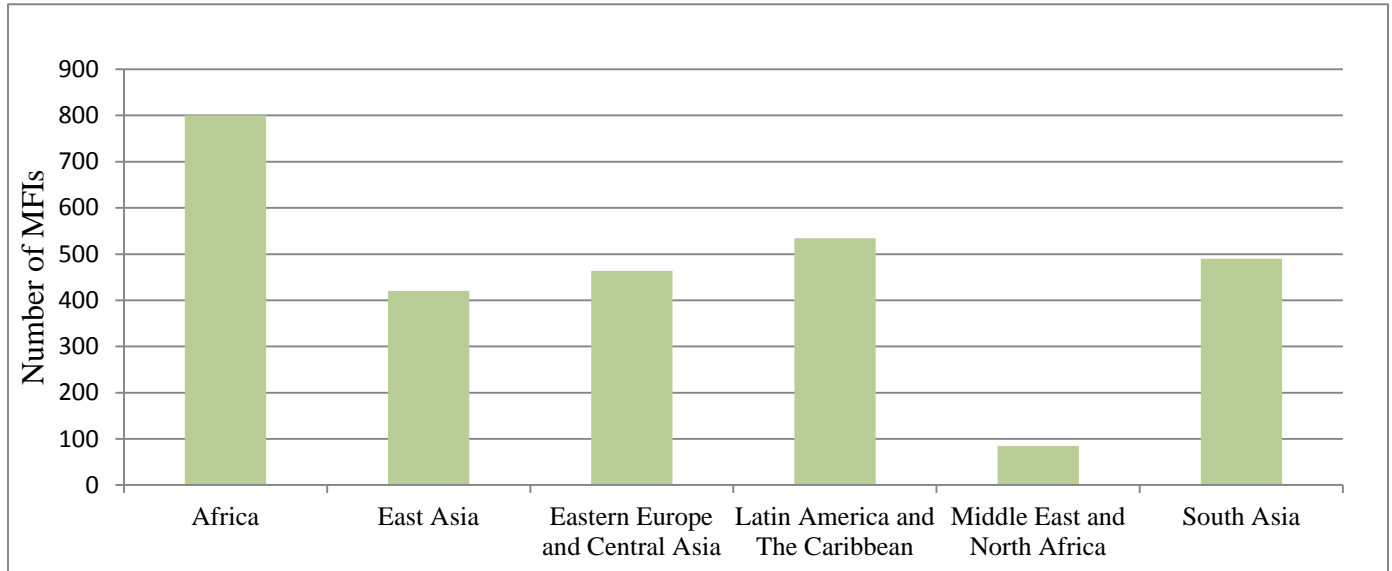
CHAPTER I

INTRODUCTION

1.1 Background

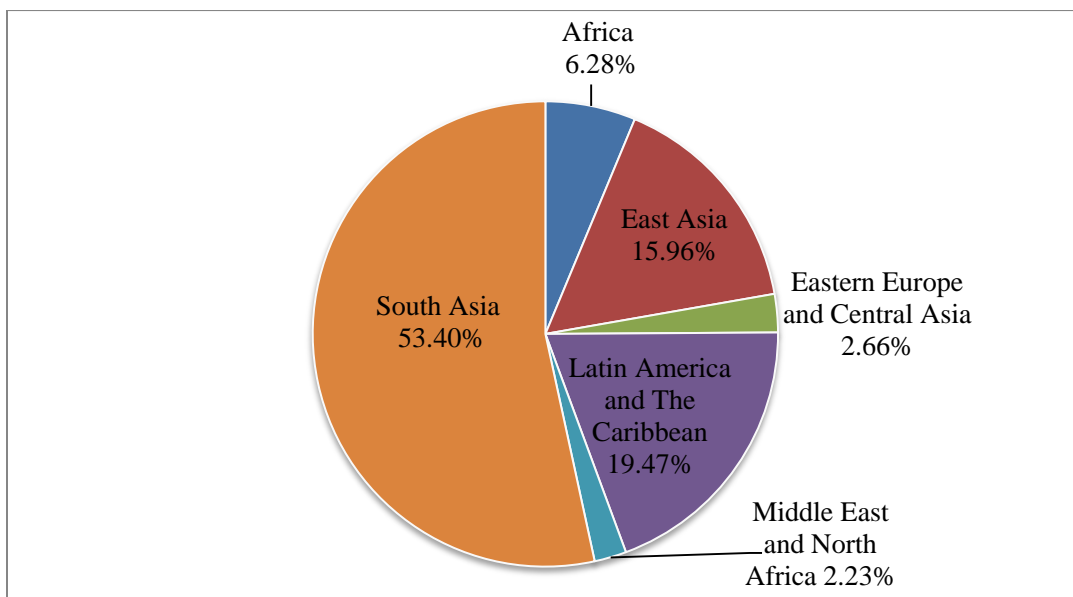
It was in 1976 when Professor Muhammad Yunus went to a village in Bangladesh close to the university where he taught Economics and talked to the poor habitants. Professor Yunus was trying to find out what makes a person poor and what makes him or her remain that way. Soon after his first visit to the village, he realized that it was a lack of access to credit that did not allow poor people to get out of poverty. He started to lend money to the poor and from there microcredit was created. In 2011, Grameen Bank, funded by Professor Yunus, reported more than 6.6 million active borrowers and a portfolio over 920 million US dollars. The idea of lending to the poor, which started in Bangladesh, spread worldwide. In 2011, Mix Market reported 2,793 Microfinance Institutions (MFI) worldwide (Figure 1) and a combined total of 94 million active borrowers. South Asia accounts for 53.4% of the total global borrower base while Latin America and the Caribbean constitute 19.47% (Figure 2) (Mix Market, 2013: online).

Figure 1.1: Number of MFIs worldwide in 2011



Data from Mixmarket.org

Figure 1.2: Percentage of total active borrowers per region in 2011

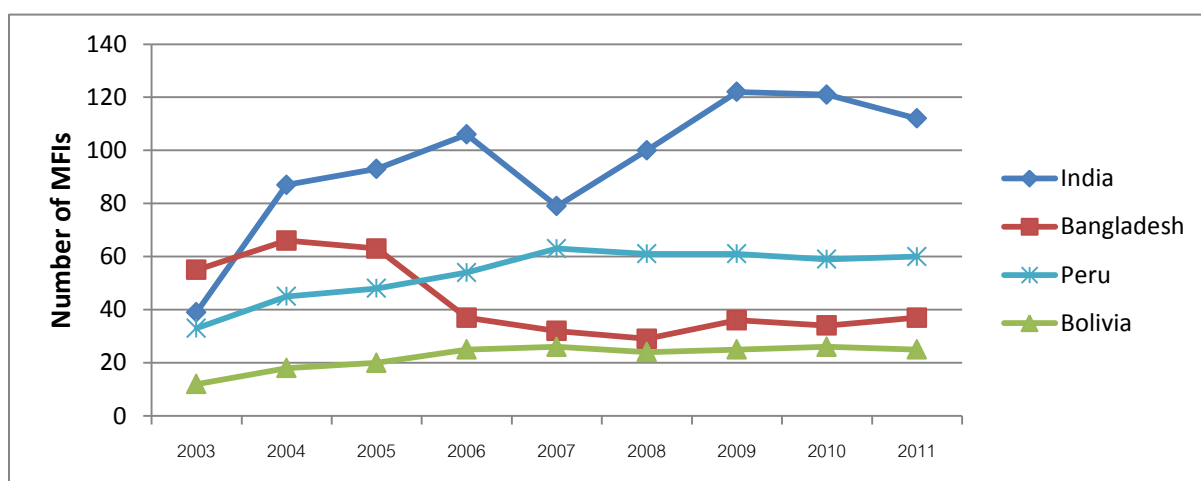


Data from Mixmarket.org (2013)

Microfinance has become extremely popular in developing countries and it has expanded not only to new locations but also the range of services it offers. Microfinance started based on the idea of giving small loans to help poor people to start or expand their businesses, however the massive demand forced microfinance to add new services and features that the community needed. Some of these features are Micro Savings, Micro Insurance, Micro Leasing, and Money Transfer. In this research we will only focus on microcredit and the determinants of the repayment rate of microloans. We will use the terms microfinance, microloans, and microcredit interchangeably; all terms represent the service provided by a financial institution to a low income person or group in the form of a small loan.

Microfinance has been seen as a major tool to alleviate poverty; however, there have been many studies that challenge this view. A rapid increase in the number of microfinance institutions in the four countries studied (Figure 3) could significantly increase the competition in the industry, which may change the dynamic of the industry possibly making the MFIs forget the basic fundamental reasons why microfinance was created in the first place.

Figure 1.3: Growth in the number of MFIs in India, Bangladesh, Peru, and Bolivia.



Data from Mixmarket.org

1.2 Objective

This research will attempt to answer the following questions:

- 1) Does competition in a given geographical area in the microfinance industry have a negative effect on microloan repayment rates?
- 2) In addition, do the gender and the income of the borrowers, the interest rate of the loan, and the legal status, the regulatory status and the age of the institution have a significant effect on microloan repayment rates?

1.3 Scope

In this paper we compare the microfinance industries of four countries to analyze the influence of independent variables on the repayment rate. The four countries selected for this research are India, Bangladesh, Peru, and Bolivia. India and Bangladesh represent the

Asian region while Bolivia and Peru represent the Latin American region. Bangladesh was selected for this research since it was the country where microfinance was created, so it is one of the few countries where the microfinance industry has matured. India was selected for this research because it is one of the countries in the Asian region where microfinance has grown tremendously in the last decade and continues to grow at a fast rate today. The Indian microfinance industry is a good case to study the effect of fast growth and competition on repayment rates. From the Latin American region, we selected Bolivia and Peru since they are two countries where the microfinance industry has grown and developed increasingly in the past decade. Moreover, the microfinance markets in these countries are among the largest in the Latin American region. Lastly, we selected two countries from Asia and two countries from Latin America to compare the two regions since they are both very different from each other. By comparing these two regions we will be able to see more clearly the effect of the independent variables on the repayment rate. The data collected commences as early as 2003 until 2011. All data collected is in annual data frequency.

CHAPTER II

MICROFINANCE INDUSTRY

2.1 Indian Microfinance Industry

Table 2.1: Overview of India and microfinance industry

Population	1,241,491,960
Active Borrowers	26.2 million
Gross Loan Portfolio	4.2 billion
GNI per capita (dollar)	\$ 3,590
Human Development Index	134th

Sources: World Bank 2011, Mix Market 2011, and United Nations Human Development Index 2011

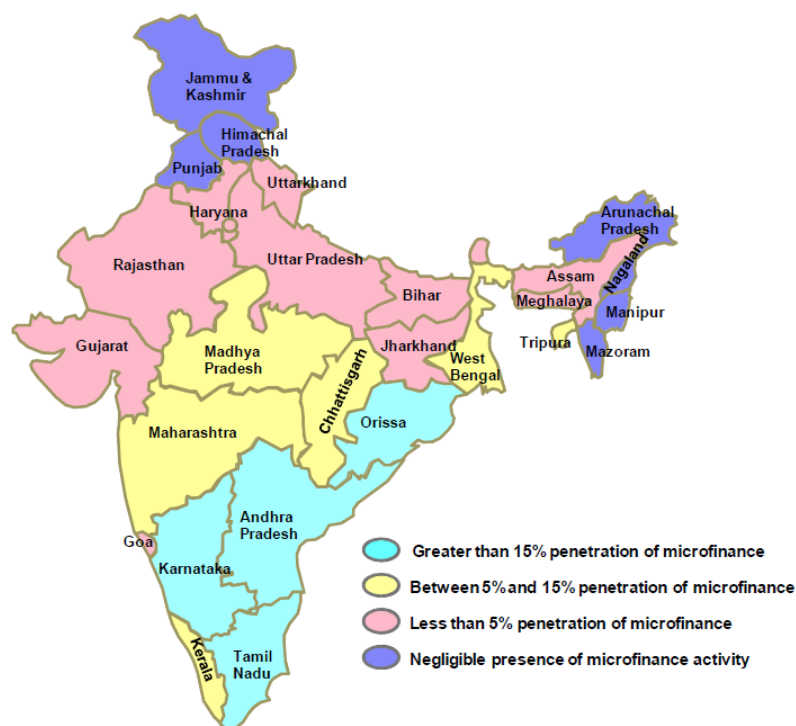
With a population of over 1.2 billion people, India has the second largest population in the world, following China. Even though India has one of the fastest growing economies in the world, there is still 68.7% of the total population that lives with less than \$2 per day (World Bank 2013: online). By looking at those figures, it is clear that there is a huge number of poor Indians that may be willing to borrow microloans to finance new businesses in an attempt to escape poverty.

Before the 1980s, microfinance in India was largely informal, however in the 1980s the introduction of new NGOs made microfinance a more formal way of financing the poor. In India there are two popular models of providing microcredit. The model called Self-Help Group (SHG) is an adaptation of the informal way of financing the poor before the NGOs stepped up. The other model is called the Grameen Model, which is based on

the model invented by Professor Yunus in Bangladesh. The main difference between these two models is that the SHG consists of a group of ten to twenty women who are required to save certain amount of money (usually small amounts, for instance one rupee per day). After six months the group will have enough money to use as collateral to ask for a microloan. In the Grameen Model, the groups are usually smaller, around five to ten women, and the members of the group are the collateral for each other. Therefore, if one of the members of the group fails to pay the microloan back then the other members are responsible for the repayment of the loan.

There had been little or no regulation from the Government in the first 30 years of microfinance industry. In fact the government helped and incentivized MFIs to grow and expand to new areas in India. This was a major reason why the microfinance industry grew so fast and so big during those 30 years. However, the geographical areas where MFIs grew were not proportionally distributed among the Indian states. The southeast region is home to many MFIs while the northern region still has limited access to microfinance.

Figure 2.4: MFIs penetration in India in 2010



Source: Lok Capital Report “Microfinance Industry in India” (2011)

Microfinance crisis in Andhra Pradesh

The tremendous unregulated growth of microfinance in India had its consequences. In 2006 and in 2010 the state of Andhra Pradesh faced microfinance crises that led to a number of suicides among borrowers that forced the government to take action on the industry.

There were many reasons that contributed to the crisis in 2006. The three most well-known reasons were the lack of transparency regarding the interest charge to the poor, the implementation of unethical ways to force the borrower to repay the microloans, and the intense competition among MFIs to get more borrowers (Shylendra 2006). Just by

looking at these reasons it is clear that somewhere along the line that some MFIs shifted their main mission. When most of the MFIs were created they were formed as NGOs (non-profit organizations). Their main mission was to alleviate poverty in the community where they operated, however a large number of MFIs originally created as NGOs decided to become for-profit and changed their main mission from helping the poor to making the largest profit possible. These had as consequence the reasons describe above that triggered the crisis.

When the crisis started in 2006, default rate increased to the point that the Government, concerned about the industry, decided to step in and help to reduce the damage. It did not take a long time for the industry to get back on its feet and it continued to grow at an incredible rate again. Some MFIs doubled their loan portfolios between 2008 and 2009. The rapid growth of the industry and the incredible potential for profit caught the attention of international investors. By the end of 2009 around 12 billion US dollars had been invested by foreigners into the microfinance industry in India (Taylor 2011). As the number of for-profit MFIs increased in the state and in India, the competition among MFIs intensified. The competition lowered the interest charge in microloans, a strategy taken by some MFIs with the purpose of getting more borrowers; however the interest rate never became the same as the banks' interest rate. The reason why the MFIs always charged a higher interest rate than banks is because they are borrowing money from the banks. Therefore, MFIs already need to pay the bank's interest rate plus add the MFIs' cost of bringing microloans to the poor. As a result, competition did lower the interest rate on microloans, however the MFIs' interest rates continued to be higher than the

banks' interest rates. The high interest rate plus the easy access to microcredit in Andhra Pradesh had as a consequence an increase in overlapping in the state. Many microfinance customers were not able to repay their microloans with their incomes; therefore, they took more loans to repay the previous loans. In 2010 in Andhra Pradesh there were 23.55 million microcredit borrowers and only 16 million household, this clearly show a huge overlapping in loan portfolios (Srinivasan 2010). After the repayment rate came down from its high of around 90% to only 15% - 20% in MFIs that operated in Andhra Pradesh the banks stopped giving loans to MFIs not only in Andhra Pradesh but all over India. This created a liquidity shortage that prevented MFIs from providing microloans (Nair, 2011). In addition, the media had linked cases of suicides in the state with microcredit dues convened with the news that SKS Microfinance, the largest microfinance provider in India, went public and the initial public offering (IPO) had a value of 1.5 billion (CGAP 2010). These brought criticism from the international media where they stated that microfinance in India is living off of the poor. The Government of India decided to act by closing MFIs in the Andhra Pradesh state and an act to protect women's SHG from the exploitation of MFIs was passed in 2010.

In an attempt to control the microfinance industry, the Reserve Bank of India created a new category for new MFIs, called Non Banking Financial Company (NBFC-MFI). The MFIs under this category are requested to have 75% of their loan portfolio in loans that are invested in income-generating activities. The maximum interest rate that could be charged to their clients was set at 26% with no penalty for late payments and no security deposit. The government is also working on the control of over-indebtedness by limiting

the MFIs to only lend to members of Joint Liability Groups (JLG), not allowing MFIs to lend microloans to people that are members of more than one SHG or JLG, and controlling that no more than two MFIs may lend to the same person. This last requirement is still hard to achieve since information sharing between MFIs is limited. The Indian government also regulated the documentation and transparency and the collection practices in MFIs.

It seems that the Indian Government learned the lesson the second time around and decided to take action by regulating the industry; however, the microfinance industry in India is now seen differently by the public. Previously, the industry was seen as a non-profit business with the only purpose to help improve lives of poor. Indians trusted the NGOs and made a relationship that resulted in higher repayment rates and an improvement in the economic status of the borrower. After the 2010 crisis, the industry is seen by many as a profit-seeking corporation that exploited the underprivileged to get large profits for their already rich stockholders. The relationship between MFIs and borrowers is very different after the MFIs converted to for-profit organizations. As a consequence, the repayment rate has suffered from this as was shown during the crisis.

2.2 Bangladesh Microfinance Industry

Table 2.2: Overview of Bangladesh and microfinance industry

Population	150,493,658
Active Borrowers	20.9 million
Gross Loan Portfolio	2.8 billion
GNI per capita (dollar)	\$ 1,940
Human Development Index ¹	146th

Sources: World Bank 2011, Mix Market 2011, and United Nations Human Development Index 2011

Bangladesh is one of the most densely populated countries on earth, with a population of over 150 million, of which more than half are living below the poverty line. Bangladesh's GDP growth in 2011 was 7%, however, GNI per capita in the same year was below 2,000 US dollars (World Bank 2013: online) and its human development index reported by the United Nations was 0.5, putting Bangladesh in the list of "low human development" countries (United Nations Development Programme 2013: online).

It is clear from looking at these characteristics that Bangladesh should have a significant need for MFIs. In fact, Bangladesh is said to be the motherland of microfinance, since back in the middle 1970s a Bangladeshi professor of Economics, named Muhammad Yunus, started a research project that he called "Jobra" where he gave poor people small loans with the objective to help them start or improve their business. The special characteristics of these small loans were that they were given under a "solidarity group-based credit delivery system" which means that the poor people that were willing to receive loans must form a group of 5 or 10 members and ask for a loan together. Once the loan was given to one of the members of the group the other members

¹ Out of 187 countries

will act as collateral for the borrower and were held responsible for the repayment of the loan. Once the loan was paid in full then another member of the group was allowed to ask for a loan. Others characteristics of Professor Yunus' project were that the loans were very small, usually less than 100 US dollars, and the targeted clients were mostly poor women.

After seeing the success of the project, Professor Yunus decided to fund Grameen Bank in 1984 and from there microfinance started. Since the recent independence of the country had given donors an incentive to help build Bangladesh, a huge amount of money was coming to the country in form of donations. In addition, the success of Grameen Bank with microcredit gave enough incentive to NGOs to use the money donated and start copying Grameen Bank's model for microfinance. Moreover, new NGOs were created with the main propose of providing microcredit to the underprivileged. The 1980s and 1990s were a time of growth and expansion of MFIs. The most notable MFIs were Grameen Bank, ASA, BRAC, and Proshika, which are now the four biggest MFIs in Bangladesh and together account for more than 80% of the total microcredit borrowers in the country. The continuous donations coming from foreign sources and the experience in the market gave these four MFIs an advantage over the small new MFIs. Soon after the small new MFIs started operating, they found themselves struggling to remain in the industry. As these four MFIs became dangerously big the Government of Bangladesh decided to pass the Microcredit Regulatory Authority Act – 2006, which required the creation of the Microcredit Regulatory Authority (MRA). Since then, any NGO that wants to offer microfinance services in the country must be registered with the MRA or

the Bangladesh Bank (central bank) and report financial information on an annual basis. Moreover, the Government set restrictions on how much interest an MFI can charge for their microloans and reduces abuse of the borrowers by the loan providers. This attempt by the Government to maintain organization and transparency in the microfinance industry has consequently helped the industry to develop in a more organized and supervised way that benefits the microloan clients.

The success of the microfinance industry in Bangladesh can be attributed to the hands-on government regulations of the industry and the fact that most of the MFIs, including the four biggest MFIs, are NGOs that focus on economic development and poverty alleviation in the country. It is important to highlight the goal/mission of the MFI since these will determine the way MFIs achieve their aims. A non-for-profit MFI will charge only the minimum amount of interest—just enough to cover the expenses associated with providing the microloan and will give the borrowers the best service available to help them improve their economic situation and be able to repay their microloans. A for-profit MFI, on the other hand, has as main goal to make as much profit as possible and will limit the services to the borrowers to a minimum in order to cut costs, giving the borrower little help. In the case of Bangladesh, private banks and for-profit MFIs are not influential in the industry.

Bangladesh is the second country in Asia in financial inclusion after Sri Lanka, which is a great achievement for a developing country²; however, there is still a big gap between demand and supply of microfinance where only 17 million out of the estimated 61

² “NGO-MFIs in Bangladesh.” Microcredit Regulatory Authority. Volume VIII. (2011).

million of poor people are reached by MFIs (Taylor 2009). However, if the MFIs continue to grow and the Government continues to regulate them, the MFIs will continue to expand and reach more poor people.

Table 2.3: Overview of the four largest MFIs in Bangladesh in 2011

Microfinance Institution	Provider of Microfinance Since	Legal Status	Number of Borrowers	Gross Portfolio USD	Area Coverage (No. of Districts)
Grameen Bank	1983	Bank	6.6 million	920.7 million	64
BRAC	1990	NGO	5.0 million	643.6 million	64
ASA	1991	NGO	4.94 million	579.8 million	64
Proshika	1976	NGO	1.36 million	45 million	55

Data from Mixmarket.org

2.3 Peruvian Microfinance Industry

Table 2.4: Overview of Peru and microfinance industry

Population	29,399,817
Active Borrowers	3.6 million
Gross Loan Portfolio	8.8 billion
GNI per capita (dollar)	\$ 9,440
Human Development Index	80th

Sources: World Bank 2011, Mix Market 2011, and United Nations Human Development Index 2011

It was in 1968 when Accion International entered in Peru and started projects to help communities, but it wasn't until the United States Agency for International Development (USAID) and the Inter-American Development Bank (IDB) promoted the microfinance

project, copying the Grameen Bank model, to NGOs in early 1980s that motivated Accion International to become one of the first NGOs in Peru to offer microcredit to low income families. It took less than ten years for the industry to grow from a simple project used by small NGOs to become a major tool to fight poverty in Peru. The rapid growth of the industry in its early years was partially attributed to a new policy framework of economic liberalization applied by the Peruvian government in the 1990s.

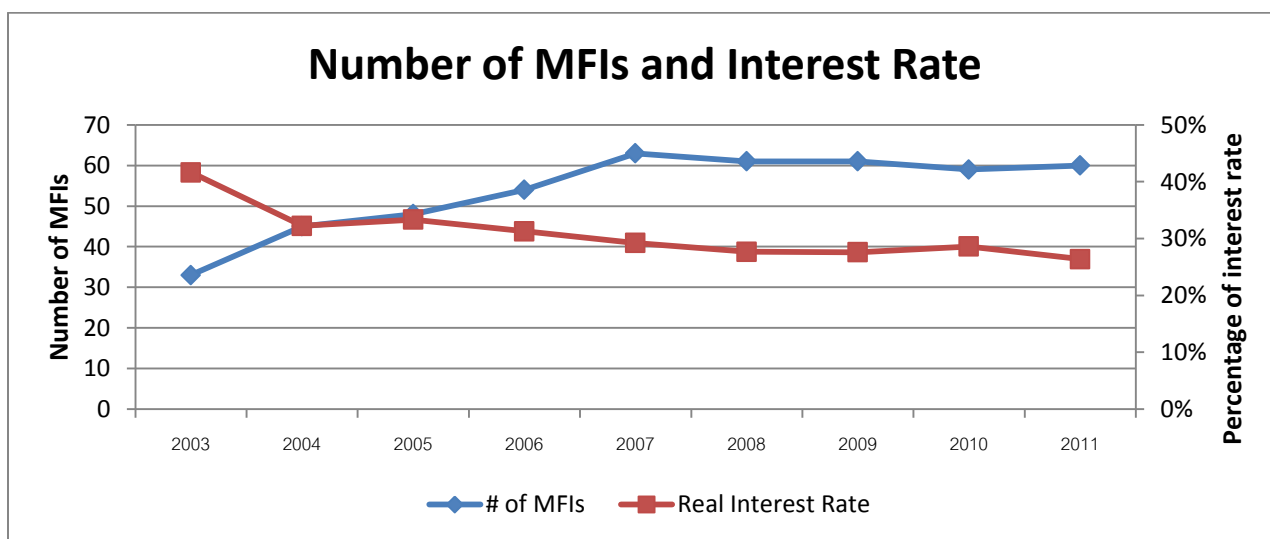
The Government of Peru realized the potential of the microfinance industry at an early stage and was able to adapt regulations to it before it became too difficult to control and regulate. The Government offers five categories for institutions that want to provide microcredit service. Those categories are Municipal Savings and Loan Institution (also known as CMAC), Rural Savings and Loan Institution (also known as CRAC), Entities for the Development of the Small and Microenterprise (EDPYME), Commercial Banks, and Financial Companies. The differences between those categories are many; the most general ones are the minimum required reserve, the restrictions on offering saving accounts to clients, and the mission on which the institution is based.

The Government also developed seven principles that help to control the industry. Those principles are (1) Modular diversity of regulatory types and upward mobility between them (2) Extensive supervision (3) Nondiscrimination between domestic and foreign capital (4) Nonintervention by the state (5) Freedom of capital allocation (6) Freedom to determine price (interest rate and commission) (7) Permission to take deposits for several regulatory forms (except EDPYME) (Etzensperger 2012).

Perhaps the most controversial principle is the freedom to determine price since it has been a problem in cases such as in India, where MFIs abused their clients by charging them enormous interest rates on their microloans. However, the reasoning behind the principle adopted by the Government in Peru is that a well-regulated and controlled industry should have healthy competition where MFIs should reduce their price and offer better services to gain more clients.

As it is clearly shown in Figure 2.5 the number of MFIs has been constantly increasing since 2003 while the interest rate on microloans has been constantly decreasing since the same time. This proves that competition in Peru has not increased the price of the microloans but has decreased it substantially from an average of more than 41.5% in 2003 to 26.39% in 2011.

Figure 2.5: Number of MFIs and Interest Rate



The microfinance industry in Peru is one of the most organized in the world and this is due to the Superintendency of Banking, Insurance, and Pension Funds (SBS) which is in

charge of regulating the industry as well as collecting information from the MFIs on a monthly basis. The SBS collects specific information about the MFIs and their clients and makes this information available online and in the newspapers. The idea behind sharing information is to try to avoid over indebtedness since all MFIs can find the credit record of a potential client and make a educated decision whether the client is worth to give a loan or not and how much interest rate to charge in the loan. The information sharing system that SBS provides is meant to reduce overlapping even when competition is increasing in the industry.

These regulations have made Peru one of the world's leading in the microfinance industry. A ranking made by the Economics Intelligence Unit in 2012 concluded that Peru is number one in the Overall Microfinance Business Environment ranking out of 55 countries evaluated. Peru also is placed in the number one position for the Regulatory Framework and Practice category where the regulation of the government and the method use by the MFIs are evaluated and the Supporting Institutional Framework category where the transparency in the account standards, the interest rate, and client protection are evaluated.

The Peruvian microfinance industry is a good example to follow. With its regulations in place and a growing number of MFIs more people will find access to financial services in the near future. In 2011 it was estimated that 47% of the demand for microloans was still not met, therefore, there is still place for the microfinance industry to grow and expand throughout the country (Etzensperger 2012).

2.4 Bolivian Microfinance Industry

Table 2.5: Overview of Bolivia and microfinance industry

Population	10,088,108
Active Borrowers	1 million
Gross Loan Portfolio	3 billion
GNI per capita (dollar)	\$ 4,890
Human Development Index	108th

Sources: World Bank 2011, Mix Market 2011, and United Nations Human Development Index 2011

Bolivia is one of the poorest countries in Latin America. The last national census made in 2001 showed that 59% of the population lived in poverty and out of the 59%, almost 25% lived in extreme poverty (living with less than \$1.25 per day).³ As with other countries in this study, the poor in Bolivia found it almost impossible to access credit from commercial banks. Therefore, the demand for credit, more specifically microcredit, is clear in Bolivia.

Microfinance was introduced in Bolivia in late 1980s where small NGOs started offering small loans to the poor local population. By 1992, Bancosol, one of the NGOs offering microfinance, became the first non-profit NGO to convert to a for-profit bank that offers microcredit. After Bancosol, many other NGOs decided to shift from NGOs to banks. The Government of Bolivia decided to create a new category of MFIs called Private Financial Funds (Fondos Financieros Privados (FFP)). The Government justified the declaration of the new category of MFIs by saying that this change will improve the

³ UNICEF http://www.unicef.org/bolivia/resources_2332.htm

microfinance industry by allowing MFIs to expand to places where microfinance is not yet accessible.

In fact, it was true that right after the changes made by the Government, the MFIs expanded to new areas and were able to reach citizens that did not have access to microloans before. There was an increase in the number of borrowers and the portfolio of the microloans lent. The interest rates of the microloans also decreased due to implementation of more efficient ways to manage operation costs. There was also an increase in the number of services offered by MFIs. Adding to all these positive factors, it seems that the MFIs (once NGOs and now banks) did not lose their original mission and they still work for the benefit of the poor. However, it did not take long until other organizations and investors noticed the potential profit in the industry and decided to jump in. Between the years 1996 to 1998 the increase in the competition in the industry was as high as it had ever been. This was partially due to the inclusion of a new form of microfinance called Consumer Lenders (*credito de consumo*) that entered the industry in those years. This new way of offering loans provides microloans of a similar amount to loans from a regular MFI, but the amounts of the loans are based on the borrowers' salary and the payments are made by deducting from the borrowers' paycheck.

The competition between MFIs and Consumer Lenders was intense and the large availability of funds incentivized borrowers to borrow money from more than one MFI and Consumer Lenders, creating overlaps.

In early 1999, an economic crisis started in the neighboring countries – Brazil's and Argentina's currencies devalued – which affected Bolivia's exports and brought Bolivia

into an economic crisis. Many state employees were fired as a consequence and the repayment rate on microloans and Consumer Lenders decreased. The microfinance industry entered a crisis and many banks struggled to stay in business. Consumer Lenders almost entirely disappeared from the industry since the repayment rate decreased to the point where they could not afford to stay in business anymore. Some MFIs used unconventional ways to force their clients to repay their loans or they used extremely high late fees that made the borrower more indebted than before. There were many manifestations from the borrowers asking for debts forgiveness. The Government pushed the MFIs to evaluate the loans and consider rearranging the terms and conditions for the loans. However, few loans were modified from their original terms. The crisis lasted until 2002 when the number of borrowers started to increase slowly in the industry.

The industry of microfinance in Bolivia is regulated by the FINRURAL (Association of non-regulated MFIs) and ASOFIN (Association of Regulated MFIs) under the Bolivian Financial Regulator Department (ASFI). However, the Government did little to regulate the industry in its earliest stage, which contributed to the rapid growth of the industry. The Government also incentivized growth by creating the Private Financial Funds category. However, after the crisis in the industry that lasted four years the ASFI took action to provide a more organized and stable industry. The crisis pushed a large number of Consumer Lenders and private organizations out of the market, leaving the old MFIs to reconstruct the industry. The increase in the participation of the ASFI and the decrease in the number of Consumer Lenders and private organizations significantly changed the industry.

In 2012, the Economics Intelligence Unit stated that Bolivia is the second best country in the Overall Microfinance Business Environment ranking out of 55 countries evaluated. Bolivia is also placed in the second position for the Supporting Institutional Framework category where the transparency in the account standards, the interest rate, and client protection are evaluated.

Now the industry consists of 37% of the total financial activity in the country (Vogel 2012) and is used as an example of a well run industry worldwide.

CHAPTER III

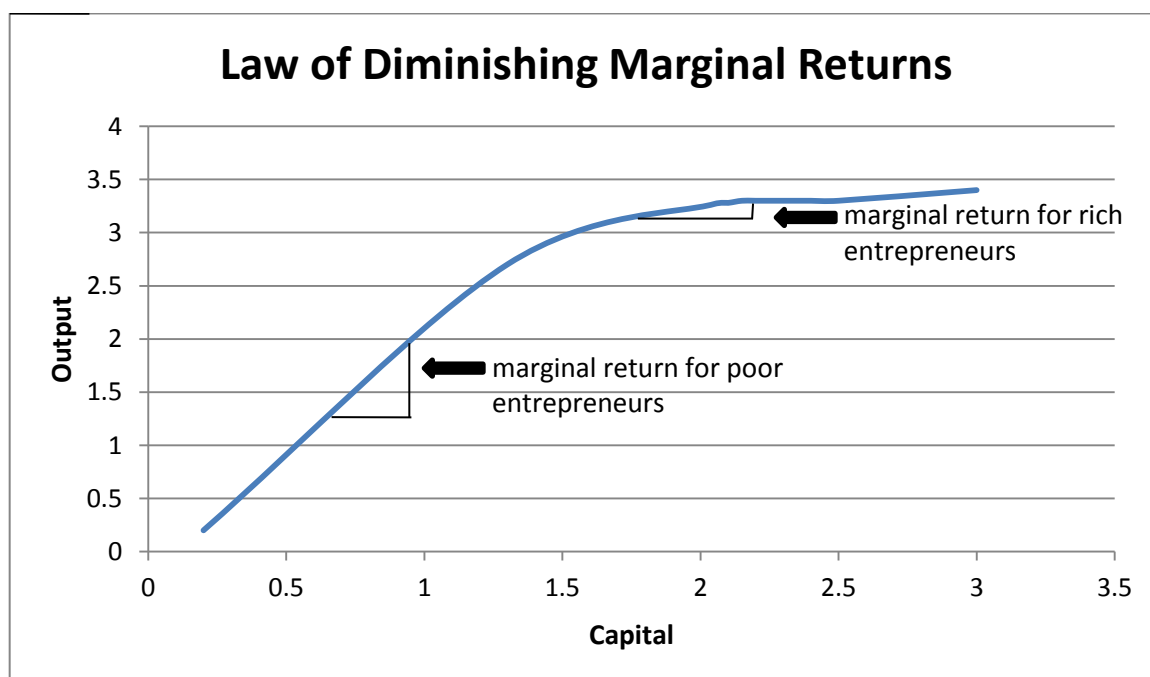
CONCEPTUAL FRAMEWORK & LITERATURE REVIEW

3.1 Conceptual Framework

The idea of microcredit is based on the Law of Diminishing Returns, which states that an entrepreneur with little capital will produce more when giving one extra unit of capital than an entrepreneur with more capital. Therefore, it makes sense to lend money to low-income families since an increase in their capital will lead to a higher return than an increase in capital of a rich family.

The graph below shows the concavity curve of diminishing return that illustrates that at a higher capital stock the return is less than at a lower capital stock.

Figure 3.6: Law of Diminishing Return Curve

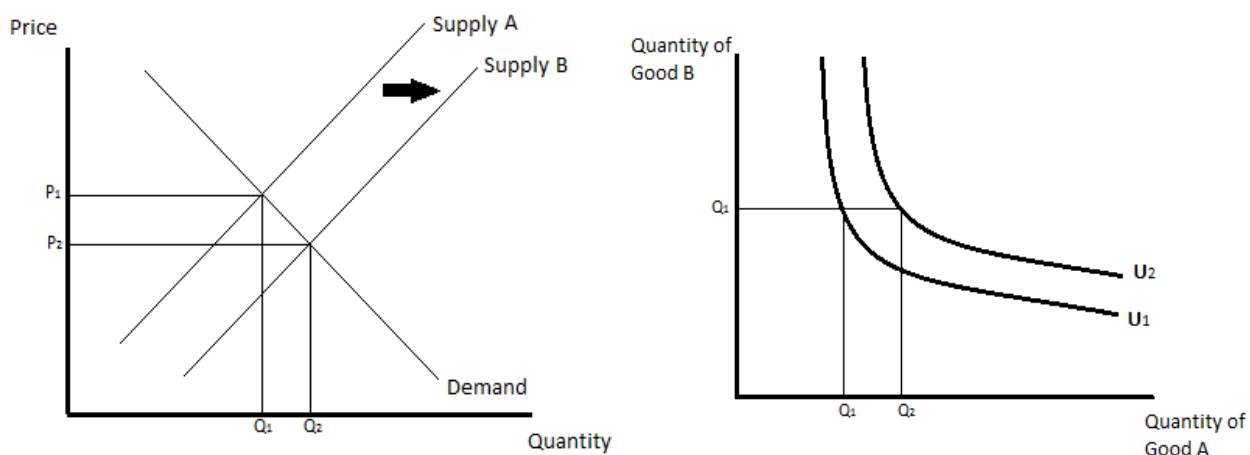


Market Competition Theory

This theory tells us that an increase in the number of sellers will increase competition which will lead to a decrease in the sellers' profit but will benefit the consumer by reducing the price of the goods or services.

An increase in the number of sellers will increase the supply in the industry which will lower the price of the good or service sold. This will give the consumer the opportunity to expand his/her utility curve.

Figure 3.7: Supply, Demand and Utility curves



As a result, competition has a positive effect on consumers, who will be able to buy the same good or service for a lower price, and will be able to choose from a greater variety of the goods or services in the market. Competition also incentivizes firms to provide a better service at a lower cost and invest in research and development to come up with a new product not yet in the market. Consumers will also gain from this incentive

since new products will give the consumers more options at the time to purchase a good or service.

In general, competition has a positive effect on consumers and a negative effect on the producers in the industry; however, in our research we will find that competition in the microfinance industry may possibly have a negative effect on consumers who may fall behind on loan payments and increase their indebtedness.

Costs and Benefits of Microcredit

It is easy to see the benefits that microcredit can bring to a country. Financial sustainability, small and medium business improvement and expansion, poverty alleviation, and education are some of the positive effects microcredit could have on a country. However, when looking closer to the microcredit effects we can also see the cost in the society that use it and on the microfinance institutions that provide it. For an MFI, the cost of providing microcredit is the risk of not getting the lent money back, which will be the probability of default on a loan. For the society, the cost of receiving microcredit is the possibility of abuse from the microfinance institutions that provide the service. There have been cases where the provider of the service, taking advantage of the lack of information from their clients, charged clients extremely high interest rates. Moreover, McIntosh and Wydick's (2005) study concluded that an increase in the number of providers of microcredit in an area will increase competition and will hurt the poorest in the area by denying them access to credit. The cost for the society of an increase in competition in the microfinance industry is the exclusion of the low income families to

receive microloans, which let these low income families in the same position that they were when microloans were not yet created.

3.2 Literature Review

- Competition

McIntosh and Wydick (2005) analyzed the microfinance industry and the effect of competition. They stated that competition, generally seen as positive for the consumers, may have a negative consequence for the borrowers of microloans. They explained that an increase in competition between microfinance institutes would decrease the shared information among the organizations. This as a consequence facilitates borrowers to borrow more loans from different institutions which may lead to them with a higher probability of defaulting. Lack of information from the financial institutions may lead to a lower repayment rate and consequently a higher default rate. Moreover, McIntosh and Wydick stated that as competition in the industry increases, the clients who will get benefit from the competition are only the wealthier borrowers while the poorer borrowers will have a decrease their wealth as a consequence of an increase in the number of lenders. The reason for this is that once the MFIs realize that clients are not paying back their microloans, they become more selected at the time of give loans selecting only the clients that they believe will be able to pay back the money borrower, those clients are usually the wealthier ones.

Assefa, Hermes and Meesters (2010) examined the effect of competition in MFIs. They stated that an increase in competition lowers the borrower selection requirement

standard, weakens the relationship with the client which has a negative effect on the MFIs performance that consequently increases the default rate, and decreases the efficiency and financial performance. The authors explain that even though competition usually is beneficial for clients, in the microfinance industry competition may in fact have negative consequences for the suppliers as well as the clients. The microfinance industry, the authors explains, depends on a strong seller-client relationship. Since microcredit borrowers have no collateral to offer, MFI must be very careful at the time to approve their loans to try to minimize their probability of defaults. High competition in the microfinance industry forces MFIs to seek for new clients constantly which puts them in a position where they must lower their clients' requirements to attract more clients. By lowering their clients' requirements the MFI will face a higher probability of borrowers defaulting in their loans.

- Gender

The study made by D'Espallier, Guérin, and Mersland (2010) analyzed 350 MFIs in 70 countries to evaluate the influence of gender in the portfolio at risk and write-off at a global level. Their results show that a higher percentage of female borrowers is negatively related to portfolio at risk at 30 days (this is the same as saying that female borrowers have a positive effect on repayment rate), this relation is statistically significant at a 5% level on the OLS model. The coefficient of the gender variable in this result was -0.05 which means that an increase of 10% in the number of female borrowers on the total number of borrowers will decrease the portfolio at risk by an average of 0.5%. The authors also run a second regression using a dummy variable to represent the

gender of the borrowers. The result of this second regression shows that the proportion of female borrowers has a negative effect on the portfolio at risk and the coefficient of the gender variable is -0.01 on the OLS model. The authors of the research explain some of the reasons why females could be better borrowers by using previous literature on the topic. Some of the reasons that are mentioned in this paper are (1) women tend to invest their loans on low-risk easy-payment businesses that allow them to start repaying their microloan quickly. (2) Women have less access to credit therefore they have more incentive than men to pay their loans and build a good credit record to get future loans. (3) Women are more sensible to pressure from credit group members as well as loan officers. (4) Women are less mobile than men therefore they are more easily monitored by the loan provider.

Roslan and Karim (2009) studied the determinants of the repayment rate in Malaysia using the case of Agrobank, a bank that lends microloans to the agricultural sector. They used survey responses from Agrobank's branches from different parts of Malaysia and concluded that gender is a significant factor to consider at the time to forecast repayment rate. They stated that a microloan has a higher probability of default if the borrower is a male. Therefore, they concluded that females are better borrowers. Another study made by Anthony and Horne (2003) analyzed gender and cooperation with respect to loan repayment in microcredit groups. The study concluded that women are more cooperative than men when participating in Self-Help Groups (SHG). Therefore, women are less likely to fall behind with the microloan payments than men and a SHG with more female members will be more likely to repay the full loan on time. Another study made in

Bangladesh by Sharma and Zeller (1997) using three group-based programs shows that a higher percentage of female borrowers has a negative effect on the default rate. This means that an increase in the percentage of female borrowers will usually decrease the delinquency rate.

Bhatt and Tang (2002) tested the relationship between gender and repayment rate in the United States. They used four of the oldest microcredit programs in the US that have different types of clients between each other. They believed that by evaluating these four programs they would cover almost all types of clients that used microcredit services in the US. Their study concluded that gender is not a significant determinant of repayment rate. The authors stated that there were two reasons that could explain why gender is not significant in the case of the US. The first reason could be that the women borrowing loans in the US were engaging in high-risk and low-return investments that did not generate enough profit to be able to repay the microloan. The authors also noticed that in the US self-employed women earned less than half as much as self-employed men. The other reason could be that poor women have more public benefits than poor men; therefore, women in the US may not have a lot of incentive to repay their loans since they can rely on the government benefits for future income.

- Interest Rate

One of the most talked about topics in microfinance is whether charging a high interest rate helps the borrowers. Many studies investigated the causes of a high interest rate charged by microloans providers. Nimal's (2006) research concluded that there are four factors that determine the final interest rate charged; those factors are the cost of

funds, the microloan provider's operating cost, the loan losses, and the profit. Consultative Group to Assistance the Poorest (CGAP) stated that close to 50% of the interest rate charged goes to operational expenses. Nimal (2006) explained that operational expenses are high because the microfinance industry is a labor-intensive industry since borrowers of microloans expect personalized services. These services include a MFI staff member going to the borrowers' houses to collect loan payments, classes offered to inform people about microloans, and classes to new entrepreneurs on how to make the best use of the loan received. Moreover, operational costs include administration costs such as telecommunication expenses, utility charges, transportation, and rent, all of which could be very pricey in rural areas in developing countries, which are usually the countries where MFIs are located.

Another study made on women farmers' Self-Help Groups in Nigeria by Ugbomeh et al. (2008) stated that the interest rate has a negative impact on repayment rate in Bayelsa State, Nigeria. The author explained this result by saying that a higher interest rate will create a burden to the borrowers that will face difficulties to pay the high cost loan back. The author suggested that interest subsidies will incentivize the women farmers to borrow more microloans in Nigeria.

Derban, Binner, and Mullineux (2005) analyzed the repayment rate on microloans given in the UK. Their results show that the interest rate is not significant to the loan loss rate at the 5% level. However, they highlight that in the UK the interest rate varies significantly among different MFIs ranging from 1.25% to 25%. The reason for this huge variation, the authors explained, is the different objective of the microloan providers. An

institution may be more commercially oriented therefore its main goal is to generate profit, and it charges higher interest rate whereas a more socially oriented institution is focused on community development and charges only the interest rate that is enough to cover for the expenses of providing the loans.

- Household Income

Oke, Adeyemo, and Agbonlahor (2007) analyzed the data from 200 members of MFIs in Southwestern Nigeria to find out if there is relationship between household income (among other determinants) and the repayment rate of microloans. The result of their study shows that household income is significant at a 1% level and has a positive effect on repayment rate, meaning an increase in the income of the borrowers will increase the repayment rate of the microcredit lent. On the other hand, a study made by Bhatt and Tang (2002) using data from four of the oldest microcredit programs in the US concluded that household income does not have a significant relationship with the repayment rate of the microloans.

- Age

Derban, Binner, and Mullineux (2005) found that age of the provider of microcredit is significant and positively related to the repayment rate - this means that the older the MFI the higher the repayment rate. The authors justified this result by explaining that mature MFIs have more experience that allows them to adopt policies that will help them increase the repayment rate. New MFIs do not have this advantage.

Onyeagocha, S. U. O., et al. (2012) used 36 MFIs from three provinces in southeast Nigeria to analyze the relationship between age of the MFI and the repayment rate. The

authors' result shows that there is not a significant relationship between the age of the MFI and the repayment rate of the microloans offered in those three provinces.

CHAPTER IV

METHODOLOGY

4.1 Data Source and Description

Table 4.6: Data Source and Description

Data	Detail	Source
Repayment Rate	1 minus outstanding balance, portfolio overdue for more than 30 days divided by Gross Loan Portfolio	Mixmarket.org
Microfinance Institutions (MFI Comp)	Sum of the number of Microfinance institutions in the state divided by population in the state per 100,000 people, divided by the number of states in which the MFI offers microcredit.	Mixmarket.org & National Census
Gender (GEN)	Total number of female borrowers divided by total number of borrowers	Mixmarket.org
Household Income (Income)	Average salary of the borrowers divided by GNI per capita	Mixmarket.org
Interest Rate (INT)	Average annual real interest rate charge by the MFI	Mixmarket.org
Age of institution (MFI Age)	Number of years the MFI has been offering microloans	Mixmarket.org
Current Legal Status (DumNonProfit)	Dummy for type of MFI (1 = Non-Profit MFI)	Mixmarket.org
Regulatory Status (DumReg)	Dummy for regulatory status (1 = Regulated MFI)	Mixmarket.org
Years (Dum Current year)	Dummy for current year (1=current year)	Mixmarket.org

Our main source of data for this research is Microfinance Information Exchange, normally called Mix Market (mixmarket.org) which is a non-profit organization that provides data of more than 2,500 Microfinance institutions around the world. Mix Market is a well-known data source in the field of microfinance. Some of its partners include the Bill and Melinda Gates Foundation, Michael & Susan Dell Foundation, Citi Foundation, The MasterCard Foundation, Consultative Group to Assistance the Poorest (CGAP), among others. It is important to highlight that all the information that Mix Market provides are voluntarily received from the MFIs, therefore Mix Market cannot guarantee that all information will be available or that the information is accurate and reliable. However, Mix Market recently came up with a new feature called the Diamond System which evaluates the level of reliability of the MFIs' data and classifies each MFI by giving them a number of diamonds from 1 to 5 depending on how reliable and complete the data is (5 being the most reliable data). This research will only use data from MFIs that have at least three diamonds.

Following is a table used by Mix Market to explain how they determine how many diamonds each MFI receives.

Level	Annual Diamond
1	Profile is visible.
2	Level 1 and some data on products and clients for the year
3	Levels 1 and 2 and some financial data for the year
4	Levels 1 - 3 and audited financial statements are published for the year

5	Levels 1 - 4 and rating or due diligence report is published for the year
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Source: Mix Market (2013)

4.2 Methodology

In this analysis on the effect of competition, borrowers' gender, household income, interest rate, age of MFI, type of MFI, regulatory status, and year on the repayment rate, we used the Ordinary Least Square model.

Ordinary Least Square (OLS)

The model that will be used in this study is represented below:

$$\begin{aligned} \text{REPAYMENT RATE}_{it} = & \beta_1 + \beta_2 \text{MFI Comp}_i + \beta_3 \text{GEN}_{it} + \beta_4 \text{Income}_{it} + \beta_5 \text{INT}_{it} \\ & + \beta_6 \text{MFI Age}_{it} + \beta_7 \text{DumNonProfit}_i + \beta_8 \text{DumReg}_i + \beta_9 \text{Dum03}_t \\ & + \beta_{10} \text{Dum04}_t + \beta_{11} \text{Dum05}_t + \beta_{12} \text{Dum06}_t + \beta_{13} \text{Dum07}_t + \beta_{14} \text{Dum08}_t \\ & + \beta_{15} \text{Dum09}_t + \beta_{16} \text{Dum10}_t + \varepsilon_{it} \end{aligned}$$

Where,

REPAYMENT RATE = Percentage of repayment paid on time (less than 30 days payment overdue).

MFI Comp = Sum of the number of institutions offering microcredit in the state or province divided by the population in those states or provinces per 100,000 people, divided by the number of states or provinces in which the MFI offers microcredit.

GEN = Percentage of female borrowers

Income = Average salary of the borrowers divided by GNI per capita.

INT = Average annual real interest rate.

MFI Age = Age of institution

DumNonProfit = Dummy for current legal status of the institution, where a Non-profit institution is 1 and a For-Profit institution is 0.

DumReg= Dummy for regulatory status, where a regulated institution is 1 and a non regulated institution is 0.

Dum03= Dummy for year 2003, where 1 represents observations in year 2003 and 0 represents any other year.

Dum04= Dummy for year 2004, where 1 represents observations in year 2004 and 0 represents any other year.

Dum05= Dummy for year 2005, where 1 represents observations in year 2005 and 0 represents any other year.

Dum06= Dummy for year 2006, where 1 represents observations in year 2006 and 0 represents any other year.

Dum07= Dummy for year 2007, where 1 represents observations in year 2007 and 0 represents any other year.

Dum08= Dummy for year 2008, where 1 represents observations in year 2008 and 0 represents any other year.

Dum09= Dummy for year 2009, where 1 represents observations in year 2009 and 0 represents any other year.

Dum10= Dummy for year 2010, where 1 represents observations in year 2010 and 0 represents any other year.

ε = Error term

i = Represents microfinance institution

t = Represents time

For the main model, we roughly divided the term we wanted to study into 4 groups. The first group is the “Client’s characteristics” a term which is represented by GEN and Income. The second term is called “Microfinance institutions’ characteristics” which is represented by INT, Legal Status, Age and Regulatory Status. The third term is the group called “Microfinance industry” which is represented by MFI Comp. And the final group is the group called “Host country’s economic condition” which is represented by all the year variables.

This main model, which is run for each country (India, Bangladesh, Bolivia, and Peru) separately, analyzes the effect of the determinants on the repayment rate and compares the results between countries. The year 2011 has been chosen as the baseline year, which is why it was omitted in the regression. The data is entered as panel data since it is cross-sectional and time serial data.

Explanation of the variables in the model

Repayment Rate: This study is trying to analyze the effect of the repayment rate on selected independent variables. Repayment rate was calculated by taking the total portfolio at risk at 30 days of each MFI used in the observation at a specific year minus 1;

this gives us the repayment rate in loan payments that were not overdue by more than 30 days. The repayment rate variable is subject to the institution and the year.

Microfinance Institutions Competition: This study will evaluate the influence of the level of competition in repayment rate in microloans. In order to do so, we calculated the level of competition of each microfinance institution that we used in our regressions. The way this study calculates the competition level among MFIs is by taking the sum of the total number of microfinance institutions in all the states or provinces the particular MFI offers microcredit divided by the sum of the population of all those states or provinces, divided again by the number of states where the MFI offers microcredit times 100,000. This equation will give us the average competition level for each MFI. Since all other variables in our model are at the national level we cannot separate the competition by state or province; therefore, we take the total average of all the states where the MFI offers microcredit and use it to calculate the competition at a national level. We multiply the results by 100,000, which gives the number of MFIs per 100,000 residents of the state or province. Lastly, we use the result of the equation as a constant throughout time since the data of the number of MFIs offering microcredit in the states in the past years is not available. Therefore, the competition variable is subject to only the institution and not to time.

Figure 4.8: Competition variable formula

$$\text{Competition} = \frac{\frac{\text{Number of MFIs in all states where the studied MFI offers MC}}{\text{Population in all those states}}}{\text{Number of states}} \times 100,000$$

Gender: This research analyzes the relationship between the borrowers' gender and the repayment rate of microloans. In order to calculate the gender variable, this study takes the percentage of women borrowers for each MFI used in the observation for all the years that were used in the observation. Therefore the gender variable is subject to the institution and the year.

Household Income: This research analyzes the relationship between the borrowers' income and the repayment rate of microloans. The way this study calculates the income variable in the model is by taking the average salary of all the clients in a specific MFI divided by the gross national income (GNI) per capita of the country where the MFI offers microloans. Using this calculation we will be able to see if the MFI generally gives loans to people whose income is below the GNI per capita, meaning that they are the poorest in the country, or if the MFI focuses more on people whose income is above the GNI per capita, which they may be the richest of the poorest or not poor. The income variable is subject to the institution and the year.

Interest Rate: This research analyzes the relationship between the interest rate in the microloans and the repayment rate of microloans. This study used the average interest rate charge by a particular MFI in a specific year. Since this study attempts to compare the results of different countries, the interest rate used is the real interest rate which is free of inflation rate of the home country. This way we can evaluate the results of the

influence of interest rate in repayment rate without the effect of the variation in the countries' inflation rate. The interest rate variable is subject to the institution and the year.

Institution Age: This research analyzes the relationship between the ages of the MFIs and the repayment rate of microloans. We calculated the MFI's ages by finding the year when the MFIs used in our observations were founded and matching the years that we used in our observations with the age the MFI was at that particular year. For example if a MFI was created in 2002 and our observation uses the years 2010 and 2011 for this specific MFI, then the age of the MFI will be 9 years old in 2010 and 10 years old in 2011. The age variable is subject to the institution and the year.

MFI's Legal Status: The difference on the types of MFI may be a determinant that varies the repayment rate among MFIs. There are six different types of MFIs, including rural banks, banks, non-governmental organizations (NGOs), non-bank financial institutions (NBFIs), credit union/cooperative institutions, and others. In this research we will divide the six types of MFI into two categories; non-profit MFIs and for-profit MFIs. Non-governmental organizations and credit union/cooperative institutions are classified as non-profit MFIs while rural banks, banks, and non-bank financial institutions are classified as for-profit MFIs. For the type of MFIs categorized as "Other" we will look at every MFI separately to find if the institution is for-profit or not. This variable will be a dummy variable in the model where 1 represents non-profit MFIs and 0 represents for-profit MFIs. The legal status variable is subject to only the institution and not to time.

Regulatory Status: This research analyzes the relationship between the regulatory status of the MFIs and the repayment rate of microloans. Being a regulated MFI means it must report to a larger bank and should take orders from this bank. This variable will be a dummy variable in the model where 1 represents regulated MFIs and 0 represents non-regulated MFIs. The regulatory status variable is subject to only the institution and not to time.

Years: This research analyzes the relationship between the years and the repayment rate for each of the countries. The idea is to examine the influence of the economic situation in the country where the MFIs operate.

Table 4.9: Expected Results

Independent variables	Dependent variable: (Repayment rate) Expected sign
Microfinance Institutions Competition	—
Gender (Females)	+
Household income	+
Interest Rate	+/-
Institution Age	+
MFI's Legal Status (Non-Profit)	+
Regulatory Status	+/-
Years	+/-

Explanation of the expected signs

Microfinance Institutions Competition: Even though economic theories suggest that more competition is better for the clients, several studies agree that competition among MFIs in the same area affects the repayment rate of microloans negatively and increases clients' debt. Higher competition in the microfinance industry means more access to credit for the population but less information shared among the entities. As a consequence, a person who asks for a microloan in one MFI and fails to pay the loan back can go to another MFI and ask for a new microloan. Since the information shared between MFIs is limited, the new MFI will not have any record of the client's previous loan default and it will lend a new microcredit to him or her. This will hurt both the institution since it is giving a loan to a highly risky client at a regular interest rate and the client who will increase his or her debt which will damage his or her credit record.

As the market for microcredit increased throughout the years, big banks and financial institutions started looking at the microfinance sector as a potentially profitable business. Since these for-profit institutions are large firms, they could provide microcredit to the clients at a lower cost than small MFIs and, therefore, make more profit. Once the for-profit firms entered the microfinance industry, they started offering microloans to low income households. Since the for-profit firms do not have as much information about the clients that they want to serve, the big banks must make decisions about lending based on limited information about the borrower. Small non-profit MFIs, on the other hand, are well-informed about the area and its habitants and have a better judgment at the time to give loans. Small non-profit MFIs, in contrast to big banks, work closely with the

community where they offer microloans, therefore there is better, more personalized customer service offered by small non-profit MFIs. Moreover, small non-profit MFIs' objectives are to help low income families to improve their economic status by giving them small loans and educating them on how to use the loan more efficiently. Big banks' and financial institutions' objective, on the other hand, is to make profit, therefore they try to lower their costs as much as possible. As a result, they do not offer extra services, such as classes on how to use the loans more efficiently and better customer service to their loan borrowers. An increase in the number of big banks and financial institutions whose objective is to gain profit out of the microfinance industry is expected to reduce the repayment rate.

Gender: Sengupta and Aubuchon (2008) stated that many studies done in Asia and Latin America had shown that repayment rates are significantly higher when females are the borrowers of microloans compared with when males are the borrowers. The authors explain that the reasons of this result could be a consequence of women being more risk averse when investing the borrowed money. It could also be because they are less mobile, which makes it easier for banks to monitor them and receive the loan payments. In addition, they may be more sensitive to social judgment than men. Anthony and Horne (2003) concluded after analyzing different Self-Help Groups (SHG) that a group where there is a larger proportion of women is less likely to default in the loan payments. Roslan and Karim (2009) concluded that gender is a significant factor to consider at the time to forecast repayment rate. They stated that a microloan has higher probabilities of

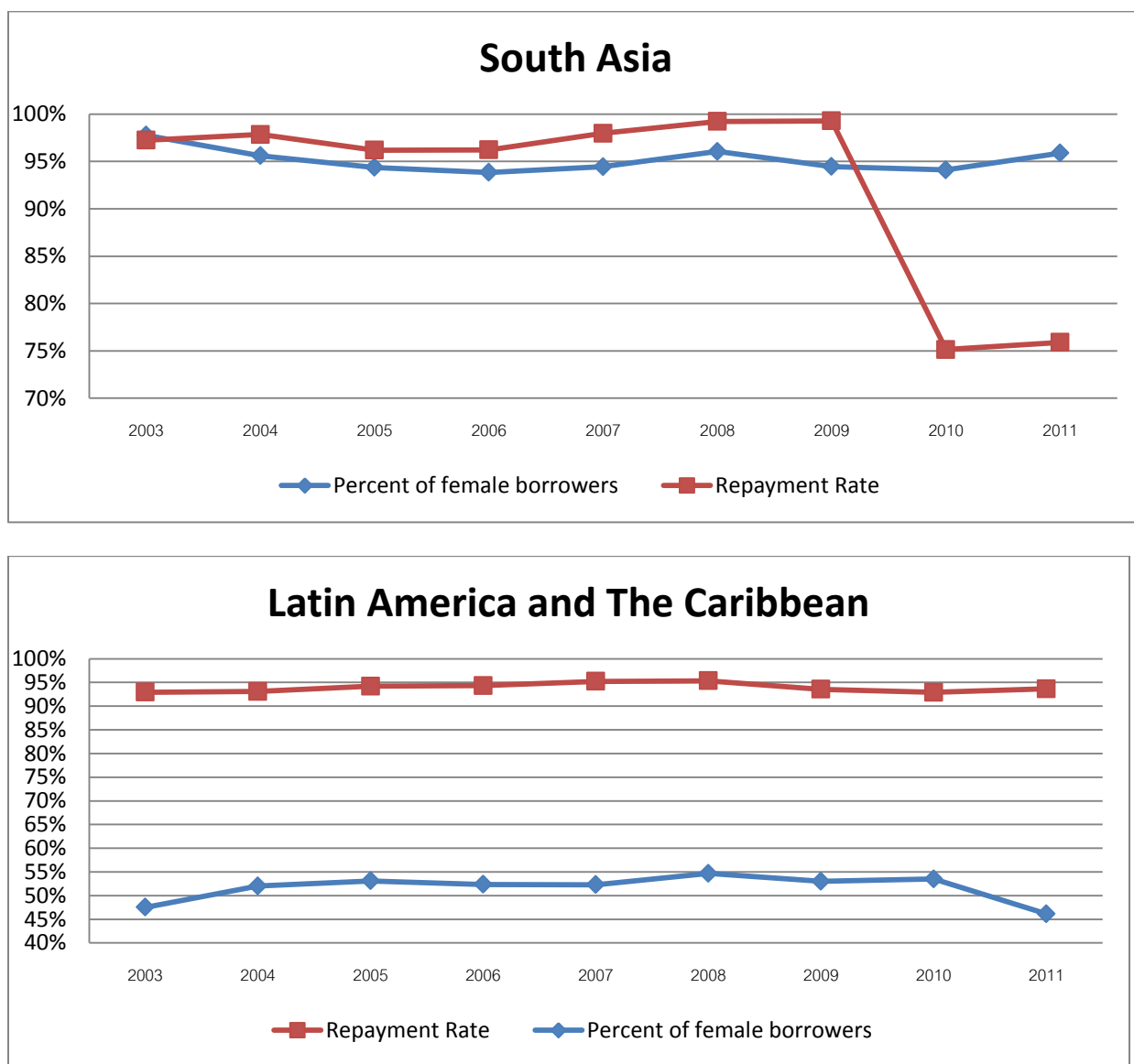
default if the borrower is a male. Since there is a difference whether the borrower is a female or a male on the repayment rate, we will use gender as a variable to determine the repayment rate of a microloan.

Figure 4.9 shows the percentage of women borrowers and the repayment rate of the South Asia and Latin America regions. We can clearly observe that the target client's gender in both regions is very different. In South Asia the percentage in women borrowers is always higher than 90%. In contrast, women make up on average 50% of the borrowers in Latin America and the Caribbean since 2003. The figures also show that there is more fluctuation in the repayment rate in South Asia even though the percentage of female borrowers is very constant while in Latin America region both the repayment rate and the percentage of females do not present a lot of fluctuation throughout the years. Still it seems that in both regions the percentage of female borrowers and the repayment rate moves up and down at almost the same time, giving an indication that there may be a relationship between them.

It is notable that there is a massive decrease of almost 25% in the repayment rate in South Asia during 2010. The reason for this decrease is related to two crises in the microfinance industry. One of the crises took place in Pakistan after a flood left one fifth of the country underwater; poor Pakistanis living in the areas affected lost everything they had and struggled to make the microloan payments. The other crisis was in Andhra Pradesh, India where a massive increase in the number of MFIs in the area contributed to an increase in the borrowers' indebtedness that resulted in some microcredit borrowers

committing suicide. During both crises political and religious leaders of both countries suggested that borrowers not repay their loans.

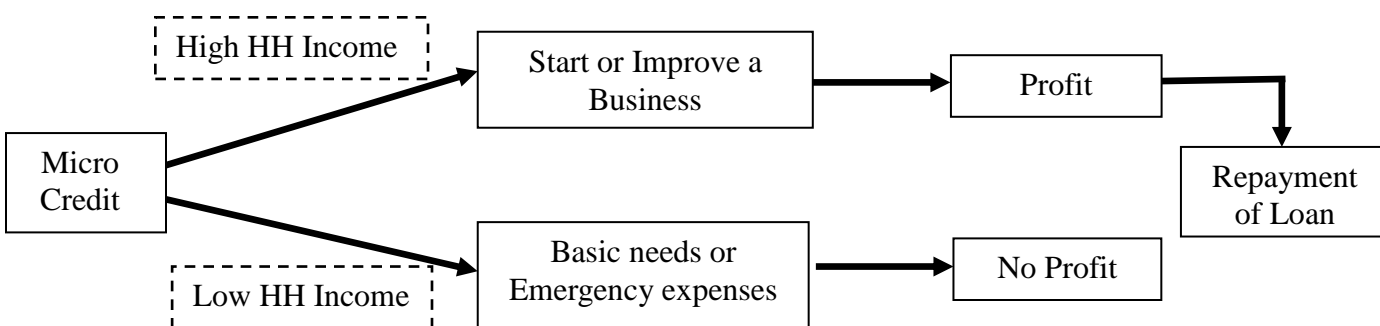
Figure 4.9: Percentage of Female Borrowers vs. Repayment Rate



Data from Mixmarket.org

Household Income: When the household income is very low, poor people tend to borrow money to pay for basic needs and emergency expenses such as medical expense. These expenses do not generate profits; therefore, the low income family will face an extra expense once the repayment of the microloan is due. It is for this reason that a low household income can contribute to a higher risk portfolio for the lender MFI. On the other hand, a household with relatively high income has more flexibility at the time to invest their microloan. It is assumed that households with high income will use their regular income to pay for basic needs and emergency expenses and will use the microloan to invest in a business that will generate profit in the future, later they will use part of this profit to repay the microloan received. For this research, we calculate the household income by dividing the average salary of the borrowers by the gross national income (GNI) per capita of the country where the MFI is located. If the result of this division is above 1 then the borrower is said to have a high household income. A result lower than 1 tells us that the borrower's income is below the national income, then the borrower is said to have a low household income.

Figure 4.10: Income Level vss. Repayment rate Map

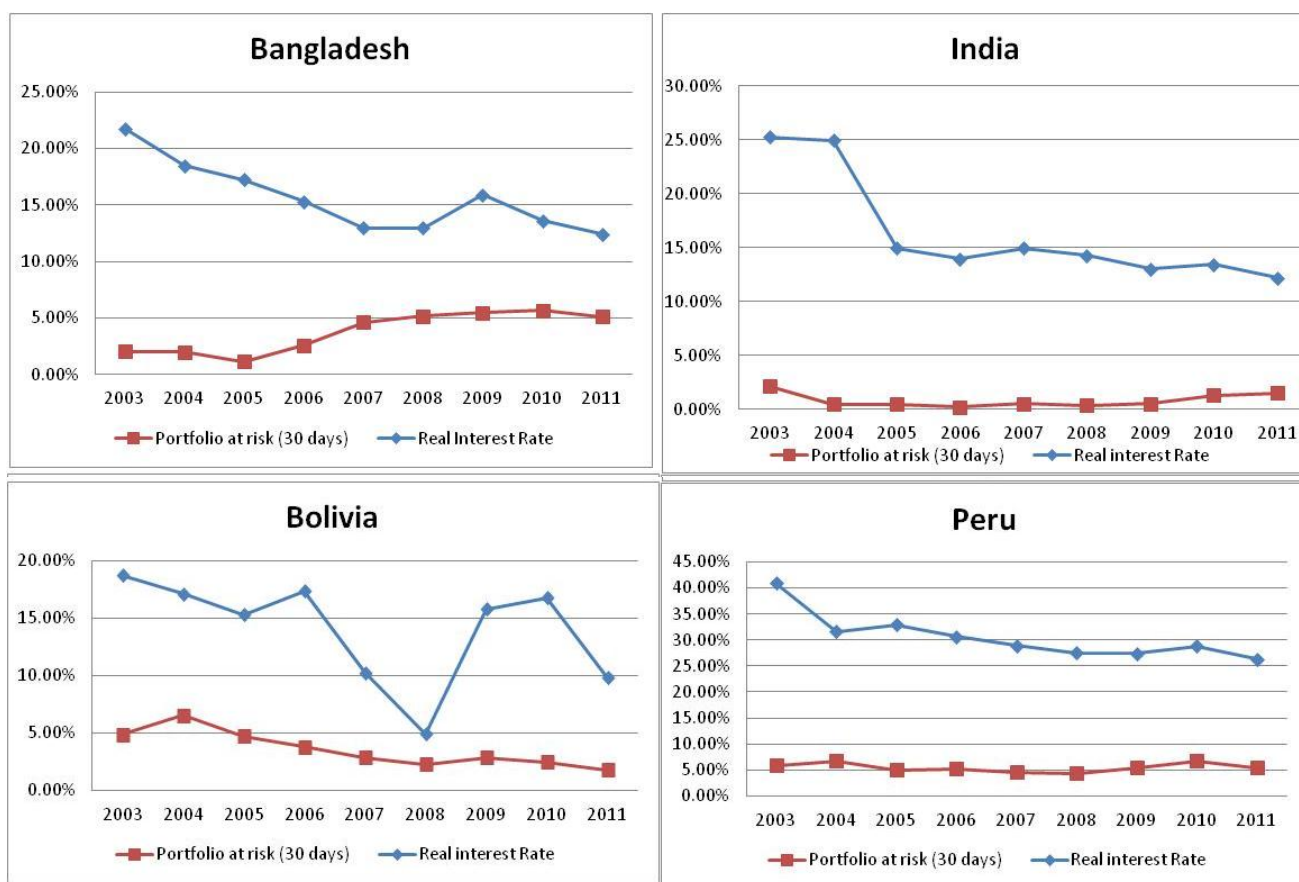


Interest Rate: The higher the interest rate of the microloan the more expensive it is for a poor family to borrow from the MFIs, therefore the higher the probabilities the borrower will fall behind with the payments. Moreover, Stiglitz & Weiss (1981) state that charging a high interest rate will discourage creditworthy borrowers and attract risk-taking borrowers. This will make the loans with high interest rates more likely to remain unpaid. However, in the microfinance industry an increase in interest rate could mean an increase or improvement in the services provided by the MFIs to their clients. Usually MFIs offer classes to their borrowers on how to improve or start their business, basic concepts on risk and risk aversion, how to improve their finances, how to save money, and how to use their loan in efficient ways. Moreover, MFIs follow up with their clients to evaluate how their clients are investing their loans. This increase in services could help the borrowers to make better decisions at the time of investing the loan and therefore receive higher profits and be able to pay their loans back on time. As a result an increase in interest rate may affect the repayment rate positively.

Figure 4.11 shows the average interest rate charged from each country that this research studied and the portfolio at risk in 30 days. We used portfolio at risk instead of repayment rate in these graphs since it is easier to see the relationship between portfolio at risk and interest rate than repayment rate and interest rate. All countries show a positive relationship between portfolio at risk and interest rate. This means that as a consequence of an increase in interest rate, more borrowers fell behind with their payments for at least 30 days from the due date. Therefore the expected sign of the interest rate variable is ambiguous.

There was a notably massive decrease in the interest rate charged by MFIs in Bolivia in the years 2007 and 2008. The reason of this decrease is huge inflation rate in the country during those years. Since this study uses the real interest rate (nominal rate minus inflation) we can see that MFIs did not increase their interest rate soon enough and were affected by the increase in inflation rate of the country.

Figure 4.11: Interest Rate vs. Portfolio at Risk (30 days)



Data from Mixmarket.org

Institution Age: How mature a MFI is may be a factor that affects the repayment rate. For a MFI to succeed in the industry it needs to have a good relationship with its clients and understand the market and the area where it is doing business, and for this to happen it takes time and experience. A mature MFI that knows the market is able to use its experience to get the best results—in this case high repayment rates—on the contrary, a new MFI will not have a lot of expertise in the market or the area where it is located; therefore it will make decisions about lending based on less information than a mature MFI. For this reason we believe that new MFIs will have a lower repayment rate since they will have less information when lending microloans, therefore they will face more risk than mature MFIs.

MFI's Legal Status: This study is expecting to find a positive relationship between non-profit MFIs and repayment rate. Since non-profit MFIs are not seeking to get profit out of the service they provide, their main goal is to alleviate poverty and create a positive impact in the communities where they work. It is for this reason that non-profit MFIs build a strong relationship with their clients and are able to trust their clients with microloans without any collateral and expect their clients will pay the microloans back.

Regulatory Status: A regulated MFI is supervised by a banking authority. Mersland and Strøm (2010) suggest that a regulated MFI may lead to mission drift. In microfinance institutions, mission drift could mean that the MFI no longer focuses mainly on helping the poor to alleviate poverty but instead focuses on gaining more clients and maximizing

their portfolio. Moreover, mission drift could result in an initially non-profit institution to become a for-profit institution. On the other hand, a regulated MFI may be more organized, more productive and may have a higher incentive to improve its services since it needs to report to a higher authority. As a consequence this may lead to a higher repayment rate. Therefore the expected sign of the regulatory status variable is ambiguous.

Years: This study is expected to find positive signs in the years where the economy of the host country is growing and strong. On the other hand, this study is expecting to find a negative sign in the years where the economy of the host country is in crisis. The base year for comparison is 2011.

CHAPTER V

EMPIRICAL RESULTS

5.1 India's Results

The following is summary statistics for all the observations used for India and the results of the regressions. For India, we decided to run two regressions: one using all the microfinance institutions that we have the data for and another regression using only the microfinance institutions that operate only in one state in India. By running these two regressions we will see that the results of the competition variable do not change when using average competition or total competition

Table 5.8: Summary of Statistics for India using all MFIs.

Variable	Observations	Mean	Std. Dev.	Min	Max
mfi	326	34.258	20.205	1	69
year	326	2008	2.028	2003	2011
repayment	326	0.955	0.124	0.0005	1
competition	326	5.970	1.839	0.3444	11.2198
gender	326	0.932	0.168	0.035	1.0294
income	326	1.794	0.918	0.04	4.96
interest	326	0.143	0.071	-0.0002	0.449
age	326	9.632	5.898	1	34
legalstatus	326	0.433	0.496	0	1
regstatus	326	0.650	0.478	0	1
dum03	326	0.012	0.110	0	1
dum04	326	0.025	0.155	0	1
dum05	326	0.074	0.262	0	1
dum06	326	0.086	0.281	0	1
dum07	326	0.123	0.329	0	1
dum08	326	0.144	0.352	0	1
dum09	326	0.181	0.386	0	1
dum10	326	0.193	0.395	0	1

For this regression we used a total of 326 observations where the mean repayment rate is 95.5% and some MFIs achieved a 100% repayment rate. However, the lowest repayment rate is 0.05%, which belongs to a MFI named Trident Microfinance that operated in Andhra Pradesh state and was severely affected by the microfinance crisis in 2010. The mean for the competition is almost 6 and the maximum value almost doubles the mean. We can clearly observe that the microfinance industry in India targets primarily women since the mean of the gender variable is 93%, which means that an average MFI's total clients are 93% women. Income of the borrowers was calculated by dividing the average salary of the total borrowers by the GNI per capita. In the case of India the mean income is almost 1.8. The mean real interest rate charged in India is less than 15% with a minimum real interest rate of -0.02%. The reason for the negative interest rate is that this research used the real interest rate which eliminated the inflation rate. Therefore, when the economy of the country has a high inflation rate, it is possible that the real interest rate charged by MFIs is a negative number. The average age of a MFI in India is close to 10 years. In the industry 57% of the MFIs are for-profit and 65% of the total MFIs are regulated by a large bank.

Table 5.9: Results for India using all microfinance institutions.

VARIABLES	(1) repayment	(2) repayment	(3) repayment	(4) repayment
competition			-0.005 (0.004)	-0.005 (0.004)
gender	-0.027 (0.035)	-0.041 (0.040)	-0.030 (0.035)	-0.045 (0.040)
income	-0.011	-0.006	-0.012	-0.006

	(0.013)	(0.012)	(0.013)	(0.012)
interest	0.036	0.054	0.049	0.070
	(0.107)	(0.104)	(0.105)	(0.103)
age	-0.005**	-0.006**	-0.006**	-0.006***
	(0.002)	(0.002)	(0.002)	(0.002)
legalstatus		0.042*		0.041*
		(0.024)		(0.023)
regstatus		0.016		0.012
		(0.021)		(0.021)
dum03	0.057**	0.059**	0.049*	0.051*
	(0.028)	(0.029)	(0.026)	(0.026)
dum04	0.043	0.044	0.039	0.039
	(0.026)	(0.027)	(0.024)	(0.025)
dum05	0.042	0.042	0.039	0.038
	(0.027)	(0.028)	(0.026)	(0.027)
dum06	0.039	0.041	0.036	0.037
	(0.025)	(0.027)	(0.024)	(0.026)
dum07	0.045*	0.044*	0.043*	0.041
	(0.025)	(0.026)	(0.024)	(0.025)
dum08	0.052*	0.052*	0.051*	0.050*
	(0.027)	(0.028)	(0.027)	(0.027)
dum09	0.050*	0.049*	0.048*	0.046*
	(0.026)	(0.026)	(0.026)	(0.026)
dum10	-0.022	-0.024	-0.023	-0.025
	(0.022)	(0.022)	(0.022)	(0.022)
Constant	1.020***	0.999***	1.056***	1.043***
	(0.056)	(0.057)	(0.066)	(0.068)
Observations	326	326	326	326
R-squared	0.132	0.144	0.137	0.149

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

From the results we can see that age and legal status are significant variables to repayment rate at a 1% and 10% level, respectively. Legal Status has a positive impact of 4.1% on repayment rate, meaning that a MFI that is nonprofit will have a repayment rate 4.1% higher than a for-profit MFI with the same characteristics.

This result also shows a negative relationship between the age of the MFI and the repayment rate. We were expecting that as the MFI grows older it becomes more mature

and experienced in the market and the community where it operates. However, this result shows the opposite, implying that as the MFI becomes one year older the repayment rate decreases by 0.6%. An explanation for this result could be that a young MFI will learn from mature MFIs and use new technology and strategies to attract new clients and increase their repayment rate.

The variables for the years 2003, 2008, and 2009 are also significant at 10% and positive to repayment rate. This tells us that the economic situation in India in those years had a positive effect on the MFIs' repayment rate.

This study was expecting to see a significant positive relationship between gender and repayment rate. The results, however, do not match the expectations. The reason for this could be because the value of the repayment rate and the gender variable do not show much variation among MFIs and years. Therefore, it is difficult to prove that when there is a big change in the percentage of women borrowers it will have an effect on repayment rate.

This research was expecting to show a negative relationship between the variables for the years 2006 and 2010 and the repayment rate since those were the years when the microfinance crises took place. However, the results do not show a significant relationship between these variables and the dependent variable. The reason for these results is the limited number of observations in MFIs placed in Andhra Pradesh (state where the crisis was concentrated).

Next we analyze the summary statistics and the results of the regression that used as observations for only the MFIs in India that operate in one state.

Table 5.10: Summary of Statistics for India using only the MFIs that operate in one state

Variable	Observations	Mean	Std. Dev.	Min	Max
mfi	162	19.5	11.164	1	39
year	162	2008	1.826	2003	2011
repayment	162	0.955	0.129	0.0005	1
competition	162	6.123	1.822	0.3444	8.9943
gender	162	0.947	0.144	0.061	1.029
income	162	1.571	0.875	0.06	4.96
interest	162	0.131	0.075	-0.0002	0.449
age	162	8.957	6.006	1	30
legalstatus	162	0.574	0.496	0	1
regstatus	162	0.537	0.500	0	1
dum03	162	0.006	0.079	0	1
dum04	162	0.006	0.079	0	1
dum05	162	0.056	0.230	0	1
dum06	162	0.062	0.241	0	1
dum07	162	0.111	0.315	0	1
dum08	162	0.148	0.356	0	1
dum09	162	0.204	0.404	0	1
dum10	162	0.222	0.417	0	1

For this regression we used a total of 162 observations where the mean repayment rate is 95.5% and some MFIs achieved a 100% repayment rate. The mean for the competition is 6.12. We can clearly observe that microfinance industry in India targets primarily women since the mean of the gender variable is 94%, which means that an average MFI's total clients are 94% women. Income of the borrowers was calculated by dividing the average salary of the total borrowers by the GNI per capita. In the case of India the mean income of the MFIs that operate only in one state is almost 1.6. The mean real interest rate charged by these institutions was 13% with a minimum real interest rate of 0.02%.

The average age of these MFIs in India is close to 9 years. For MFIs that operate in one state, 57% are non-profit and almost 54% of the total MFIs are regulated by a large bank.

Table 5.11: Results for India using only the MFIs that operate in one state

VARIABLES	(1) repayment	(2) repayment	(3) repayment	(4) repayment
competition			-0.009 (0.006)	-0.010 (0.006)
gender	-0.071 (0.082)	-0.071 (0.086)	-0.085 (0.091)	-0.084 (0.095)
income	-0.025 (0.017)	-0.020 (0.016)	-0.024 (0.018)	-0.019 (0.016)
interest	-0.004 (0.138)	-0.010 (0.124)	0.035 (0.127)	0.034 (0.109)
age	-0.006* (0.003)	-0.007* (0.004)	-0.007* (0.004)	-0.008** (0.004)
legalstatus		0.068* (0.036)		0.066* (0.034)
regstatus		0.022 (0.020)		0.016 (0.020)
dum03	0.053 (0.048)	0.079 (0.056)	0.033 (0.041)	0.057 (0.047)
dum04	0.059 (0.049)	0.086 (0.057)	0.040 (0.041)	0.066 (0.048)
dum05	0.050 (0.038)	0.054 (0.039)	0.046 (0.037)	0.048 (0.037)
dum06	0.039 (0.039)	0.047 (0.041)	0.033 (0.038)	0.039 (0.039)
dum07	0.045 (0.038)	0.045 (0.037)	0.043 (0.037)	0.041 (0.036)
dum08	0.048 (0.040)	0.049 (0.040)	0.046 (0.039)	0.046 (0.039)
dum09	0.041 (0.037)	0.039 (0.036)	0.039 (0.036)	0.035 (0.035)
dum10	-0.005 (0.035)	-0.009 (0.034)	-0.007 (0.034)	-0.011 (0.034)
Constant	1.093*** (0.094)	1.043*** (0.087)	1.163*** (0.120)	1.124*** (0.108)
Observations	162	162	162	162
R-squared	0.157	0.195	0.170	0.210

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Similar to the previous results, the competition variable has no impact on the repayment rate. This helps justify the validity of using the average competition variable rather than the total competition variable. From the results we can see that age and legal status are significant variables to repayment rate at a 5% and 10% levels, respectively. Legal status has a positive impact of 6.6% on the repayment rate, meaning that a MFI that is non-profit has on average a repayment rate 6.6% higher than a for-profit MFI with the same characteristics. The results also indicate a negative relationship between the age of the MFI and the repayment rate, implying that as the MFI become one year older the repayment rate decreases by 0.8%. Similar to the previous results, there is no relationship between gender and repayment rate.

This research was expecting to show a negative relationship between the variables for the years 2006 and 2010 and the repayment rate since those were the years where the microfinance crises took place. However, the results do not show a significant relationship between these variables and the dependent variable. The reason for these results is the limited number of observations in MFIs placed in Andhra Pradesh (state where the crisis was concentrated).

5.2 Bangladesh's Results

Table 5.12: Summary of Statistics for Bangladesh

Variable	Observations	Mean	Std. Dev.	Min	Max
mfi	115	13.104	8.123	1	26
year	115	2008	2.168	2003	2011
repayment	115	0.936	0.060	0.674	1
competition	115	5.996	0.473	5.039277	7.360357
gender	115	0.949	0.063	0.6455	1.0311
income	115	2.788	0.909	0.4	7.21
interest	115	0.150	0.059	-0.0737	0.5969
age	115	24.557	8.249	10	40
legalstatus	115	0.957	0.205	0	1
regstatus	115	0.652	0.478	0	1
dum03	115	0.035	0.184	0	1
dum04	115	0.035	0.184	0	1
dum05	115	0.061	0.240	0	1
dum06	115	0.096	0.295	0	1
dum07	115	0.113	0.318	0	1
dum08	115	0.148	0.356	0	1
dum09	115	0.174	0.381	0	1
dum10	115	0.200	0.402	0	1

For this regression we used a total of 115 observations where the mean repayment rate is as high as 93.4% and some MFIs achieved 100% of their repayment rate. The mean for the competition is almost 6 and the maximum value is above 7. We can clearly observe that microfinance industry in Bangladesh targets primarily women since the mean of the gender variable is 95%, which means that an average MFI's total clients are 95% women. In the case of Bangladesh the mean income is almost 2.8. The mean interest rate charged in Bangladesh is 15% however; we can see that the minimum interest charge is -7.4%, the reason for this negative interest rate is that this research used the real interest rate which

eliminated the inflation rate. Therefore, when the economy of the country has high inflation rate it is possible that the real interest rate charge by MFIs is a negative number. The average age of a MFI operation in Bangladesh is 24.5 years, demonstrating the relative maturity of Bangladesh's microfinance industry. 95% of the MFIs are non-profit and 65% of the total MFIs are regulated by a large bank.

Table 5.13: Results for Bangladesh

VARIABLES	(1) repayment	(2) repayment	(3) repayment	(4) repayment
competition			0.013 (0.019)	0.018 (0.023)
gender	0.074 (0.138)	0.095 (0.124)	0.098 (0.135)	0.135 (0.127)
income	0.012 (0.009)	0.013 (0.010)	0.014 (0.010)	0.016 (0.011)
interest	0.180 (0.164)	0.158 (0.152)	0.154 (0.175)	0.114 (0.165)
age	-0.002* (0.001)	-0.002 (0.001)	-0.002* (0.001)	-0.002 (0.001)
legalstatus		-0.001 (0.018)		0.003 (0.018)
regstatus		0.018 (0.024)		0.022 (0.024)
dum03	0.001 (0.028)	0.000 (0.027)	0.002 (0.029)	0.002 (0.028)
dum04	0.012 (0.022)	0.010 (0.020)	0.012 (0.023)	0.011 (0.021)
dum05	0.025 (0.020)	0.026 (0.021)	0.025 (0.021)	0.027 (0.022)
dum06	0.028* (0.016)	0.028* (0.016)	0.028* (0.016)	0.028* (0.016)
dum07	0.011 (0.019)	0.011 (0.020)	0.009 (0.019)	0.009 (0.020)
dum08	-0.018 (0.022)	-0.020 (0.022)	-0.021 (0.022)	-0.023 (0.023)
dum09	-0.017 (0.017)	-0.018 (0.018)	-0.017 (0.018)	-0.018 (0.019)
dum10	-0.015	-0.015	-0.015	-0.015

	(0.011)	(0.012)	(0.011)	(0.012)
Constant	0.859*** (0.140)	0.820*** (0.136)	0.757*** (0.194)	0.659** (0.240)
Observations	115	115	115	115
R-squared	0.259	0.277	0.266	0.292

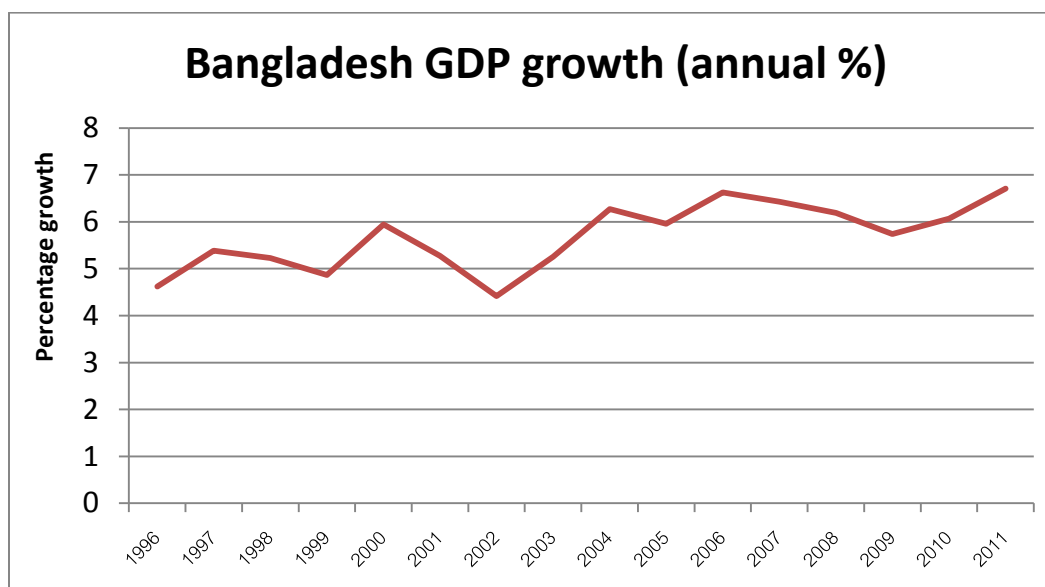
Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The main independent variable of interest, competition, has no impact on the repayment rate in Bangladesh. The results indicate that the variables age and the year 2006 are significant to the repayment rate. This result shows a negative relationship between the age of the MFI and the repayment rate, implying that as the MFI become one year older the repayment rate decreases by 0.2%. The age variable is only significant to repayment rate when legal status and regulatory status variables are dropped from the regression.

The year of 2006 has a positive impact on repayment rate. The results imply that in 2006 the repayment rates increase by 2.8%. Figure 5.12 shows the Bangladesh's GDP growth since 1996. We can see that in 2006 the GDP growth was 6.6%, the highest since 1996. This could explain the reason of the positive relationship between the year 2006 and the repayment rate. The economy in Bangladesh was growing and microcredit borrowers were able to repay their loans back.

Figure 5.12: Bangladesh GDP growth



Data from World Bank

5.3 Peru's Results

Table 5.14: Summary of Statistics for Peru

Variable	Observations	Mean	Std. Dev.	Min	Max
mfi	288	22.896	12.635	1	43
year	288	2007	2.250	2003	2011
repayment	288	0.949	0.032	0.8085	1
competition	288	319.386	78.623	190.79	508.290
gender	288	0.601	0.204	0.1365	1.000
income	288	3.285	1.078	0.71	7.950
interest	288	0.320	0.111	0.048	0.756
age	288	16.788	8.925	1	49
legalstatus	288	0.413	0.493	0	1
regstatus	288	0.653	0.477	0	1
dum03	288	0.028	0.165	0	1
dum04	288	0.063	0.242	0	1
dum05	288	0.104	0.306	0	1
dum06	288	0.122	0.327	0	1

dum07	288	0.135	0.343	0	1
dum08	288	0.142	0.350	0	1
dum09	288	0.139	0.346	0	1
dum10	288	0.135	0.343	0	1

For this regression we used a total of 288 observations where the mean repayment rate is 95% and some MFIs achieved a 100% repayment rate. The mean for the competition variable is 319 institutions per 100,000 people and the maximum value is above 508 institutions per 100,000 people. The mean for gender is 60%, which implies that the total average of clients in the microfinance industry is 60% women. In the case of Peru the mean income is almost 3.3. The mean real interest rate charged in Peru is almost 33%. The average age of MFIs in operation in Peru is 17 years. In the industry 41% of the MFIs are non-profit and 65% of the total MFIs are regulated by a large bank.

Table 5.15: Results for Peru

VARIABLES	(1) repayment	(2) repayment	(3) repayment	(4) repayment
competition			-0.000 (0.000)	-0.000 (0.000)
gender	0.067*** (0.025)	0.066*** (0.024)	0.067*** (0.024)	0.066*** (0.024)
income	-0.001 (0.004)	0.004 (0.004)	-0.001 (0.003)	0.004 (0.004)
interest	-0.072 (0.063)	-0.083 (0.066)	-0.071 (0.060)	-0.082 (0.064)
age	-0.001** (0.000)	-0.001*** (0.000)	-0.001** (0.000)	-0.001*** (0.000)
legalstatus		0.037*** (0.013)		0.036*** (0.013)
regstatus		0.023 (0.015)		0.022 (0.016)
dum03	0.005	-0.007	0.004	-0.007

	(0.013)	(0.014)	(0.012)	(0.013)
dum04	-0.003	-0.010	-0.004	-0.011
	(0.007)	(0.008)	(0.007)	(0.008)
dum05	0.003	-0.003	0.002	-0.003
	(0.006)	(0.007)	(0.006)	(0.007)
dum06	0.002	-0.001	0.002	-0.002
	(0.006)	(0.006)	(0.006)	(0.006)
dum07	0.007	0.003	0.007	0.003
	(0.006)	(0.005)	(0.006)	(0.005)
dum08	0.015***	0.012**	0.015***	0.012**
	(0.005)	(0.005)	(0.005)	(0.005)
dum09	0.003	0.002	0.003	0.002
	(0.004)	(0.004)	(0.004)	(0.005)
dum10	-0.000	0.000	-0.000	0.000
	(0.003)	(0.003)	(0.003)	(0.003)
Constant	0.947***	0.914***	0.953***	0.920***
	(0.028)	(0.034)	(0.036)	(0.044)
Observations	288	288	288	288
R-squared	0.230	0.286	0.232	0.288

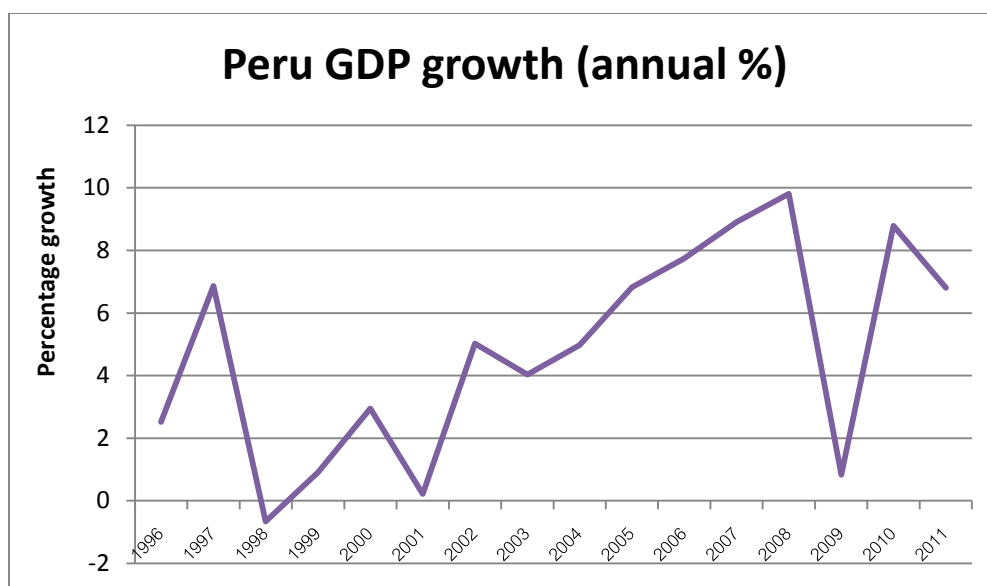
Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Even though there is high degree of competition in Peru, the competition variable has no effect on the repayment rate. The results show that the variables gender, age, legal status, and the year 2008 are significant to the repayment rate. The gender variable, as it was expected, has a positive effect on repayment rate. In the case of Peru an increase in 10% of women borrowers will increase the repayment rate by 0.66%. This result also shows a negative relationship between the age of the MFI and the repayment rate, implying that as the MFI become one year older the repayment rate decreases by 0.1%. Legal status has a positive impact of 3.6% on repayment rate, meaning that a MFI that is non-profit will have a repayment rate 3.6% higher than a MFI for profit with the same characteristics. The year of 2008 has a positive impact on repayment rate. The results imply that in 2008 that the repayment rates increase by 1.2%. Figure 5.13 shows the

Peru's GDP growth since 1996. We can see that in 2008 the GDP growth was 9.8%, the highest since 1996. This could explain the reason for the positive relationship between the year 2008 and the repayment rate. The economy in Peru was growing and microcredit borrowers were able to repay their loans back.

Figure 5.13: Peru GDP growth



Data from World Bank

5.4 Bolivia's Results

Table 5.16: Summary of Statistics for Bolivia

Variable	Observations	Mean	Std. Dev.	Min	Max
mfi	157	12.070	6.848	1	23
year	157	2007	2.250	2003	2011
repayment	157	0.952	0.062	0.639	0.999
competition	157	40.022	7.750	17.109	55.860
gender	157	0.574	0.187	0.2006	1
income	157	6.952	2.539	1.51	18.05

interest	157	0.159	0.094	-0.011	0.498
age	157	18.057	9.021	5	49
legalstatus	157	0.643	0.481	0	1
regstatus	157	0.420	0.495	0	1
dum03	157	0.045	0.207	0	1
dum04	157	0.051	0.221	0	1
dum05	157	0.096	0.295	0	1
dum06	157	0.115	0.320	0	1
dum07	157	0.146	0.355	0	1
dum08	157	0.146	0.355	0	1
dum09	157	0.146	0.355	0	1
dum10	157	0.140	0.348	0	1

For this regression we used a total of 157 observations where the mean repayment rate is 95% and some MFIs achieved a 100% repayment rate. The mean for the competition variable is almost 40 institutions per 100,000 people and the maximum value is above 55. The mean for gender is 57%, which implies that the total average of clients in the microfinance industry is 57% women. In the case of Bolivia the mean client income is almost 7 times the per capita GNI. The mean real interest rate charged in Bolivia is 16% with a minimum real interest rate of -1.1%. The average age MFIs in operation in Peru is 18 years. In the industry 64% of the MFIs are non-profit and 42% of the total MFIs are regulated by a large bank.

Table 5.17: Results for Bolivia

VARIABLES	(1) repayment	(2) repayment	(3) repayment	(4) repayment
competition			0.002 (0.001)	0.000 (0.001)
gender	-0.000 (0.072)	0.053 (0.051)	-0.037 (0.071)	0.050 (0.044)
income	0.000 (0.005)	0.001 (0.005)	-0.003 (0.005)	0.000 (0.006)

interest	0.231 (0.261)	0.345 (0.243)	0.281 (0.251)	0.346 (0.240)
age	-0.001 (0.001)	0.001 (0.002)	-0.001 (0.001)	0.001 (0.002)
legalstatus		-0.108 (0.074)		-0.106 (0.079)
regstatus		-0.046 (0.067)		-0.045 (0.069)
dum03	-0.080* (0.046)	-0.099* (0.051)	-0.076 (0.044)	-0.098* (0.052)
dum04	-0.061 (0.037)	-0.077* (0.042)	-0.058 (0.037)	-0.077* (0.043)
dum05	-0.073* (0.036)	-0.076** (0.033)	-0.068* (0.035)	-0.076** (0.034)
dum06	-0.065* (0.035)	-0.068* (0.033)	-0.060* (0.034)	-0.068* (0.034)
dum07	-0.045** (0.019)	-0.037** (0.018)	-0.037* (0.019)	-0.037* (0.018)
dum08	-0.018* (0.010)	-0.007 (0.011)	-0.011 (0.010)	-0.006 (0.011)
dum09	-0.033 (0.021)	-0.036* (0.019)	-0.033 (0.020)	-0.036* (0.019)
dum10	-0.030 (0.025)	-0.038 (0.022)	-0.032 (0.024)	-0.038 (0.022)
Constant	0.967*** (0.045)	0.969*** (0.050)	0.916*** (0.065)	0.965*** (0.069)
Observations	157	157	157	157
R-squared	0.201	0.382	0.247	0.382

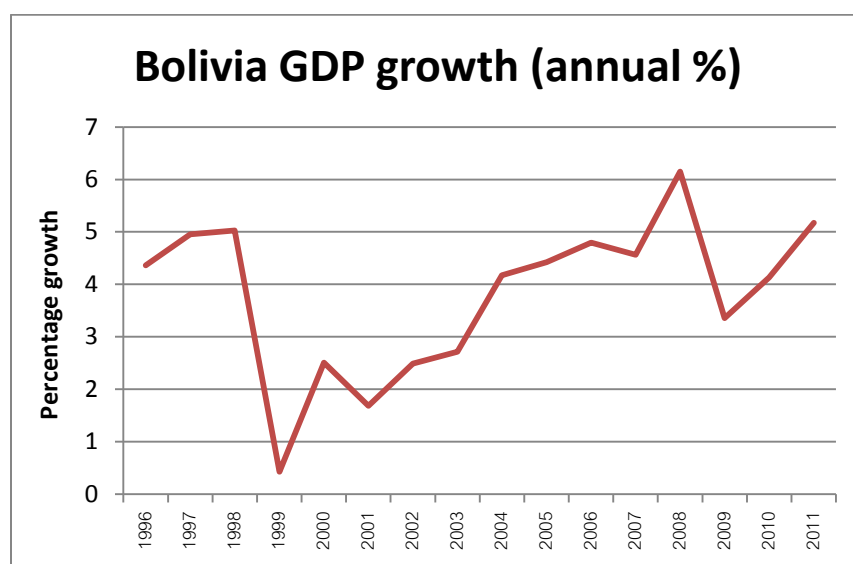
Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The independent variable of interest, competition, does not impact the repayment rate. In fact, the results show that the only variables that are significant to the repayment rate are the year variables. This means that the repayment rates in MFIs in Bolivia are more influenced by the present economy of the country than institutional characteristics. Figure 5.14 shows Bolivia's GDP growth since 1996. We can see that in 1999 there was a decrease in the GDP growth indicating an economic crisis. The crisis in 1999 started when the Argentinian and Brazilian currencies devalued, which affected the Bolivian's

exports that decreased Bolivia's GDP. After 1999, Bolivia faced a slow recovery from the crisis until 2008 where it shows a GDP growth of 6.1%, the highest since 1996. However, in 2009 there is again a decrease in GDP. The slow increase and the decrease of the GDP growth can explain why the variables for the years 2003, 2004, 2005, 2006, 2007, and 2009 have a negative effect on repayment rates. Microloan borrowers struggled to pay back their loans since the economy in Bolivia was recovering from a crisis.

Figure 5.14: Bolivia GDP growth



Data from World Bank

5.5 Summary of all Results

Table 5.18: Summary of results for all four countries

VARIABLES	ASIA			LATIN AMERICA	
	India		Bangladesh	Peru	Bolivia
	All MFIs	One State MFIs			
Competition	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant

Gender	Not Significant	Not Significant	Not Significant	+	Not Significant
Income	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Interest Rate	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Age	-	-	-	-	Not Significant
Legal Status	+	+	Not Significant	+	Not Significant
Reg. Status	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
2003	+	Not Significant	Not Significant	Not Significant	-
2004	Not Significant	Not Significant	Not Significant	Not Significant	-
2005	Not Significant	Not Significant	Not Significant	Not Significant	-
2006	Not Significant	Not Significant	+	Not Significant	-
2007	Not Significant	Not Significant	Not Significant	Not Significant	-
2008	+	Not Significant	Not Significant	+	Not Significant
2009	+	Not Significant	Not Significant	Not Significant	-
2010	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant

Competition, income, interest rate, and regulatory status variables are not significant in any of the countries studied.

This research used the Asian and the Latin American regions since their ways to provide microfinance is very different. The countries used to represent the Asian region show a strong commitment to give microloans to women showing a mean in the gender variable higher than 90%. And the borrowers' income mean is close to 2.3 and the maximum is 7.2 times the per capita GNI. The real interest rate mean for the countries representing Asia is 15% and the maximum charge is 60%.

The picture of the Latin American countries is very different. The countries used by this study to represent the Latin American region do not show a strong commitment to give microloans to women showing a mean in the gender variable of 60%. And the borrowers' income mean is close to 5 and the maximum is 18 times the per capita GNI.

This indicates that Latin America's microfinance industry does not focus on the very poor but on the wealthier poor. The interest rate mean for the countries representing Latin America is 24% and the maximum charge is 75%.

Even though there are general characteristics that differ the industry as a whole for Asia and Latin America, there are also many differences between the countries' microfinance industry within the same region. It is for these differences in the industry's characteristics that make the final results of the variables different between countries.

In the Asian region only the age variable has the same effect on the repayment rate in India and Bangladesh while in Latin America there is no variable that has the same effect on the repayment rate in Peru and Bolivia. When comparing Asia and Latin America we see that there is no variable that has the same effect in all four countries, including the variable of interest, competition.

CHAPTER VI

CONCLUSION

This research investigates the relationships between the repayment rate and variables such as competition, borrower characteristics, and MFI institutional characteristics. The analysis shows that the relationships vary from country to country. Below are the questions asked and the answers that this study obtained.

Does competition in a given geographical area in the microfinance industry have a negative effect on repayment rate?

Even though previous studies have shown competition to have a negative effect on repayment rates and attributed the increase in competition to the crisis in microfinance, our study shows that competition does not significantly affect the repayment rate in any of the countries studied.

In addition, do the gender and the income of the borrower, the interest rate of the loan, the legal status, the regulatory status and the age of the institution have a significant effect on the repayment rate?

The combined results of all the countries show that gender, age, and legal status variables are significant in one country or another. In the case of the age variable, it shows a negative relationship with repayment rate in India, Bangladesh, and Peru. Gender shows a positive relationship with repayment rate in Peru. Legal status shows a positive relationship with repayment rate in India and Peru.

However, income, interest rate, and regulatory status are not significant in all countries. In addition, some years are significant in the countries studied. This tells us that the repayment rate is affected by the economic situation of the host country.

In India the year variables of 2003, 2008, and 2009 show a positive relationship with repayment rate compared to 2011. Bangladesh shows the year 2006 has a positive relationship with repayment rate. Peru shows the year 2008 has a positive relationship with repayment rate. Finally, Bolivia shows a negative relationship between the years 2003, 2004, 2005, 2006, 2007, and 2009 and repayment rate.

6.2 Recommendations

Microfinance proves to be an excellent tool to fight poverty but it could also be a very dangerous tool if it is misused as we have seen in the microfinance crisis in Bolivia and India in 1998 and 2010 respectively. In all the countries studied in this research we found that the microfinance industry still did not reach its maximum potential or meet the demand for microcredit. It is for this reason that this study attempts to make some suggestions on how to expand the industry without creating a crisis in the process.

This research suggests following the structure implemented by the government of Peru in this industry. Peru is the number one country in the Overall Microfinance Business Environment ranking for its regulatory framework and supporting its institutional framework. The Government of Peru dedicates a lot of time and resources to controlling and regulating the industry since it believes that microcredit could help alleviate poverty in the country but it needs to be well regulated in order to continue reducing poverty without creating a crisis.

Microfinance is not an industry that can grow and have healthy competition without any external control. The poor are the most vulnerable and dependent citizens in these countries and the large amount of possible profit are two characteristics that attract large companies to the industry without any intention to provide help to the poor but to make as much profit as possible. This is where governments need to legislate and stop those companies from damaging the industry.

6.3 Suggestions for further research

This research attempted to analyze the level of competition that the MFIs face in each country. However, at this time the data available on the number of MFIs in specific areas is very limited. Moreover, the classification of the type of MFIs (for-profit or non-profit) is only available for the MFIs used in this sample, but the overall distribution of non-profit and for-profit MFIs in a specific area is unknown. This distinction is critical at the time of calculating competition since non-profit MFIs are not meant to compete but help the community. If an MFI is located in an area with a total of 100 MFIs per 100,000 people and 90% of the MFIs are non-profit, the competition level will be less than for a MFI located in an area where there are a total of 100 MFIs and 50% of the of the MFIs are non-profit.

This research cannot make such calculations since the data is not available at this time. Therefore, the calculation of competition that we made in this research might actually capture the level of concentration of MFIs that the observed MFIs face in the area where they operate.

We believe that as more data becomes available, future research will be able to calculate competition and the variable will show a significant effect on the repayment rate.

References

- Ahmed, S. Microfinance institutions in Bangladesh: achievements and challenges. *Managerial Finance* 35.12 (2009): 999-1010.
- Anthony, D., and Horne, C. Gender and cooperation: explaining loan repayment in micro-credit groups. *Social psychology quarterly* (2003): 293-302.
- Arriola Bonjour, P. Las microfinanzas en Bolivia: historia y situación actual. *Banco Los Andes Procredit* (2006).
- Assefa, E., Hermes, N., and Meesters, A. Competition and the Performance of Microfinance Institutions. Available at SSRN 2029568 (2012).
- Bhatt, N., and Shui–Yan, T. Determinants of repayment in microcredit: Evidence from programs in the United States. *International Journal of Urban and Regional Research* 26.2 (2002): 360-376.
- Chemin, M. The benefits and costs of microfinance: evidence from Bangladesh. *The journal of development studies* 44.4 (2008): 463-484.
- Chen, G. India Microfinance Learning Visit: March 12-16, 2007. *USAID*. (2007).
- Chen, G., Rasmussen, S., Reille, X., and Rozas, D.. Indian Microfinance Goes Public: The SKS Initial Public Offering. *Focus Note* (September 2010): 65
- Credit and Development Forum (CDF). Bangladesh Microfinance Country Profile (2006).
- D’Espallier, B., Guérin, I., and Mersland, R. Women and repayment in microfinance: A global analysis. *World Development* 39.5 (2011): 758-772.
- Derban, W. K., Binner, J.M., and Mullineux, A. Loan repayment performance in community development finance institutions in the UK. *Small Business Economics* 25.4 (2005): 319-332.
- Ebentreich, A. Microfinance Regulation in Peru: Current State, Lessons Learned, and Prospects for the Future. *Microfinance Regulation and Supervision Resource Center*, April (2005).
- Etzensperger, C. Research Insight: Peru – Model Market for Microfinance. *ResponsAbility* (2012).
- Global microscope on the microfinance business environment 2012. *Economist Intelligence Unit. The economist*. (2012).

- Gonzalez, A. Analyzing Microcredit Interest Rate. MIX Data Brief No.4. *Mix Microfinance Information Exchange*. (February 2010)
- Guha, B., and Chowdhury, P.R. Micro-finance Competition with Motivated MFIs. (2012).
- Hoda, A. Micro-Finance and Poverty Alleviation. *Development Policy Division*. (2007).
- Hulme, D., and Moore, K. Why has Microfinance been a policy success in Bangladesh (and beyond)?. *Economic and social research council (ESRC)*. Global poverty research group (GPRG) (2006).
- Kalpana, K. The vulnerability of 'self-help': women and microfinance in South India. *Institute of Development Studies at the University of Sussex*, (2008).
- Khandelwal, A. K. Microfinance development strategy for India. *Economic and Political weekly* (2007): 1127-1135.
- Kline, K., and Sadhu, S. Microfinance in India: A New Regulatory Structure. *Center for Microfinance*. (2011).
- Kumar, A. Micro-credit – More Lifebuoy than Ladder? Understanding the role of micro-credit in coping with risk in the context of the Andhra Pradesh Crisis. *Development Studies Institute. London School of Economics and Political Science*. (2012).
- Lützenkirchen, C., et al. Microfinance in evolution. *An industry between crisis and advancement, DB Research* [online]. (2012). Available from: [http://www.dbresearch.de/MAIL/DBR_INTERNE T_DE-PROD/PROD000000000294314.pdf](http://www.dbresearch.de/MAIL/DBR_INTERNE_T_DE-PROD/PROD000000000294314.pdf) (accessed 20.09. 2012)
- MacLean, J. Microfinanzas en Bolivia: aportes y perspectivas. *Naciones Unidas CEPAL*. (2005).
- McIntosh, C., and Wydick, B. Competition and microfinance. *Journal of Development Economics* 78.2 (2005): 271-298.
- Mehta, V., and Nataraja, V. Microfinance industry in India. *Lok Capital, Gurgaon* (2010).
- Mix Market (2013). Available from <http://www.mixmarket.org/>
- Mix Microfinance World: India: Post-Crisis Results. *MIX Microfinance World*. (2011).

- Mersland, R, and Øystein Strøm, R. Microfinance mission drift?. *World Development* 38.1 (2010): 28-36.
- Muller Costas, H. Las microfinanzas reguladas en Bolivia. (2007).
- Nimal, F.A. (2006) Understanding and dealing with high interest rates on microcredit. *Asian Development Bank (ADB)*.
- Nair, Tara S. Microfinance: Lessons from a crisis. *Economic & Political Weekly* 46.6 (2011): 23.
- Navajas, S., et al. Microcredit and the Poorest of the Poor: Theory and Evidence from Bolivia. *World development* 28.2 (2000): 333-346.
- NGO-MFIs in Bangladesh. Microcredit Regulatory Authority Volume VIII (2011).
- Oke, J. T. O., Adeyemo, R., and Agbonlahor, M. U. An empirical analysis of microcredit repayment in southwestern Nigeria. *Journal of Human Behavior in the Social Environment* 16.4 (2007): 37-55.
- Olivares-Polanco, F. Commercializing microfinance and deepening outreach? Empirical evidence from Latin America. *Journal of Microfinance/ESR Review* 7.2 (2005): 47-69.
- Onyeagocha, S. U. O., et al. Determinants of Loan Repayment of Microfinance Institutions in Southeast States of Nigeria (2012).
- Orbush, E. Toward an integrated approach to microfinance: sustainability in Bolivia and Peru (2011).
- Penkar, D., and Takale, R. Micro Finance Institutions in India, do they need to be regulated?. *International Refereed Journal of Arts, Science & Commerce*. (2013).
- Polgreen, L., and Bajaj, V. India microcredit faces collapse from defaults. *New York Times* 18 (17 November 2010): A5.
- Rhyne, E. Commercialization and crisis in Bolivian microfinance. *The Commercialization of Microfinance*, Drake D, Rhyne E (eds). Kumarian Press: Bloomfield (2002): 114-137.
- Rhyne, E. Crisis in Bolivian Microfinance. *Monday Developments* (2001).
- Rosenberg, R. and Kneiding, C. Variations in Microcredit Interest Rates. *CGAP* (July 2008).

- Roslan, A. H., and Karim, A. Z. A. Determinants of microcredit repayment in Malaysia: The case of Agrobank. *Humanity & Social Sciences Journal* 4.1 (2009): 45-52.
- Seibel, H. D. History matters in microfinance. No. 2003, 5. *University of Cologne, Development Research Center*, (2003).
- Sengupta, R., and Aubuchon, C.P. The microfinance revolution: An overview. *REVIEW-FEDERAL RESERVE BANK OF SAINT LOUIS* 90.1 (2008): 9.
- Sharma, M., and Zeller, M. Repayment performance in group-based credit programs in Bangladesh: An empirical analysis. *World development* 25.10 (1997): 1731-1742.
- Shastri, R. K. Microfinance and poverty reduction in India (A comparative study with Asian Countries). *African Journal of Business Management* 3.4 (2009): 136-140.
- Shylendra, H. S. Microfinance institutions in Andhra Pradesh: crisis and diagnosis. *Economic and political weekly* (2006): 1959-1963.
- Sotelo, S. Microfinanzas en Perú: Desafíos y Posibilidades *IDLO* (2009).
- Srinivasan, N., Microfinance India: The State of The Sector Report 2010. New Delhi: *SAGE Publications* (2010).
- Sriram, M. S. Commercialisation of Microfinance in India: A Discussion on the Emperor's Apparel. *Indian Institute of Management* (2010).
- Stiglitz, J. E., and Weiss, A. Credit rationing in markets with imperfect information. *The American economic review* (1981): 393-410.
- Taylor, M. 'Freedom from Poverty in Not for Free': Rural Development and the Microfinance Crisis in Andhra Pradesh, India. *Journal of Change*, Vol. 11 No.4 (2011): 484-504.
- Taylor, M. Microfinance industry report Bangladesh. *The Banking with the Poor Network* (2009).
- Ugbomeh, G. MM, et al. Determinants of loan repayment performance among women self help groups in Bayelsa State, Nigeria. *Agriculturae Conspectus Scientificus (ACS)* 73.3 (2008): 189-195.
- Vijaya, B. Micro Finance to rural poor: a tool for poverty alleviation. *International Refereed Journal of Arts, Science & Commerce*. (2013)

Vinayak, G. P. Microfinance in India Golden Reserch Thoughts. Vol. 1, Issue V. (2011):
1-4

Vogel, R. Microfinance Regulation: Lessons from Bolivia, Peru and the Philippines.
International Seminar on Microfinance in China and Latin America (2012).

Zaman, H. Microfinance in Bangladesh: growth, achievements, and lessons. *Scaling Up
Poverty Reduction Case Studies in Microfinance* (2004).

APPENDICES

Appendix A

Table A.19: Summary of reason for expected signs

Independent variables	Dependent variable: (Repayment rate) Expected sign	Reasons for expected signs
Microfinance Institutions Competition	—	A large number of MFI in the same area will have a negative effect on repayment rate. As many researches show, an increase in competition lead to less information sharing among the institutes which result in higher default rates.
Gender (Females)	+	A higher percentage of total female borrowers will have a positive effect on the repayment rate. Since many studies has shown that women borrowers are less likely to fell behind in their loans payments.
Household income	+	The higher the household income, the more likely the borrower will use the money to invest and create future income. The borrower will be more likely to repay the loan
Interest Rate	+/-	A high interest rate may have a negative effect on the repayment rate since a higher interest rate means the loans are more expensive and harder to repay. On the other hand, a higher interest rate in the microfinance industry could mean better services from the microcredit providers to their clients, such as classes on how to improve business and generate more profit. This increase in the interest rate could actually have a positive effect on repayment rate.
		As the institution mature, we expect a positive relationship between increase in age and repayment rate since an older institution will have more experience in the area where

Institution Age	+	it is located and will be able to work with the local clients more efficiently than a new institution in the same area. An older institution is expected to have a higher repayment rate than a newly institution in the same area.
MFI's Legal Status	+/-	The types of MFIs that are oriented to help underprivileged people by giving them microloans and having a close provider-seller relationship will have a positive sign in their coefficient and therefore a positive effect on repayment rate. The more commercialize and profit seeker types of MFI will have a negative coefficient and a negative effect on repayment rate.
Regulatory Status	+/-	A regulated MFI is expected to have a negative sign in its coefficient and therefore a negative effect on repayment rate since regulated MFIs are supervised by commercial banks, which are more oriented to seek for profit than to reduce economic issues in the area where they do business. A non-regulated MFI has the freedom to decide what type of goal it wants to pursue – create a positive impact on its borrowers' economic status or generate high profits.
Years	+/-	This study is expected to find positive signs in the years where the economy of the host country is growing and strong. On the other hand, this study is expected to find a negative sign in the years where the economy of the host country is in crisis.

Appendix B

In order to calculate the competition variable, we divided the 4 countries by province, state, division, and department depending on how the government of each country divides its geographical territory. Follows is the description of how this thesis divided each country studied.

Bangladesh was divided by divisions. There are a total of seven divisions in Bangladesh named Barisal Division, Chittagong Division, Dhaka Division, Khulna Division, Rajshahi Division, Rangpur Division, and Sylhet Division. In order to calculate the competition variable this study used the latest national census made in 2011 where the population was divided by divisions.

Figure B.12: Map of Bangladesh divided by divisions⁴



⁴ Imagine from http://www.ephotopix.com/bangladesh_division_map.html

India was divided by states. There are a total of 36 states in India named Andaman & Nicobar Islands, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chandigarh, Chhattisgarh, Dadra & Nagar Haveli, Daman & Diu, Goa, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Karnataka, Kerala, Lakshadweep, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, NCT of Delhi, Orissa, Pondicherry, Punjab, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh, Uttaranchal, and West Bengal. In order to calculate the competition variable this study used the latest national census made in 2011 where the population was divided by states.

Figure B.13: Map of India divided by states⁵



⁵ Imagine from <http://thinkingparticle.com/image/states-india>

Peru was divided in regions. There are a total of twenty five regions named Amazonas, Ancash, Apurímac, Arequipa, Ayacucho, Cajamarca, Callao, Cuzco, Huancavelica, Huánuco, Ica, Junín, La Libertad, Lambayeque, Lima, Loreto, Madre de Dios, Moquegua, Pasco, Piura, Puno, San Martín, Tacna, Tumbes, and Ucayali. In order to calculate the competition variable this study used the latest national census made in 2007 where the population was divided by regions.

Figure B.14: Map of Peru divided by regions⁶



⁶ Imagine from <http://www.istanbul-city-guide.com/map/country/peru-map.asp>

Bolivia was divided by departments. There are a total of nine departments named Beni, Chuquisaca, Cochabamba, La Paz, Oruro, Pando, Potosi, Santa Cruz, and Tarija. In order to calculate the competition variable this study used the latest population projection made by the Bolivian institution of statistic for the year 2011 where the population was divided by departments.

Figure B.15: Map of Bolivia divided by departments⁷



⁷ Imagine from <http://www.boliviabella.com/geography.html>

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