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Persistence of Microcredit Market Phases

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Problem Description

Evaluate the market phase hypothesis for microcredit markets and assess the likelihood that specific developing markets will go through similar phases and face similar crises as other mature markets have gone through.

Main contents:

1. Review and discussion of the theoretical and empirical literature related to microcredit market phases.
2. Qualitative and quantitative empirical analysis of developing microcredit markets and comparison to the historical development of mature markets with the intention of evaluating the degree of similarity and identifying possible distinguishing features.
3. Overall assessment of the likely future path of the selected developing microcredit markets.

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Supervisor: Einar Belsom

Abstract

I formulate a phase theory of microcredit market dynamics. The theory is developed and validated using an in-depth multiple case study examining three mature microfinance markets: Bolivia, Bosnia and Herzegovina, and Morocco. I present a specific case study framework that is used to analyze each of the three markets separately. This framework combines qualitative and quantitative empirical analysis through the evaluation of 12 specific indicators. These indicators are chosen to represent four different market dynamics that are believed to affect microfinance institutions and their performance.

A cross-case analysis is conducted to detect similar patterns across the three mature markets, and the findings are summarized into the phase theory. I present a theory of six different phases that a microfinance market goes through from its emergence until the crisis is resolved. Some of the important findings across the three cases are rapid growth, increased bargaining power of consumers and excessive funding to the microfinance institutions, all in the time period leading up to the repayment crisis.

In essence, the phase theory predicts that a market that grows beyond what is sustainable and controllable will eventually crash when macroeconomic instability occurs. To make sure a market maintains a sustainable growth, it's important for the microfinance institutions to focus on long-term profitability over short-term growth. Mechanisms for information sharing are also essential to eliminate the new information asymmetries that arise from introducing competition in microcredit markets.

I also examine a microfinance market that is under development: Cambodia. This market has not yet experienced a repayment crisis, and I apply the phase theory on this case market to assess how likely it is that it will.

Preface

This study is conducted as part of MSc-studies at Norwegian University of Science and Technology, Faculty of Social Science and Technology Management, Department of Industrial Economics and Technology Management.

The study is a master thesis that builds on a previous study on "Microfinance and the problems of asymmetric information" (Dahl 2010), conducted earlier in the MSc-studies. Some of the introductory chapters in this thesis are results presented in my previous report as this is considered new to the reader.

I would like to express thanks to my supervisor, Einar Belsom, for valuable guidance and useful discussions during the study.

The study was conducted in the period of January 20th 2011 through June 1st 2011.

Trondheim, June 1st, 2011

Anders Dahl

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1. Introduction to Microfinance

According to the World Bank, there are about 1 billion people living in extreme poverty throughout the world (TheWorldBank 2008). Microfinance has been highlighted as one effective means in the quest for empowering the world's poor. The story of microfinance started in Bangladesh in 1976 with Muhammad Yunus and what was going to be Grameen Bank. Yunus and Grameen Bank received the Nobel Peace Price in 2006 *"for their efforts to create economic and social development from below".* Microfinance has indeed developed into a whole new field of finance and has both become big business and proved to be an effective means to increase the social standards for some of the world's poorest.

The Consultative Group to Assist the Poor (CGAP) explains microfinance as offering poor people access to basic financial services such as loans, savings, money transfer services and microinsurance. This report focuses mainly on the credit aspect of microfinance but it is important to notice that the field of microfinance spans over multiple services that is complementary to each other to work effectively in both an economic and a social way. The terms microfinance and microcredit will be used interchangeably and mainly refer to the credit aspect throughout the report.

Even though the history of the microcredit industry is rather young, the last couple of decades have brought several interesting and challenging problems at hand for the microfinance institutions (MFIs). A theme for many of the markets is a rapid growth and increased competition among both MFIs and more traditional banks and consumer lenders. Several microcredit markets have experienced what is referred to as "repayment crises", where delinquency rates rise sharply over a short amount of time, leaving the lenders in a very difficult situation.

The intent of this thesis is to examine some markets that have experienced repayment crises and to formulate a phase theory on how microcredit markets develop. I will present three case studies of such *mature markets,* considering Bolivia, Morocco and Bosnia and Herzegovina. Bolivia experienced its crisis in 1999, while Morocco and Bosnia and Herzegovina have experienced similar conditions in 2007-2009. I will identify certain indicators that are essential for each of the phases and I will look into conditions for transitions between different phases. Based on the phase theory I will then conduct case studies of a microcredit market that has not yet experienced a repayment crisis, and assess the likelihood that it will follow a similar pattern of phase transitions, leading to a repayment crisis, or whether there are conditions preventing this from happening.

The remaining part of the report is organized as follows:

In chapter 2 I present relevant theory on the subjects of competition in microfinance, problems of asymmetric information, information sharing, market phases and the use of indicators in assessing microfinance markets.

In chapter 3 I provide a discussion of the chosen research design and explain

how this study has been conducted. I also discuss data sources briefly and present the case study framework that will be used in chapter 4.

Chapter 4 consists of three case studies: Bolivia, Bosnia and Herzegovina, and Morocco. For each of the countries I present some historical background, describe the developments from launch to the repayment crisis, and assess the 12 chosen indicators for each market.

The phase theory itself is formulated in chapter 5 where I compare and consolidate the three case studies into a more general theory.

Chapter 6 applies the theory on the developing microcredit market Cambodia, also presented as a case study.

Chapter 7 provides some general conclusions and forecasts for the industry as a whole.

2. Theory Review

In this section, I will provide an overview of important theories, related to competition in microfinance, problems of asymmetric information, information sharing, market phases and the use of indicators in assessing microfinance markets. Much of the material presented here is further discussed in my study from 2010, "Microfinance and the problems of asymmetric information" (Dahl 2010). Some topics are therefore just touched upon here, and I refer the reader to my previous study to find more information and discussions of the various theories.

2.1 Banking to the Poor

Microcredit emerged in the 1980s as a project to alleviate poverty in a small scale. The most known initiative came from Muhammad Yunus who started Grameen Bank in Bangladesh. His story is well documented by Yunus and Jolis (2003) and serves the purpose of describing the initial intentions well. In a few words, microcredit is about providing credit to people that are too poor to be welcome in ordinary banks. This has traditionally been done through a special set of mechanisms that has been developed as the industry has emerged. Variations occur frequently, but by looking into microcredit as a situation of asymmetric information between the lender and the borrower, we may identify similarities between the mechanisms and how they make credit to the poorest possible.

Paulson and Townsend (2004) have studied how financial constraints affect entrepreneurial activity in Thailand and found that about half the existing entrepreneurial households would gain from expanding their business, but that half of these were unable to finance the expansion. This is only one example of the unmet credit demand among poor entrepreneurs in developing countries. Some of reasons to why they aren't able to find financing are high administrative costs for handling small loans (Braverman and Guasch 1989) and problems related to uncertainty and information asymmetries (Dahl 2010).

2.2 Information Asymmetries

Asymmetric information is a part of what we call information economics and has gained an increasing attention over the last couple of decades. It relates to principal-agent theories and explains what happens, and how one should behave, when one part in a business relationship has more information than the other part. For extensive theory on asymmetric information I refer to Akerlof (1970), Spence (1973) and Stiglitz (1975; 1981; 1990). They all received the Nobel Prize in Economics in 2001 for their work on the subject.

There are two important terms within the theory on information asymmetry: *adverse selection* and *moral hazard*. Both terms relate to an informed person's benefitting from trading or otherwise contracting with a less informed person (Perloff 2004, p.659-660):

"**Adverse selection** is opportunism characterized by an informed person's benefitting from trading or otherwise contracting with a less informed person who does not know about an *unob-*

served characteristic of the informed person"

"**Moral hazard** is opportunism characterized by an informed person's taking advantage of a less informed person through an *unobserved action*"

Akerlof (1970) describes how adverse selection can reduce the size of a market and in some cases even eliminate it, creating a *market for lemons*. In short, if a person can't know the difference between two products he will only be willing to pay the price that reflects his *expected* gain from buying the product, pricing in the risk of a bad product. In microfinance, this happens when a bank can't know the risk level of a client and ends up with an interest level that is too high for a low-risk borrower to accept; leaving only bad clients in the bank's loan portfolio. The elimination of good products (low-risk borrowers) thus leads to market failure.

Perloff (2004) describes that there are two ways to respond to adverse selection problems: to *restrict opportunistic behavior* or to *equalize information*. Restricting opportunistic behavior is mainly done through contracts and the enforcement of these. Equalizing information happens through *signaling* and *screening*. Spence and Stiglitz discuss these mechanisms further, but the intuition is that the uninformed part can *screen* applicants to obtain information – or the informed part can *signal* his information to inform the uninformed part. The key to making this work is credibility. Perloff describes the situation where a person is unable to distinguish good products from bad products as *a pooling equilibrium*. The opposite is a *separating equilibrium*.

While adverse selection deals with information asymmetries ex-ante, moral hazard is about the ex-post asymmetries. Perloff (2004) discusses some potential ways to respond to moral hazard. First of all he discusses the choice of contract type for transactions in markets where moral hazard may occur. An efficient contract needs to address both the efficiency in production and the efficiency in risk bearing. If both these issues are addressed the two parts can reach an agreement where none of the parts can be better off without harming the other part – a *pareto optimal* contract.

2.3 Information Asymmetries in Microfinance

Microfinance can be seen as a principal-agent situation where the bank is the principal and the borrower is the agent. Ghatak and Guinnane (1999) describe the problems of information asymmetries in the context of microcredit and points to four specific problems in credit markets:

a) To ascertain what kind of a risk the potential borrower is (*screening*)

b) To make sure she will utilize the loan properly, once made, so that she will be able to repay it (*monitoring*)

c) To learn how her project really did in case she declares her inability to repay (*auditing costs*)

d) To find methods to force the borrower to repay the loan if she is reluctant to do so (*enforcement*)

It's important to note that these problems aren't unique to microfinance, but are present in any credit market. Traditional banking have found ways to deal with this kind of problems through mechanisms like collateral, but these mechanisms exclude the poorest from their loan portfolios. The problem that microfinance needs to resolve is thus to find new mechanisms that solve these four issues and include the poor at the same time.

2.3.1 Adverse Selection

The screening problem is an adverse selection problem where the bank needs to assess new borrowers' risk profile and set interest rates accordingly. An efficient way to solve this is to use price-discrimination between borrowers with different risk profiles; offering the safe borrowers a lower interest rate and the risky borrowers a higher interest rate to compensate for the increased risk of default. Price-discrimination depends on the bank's ability to separate the two groups though, and the normal case is that this is very hard to achieve.

The bank thus needs to find a single interest rate, and this will be set to match the average level of risk in the market. We may then face a problem with excluding safe borrowers, creating a *market for lemons* like Akerlof described. Stiglitz and Weiss (1981) discuss interest rates as a screening device and conclude that any lender will in fact have a single optimal interest rate where both a reduction and an increase in the interest will lead to a decrease in expected profits to the lender.

2.3.2 Moral Hazard

The three other problems are related to moral hazard.

Monitoring is required to make sure the borrower doesn't choose projects that increase the risk profile beyond what was assessed by the bank. Stiglitz and Weiss (1981) discuss how the interest rate may be used as an incentive mechanism and show that increasing the interest rate increases the relative attractiveness of riskier projects to the borrower. We observe similarities to option pricing theory. The borrower has a call option on the outcome of the project, with an exercise price equal to the interest. The value of a call option increases when the volatility of the underlying asset increases – and we see similar characteristics in this situation.

State verification becomes an issue when a borrower claims to be unable to repay the loan. The problem related to microfinance is again the high costs compared to the potential gains. In many cases the bank is unable to do such verification within its cost limits and then the borrower is practically encouraged to claim default.

The last of the four problems is really not a problem arising from information asymmetries, but is a problem that empowers the other information-related problems. To be able to enforce repayment, the bank requires a legal system and laws that give them the authority to enforce sanctions towards the borrower. In many of the geographical regions where microfinance has emerged,

such legal systems are weak and the political situation may be unstable. Given the small amounts of money that are on stake, the legal system is also likely to give such cases a low priority.

2.4 Traditional Microfinance Mechanisms

Armendariz and Morduch (2010) present a broad overview of the economics of microfinance, and they describe many mechanisms that has been used to create a sound lending industry for poor people. Some of these are *group lending*, *dynamic incentives*, *peer monitoring*, *regular repayment schedules* and *collateral substitutes*. We will have a brief look into how these mechanisms affect the information asymmetry between the lender and the borrower and how these mechanisms solve some of the problems discussed.

2.4.1 Joint Liability and Group Lending

Joint liability can be found in credit cooperatives and Rotating Savings and Credit Associations (ROSCAs) as early as 1850. (Ghatak and Guinnane 1999; Armendariz and Morduch 2010). It became a key concept for the first MFIs to resolve some of the problems that information asymmetries created for the poor. Yunus and Jolis (2003) explain how Grameen Bank learned that group structures was a successful approach. They required that all their customers organized themselves into groups of five people living in similar economic and social conditions. They further organized eight such five-person groups into a *center* to make good use of their scale advantages to reduce costs from e.g. group meetings. Bhatt and Tang (1998) show that group lending and joint liability lowers the transaction costs for both borrowers and lenders.

Bhatt and Tang explain that there are different types of group lending contracts. There are two main differences. First, whether loans are given collectively or to individuals in the group. Second, whether the contract involves joint liability, meaning that the whole group is responsible for each other's loans as well as their own.

Without joint liability, the main benefit is a reduction in transaction costs. With joint liability, the group members are given an incentive to make sure the others perform well and do not behave opportunistically – and thus shifts the risk from the bank and over to the borrowers themselves.

Ghatak and Guinnane (1999) explain some of the benefits from joint liability. They discuss the concept of *assortative matching*, showing that safe borrowers are likely to find safe partners when they enter contracts with joint liability. They further explain how joint liability will reduce the need for state verification to situations where the whole group claims to default.

Morduch (1999) argues that group structures with joint liability also enables *peer monitoring*. In effect, this means that the borrowers keep an eye on each other. Their social relations and the joint liability give them both the opportunity and the incentive to do so.

Ghatak and Guinnane (1999) also state that the group design is especially im-

portant. Social ties among the members make monitoring easier and is effective to enforce repayment on each other. If the social ties between them are too strong, they may want to cooperate to behave opportunistically, and then joint liability has no real benefits from individual lending (See e.g. Guinnane 1994; Kevane 1996). The size of the group also has some trade-off effects that work in both directions.

2.4.2 Dynamic Incentives

Armendariz and Morduch (2010) explain how dynamic incentives work as a mechanism in microfinance. The central issue is the value of the continued relation between the borrower and the lender after the current loan has been repaid. The lender needs to give the borrower incentives to repay by making the value of a continued relation greater than the potential gain from defaulting the current loan. We can separate this group of mechanisms into two groups: the threat of negative impacts and the opportunity of positive impacts.

Negative dynamic incentives are about creating a demand for the *next* loan. The lender needs to be able to make the borrower value the possibility of borrowing money several times. If a borrower doesn't repay a loan, the lender will exclude him from taking new loans at a later point in time. For many poor entrepreneurs, the value of a continuous credit relation is very important (See e.g. the anectode in Yunus and Jolis 2003).

Dynamic incentives can also be focused on improving the terms of loans with credit history. This is what we refer to as *positive dynamic incentives*. Many microfinance institutions use the size of loans as an incentive for continued borrowing. The first loan is usually a small one, and then the amounts are increased for each new loan. The borrower is encouraged to build a solid credit history through a kind of positive incentive rather than negative threats of being cut off.

Armendariz and Morduch also mention some problems that are related to dynamic incentives. One such problem is *the last loan*. They argue that the lender will not be able to use dynamic incentives to ensure payment when the borrower knows that this is the last loan he needs. Further, dynamic incentives require some kind of exclusiveness in the relationship between the lender and the borrower. When the borrower has many possible MFIs to borrow from, the effects of such incentives decrease.

2.4.3 Regular Repayment Schedules

Armendariz and Morduch (2010) explain how microfinance distances itself from traditional banking when it comes to repayment schedules. In microcredit the repayments are usually divided into many small fractions and the borrower is expected to start repaying almost instantly after the loan is issued. Gonzalez-Vega et al. (1997) studied microfinance in Bolivia and found that 94% of the borrowers had weekly or biweekly repayment schedules.

Regular and frequent repayments have several benefits to the MFI. First, it provides a screening tool to the credit institution. Bad borrowers are less likely to be able to repay all small repayments on time than good borrowers. Thus,

borrower's who often fall behind on the regular repayments may be screened as more high-risk for future loans.

It also works as a tool for monitoring the borrower through the loan period, giving the bank an early notice if repayments aren't made according to plan (Gonzalez-Vega, Schreiner et al. 1997). Armendariz and Morduch also explain that the frequent repayments prevent the borrowers from spending the money on other things in the time from acquisition to repayment.

Problems related to regular repayment schedules are increased transaction costs as repayment frequency increase, and a bad match with borrowers that borrow for seasonal activities like agriculture.

2.4.4 Collateral Substitutes

Certain microfinance institutions take non-traditional views at collateral and use this as a mechanism, even though poor clients are less likely to have assets that are valuable enough for the bank to cover its losses in the case of default. The key insight is to look at collateral as an incentive mechanism more than a financial security.

Armendariz and Morduch (2010) tell of an Indonesian microfinance institution *BRI* who require their customers to put up collateral. Their assessment of collateral is based on whether it will be problematic for the borrower to give up the collateral or not. If the personal value is great, the borrower will have the right incentives to repay the loan, regardless of how much the bank can sell the asset for in the case of default.

Other MFIs have coupled credit with savings, and used the savings as collateral. Armendariz and Morduch (2010, p.156-157) debate how well savings work as collateral, and argue that "... the use of financial collateral does little more than effectively reduce the capital that borrowers have available to them...". They conclude "... financial collateral can be an effective way to facilitate lending, but it hinges on special assumptions about borrower psychology and constraints that are unlikely to hold for everyone at all times".

2.5 Effects from Increased Competition

Microfinance has become more competitive as more MFIs have been established and started lending to the poor. We can find microfinance providers in more and more countries, and as the performance of the first MFIs improve, new institutions are eager to follow.

The worldwide loan portfolio has grown fast, especially over the last decade. The Microfinance Information Exchange *(MIX)* reports that the gross loan portfolio summed up to 65 billion USD at the end of 2009 (mixmarket.org).

Daley-Harris (2009) shows that both the number of microcredit institutions and the number of borrowers have increased significantly over the last decade. The number of MFIs reporting to the Microcredit Summit Campaign increased from 618 in 1997 to 3,552 institutions reporting in 2007, representing a movement of emerging microcredit organizations.

Daley-Harris also shows that the reporting organizations served 13.5 million borrowers in 1997, and that this number had increased to 154.8 million borrowers by the end of 2007. Thus, empirical evidence shows that the microfinance industry as a whole experiences a high level of growth in its operational level.

Chen et al. (2010, p.2) explain how "growth was driven by increasingly competent and confident MFIs with a social mission to increase outreach to the poor and the unbanked" and claim that the growth has been motivated by many means, e.g. an excessive supply of credit and extensive attention in media and politics.

2.5.1 Market Dynamics

This has changed the dynamics of the microfinance markets, introducing new competitive forces and shifting the power balance between different stakeholders in the market.

Modern economics favor competition over monopoly markets. Competition usually brings the competitors to another level of performance, putting the customer in the center of their activities and making an effort to meet client demands as best they can. Competition is believed to have beneficial effects on both prices (interest rates) and quality of service, seen from the client's perspective (Krishnaswamy 2007).

McIntosh and Wydick (2005) use a theoretical approach and provide a framework that explains how the introduction of competition affects the dynamics in a microcredit market with client-maximizing and profit-maximizing MFIs, respectively.

In short, they argue that, under Bertrand competition, the two MFIs will compete in the market and reduce their price (the effective interest rate) until the entire surplus is left with the borrowers. Client-maximizing MFIs will then have to cut off their worst-off clients, as they no longer have any profits to subsidize the bad borrowers with.

Alamgir (2009) has studied the effects from competition between MFIs in Bangladesh. He found that interest rates in fact have gone up despite increased competition, and argues that the demand is so high that excessive competition is required to affect this term. He also argues that MFIs rarely compete on this parameter, but that they use larger loan size, faster handling of applications, increased flexibility in repayment conditions, savings services, local roots and additional services like education, health services and so on.

Alamgir (2009, p.127-128) also points out that "the main competition among the MFIs is seen in the *mainstream* microcredit segment of the market where the number of clients and consequently, the size of the portfolio is large" – and to a less extent in the poorest segments.

Another point mentioned by McIntosh and Wydick is that competition is likely to increase the information asymmetry between lenders in the market.

Competition can also have dangerous side effects. Krishnaswamy mentions both concerns about unethical behavior, client-poaching and increased focus on targeting richer clients to in-

crease profits. This last concern will cut off the poorest from loan portfolios and undermine the social goals of microfinance. There is a large debate in the microfinance sector on whether this is a real concern, and the effect is often referred to as "mission drift". I will not go into details on this issue here, but simply refer interested readers to e.g. Mersland and Strøm (2010).

2.5.2 Private Reputation

Many of the traditional microfinance mechanisms were variants of creating a private reputation between the lender and the borrower. The borrower builds some kind of a credit history and a relationship to the lender through credit (and deposit) activities. The basic problem concerning competition and microfinance is that the mechanisms were designed with the dependency between the borrower and the lender as the driving force for repayment.

Chen et al. (2010, p.8) explain that "competition enables clients to benefit from wider choice as microfinance transforms from a sellers' to a buyers' market". De Janvry et al. (2010) present empirical studies that indicate a substantial adverse selection problem for the lender, as a consequence of strategic behavior based on information asymmetries.

The threat of negative impacts from defaulting a loan is significantly reduced when the borrower has other alternative sources for credit (Hoff and Stiglitz 1997). However, the opportunity for increased loan sizes remains. Competition may thus drive the increase of loan sizes further, as this becomes a parameter to compete on.

2.5.3 Multiple Lending

One of the effects of competition is that borrowers are able to attain loans from different MFIs at the same time. Chen et al. (2010) study four specific countries that have experienced a microfinance repayment crisis and find that multiple lending is a key explanation to many of the problems. According to their study, as much as 30-40% of all borrowers in these countries had multiple loans when the crisis began.

It's difficult to measure the level of multiple lending in a market without the use of a credit bureau and extensive information sharing. Thus, there are few empirical studies of this phenomenon. We refer to the situation where a borrower has a higher outstanding total debt than he can handle as *overindebtedness*.

Multiple loans may also be used to repay existing loans, extending the credit limit without any warning systems going off. We refer to this as *bicycling loans*. MFIs tend to increase the loan size as loans are repaid on time, and the borrower can then easily use a strategy of multiple funding to accelerate the increase in loan size beyond his real capacity. As long as the loans are repaid, the bank won't notice what the borrower is doing, and the losses can be substantial when the scam is detected and the borrower is unable to repay the loan(s).

This has, to some extent, been accepted by microlenders and consumer lenders (see e.g. Rhyne 2001b), but has been restricted in the later years.

When the behavior is less opportunistic, taking up multiple loans could actually

improve the ability to repay the loan on schedule. Krishnaswamy (2007) studies multiple borrowing in the Indian microfinance sector and finds evidence that indicates an improved repayment rate from borrowers with multiple loans. These results are not conclusive though, and should only be considered indications that motivate further studies on this topic.

2.6 Information Sharing

The obvious solution to many of the information asymmetry problems in microfinance is for the MFIs to start collaborating; telling each other which clients are risky clients that should not be granted new loans – and which clients are currently close to their debt capacity and therefore should not be given another loan at the current time. Basically, they need to start sharing information to get rid of the new information asymmetries through *equalizing information*.

Campion and Valenzuela (2001, p.3) look into credit bureaus and the need for information sharing in microfinance by studying five Latin-American countries. They address what information MFIs need to share, and generalize the demand for information into three groups:

1) Clients' current and past delinquencies or defaults

2) Clients' current outstanding balances, including information on guarantees and collateral

3) Credit histories of guarantors and co-signers

We refer to the first category as *negative credit information*. This helps the banks determine the right level of *credit risk* associated with the client. We refer to the second and third categories as *positive credit information*. This helps the bank get an overview of the clients' real ability to repay another loan.

Campion and Valenzuela argue that sharing information on client histories will *minimize the risk of lending* and reduce transaction costs by excluding risky clients early in the process, *increasing institutional efficiency*.

They also give a thorough overview of several types of information sharing mechanisms that are used by MFIs. They present informal blacklists, public credit bureaus, private credit bureaus, public information vendors, and specialized MFI credit bureaus. I won't go into each of these alternatives here, but simply note that a nation-wide credit bureau that includes both MFIs and also other credit institutions is preferable from an information asymmetry perspective.

Information sharing is only implemented in a limited amount of microfinance markets, and they're often designed in a way that is not useful to MFIs. Campion and Valenzuela explain that there are mainly two reasons to why MFIs are reluctant to sharing information with each other.

First, the cost vs. benefit from using a credit bureau is only beneficial to the MFIs if it's designed in the right way. Many public credit bureaus are designed for ordinary banks rather than MFIs, and such bureaus are rarely useful for the microfinance industry.

Second, we experience that it's much harder to get MFIs to share positive information than negative information. This is mainly due to concerns about *client poaching* by competitors. This is discussed by Gehrig and Stenbacka (2007), who explain that if all MFIs know which clients are the best, all MFIs have an incentive to target these clients.

As we have seen in chapter 2.3, information asymmetries exist in all credit markets. It is important to note that information sharing among MFIs won't resolve all these issues, but it will be important in order to equalize the asymmetries between various lenders. Each MFI, or the industry as a whole, still needs to address the information asymmetry between lenders and borrowers. Information sharing is thus essential to counteract the bad effects from competition, but cannot replace the traditional microfinance mechanisms, as they are designed specifically for the lender-borrower relation and not the relations between various lenders.

2.6.1 Experiences From Guatemala

De Janvry, McIntosh et al. (2010) present an empirical study that documents the effect of using a credit bureau. They are able to show improvements in terms of reduced adverse selection and reduced moral hazard. Their study concentrates on a Guatemalan microfinance lender who gradually started using a credit bureau without letting its clients know. This made it possible to measure the effects on adverse selection and moral hazard separately.

They found that the ejection rate with regard to new loan applications rose by 15% when the MFI started using a credit bureau. When the borrowers were educated on the use of a credit bureau, the study both found that joint liable groups increased their level of screening applicants, excluding the worst performing group members, and that borrowers were less likely to take a loan from an outside lender, reducing multiple lending.

De Janvry, McIntosh et al. (2010, p.174) conclude that "overall, the bureau permits a substantial expansion of credit among lenders in the system while simultaneously driving down delinquency".

2.7 Market Phases and Crisis Indicators

This study looks at the events in various microfinance markets from emergence until a repayment crisis occurs, and tries to explain similar patterns across the markets by formulating a phase theory. This is the first study to express such an approach to the problems, but others have done similar studies without using the term *phases*. I will present some of these studies and their findings here, and further relate them to my study in chapter 3.2.

2.7.1 Growth and Vulnerabilities

Chen et al. (2010) present a case study of four countries that have experienced a repayment crisis after the global financial crisis in 2008: Nicaragua, Morocco, Bosnia and Herzegovina (BiH), and Pakistan. They conclude that the global financial crisis was not the primary cause of the repayment crises, but point to three vulnerabilities that lie at the core of the problems:

- Concentrated market competition and multiple borrowing
- Overstretched MFI systems and controls
- Erosion of MFI lending discipline

In short, they find that all four case countries experienced a period of growth prior to the crisis. They argue that abundant funding fueled this growth and show that the performance of MFIs in this period remained solid. After a while, the portfolio showed signs of distress through increased Portfolio-At-Risk (e.g. PAR30[1]) and a slowdown in growth.

Chen et al. argue that growth led to more intense competition, and that this often happened in concentrated geographical regions. They also present high numbers for multiple lending in the microfinance markets, and argue that market dynamics changed as borrowers got more possible credit providers in their region.

The argument of overstretched management was founded on rapid increases of MFI staff and the lack of proper auditing staff. They also argue that MFI discipline decreased through the emergence of a competitive environment with incentives that focused on short-term growth rather than long-term sustainability.

Their study also shows that contextual factors mattered, and they point to three contextual forces that affected the pace and scope of the crises:

- The macroeconomy
- Local events
- Contagion factors

They argue that the global economic recession that started in 2008 affected the borrowers ability to repay, even though it didn't *cause* the crises. In some countries, especially Nicaragua and Pakistan, local "non-repayment movements" and *herd behavior* of the borrowers accelerated the repayment problems. Contagion effects, like social networks or special media coverage also affected how severe the crisis became.

We thus find indications that can be interpreted in the direction of a phase theory, even though Chen et al. do not explicitly mention this. However, the study implies that a period of growth precedes the crisis, and points to important conditions in the market that are worsened before the crisis.

2.7.2 Growth and Market Penetration

Gonzalez (2010) takes up the question on whether growth itself can be the cause of repayment problems. He analyzes the relationship between portfolio risk and institution-specific growth (in terms of number of clients), aggregated countrywide growth, and market penetration rates, respectively. The analysis is performed as an empirical regression study based on observations from a large number of MFIs in the period 2000-2008.

He finds that the growth in a particular MFI must be at an extremely high level before it affects the repayment performance in a negative way. He actually

1 PAR30 is a measure of how many loans, in percentage of the total portfolio, is more than 30 days overdue with their repayment.

finds that the repayment performance, measured in PAR30, Write-Offs and Total RISK (PAR30 + Write-Offs), has a U-shaped relationship to the growth in number of borrowers. The critical level is in the range from 250-277% annual growth for each of the three risk parameters. He only finds 2 out of 689 MFIs with an annual growth rate above this threshold in 2008.

Further, he divides growth into two categories: local growth and expansive growth. The first contains growth in existing branches, while the latter comes from opening new branch offices. He finds that MFIs can grow much more through expansive growth, than through local growth, before the growth affects the repayment performance. The thresholds are 168% locally and 631% expansively. Still, few MFIs surpass any of the measures.

Gonzalez finds the relationship between aggregated countrywide growth and repayment performance to be similar to the institution-specific growth in shape, but with other thresholds. The critical growth level is only 63-84% for the different risk measures when we look to aggregated growth. However, the U-shaped curve is quite flat for the region 0-125%, and only countries above 125% annual growth in number of borrowers should expect to see a deterioration of the portfolio from the growth itself. Few MFIs in the data sample surpassed this limit as well.

He also examines how the market penetration rate in the country is related to repayment performance, and finds that the risk profile of the portfolio increases when market penetration surpasses a threshold at 10% of the total population.

Gonzalez' study thus tells us that none of these measures caused the observed repayment crises by themselves.

2.7.3 Early Warning Index for Over-Indebtedness

Kappell et al. (2010) has a more empirical approach to the problems than Chen et al. They argue for the use of a "signaling approach" and present a set of indicators that act as early warning signs of over-indebtedness. They construct a weighted index of these indicators to create an *early warning index*. The index is constructed to be used by e.g. investors, and is only indicative and far from conclusive, due to a small amount of available data.

They examine 21 potential indicators, representing four different levels of measure. These are (1) macro-level indicators, (2) microfinance market indicators, (3) firm-level indicators, and (4) household-level indicators. Some of the indicators are quantitative and can be easily measured from reported data, while others are qualitative and represent the perceived situation reported through a survey distributed by the researchers.

A set of 14 indicators was included in the final index, and most of these were industry- or firm-level indicators.

By applying the index to 13 selected microfinance markets, they find that Bosnia and Herzegovina, Cambodia, and Peru are all markets with a *relatively high level* of early warning signs for over-indebtedness. No markets reached the most severe category.

Colombia, Ghana, and Kosovo were listed as markets with *medium to high* level of early warning signs. Armenia, Paraguay, Tajikistan, Bolivia, El Salvador, Ecuador, and Georgia all have *medium* or *relatively low* levels of early warning signals. They also argue that it's possible to counteract the problems and thus prevent a crisis, even if the warning signs are present.

3. Methodology

In this chapter, I outline how the case studies will be conducted. I will start by defining the problem and discuss how it should be addressed through research. Next, I will present my selected choice of method and argue why this has been chosen. Further, I will also address the sources of information and data that has been used as a basis for the study. At last, I will present a framework for the single case studies that will be presented in this report.

3.1 Defining a Repayment Crises

As a start, I will address the term *repayment crisis*. This term will be used a lot throughout the report, and is also used by other researchers. The exact choice of definition is not critical to my study, but it's still useful to define the term to establish a common understanding of the phenomenon, as this is a central term in my problem definition.

The central parameters for repayment behavior in microfinance are *Portfolio At Risk (PAR[X]), Write-Offs* and *Total Risk*. PAR is measured as the fraction of the loan portfolio that is more than X days overdue, where X often is chosen to be 30 or 90 days. It thus measures the *risk of default*. Write-Offs are measured as the fraction of the loan portfolio that is considered lost to the credit institution, and thus measures *confirmed defualts*. Total Risk is defined as the sum of PAR and Write-Offs.

As we will see throughout the report, various MFIs choose different strategies for depreciation of defaulted loans and delayed repayments. This affects the performance of PAR30 and Write-offs. The most correct measure of repayment behavior may thus be the Total Risk.

Chen et al. (2010) define a market with a repayment crisis as a market where the level of PAR30 exceeds 10%. To maintain consistency with previous research I endorse this definition, and thus use a similar definition in my study.

However, the definition only affects the variety of potential markets that I can choose to look into in this study, and the exact threshold is thus less important. All the mature markets I investigate have experienced occurences of PAR30 above 10%, but I want to emphasize that markets with high Write-Offs (and thus Total Risk) may be equally valid even if PAR30-values are below 10%.

3.2 Problem Definition

The intent of this study has been to formulate a *phase theory* that enable researchers to evaluate microcredit markets under development, to assess whether they are likely to face a repayment crisis. The hypothesis has been that the mature microcredit markets that have already experienced repayment crises, shared common behavior patterns prior to the crisis, and that developing markets with similar behavior are likely to face a crisis in the future.

This study has therefore focused on the following issues:

1) Describe the developments in a microfinance market from launch to an eventual repayment crisis.

2) Detect similar patterns across different markets that have faced repayment crises.

3) Explain why repayment crises occur.

4) Suggest improvements to the development that are likely to prevent crises.

5) Predict whether markets under development are likely to face similar repayment crises based on their present behavior.

There is some overlap between my problem definition and that of earlier research. The main contributions have been presented in chapter 2.7, but I will try to relate them to my approach in this section as well.

Chen et al. (2010) addressed points 1-4 in their study of four mature markets that have experienced repayment crises. Their study takes a holistic approach and they mainly *explore* the subject. They present some possible causes for repayment crises. My study use their findings as a point of entry and extend it through several quantitative analyses. I also go one step further in formalizing the findings into the phase theory that explains how the various findings are connected to each other.

Kappell et al. (2010) addressed point 5 with the intention of creating an *early warning index* that can be applied to microcredit markets. However, the outcome of using such an index is limited to assigning the market to a *level* of problems. Thus, researchers applying the index to a market will not know what the specific problems are and how to solve them. My study thus extends Kappell et al.'s study through describing the different phases of a market prior to the crisis and how to assess which phase a market is in now.

Gonzalez (2010) addressed certain hypotheses related to point 3. He used extensive, quantitative data analysis to see whether various kinds of growth or market penetration in itself could explain repayment crises. My study builds upon his findings as well, but have a much wider scope to finding explanations.

All three studies represented points of entry to my problem definition, and they acted as a basis for my hypotheses as I started the research. Especially Chen et al's implication of a behavioral pattern across several mature markets has been important to my choice of research design. Kappell et al's thorough screening of important indicators have also been important to my choice of research parameters, especially in narrowing down the relevant data to collect and analyze.

Apart from these three studies, there are few significant contributions to the field of study. There are few expressed hypotheses and the research is therefore still characterized as *exploratory*. The fact that I use the existing studies as a point of entry enable me to go one step further into *description* and *evaluation*, but can also be a source of bias in the approach. However, it is beyond the scope of this study to explore all possible explanations. This study does not claim to be fully comprehensive, but intends to extend the existing research.

In addition, the research area has been confined to the finance institutions in the market, and to some macroeconomic parameters that are related to the market. As this is a study within the field of economics, emphasis has been put on micro- and macroeconomic parameters, and not on e.g. elements of social science.

Chen et al. mention certain issues that are not addressed further in this study, like the *no-pago (no-payment) movements* in Nicaragua. These issues are not regarded as irrelevant to the problem of repayment crises, but is simply not included in the scope of this economic study.

Further research should therefore also try to find opposing or complementary theories to this phase theory, and focus more on discrepancies between markets to establish a more defined border between the markets and their context. This way, researchers may be able to rule out some of the indicators that are included in this study, and possibly also detect new ones that haven't been addressed here.

The research field is thus far from fully explored, but this study focuses more on approaching a *description* and *evaluation* based on previous *exploratory* studies than on exploring the subject further.

3.3 Research Design

Here, I outline the specific research design for this study. I will argue why the case study methodology has been chosen and argue why the specific markets have been included in the case study.

3.3.1 Choice of Method

Yin (2003, p.5) suggests that three conditions are important to the choice of research design:

a) the type of research question posed

b) the extent of control an investigator has over actual behavioral events

c) the degree of focus on contemporary as opposed to historical events

The research questions where outlined in the previous section, and we can see that they represent different kinds of questions. However, the central part of the research problem is to explain *how* markets develop and *why* crises occur.

Further, it's not possible for me to control any events in the microcredit markets. In addition, as implied above, little research exists on the field, and the complexity of the situation makes it hard to create a model that can be tested through a controlled experiment. Experimental studies are therefore not an option in this case.

The focus is on historical events in term of mature markets, but on contemporary events in term of developing markets. We can also argue that the repayment crises that are addressed are so recent that even mature markets may be treated as contemporary events. At least, this is the case for two out of the three chosen mature markets.

Yin (2003, p.1) states that "case studies are the preferred strategy when 'how' or 'why' questions are being posed, when the investigator has little control over events, and when the focus is on a contemporary phenomenon within some

real-life context". Based on the reflections above, I found the case study approach to be the appropriate research design for this study.

3.3.2 Case Study Design

In his definition of a case study, Yin (2003) emphasizes that the phenomenon is studied within its real-life context, and that the boundaries between the phenomenon and the context are not clearly evident.

This is also the case for this study. The limited amount of previous research to build upon makes it hard to distinguish between what elements are in fact related to the repayment crises, and which are only parts of its context. I have therefore chosen to look into a quite broad set of indicators and elements in each case, and hope that the cross-case analysis will reveal more of what is actually related to the core problem.

My study is designed as a *multiple-case embedded design* (see Yin 2003, for a discussion of various designs). The *cases* are defined as national microfinance markets. It is known from other studies (e.g. Sapundzhieva 2011) that market dynamics can be quite different in various geographical regions within a country, especially separating urban and rural areas. It would thus be beneficial if I could look at more confined geographical areas, but unfortunately, comparable data is only available on national levels. Inside each market, I collect data from each *microfinance institution* (MFI). This makes the design an *embedded* case study design.

The first part of my study looks at mature markets, and is a *multiple-case* study as it looks into three different mature markets. Multiple-case studies are regarded more robust than single-case studies, even if the number of cases is only two or three (Herriott and Firestone 1983; Yin 2003). In this study, I first looked into each of these three markets and tried to describe and explain the events in each of them. Then, I did a *cross-case analysis* and used elements of *pattern matching* (see e.g. Campbell 1975) to find similarities among the three markets. This was then formulated into the phase theory.

Finally, I looked into another case (market), which was addressed differently from the others. This developing market was studied as a case study that intended to apply the phase theory to predict and suggest future developments. The last case strengthens the phase theory through showing that similar events can be detected in a market that has not faced a repayment crisis, and thus strengthens the chain of evidence further.

3.3.3 Choice of Markets

As I had decided to do a multiple-case study, the next important design issue was to choose appropriate cases (markets).

Mature Markets

The first part of the study looks at mature markets that have experienced repayment crises. I defined the term repayment crisis earlier, and showed that the level of PAR30 should be above 10% in the market. Most markets have single MFIs that experience such levels, but for a crisis to be present, the whole market should see a significant increase

in PAR30-levels, and the portfolio-weighted average of RISK-levels among MFIs should be above 10%.

There are only a limited number of such markets. In fact, only a handful of markets have undergone a serious repayment crisis, even though several markets have seen the same effects in a smaller scale. Industry experts and previous studies point to Bolivia, Morocco, Bosnia and Herzegovina, Pakistan, and Nicaragua.

Chen et al. (2010) studied four of these markets: Nicaragua, Morocco, Bosnia and Herzegovina (BiH) and Pakistan. All these markets have experienced a repayment crisis rather recently (after 2007). Both Nicaragua and Pakistan experienced that borrowers collectively refused to pay, and these markets should thus be studied with a combined focus on economic and social events. I therefore leave those two markets out of my study. However, I include both Morocco and Bosnia and Herzegovina, as Chen et al. suggests that economic parameters and behavior prior to the crisis share a common pattern.

The first microfinance market to experience a serious repayment crisis was Bolivia. This happened around 10 years earlier than the crises in Morocco and BiH, and thus represents another time period. It also adds geographical diversity to the mix, as Bolivia, Morocco, and Bosnia and Herzegovina all reside on three different continents. The repayment crisis in Bolivia was studied quite well by researchers, as it was the first of its kind. Even though the amount of quantitative data from MFIs in Bolivia is lower than for the other two cases, an extensive amount of qualitative data can be used to complement the case study. I therefore also include Bolivia as a case market.

The three cases, Bolivia, Bosnia and Herzegovina (BiH), and Morocco, thus represents a diversity in both geography and time. As we will see through the case descriptions, they also differ in several other areas. It is important to note though, that the use of multiple cases do not intend to "represent" the whole microfinance industry. Yin (2003) explains that multiple cases should be considered the same way as multiple experiments, using a *replication* logic and not a *sampling* logic. By using multiple cases I thus try to replicate the findings that I make in the first case, by looking at other cases where some parameters are changed (e.g. geography and time).

The choice of markets is supported by other researchers. They are often-quoted examples of markets that have experienced problems with repayment. As we have seen, both Chen et al. and Kappell et al. use some of the same markets in their research, and I will thus have a similar bias as them, with regard to case selection. As mentioned, the available set of markets to choose from is rather limited and if more markets experience similar crises in the future, the set of markets should be widened to strengthen the theories with new findings.

Developing Markets

For the last case, there were several possible markets that could be examined. The purpose of doing the last case was to give an example of how the phase

theory could be used. Similar analyses could be done for several markets, but the focus of this study has been to establish the phase theory itself, and not to examine all developing microfinance markets. This study therefore only does one thorough case study of developing markets.

The developing market that is examined in this study is Cambodia. This market was flagged light red by Kappell et al. through the use of the Early Warning Index, indicating that there is a "relatively high level of early warning signals for over-indebtedness". This is thus a market where it would be relevant to search for patterns that are similar to the mature markets, to enhance Kappel et al.'s indication to a more thorough analysis.

The fact that I chose a market that has previously been flagged by researchers obviously represents a bias in the selection. However, the intent of the last case is to exemplify the use of the phase theory, and not to cover all (or any particular) developing markets. It would strengthen the phase theory even further if we could find similar patterns in markets that have not been previously examined, but even Cambodia is "another case" that gives strength to the theory.

As mentioned earlier, research in this field is still explorative. As theories become more established, it would perhaps be a reasonable approach to apply a tool like the Early Warning Index as a shallow screening of all markets, and then apply e.g. the phase theory to do a more thorough analysis of the markets that are flagged in the index. I thus acknowledge that this procedure limits the validation in the present study, but suggest that the procedure is sound when theories and tools become more settled.

Future research is very welcome to apply the phase theory to several other developing markets, but this requires an effort beyond the possible scope of this study.

3.4 Data

This study relies on secondary data sources only. The data availability has been a challenge to the study, and some topics have therefore been analyzed rather superficially.

The Microfinance Information eXchange (MIX) gathers data from a large number of MFIs on an annual basis. Their information is publicly available at the web portal MixMarket. MFIs report to MIX on a voluntary basis, and the dataset thus has some self-selection bias. The MFIs that report are expected to be among the best in terms of portfolio quality and performance, as the willingness to report to MIX is driven by the desire to be exposed to investors and donors (Gonzalez 2007; Kappell, Krauss et al. 2010).

Another drawback with MixMarket is that data is only reported annually. This gives a low-resolution data set. The repayment crisis we have observed have only lasted for a few years, and it's thus hard to make trustworthy empirical findings based on a data set with this low resolution.

It's also a challenge that the online data is not available in a database presen-

tation, but only through certain predefined views. This made it hard to do "screening analysis" to search for certain patterns in the data material, and has confined the use of MixMarket to collecting parameters for single MFIs or countries. This required me to know what to look for in advance, and obviously confined the possibilities of exploring the data material through initial analyses. It should be noted though, that MixMarket has very recently added new functionality that improves these possibilities. The new functionality was added too late to be of any use for this study though.

However, MixMarket is regarded to be the most comprehensive database that exists for data from MFIs, and is thus selected as the main source of information related to the firm-level indicators.

MixMarket only contains data back to 1996, and the availability of data for Bolivia is therefore very limited. This case has therefore been supplemented with data from various studies that are referred to in the case itself. Some of the analytical tools used in the other two cases are left out of the Bolivia-case though, as the necessary data is not available.

For macroeconomic figures, the World Development Indicators have been used.

In addition to the quantitative data that is analyzed, certain qualitative assessments found in previous studies are also included to complement the evaluation.

3.5 Case Study Framework

As mentioned in the description of the research design, each of the mature markets is investigated separately at first, and then a cross-case analysis is conducted to compare findings. Each case is presented separately, and use a similar structure in all of them to make the cross-case analysis easier and to achieve a higher level of consistency between the three presentations.

There are some discrepancies between the cases, mainly due to available information and data. However, each of the three cases is presented according to the framework outlined below. Points 1-4 are mostly presented as a qualitative description of the market and its events, while point 5 is a combined quantitative and qualitative evaluation of dynamics in the market.

I. Historical background

In this section of the case, I outline important historical events prior to the first microfinance initiatives. This is important to understand the context of each market.

II. Introducing microfinance institutions

Here, I give a brief overview of the microfinance market and point out the most significant microcredit institutions. I also present some key performance indicators for each of the presented MFIs that give an overview of the institution in terms of size, positioning, and financial performance. The presented information is dependent on data availability, but normally includes: gross loan portfolio size, average loan size, risk measures (PAR30 and Write-Offs), profit margin, return on assets,

and the number of offices, personnel and clients.

This section is especially extensive in the Bolivia case. This is intended to give a thorough description of how microfinance institutions operated, and serves the purpose of giving the reader a broad overview of the differences and similarities that exist among various MFIs in a microcredit market.

III. Microfinance from launch to crisis
In this part, I outline the main events in the microfinance market from its launch and until the repayment crisis emerges. This part works as a summary of the case, and introduces some of the most important findings from the part *Crisis Indicators* as well; woven into the context of the whole story.

IV. The repayment crisis
This section contains a description of the repayment crisis and its main events.

V. Crisis Indicators
Here, I investigate a set of *indicators* that are believed to behave in a certain way prior to the crisis. The analysis combines both quantitative and qualitative assessments, and seeks to explain significant changes in the indicators prior to the crisis.

The choice of indicators and their presentation is described in chapter 3.5.1 and 3.5.2.

VI. After the crisis
Because Bolivia experienced their repayment crisis some time ago, I'm able to include a section in that study to describe what happened in the market right after the crisis as well. This chapter is not included in the other two cases.

3.5.1 Choice of Indicators and Categorization

The choice of indicators is based on existing research and data availability. As discussed earlier, this study does not seek to be exploratory, but rather focus on taking existing research one step further.

Kappell et al. (2010) did a thorough screening process of possible indicators when they constructed the early warning index, and considered 57 different indicators at 4 different levels: macro-level indicators, microfinance market indicators, firm-level indicators, and household indicators. They examined 21 of these in their study, and decided on 14 to include in the index.

Kappell et al. conducted a survey to produce results for some of the 14 variables. The raw data material from this survey is not available to me, and it's beyond the scope of this study to conduct a similar survey. Some of the indicators are therefore left out of my study, and others are only briefly addressed through qualitative assessments made in other studies.

I use a total of 12 indicators, mainly representing the *microfinance industry level* and the *firm-level* in Kappell et al.'s study. One of the indicators is a *macroeconomic* parameter. However, my presentation and categorization of the indicators differs from Kappell et al's.

One part of my hypothesis is that we can find similarities and patterns in the industry prior to the crises. These

patterns are likely to be related to the changes in market dynamics, and I thus want to use a framework for market dynamics as the shell for my presentation. I have thus chosen to use the following four categories:

a) consumer dynamics

b) supplier dynamics

c) substitutes

d) market dynamics within microfinance

Observant readers may see the similarities of the framework "The five competitive forces" presented by Porter (1979). He claims that there are mainly five kinds of forces that affect the long-term profitability in an industry. This study does not focus on the relationship between repayment crises in microfinance and Porter's framework. Therefore, I do not use his framework and his reflections in itself, but in a modified form.

However, through assigning the indicators to each of these categories, I hope to be able to see whether the patterns in the market are related to any of the competitive forces in particular. Again, this is not the main target of the study, but is a bonus finding that I include in some parts throughout the study.

Table 1 lists the indicators in their respective categories.

3.5.2 Indicators

In this section, I will briefly visit each of the indicators and explain how they are measured and why they are included in my study.

CONSUMER DYNAMICS

This first category deals with the relationship between the credit institution and the borrower (consumer). In gen-

Consumer Dynamics	Indicator Type [1]	Primary Source[2]
(1) Remittances	Quantitative	WDI
(2) Average loan balance per borrower	Quantitative	MixMarket
(3) Loan requirements and lending methodologies	Qualitative	Assorted
(4) Productivity	Quantitative	MixMarket
Supplier Dynamics		
(5) MFI liquidity and perceived investment flow	Quan/Qual	MixMarket
Substitutes		
(6) Commercial banks	Qualitative	Assorted
(7) Consumer credit	Qualitative	Assorted
(8) Multiple lending	Quan/Qual	Assorted
Market Dynamics within Microfinance		
(9) Growth rates of total volume of loan portfolio	Quantitative	MixMarket
(10) Market penetration	Quantitative	WDI, MixMarket
(11) Level of competition	Quantitative	MixMarket
(12) Quality and use of credit information systems	Qualitative	Assorted

Table 1 – Indicators

[1] Quan = Quantitative, Qual = Qualitative

[2] Assorted = Different sources for each case study, WDI = World Development Indicators

eral, competition is believed to increase the bargaining power of consumers. This may in turn lead to credit institutions giving their borrowers more slack in order to win, and keep, customers.

Remittances

Remittance is the only pure macroeconomic indicator that is included in this study. It measures the level of regular payments flowing into the country from employees' and workers' compensation abroad, towards their relatives.

In some countries, especially developing countries, the level of remittances measured against the country's GDP can be quite high. Especially to the poorest households, remittances may thus be a significant part of their cash flow. This is considered relevant because it directly affects the borrowers' ability to repay their loans.

Kappell et al. (2010) suggest that remittances have several effects. First, the payments can be used to cover regular loan repayments and smooth the borrowers' consumption. Second, it may reduce the borrowers' dependence on external funding through credit institutions, making them less willing to repay their loans (see e.g. theories on dynamic incentives in chapter 2.4). These two effects can make borrowers overly confident and lead to over-indebtedness.

Third, a drop in the level of remittances (e.g. due to financial trouble in other countries) can force borrowers to default their loans if they have made themselves dependent on remittances to meet repayment terms.

The "worst-case" scenario for the microfinance industry is thus a level of remittances that is steadily increasing for several years (building confidence) and then a sudden drop in the level of remittances. Thus, the growth rate of remittances seems like a reasonable measure. I also look into the dependence on remittances, measuring remittances as percentage of the country's GDP, and comparing it to the region average.

Average Loan Balance per Borrower

An increase in the average loan size is natural considering the concepts behind microcredit. Increased loan sizes are one of the mechanisms used to create positive dynamic incentives (discussed in chapter 2.4). This is important to motivate the borrower to keep paying back the loans.

To keep the clients, a bank thus needs to increase its loan sizes from time to time. Unless the banks expand heavily among the poorest clients, we would thus expect to see an increasing average loan size.

Gonzalez (2007) found no significant relationship between loan sizes and repayment performance, and the measure is thus not revealing in itself. An increase does say something about the competition though, and may very well be an effect of borrowers' increased bargaining power. This may lead to situations where borrowers receive loans above their real capacity, and is thus interesting to measure.

The data is collected on firm level from MixMarket, and I present data for a set of MFIs in addition to an average value for the market. The average value will be weighted based on market shares of

the various MFIs, primarily based on number of clients (client-weighted), and secondary on portfolio size (portfolio-weighted), depending on data availability.

Loan Requirements and Lending Methodologies

Requirements and methodologies aren't standardized and thus not reported to MixMarket. This indicator therefore becomes a qualitative measure where I use findings from previous studies and descriptions from e.g. credit associations in each market.

The hypothesis for this indicator is that the use of traditional microfinance mechanisms, designed to neutralize problems of asymmetric information between the lender and the borrower, is decreasing. Instead, more and more credit institutions move toward ordinary banking, as borrowers gain bargaining power.

Traditional microfinance mechanisms to look for is described in chapter 2.4, but among the most important are joint liability (vs. individual lending) and repayment frequencies.

Productivity

The measure used for productivity is borrowers per staff, and is measured for each MFI and aggregated into an average value for the market.

$$Borrowers\ Per\ Staff = \frac{Number\ of\ Active\ Borrowers}{Number\ of\ Employees}$$

Traditional microfinance emphasized the importance of the relationship between a borrower and his specific loan officer at the credit institution. Every credit institution has some overhead in their employment, and not all employees are loan officers. However, the closest measure we have is the total number of employees. The intuition behind this measure is that with more borrowers per staff, the loan officer is less able to follow up on each borrower. Thus, the quality of screening, monitoring, and so on is believed to decrease as this ratio increases.

Chen et al. (2010) also suggest that the introduction of individual lending requires more thorough screening of the potential borrowers, increasing the need for a low borrower-to-staff ratio to maintain quality. They also explain how rapid recruitment of staff may pose as a threat to the lending policies and sound lending methodology. First of all, many of the newly recruited persons receive too short training periods, as they are needed in operations in the organization. Secondly, as the organization continues to grow, many of the poorly trained employees are promoted into middle-management positions where their culture affects the whole part of the organization that they work with – spreading unsound thoughts and methods quickly through the organization.

SUPPLIER DYNAMICS

This category deals with how the credit institutions finance (supply) their operations.

MFI Liquidity and Perceived Investment Flow

Chen et al. (2010, p.2) suggest that the high growth in the microfinance sector has been driven by a supply "push" coming from abundant funding. This

gave MFIs confidence to keep growing. They also suggest that "funding, national influence, and international recognition all flowed to the largest players". This gave the MFIs incentives to expand, creating a circular movement of funding and expansion that drove each other, and opened a potential for unfavorable growth.

As implied above, it's the *perceived* investment flow that is important as it builds confidence with the MFIs. Kappell et al. (2010) captured this perception through their survey. In this study, I merely present some key financial parameters for the largest MFIs in each market. This is non-conclusive data, but give an impression of how the liquidity and funding developed prior to the crisis.

The presented key financial parameters are collected from MixMarket and are chosen to show how the level of total assets develop, the changes in debt and equity, and changes in the level of liquid assets. The chosen parameters are therefore:

- Liabilities and Equity (= Total Assets)
- Total Liabilities
- Total Equity
- Net income after taxes before donations
- Cash and cash equivalents (measured in $US)
- Cash and cash equivalents (measured as percentage of total assets)
- Debt to equity ratio

Certain models imply that an increased supply of funds into microfinance should lead to higher default rates as the MFIs need to increase their client base, and the most profitable and least risky group of borrowers is already acquired (Holmstrom and Tirole 1997; Bolton and Freixas 2000; Vogelgesang 2003)

Reille (2009; 2010) has done studies on the behavior of investors and microfinance funds in the time of crisis, and notes that they see an increase in their cash positions. They thus have available funds to invest, but few investment objects that deliver results. As investors demand a certain return on their investment, investment funds may then be tempted to increase their risk exposure to gain the required return. This effect may disseminate to the MFIs, which in turn increase their risk exposure to deliver to their investors.

SUBSTITUTES

In addition to changed market dynamics within the microfinance sector, we also find examples of external effects from substitute products. Credit is considered to be a quite homogenous product, and other credit institutions than MFIs may thus easily compete for the same clients. Traditionally, microfinance clients have been regarded unattractive to other credit institutions, but the reality seems to be more complex.

In general, other credit institutions pose as a threat primarily because they differ significantly from microfinance in terms of methodology.

I will not do a complete assessment of substitutes here, but mainly look at two important credit providers: commercial banks and consumer lenders. I also address the problem of multiple lending in this category, as this covers all credit institutions.

Commercial Banks

Commercial banks have traditionally not been interested in serving microfinance clients. This is due to a number of facts, e.g. cost issues, improper screening possibilities, and so on. As microcredit clients become better off, commercial banks can lend to them with a profit. They can also utilize credit histories from microlenders or use the fact that a client is eligible for a loan at a microlender as a screening criterion. Kappell et al. (2010, p.32) refer to Boúúaert et al. (2008) and claim that "the scope of commercial banks' engagement in retail microfinance services is considered an important factor by many experts, and this 'downscaling' by commercial banks has a long tradition but has recently reached higher levels worldwide".

This threat is most significant in markets where the loan sizes are large, as this reduces the gap between microlenders and commercial banks.

Commercial banks usually don't report to Mix Market, and we thus have few quantitative observations to build this indicator on. I therefore only include this in a qualitative manner to see if it we can find apparent similarities across the cases.

Consumer Credit

Consumer credit was essential for the repayment crisis in Bolivia in 1999 through the introduction of very different lending methodologies. This is a very illustrative example of the effect of substitutes in the market, and is therefore included. A measure of the volume of consumer credit in the various markets is unavailable, and I therefore only address this indicator in the case of Bolivia, where others have done previous studies. However, consumer lending is believed to be more and more widespread in these markets, and some of the same effects that I explain for Bolivia is probably present in other countries as well.

Multiple Lending

Multiple lending is an often-quoted problem when we look at repayment crises. Multiple lending is a situation where a borrower takes multiple loans at the same time, normally from different credit institutions. The phenomenon was discussed in chapter 2.5.3, and according to Rhyne (2001b), BancoSol in Bolivia found a close correlation between clients that had late repayments and clients with loans at other institutions.

There are very few studies of multiple lending, especially cross-country studies. One of the problems is that it can't be measured by a single MFI, but needs to be measured on a national level. A credit information bureau usually does this, but as we will see, this is yet to be implemented in many microfinance markets. If data on multiple lending were easily accessible, the lenders

themselves would probably avoid the problem.

In this study, I therefore primarily observe this indicator through qualitative reflections and unverified quantitative observations made by others.

MARKET DYNAMICS WITHIN MICROFINANCE

As we saw in chapter 2.5, various studies show that the introduction of competitive forces in microfinance changes the dynamics of the market. This category seeks to find some indicators that capture some of these changes and measure the level of competition.

Growth Rates of Total Volume of Loan Portfolio

An important finding made by Chen et al. (2010) was the massive growth that preceded the repayment crisis. Gonzalez (2010) showed that growth itself did not cause the crises, but that within certain contexts, it might affect repayment behavior.

Chen et al. suggest that the MFI's systems and controls might become overstretched as a consequence of high growth, and that this may lead to improper screening, lack of monitoring and so on. Growth is therefore an indicator that is easy to measure and that works like a proxy measure for other underlying problems.

Data is collected from MixMarket for each MFI in the market and then aggregated into a total portfolio for the whole market.

Market Penetration

Market penetration can be an indicator of the level of competition and measures how saturated the microcredit market is. Intuitively, we would think that a highly saturated market can be a sign of multiple lending in the market, and we would expect more low-profit, high-risk borrowers in the total loan portfolio if the saturation is high.

Market penetration is ideally measured as the number of actual borrowers divided by the number of potential borrowers. However, both these numbers are rather hard to estimate.

First, the number of actual borrowers is based on reporting from the MFIs. I use aggregated data reported to MixMarket, even though this doesn't include all MFIs in the country. At the same time, the numbers from MixMarket probably also include some consumer loans etc, while many consumer lenders and ordinary banks aren't included. This is thus just a proxy for the number of active borrowers, but is considered a rather good approximation.

Second, we need to define the potential market for microcredit. This will also be an approximation. The essential in this study is to see how this measure (market penetration) develops prior to the crisis, and the most important is thus that it is comparable across the cases, not that the penetration rate itself is correct.

I use two separate definitions of the potential market to create the indicator for market penetration. First, I compare the number of borrowers to the total population. This is obviously not a correct measure of the market size, but

it's easily comparable across nations and only depends on basic population data that is easy to obtain through the World Development Indicators (WDI).

$$Market\ Penetration_1 \stackrel{def}{=} \frac{Number\ of\ Active\ Borrowers}{Total\ Population}$$

Second, I create a more sophisticated proxy for the market size. This is a crude estimate, but illustrates one way to narrow down the total market to a more relevant size. I start with the total population and adjust for only economically active persons, as defined by the WDI (between 15 and 65 years old).

I then adjust for the proportion of 'poor' people in the country, using the threshold of a daily income of 1.25$ to define poverty (hereafter referred to as the *poverty ratio)*. I assume that the poverty ratio is constant across different age levels, and that the poverty level for the whole population is transferrable to the economically active population.

It is also a fact that various MFIs target different clients. Some MFIs include people that are not defined as 'poor' (according to the definition of 1.25$ a day). Reed (2011) reports on how microcredit performs with regard to reaching goals of including the poorest in microcredit programs. He presents numbers for how large parts of loan portfolios in each of the world regions consist of people living for less than 1.25$ a day (hereafter referred to as the *poverty inclusion ratio)*. To be able to use these numbers, I simplify and say that the poverty inclusion ratio is the same for all countries in the world region.

At last, we need to exclude a part of the population that doesn't want a loan at any given time. Navajas and Tejerina (2006) did a study of five Latin American countries and found that as many as 25-50% of households did not request a loan because it was "not needed". To keep the estimates conservative, I choose the lower end of the interval and therefore only exclude 25% of the potential borrowers. I thus define the *demand ratio* as 0.75.

$$Potential\ Clients \stackrel{def}{=} \frac{Economically\ Active * Poverty\ Ratio * Demand\ Ratio}{Poverty\ Inclusion\ Ratio}$$

The second proxy for market penetration thus becomes:

$$Market\ Penetration_2 \stackrel{def}{=} \frac{Number\ of\ Active\ Borrowers}{Potential\ Clients}$$

Again, it should be noted that this is not meant to be a correct measure of the penetration rate, but a comparable indicator that gives an impression of how the penetration rate changed prior to the crisis. Both the approximations are calculated and used in the case descriptions, and calculations are further outlined in Appendix B.

Level of Competition

One of the underlying hypotheses of this study is that dynamics in the market has changed as a result of the transition from traditional microfinance to a more competitive market. Thus, it is interesting to measure whether the level of competition changed significantly prior to the crises.

I have chosen to use the Herfindahl-Hirschman Index to measure the level of competition in this study. It was introduced by Hirschman (1945) and uses relative market shares of the 50 largest

firms to calculate the level of competition. The index is calculated as follows:

$$H = \sum_{i=1}^{N} s_i^2$$

where s is the relative market share, and N is the number of firms (limited to $N \leq 50$).

This gives an index value, H, between 1/N and 1. Values close to 0 indicate a highly competitive market (free, even competition), while values close to 1 indicate a monopoly market. Values below 0.15 are considered to indicate an unconcentrated market.

Again, MixMarket is the primary data source, and the index is thus calculated based on available information from this source. For some markets this will exclude some MFIs that don't report to MIX, and also excludes consumer lenders and commercial banks that serve some of the same clients. It is therefore somewhat biased to present a lower level of competition than what is actually true.

Further, the index value depends on how we measure market shares. There are two relevant ways to measure this: portfolio size and number of clients. The most correct measure would probably be to look at the number of clients in this study, as we are interested in e.g. multiple lending and saturation as well. This measure is therefore used for the most recent cases. However, the number of clients for MFIs in Bolivia is unavailable, and I therefore use portfolio size to calculate the index there. For comparison purposes, I also present the index using portfolio size for the more recent cases.

Quality and Use of Credit Information System

As implied in chapter 2.6, the quality and use of a credit information system may affect repayment behavior. This indicator is a qualitative indicator that looks at whether an information bureau is established, and to what extent it is being used. The information is collected from various studies and from MixMarket's country briefings.

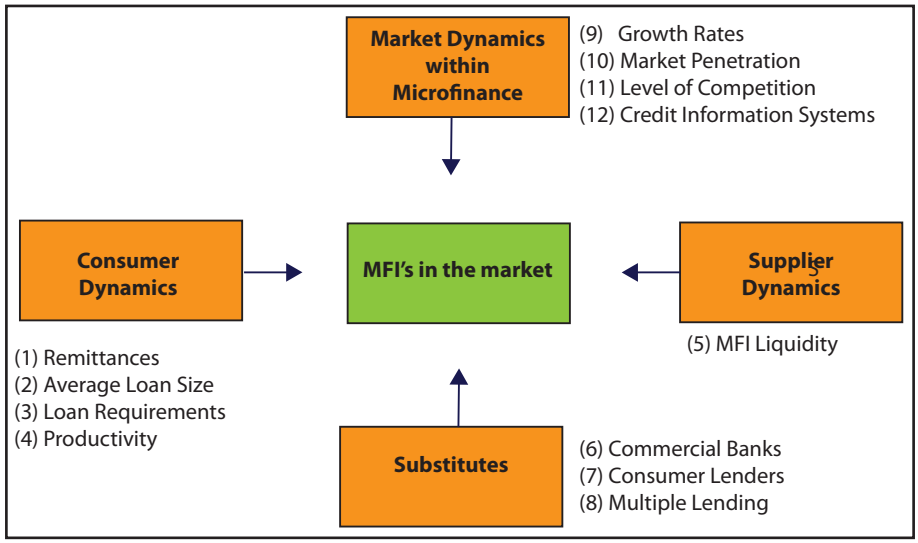

Figure 1 – Competitive Forces

3.5.3 From Indicators to Phase Theory

As described in chapter 3.5.1, the presented indicators are placed in four categories that represent different forces in the market. The sum of these forces produce a kind of 'environment' for the MFIs in the microfinance market. The different indicators are used to show how strong each of the forces is at a certain time. Through observing them over a certain time span, we're able to see whether the forces change. Figure 1 is an illustration of the four forces and once again shows the mapping of indicators to the four categories.

The cross-case analysis of the three mature cases will be presented through the description of the phase theory. As mentioned before, the relationship between the categories (forces) and the repayment behavior is not the main subject of this study, but I find it suitable to relate the presentation to the categories in order to explain how the markets change. We can thus think of the phase theory related to the case study framework like it's illustrated in Figure 2. The characteristics of each phase can be seen as a state of the competitive forces that are presented through the indicators.

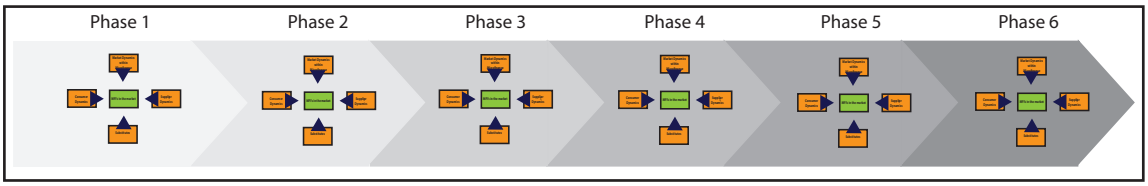

Figure 2 – Competitive Forces in the Phase Theory

4. Mature Markets

4.1 Bolivia

Bolivia is known as one of the most prominent countries within microfinance. Besides Bangladesh, it is one of the oldest and most developed microfinance markets that exist. In 2009, the gross loan portfolio of MFIs in Bolivia totaled 1.9 billion USD, which is one of the largest portfolios in any microfinance market. Bolivian microfinance experienced a large repayment crisis in 1999 as a consequence of unsustainable credit growth.

This case study presents the story from the first microfinance initiatives that appeared in the 1980s and stops a few years after the repayment crisis in 1999.

Rhyne (2001b) has studied microfinance in Bolivia and published a book about "how lending to the poor began, grew, and came of age in Bolivia". She presents several MFIs and outlines the road from the start and into the repayment crisis, step by step. Her work is used as a foundation for this case study, and where citations aren't made, facts and qualitative discussions are based on Rhyne's contribution.

4.1.1 Historical background

Until 1985, Bolivia had a weak financial system and an unstable political and economic environment. Rhyne (2001b, p.41) explains how commercial banks "were essentially the financial arms of private corporate groups owned by families or close-knit groups of wealthy men". She further explains that services offered to the middle- and lower-end customers were left to unprofitable development banks. During 1984-1985 Bolivia experienced a hyperinflation crisis with eighteen months of true hyperinflation[1]. Sachs and Morales (1988) report an annual inflation rate of 24,000 percent. The preconditions for establishing microcredit organizations were thus far from optimal.

In 1985, the president launched the New Economic Policy. This introduced a conservative economic policy that both slowed down the inflation considerably and changed the scene for the banking industry. The state closed down unprofitable banks and supported private-sector growth. There was also a shift in the industrial sector in this period. Many people who had been employed in this sector (e.g. in mining) became unemployed and entered the informal sector. The informal sector in Bolivia was dominated by tertiary businesses. Svensson (2007) has studied the economic growth of microfinance in Bolivia and states that about two-thirds of the informal sector consists of tertiary businesses (see Table 2).

Until the new reform the government had controlled interest rates. As a step in this reform, the banks were allowed to set interest rates on their own. This was essential for microcredit, as high interest rates are required to cover the high costs of microlending. Rhyne (2001b, p.40-41) explains that the hyperinflation crisis and the economic reform opened the way for microfinance: "Potential demand for microfinance was booming in the form of a fast-growing informal sector. (...) Adjustments facilitated on the supply side too,

1 Hyperinflation is defined as inflation above 50 percent per month

Sector	Type of Activity	1996	2000	2001	2002
Primary	Agriculture, forestry and fishery	8.3	6.6	8.4	8.1
	Mining and hydrocarbons	0.7	0.5	0.3	0.3
	Total	9.0	7.1	8.7	8.4
Secondary	Industry, manufacturing	19.3	15.2	16.5	19.6
	Electricity	0.1	0.0	0.1	0.0
	Construction	8.2	11.6	7.7	8.0
	Total	28.6	26.8	24.3	27.6
Tertiary	Commerce	45.5	44.2	46.7	42.3
	Transport, storage and communications	8.3	8.1	8.5	8.2
	Financial services	3.0	3.8	3.8	3.2
	Business services	6.7	10.0	8.2	10.4
	Total	63.5	66.1	67.2	64.1

Table 2 – Informal Sector Employment, Bolivia
Source: Svensson (2007, Table 4)
Values are percentage of population in informal sector

through favorable economic and financial policies under which microlenders could operate successfully. (...) Microfinance faced an empty field."

As a step in the economical reforms, Bolivia introduced *Ley 24000* in 1995, allowing non-governmental organizations (NGOs) to be converted into *private financial funds*, Fondos Financieros Privados (FFPs) (Svensson 2007). This transition opened the possibility for the institution to collect savings and put them under regulation of the Superintendency of Banks. This was made to ease the process of making the non-governmental microfinance organizations more financially oriented. FFPs had lower capital requirements than commercial banks, but weren't allowed to offer all kinds of banking services.

4.1.2 Introducing Microfinance Institutions

In this section, I introduce various microfinance institutions from the origin of microfinance in Bolivia. I start by looking at some early initiatives prior to the hyperinflation crisis. A few players dominated the microfinance market right after 1990, and the most central players were Prodem/BancoSol and Procredito/Caja Los Andes/ProCredit. A number of other institutions have also been present from the start, but they have traditionally targeted niche-markets or used deviating approaches compared to BancoSol and ProCredit. As we will see, the industry converged prior to the crisis in 1999. Consumer lenders and commercial banks are discussed in chapter 4.1.5 and left out of the discussion here.

Early Initiatives

Even before microcredit emerged in Bolivia, there were certain initiatives to provide banking to the poor. *Credit unions* have been around since the 1950s and 1960s. Rhyne (2001b) describes credit unions as early attempts of banking to the low-income population, but that it focused on the salaried workers. Credit unions offered savings accounts

and loans based on a multiple of savings. This is not particularly well suited to the informal sector where the income is unstable. In addition, the hyperinflation crisis hit the credit unions severely as their financial assets lost their value quickly. Certain credit unions have survived though, and some are even present in the market today – but with more mainstream microfinance techniques. One of the largest credit unions today is Coop Jesus Nazareno, which had 21,078 borrowers and a gross loan portfolio of 86.1 million USD in 2009 (5.6% of national gross microloan portfolio).

Another model that existed was the *village bank* model. This model was first tested in 1983, right before the hyperinflation crisis. The concept of a village bank is that the local community creates a bank by electing their own bank managers, and receives a lump sum from a national fund or organization. This local bank then disburses small loans to each family in the community and collects repayments after the harvesting season. The program started in 1983 was closed down after few years. The methodology has been refined and serves as the basis for MFIs like ProMujer and Crecer in Bolivia today. Together, these two MFIs served 182,830 borrowers in 2009, with a gross loan portfolio of 74.1 million USD (4.8% of national gross microloan portfolio).

The first successful microfinance initiatives in Bolivia came around 1986 with the start-up of organizations like Prodem, Banco FIE and Fades. Prodem is held forth as the most successful MFI among them, due to its ability to both reach high volumes of their lending for microenterprises and become financially viable. Today, Prodem's offspring, BancoSol, is one of the leading players in the microfinance market in Bolivia. In 2009, BancoSol was the leading institution with regard to the number of active borrowers (129,705), and the second largest with regard to the gross loan portfolio (351.8 million USD).

Prodem

Prodem built its activity on solidarity group loans. Rhyne (2001b) explains that they adapted this from a model *Acción International*, a US non-profit organization, had developed in other Latin American countries. Important characteristics of this lending model was operating close to the ground and using local knowledge to select good clients. We recognize this as a natural response to the problems of asymmetric information, discussed in chapter 2.3. Using local knowledge and close-by operations reduces both the problems of adverse selection and moral hazard.

Prodem only provided the loan and did not have additional training requirements or any restrictions on the usage of the loan, as did several of the other emerging MFIs. Another important characteristic was that the loan officers' incentives were directly linked to the timely repayments of their clients.

Prodem started by giving loans at the size of $50 and increased the loan size to $100, $150 and then based on the client's income. To reduce the risk of default from bad investments or bad crops, Prodem based the loans on a client's income from existing activity. This is a rather conservative approach and illustrates a sound lending policy

	1994	1996	1997	1998	1999	2000	2001	2002	2003
Offices	-	-	-	-	-	-	-	-	71
Personnel	-	159	237	316	323	284	289	362	563
Gross Loan Portfolio ($ mn)	2.6	8.4	18.3	24.1	22.0	23.5	32.1	42.7	60.5
Active Borrowers ('000)	-	27.4	38.2	47.1	35.9	30.2	16.1	18.2	25.2
Avg. loan balance per client	-	305	478	512	612	779	1,996	2,343	2,398
PAR30 (% of portfolio)	-	1.94	0.50	2.82	6.00	1.07	2.43	3.60	3.39
Write Offs (%)	-	-	-	0.33	2.04	8.75	-	-	3.06
Profit Margin (%)	-	24.2	31.5	18.0	4.4	1.4	1.1	5.6	7.6
Return on Assets (%)	-	-	9.6	6.1	1.2	0.2	0.2	1.1	1.3

Table 3 – Key Figures, Prodem FFP
Source: See Appendix A

that protects the customers from taking on too much risk. Rhyne explain sthat clients paid a flat 2.5% monthly interest (effective annual interest is 34,5%). This was considered very high compared to e.g. credit unions and traditional banks, but was low compared to some of the rates among informal moneylenders. However, the high rates were necessary for Prodem to cover its costs. The loans became very popular, and six months after its launch, Prodem had 700 clients, a waiting list of at least 260, and no delinquency.

Using many of the basic mechanisms discussed in chapter 2.4, such as joint liability through group lending, dynamic incentives, and a strong emphasis on honesty and social obligations, Prodem managed to keep an arrears rate below 1% for many years. This was an extremely low delinquency rate considering the risk profile traditionally attached to the low-income segment. According to Rhyne, several microfinance programs kept their arrears below 5%, which was considered a sustainable level. Thus, Prodem's delinquency rates were rather impressive.

Prodem remained a success, and Rhyne (2001b, p.77) gives a status report of the conditions in 1991, just before the start of BancoSol: "Prodem had become a star among the handful of successful microfinance institutions around the world. With 22,700 loans outstanding and a portfolio of $4.6 million, its outreach was among the highest in Latin America, and it was increasing by 50% per year with no end in sight. It operated eleven branches, reaching Bolivia's major cities, with a staff of 116 people".

	1992	1994	1996	1997	1998	1999	2000	2001	2002
Gross Loan Portfolio ($ mn)	8.7	33.2	48.7	66.5	74.1	82.3	77.4	74.4	75.7
Active Borrowers ('000)	-	-	-	76.2	81.6	73.0	67.1	61.3	50.9
Avg. loan balance per client	-	-	-	873	908	1,126	1,155	1,213	1,488
PAR30 (% of portfolio)	-	-	-	1.23	3.03	5.48	9.58	10.2	6.61
Write Offs (%)	-	-	-	-	-	-	-	10.60	-
Profit Margin (%)	-	-	-7.4	14.0	17.1	7.2	3.6	0.8	1.7
Return on Assets (%)	-	-	-	4.0	4.0	1.4	0.6	0.1	0.3

Table 4 – Key Figures, BancoSol
Source: See Appendix A

It also managed to become financially viable by reaching the break-even point.

ProCredit

Procredito was launched in 1992 and was able to grow with an incredible speed in the microfinance market. *Interdisziplinäre Projekt Consult (IPC)*, a German consulting firm, started Procredito. It started as an NGO, but with a sole intention of quickly being converted into a licensed financial institution (an FFP). They managed to do so in 1995, and their offspring is known as Caja Los Andes. Around 2005, their name was changed to ProCredit, to reflect that Caja Los Andes was part of an international company with MFIs in many countries (ProCredit). I will refer to the bank as ProCredit from here on, not regarding the time differences.

ProCredit's lending methodology differed significantly from other MFIs at the startup, and perhaps especially from Prodem. One of the differences was that ProCredit offered only individual lending. Rhyne gives some background information on this choice. Foremost, ProCredit focused on their clients and acknowledged that no one would prefer the hassle of making a group and being responsible for several other people if they had the choice of an individual loan. This is backed up by evidence from several researchers (See e.g. Gonzalez-Vega, Meyer et al. 1996; Churchill 1999; Rhyne 2001b).

However, few MFIs offered group loans because this was convenient for the clients, and ProCredit faced the same challenges regarding information asymmetries as the others. Their solution to handling the risk was their key to being able to offer individual loans. ProCredit accepted personal guarantees from other persons and used collateral from the poor as a means for ensuring repayment. Said in a few words, ProCredit used the psychological and social value of the guarantee and the collateral, rather than their monetary value. This is discussed in chapter 2.4.4 as one of the innovations from microfinance that distinguished it from traditional banking practices.

Rhyne explains that ProCredit and Prodem/Bancosol serve clients from similar levels, but also suggests that ProCredit is positioned slightly up-market from Prodem/BancoSol. ProCredit managed to keep their Portfolio-At-Risk at very low levels and had an ef-

	1994	1996	1997	1998	1999	2000	2001	2002	2003
Offices	-	-	-	-	-	-	-	-	32
Personnel	-	110	143	213	270	313	377	457	590
Gross Loan Portfolio ($ mn)	2.9	11.9	20.5	28.6	36.2	46.7	50.3	62.1	80.2
Active Borrowers ('000)	-	-	76.2	81.6	73.0	67.1	61.3	50.9	42.8
Avg. loan balance per client	-	521	734	879	984	1,121	1,156	1,323	1,614
PAR30 (% of portfolio)	-	4.11	3.55	6.18	4.16	544	6.26	7.04	4.84
Write Offs (%)	-	-	0.19	0.35	0.87	1.97	2.76	-	3.47
Profit Margin (%)	-	8.9	21.3	15.4	8.0	7.7	8.2	10.8	13.7
Return on Assets (%)	-	-	4.9	3.3	1.5	1.5	1.7	1.9	2.2

Table 5 – Key Figures, ProCredit
Source: See Appendix A

	1997	1998	1999	2000	2001	2002	2003
Offices	-	-	-	-	-	-	41
Personnel	68	81	92	113	137	165	187
Gross Loan Portfolio ($ mn)	2.3	2.2	2.2	3.5	3.8	4.5	5.6
Active Borrowers ('000)	14.2	16.7	18.9	23.9	27.5	31.5	38.4
Avg. loan balance per client	164	132	116	145	140	143	146
PAR30 (% of portfolio)	0.67	2.62	0.43	0.23	0.90	0.17	0.37
Write Offs (%)	-	2.2	3.8	1.0	1.7	1.2	0.4
Profit Margin (%)	-11.4	20.7	1.6	16.5	28.0	28.6	23.7
Return on Assets (%)	-	7.7	0.4	4.2	7.9	7.0	5.6

Table 6 – Key Figures, ProMujer
Source: See Appendix A

ficient staff that made them operate at least as efficient as e.g. Prodem/BancoSol that only lent to groups. Rhyne describes that Prodem/BancoSol based much more of their concept on trust and responsibility while ProCredit was a more professional business approach.

Prodem/BancoSol and ProCredit had some common characteristics as well: They both provided credit without any additional services (*the minimalist approach*) and they both based the client's loan size on its repayment capacity. Both of the institutions also provided their clients with dynamic incentives through increasing loan sizes.

Other Microfinance Institutions

Rhyne mentions six other institutions that can be divided into three groups: Socially oriented institutions (*ProMujer* and *Crecer*), enterprise developers (*FIE* and *Idepro*) and rural lenders (*Fades* and *Sartawi*). I will present each of them briefly to show that the start of microfinance in Bolivia was a multi-faceted approach.

Socially Oriented Institutions

ProMujer and Crecer are held forth as socially oriented institutions. I mentioned these two when introducing the model of village banks, also called community banking.

An important characteristic of these institutions is that they started with

	1998	1999	2000	2001	2002	2003
Personnel	-	61	133	140	167	177
Gross Loan Portfolio ($ mn)	2.0	2.9	3.5	4.2	5.6	6.9
Active Borrowers ('000)	-	19.3	24.7	31.0	40.1	44.9
Avg. loan balance per client	-	149	143	136	140	153
PAR30 (% of portfolio)	2.3	0.3	0.3	0.4	0.5	0.4
Write Offs (%)	-	-	-	0.0	0.0	0.23
Profit Margin (%)	-	-20.2	-12.6	1.5	8.4	26.5
Return on Assets (%)	-	-	-5.0	0.5	2.8	9.6

Table 7 – Key Figures, CRECER
Source: See Appendix A

	1994	1997	1998	1999	2000	2001	2002	2003
Offices	-	-	-	-	-	-	-	29
Personnel	-	-	162	169	175	181	210	287
Gross Loan Portfolio ($ mn)	4.1	12.1	14.7	18.7	22.4	26.3	33.5	39.4
Active Borrowers ('000)	-	-	20.8	24.1	23.4	23.1	26.5	31.4
Avg. loan balance per client	-	-	704	776	958	1,134	1,267	1,256
PAR30 (% of portfolio)	-	2.7	1.5	5.4	6.3	7.3	6.0	5.1
Write Offs (%)	-	-	-	0.09	0.92	2.17	2.42	4.97
Profit Margin (%)	-	-	19.0	7.6	8.9	8.9	19.4	19.7
Return on Assets (%)	-	-	-	1.6	1.7	1.5	3.5	3.1

Table 8 – Key Figures, Banco FIE
Source: See Appendix A

welfare as their motivation, rather than business-oriented objectives. As an example, ProMujer issued their first loans without any interest charged, as they thought of charging interest from the poor as exploitative. This was changed after a while, and it essentially did not affect the outreach and popularity of the bank in any negative way.

These socially oriented banks were also among the ones with a strongest emphasis on training and non-financial services. This was also reduced and adjusted as ProMujer became more business oriented, especially in response to emerging competition from business oriented MFIs like Prodem/BancoSol and ProCredito/Caja Los Andes.

Crecer's story is much like ProMujer's, but Crecer has more focus on the rural part of the country, while ProMujer was located in the urban areas. Both these organizations have faced severe difficulties maintaining financial viability, much due to a generally poorer client base and their belief in providing ancillary services.

	1992	1994	1997
Gross Loan Portfolio ($ mn)	0.4	1.5	5.0

Table 9 – Key Figures, Idepro
Source: See Appendix A

Enterprise Developers

Banco FIE and *Idepro* are two other MFIs that were early starters. They are examples of a group of MFIs that focused on a *credit-plus* model with a special emphasis on manufacturing enterprises.

Rhyne (2001b, p.88) explains that these programs were motivated by "transforming informal sector businesses into larger, more productive enterprises". They did so by focusing on enterprise growth and giving long-term loans for investment in manufacturing equipment and productive assets. Banco FIE's credit-plus approach entailed requirements of a month of technical and business training before any loan would be granted.

Banco FIE had some early experiments during the mid-1980s, but launched their first large program in 1988; an urban informal-sector loan project. As apart from Prodem, Banco FIE issued their loans on an individual basis. Idepro launched in 1991.

Rural lenders

Another group of MFIs are the rural organizations. *Fades* and *Sartawi* are

	1996	1997	1998	1999	2000	2001	2002	2003
Personnel	-	-	90	95	102	90	147	-
Gross Loan Portfolio ($ mn)	1.6	2.3	3.6	6.5	11.9	12.6	14.5	17.2
Active Borrowers ('000)	23.1	24.9	27.0	27.9	22.6	20.9	20.3	20.9
Avg. loan balance per client	71	91	135	235	527	601	713	820
PAR30 (% of portfolio)	5.0	5.7	4.3	4.7	5.7	9.7	23.1	-
Write Offs (%)	-	3.47	-	1.03	1.24	0.17	2.75	-
Profit Margin (%)	-	21.6	16.6	11.0	0.4	-36.2	-39.6	-
Return on Assets (%)	-	9.4	7.6	3.5	0.1	-6.3	-6.7	-

Table 10 – Key Figures, Fades
Source: See Appendix A

two of the MFIs in this category. Fades started in 1986 as a second-tier lender that funded grassroot organizations like bean producers, and users of common irrigation systems.

Their lending methodologies were largely influenced by the earlier initiatives of *rural revolving funds,* which included low interest rates and low focus on collection. Their lending performance was poor and they experienced high default rates.

4.1.3 Microfinance from Launch to Crisis

As we have seen, there were several different kinds of microfinance institutions that launched operations in Bolivia. The earliest started right after the hyperinflation crisis in 1985, while others were started over the next years. The period from 1985-1992 is characterized by diversity in methodologies and an initial phase where MFIs experimented and learned how microfinance worked.

In 1992, both Prodem/BancoSol and ProCredit had found their ways of doing microcredit and they experienced potential for growth and profitability. They represented the two international models that originated from *Accion* and *IPC*. The other MFIs did not succeed at the same rates, and they therefore got incentives to make their operations more like one of the two mentioned MFIs. BancoSol and ProCredit represent the dominant paradigm and most of the other MFIs have converged towards one of these two MFIs in methodology.

Convergence

Rhyne (2001b) explains that the various institutions have converged in op-

	1997	1998	1999	2000	2001	2002	2003
Personnel	-	-	-	-	-	-	35
Gross Loan Portfolio ($ mn)	2.5	3.1	3.3	5.0	4.7	5.1	4.3
Active Borrowers ('000)	-	-	-	-	-	-	1.7
Avg. loan balance per client	-	-	-	-	-	-	1,646
PAR30 (% of portfolio)	3.9	5.4	6.0	8.3	23.0	17.2	17.2
Profit Margin (%)	-	-	-	-	-	-	-164

Table 11 – Key Figures, Sartawi
Source: See Appendix A

erational methodologies and their view on financial viability. Three basic lending methods became the mainstream approach: individual lending, solidarity groups, and community banking. Also, all of the institutions moved in the direction of minimalism in the form of credit being provided without additional services like training or technical services, even though some institutions kept offering some extra services to their clients.

Rhyne describes some of the elements that converged:

- A shift towards lending to individual enterprises rather than community-based enterprises. This is not to be mistaken with the individual vs. solidarity group lending issue, but concerns the purpose of each given loan with no regard of methodology.
- The lenders provide credit with few or no non-financial services.
- Most lenders have chosen either the solidarity group or individual lending methodology.
- More and more MFIs aim towards financial sustainable operations.

A consequence from the convergence towards financial viability was a change in the financing structure of the market. Bolivia is known for its successful transition of many non-governmental initiatives into banking institutions. This is a topic that is widely discussed in the literature, but I will only mention it as part of this convergence era here, and refer interest readers to the full story presented by Rhyne (2001b).

Table 12 shows how dependent various MFIs in Bolivia were of subsidies in the period 1993-1997. We can easily see the effects of the shift in attitude towards profitability as the MFIs become less dependent on donors throughout this period.

Growth, New Entrants and Portfolio Deterioration

After the launch of Procredito and the start-up of BancoSol from Prodem, microfinance really started to accelerate in Bolivia. Through convergence, most of the various MFIs began using techniques that proved to be successful, both in terms of growth and profitability. Svensson (2007) shows that the number of micro-credit clients increased by more than 1500% over the five year period from 1992 to 1997, from 20,000 to 331,000 borrowers.

The convergence of MFIs led to a situation where almost all MFIs experienced growth and profitability. This attracted the attention of several international

	1993	1994	1995	1996	1997
Independent (0% or less)	0	1	0	3	6
Nearly independent (1-20%)	5	4	5	2	2
Dependent (21-100%)	2	4	5	6	6
Highly dependent (+100%)	4	4	3	3	0
Total	11	13	13	14	14

Table 12 – Subsidy Dependence of MFIs in Bolivia
Source: Rhyne (2001b, Table 4.3, p.100)

organizations that ran MFIs elsewhere, and also increased the attention from financial funders of microfinance. MFI liquidity and investment levels improved, and the supply side of the micro-credit market made the conditions within the market easy and attractive to the MFIs.

As part of the economic reforms, Bolivia became friendlier towards international banks that wanted to establish in Bolivia. New regulations forced the national banks down-market and into the microfinance segment. The profitability also attracted a new kind of lenders; consumer lenders. Combined, the entry of both consumer lenders and commercial banks intensified the competition in the micro-credit market substantially. Their methodologies also deferred from the mainstream microcredit approach based on trust and responsibility and seriously threatened the relationship between MFIs and their clients.

These new market dynamics led to multiple lending and borrowers becoming over-indebted. A large part of their income went to covering costs for their loans, and in absence of a working credit bureau, no one really had control of what happened in the market. The portfolios of both microcredit organizations and consumer lenders became deteriorated without the banks noticing. Several banks also compromised their own credit policies in order to keep up with the level of competition. When the crisis hit in 1998, the microcredit system was like a house of cards ready to fall.

4.1.4 The Repayment Crisis

The repayment crisis in Bolivia took place in 1998-1999. The origin of the crisis was triggered by events in Brazil earlier in 1998. Brazil experienced a financial crisis and severe currency devaluation. The crisis was empowered by an increase in trade restrictions to trading partners like Chile and Argentina, and by a large-scale eradication of coca plantations (Vogelgesang 2000).

This led to a recession, also in Bolivia, in which the informal sector was severely affected. In table 13 we can see how certain macroeconomic factors developed in the period from the crisis and beyond. Domestic and foreign investments decreased in the period 1998-2004 and the demand for goods from the informal trading sector decreased and so did their income. In addition to this, the urban employment rate increased – and many of the new unemployed people found their way into the informal sector, increasing the competition here even further (Vogelgesang 2000).

The entrepreneurs that had taken multiple loans, or excessively large loans, felt the decrease in income most and experienced trouble repaying their loans on schedule. As this occurred with a number of clients, many MFIs and consumer lenders faced delinquency rates that increased in a high pace.

Marconi and Mosley (2006) outline how various lender types responded to the repayment crisis. Commercial banks decreased their loan portfolio already in late 1998 and continued to shrink through the crisis. BancoSol and other registered non-bank finan-

Factor	1997	1998	1999	2000	2001	2002	2003
Real Economy							
GNP per capita (in current US$)	-	1,070	1,023	1,016	949	883	870
Real GDP growth (%)	-	5.2	0.4	2.4	0.0	2.5	2.6
Investment / GNP (%)	-	23.8	18.4	17.3	17.0	15.0	12.5
Urban employment rate (%)	-	5.3	6.1	6.8	7.3	7.4	8.0
External sector							
Foreign investment / GNP (%)	-	11.9	12.9	10.7	8.7	8.3	4.5
Monetary sector							
Inflation (end of period, %)	-	4.4	3.1	3.4	2.5	3.0	3.9
Average real exchange rate (1997 = 100)	(100)	96.6	95.3	98.0	99.1	103.3	-

Table 13 – Macroeconomic Parameters, Bolivia 1997-2003
Source: Marconi and Mosley (2006, Table 1)

cial intermediaries (FFPs) continued to increase their portfolios, but slowly. Their arrears increased to an average of above 10 %. Many of the NGOs experienced the same trends as the non-bank FFPs. FIE, Caja Los Andes, CRECER and ProMujer experienced higher growth and lower delinquency than the rest of the institutions in these groups. Most of the consumer credit FFPs experienced dramatically increasing default rates and were unable to keep on lending.

Table 14 illustrates how the repayment behavior developed in the period from 1996-2002. We see that the portfolio-weighted average values for PAR30 started to increase in 1998, a year before the crisis, and continued to increase into the crisis. Write-Offs show a lagged behavior, which is probably a consequence from MFIs trying to find other solutions than to consider loans as lost in the first period.

The recession was ensued by social unrest that in part also was aimed towards microfinance lenders. This led to a kind of revolt among the borrowers that made several borrowers refuse to pay back their loan, even though they could. The borrowers organized in unions and put up demands towards the MFIs to give debt forgiveness. The unions were ineffective at first due to exploitative leaders, but raised again after a first defeat, demanding grace periods, lower interest rates and longer loan terms – but acknowledging that they have to pay back their loans.

4.1.5 Crisis Indicators

This section contains the analysis of the twelve chosen indicators, according to the framework presented in chapter 3.5.

	1996	1997	1998	1999	2000	2001	2002
PAR30 (%)	1.02	0.78	1.95	4.06	6.11	6.47	5.47
Write Offs (%)	0.00	0.03	0.09	0.38	1.52	4.74	0.44
Total RISK (%)	**1.02**	**0.81**	**2.04**	**4.44**	**7.63**	**11.21**	**5.91**

Table 14 – Repayment Behavior, Bolivia
Source: MixMarket (2011)

CONSUMER DYNAMICS

Remittances

Table 15 presents the level of remittances in Bolivia in the period 1990-2000. We observe that remittances only represent a very small fraction of Bolivia's GDP. The level of remittances is thus quite low, and the values are less than 100 million USD annually for most of the period. Up until 1997, we find values below 15 million USD – which is essentially nothing when we look at macroeconomic development. The sharp increase in remittances in 1997 becomes large in percentages, but is really no significant event.

However, we do see a trend of increased remittances through the period. For those who received the remittances, this improved their cash flow and may have given them confidence in their own economic situation.

Average Loan Balance per Borrower

In Table 16 we can see how the average loan balance developed in the period 1996-2001. There are significant variations between the MFIs, mainly due to their differences in the clientele. AgroCapital has an extraordinarily high loan balance because they lend to farmers with an intention of buying machines and equipment that require high amounts of capital per investment.

In the opposite end we find ProMujer and Crecer, who both target the poorest clients and therefore stick to low loan sizes. BancoSol, ProCredit and Prodem are the most mainstream MFIs and we see that they all have a similar average loan size. All three have experienced an increase close to 80-100% in the period from 1996 to 1999. We also see that the portfolio-weighted average of all reporting MFIs increase significantly in the whole period. The table also contains the worldwide average of loan

Year	Annual Growth (%)	Bolivia (current US$, mn)	Bolivia (% of GDP)	Latin America and Carribean, average value (% of GDP)
1990	-	4.6	0.09%	0.53%
1991	-26%	3.4	0.06%	0.61%
1992	12%	3.8	0.07%	0.69%
1993	11%	4.2	0.07%	0.66%
1994	7%	4.5	0.08%	0.73%
1995	64%	7.4	0.11%	0.81%
1996	82%	13.5	0.18%	0.75%
1997	529%	84.9	1.07%	0.73%
1998	4%	88.4	1.04%	0.82%
1999	9%	96.0	1.16%	1.03%
2000	32%	126.9	1.51%	1.01%

Table 15 – Workers' remittances and compensation of employees received, Bolivia
Source: The World Bank (2010)

	1996	1997	1998	1999	2000	2001
AgroCapital	2,265	2,640	2,712	3,071	3,463	3,625
BancoSol		873	908	1,126	1,155	1,213
Crecer				149	143	136
ProMujer		164	132	116	145	140
ProCredit BOL	521	734	879	984	1,121	1,156
Prodem FFP	305	478	512	612	779	1,996
Portfolio-weighted average	**373**	**792**	**852**	**1,013**	**1,033**	**1,194**
Mix Market overall average	352	355	177	192	184	287

Table 16 – Average Loan Balance per Borrower, Bolivia
Source: MixMarket (2011)

sizes for the period, and we see that Bolivia increase from being level with the average in 1996 to being five times the world average when the crisis hit in 1999.

Loan Requirements and Lending Methodologies

As mentioned throughout chapter 4.1.2, the Bolivian microfinance sector started with several MFIs using different lending methodologies. Before ProCredit, most programs used a scheme of group lending with joint liability to reduce their risk exposure towards problems like adverse selection and moral hazard. Prodem, and eventually BancoSol, built their operations on many of the traditional microfinance mechanisms discussed in chapter 2.4 and further outlined by Dahl (2010). These mechanisms are known to reduce the problems of asymmetric information between the lender and borrower.

ProCredit introduced a more individualistic approach to microlending, but they still focused on mechanisms to face the challenge of information asymmetries. They used mechanisms like the psychological value of collateral, not primarily an economic security. Through such mechanisms, they maintained a sound lending policy.

The policies of various firms changed and became more and more client-focused throughout the 1990s. The increase in competition between MFIs, and eventually also commercial banks and consumer lenders, converted the scene of microfinance from a lender's market to a borrower's market. Especially in the years where MFIs competed to maintain a high growth, the borrowers got a lot of consumer power to bargain with the lenders. Several MFIs adjusted their lending terms as a response to the competitive forces. They introduced individual lending, increased loan sizes, and changed repayment terms. In effect, they moved in the direction of traditional banks with regard to lending methodologies.

BancoSol and Prodem started their operations with solidarity group loans as their main product. By the end of 2000, about half their loans were given to individuals rather than groups (Rhyne 2001a). According to Rhyne, the fraction of individual loans in the aggregate group, association, and individual microenterprise loan portfolio increased

from 41% in 1997 to 78% by the end of 2000.

However, Rhyne suggests that the shift towards individual loans did not, in itself, increase the risk of default during the crisis in 1999. She explains that the majority of BancoSol's delinquency came from solidarity group loans. One of BancoSol's managing directors explained that in bad times, no one in the group normally would have excessive funds to help out the others. Thus, solidarity group loans are good for dealing with idiosyncratic risks, but proved to be poor in handling systematic risks, like the crisis in 1999.

The shift towards individual lending probably affected other problems like multiple lending, though. As the MFIs got a larger portfolio of individual loans, their workload and difficulties with preventing clients from taking multiple loans increased significantly. The problem of multiple lending is further discussed as a separate indicator.

According to Vogelgesang (2003), ProCredit had weekly repayment schedules on 76% of their loan portfolio in 1992. Table 17 shows the distribution of repayment terms for the same institution in 2000. We see that by then, the fraction of loans with weekly repayment was only 0.3%, while monthly and irregular repayment summed up to 96.2%. Such repayment schedules reduced the bank's ability to monitor the client and such increased the risk of default.

Payment Frequency	Number of contracts	%
Weekly	75	0.3
Bi-weekly	752	3.4
Monthly	16,301	74.1
Irregular	4,858	22.1

Table 17 – Repayment Schedule Frequency, ProCredit 2000
Source: Vogelgesang (2000, Appendix A, Table 23)

In total, we thus find several changes in methodology that increased the bargaining power of the consumers.

Productivity

In the 1990s, MFIs mainly focused on two issues: growth and profitability. One of the means used to reach these two goals was productivity in the organization. Rhyne (2001a) tells of incentive systems for employees in both ProCredit and Banco FIE that were partly based on the size of the loan officer's portfolio. In traditional microcredit, the relationship between a borrower and his loan officer was strong and important. They met regularly through group meetings and the borrower dealt with only *one* officer from applying for loan and until the loan was fully repaid.

As discussed earlier, consumer-lending methods changed this practice significantly, and the competition required each loan officer to handle more clients on the same amount of time to compete successfully. Table 18 shows the borrower-per-staff ratio for Prodem and ProCredit in the period 1996-2003. BancoSols ratio is unknown before 1996.

We see that the borrower-per-staff ratio around 1996 is much higher than after the crisis. The decrease actually starts before the crisis, and we may be tempted to conclude that this contradicts Chen et al.'s (2010) hypothesis

	1996	1997	1998	1999	2000	2001	2002	2003
ProCredit	207	195	152	136	133	115	103	84
Prodem	173	161	149	111	106	56	50	45
Client-weighted average	**182**	**177**	**156**	**168**	**151**	**150**	**137**	**145**
MixMarket Median	114	86	98	91	99	94	101	97

Table 18 – Borrowers per staff, Bolivia
Source: MixMarket (2011)

of stretched capacity as an indicator of poor portfolio quality and as a warning sign for a crisis.

An equally likely theory is that MFIs realized that their capacity was stretched prior to the crisis, but that the high ratio a few years before the crisis may have led to a situation of poor quality control that isn't possible to detect before the crisis itself. In times with good economic conditions, multiple lending and over-indebtedness are hard to detect. This theory is supported by the fact that the productivity ratio is significantly higher than the median value of all MFIs reporting to MixMarket in the same time period.

SUPPLIER DYNAMICS

MFI Liquidity and Perceived Investment Flows

As we have seen, the loan portfolios of MFIs in Bolivia increased significantly during the 1990s. This increase was made possible by changes in the financing structure. Table 19 shows the financial structure of the three key players, BancoSol, ProCredit and Prodem, in the period from 1996-2004. We observe that the total assets increase rapidly.

If we look a bit deeper we see that BancoSol maintains a steady debt-to-equity ratio around six, while both ProCredit and Prodem increase their leverage through increased liabilities. Investors of microfinance have until recently been reluctant to take equity positions in MFIs, but they have willingly provided them with credit supplies (Reille and Glisovic-Mezieres 2009).

We observe that the increase in equity from one year to another is mainly a result of the net operating profit the year in advance. The majority of the increase in assets is thus from new liabilities.

Increased assets, and especially liabilities, point toward a situation where MFIs have easy access to credit. It's thus easy for the MFIs to expand in volumes and we would expect the portfolio quality to be reduced. The MFIs have low incentives to do proper screening to maintain low default rates and high returns on their capital. This situation creates a psychological pillow for the MFIs that may be part of the reason why credit policies weren't strictly followed prior to the crisis.

SUBSTITUTES

Commercial banks

The reform of the financial sector in Bolivia had several effects on the competitive forces in the microfinance market. First, the state-owned banks that operated without a profit were closed. Second, several weak banks were forced to close as a result of tighter regulation from the Superintendency of Banks, which was strengthened significantly

BancoSol	1996	1997	1998	1999	2000	2001	2002	2003
Liabilities and equity	61	82	91	99	91	90	98	114
Total liabilities	53	71	77	85	77	77	84	97
Total equity	8.5	10.7	13.4	14.3	14.5	13.3	13.9	16.8
Net income after taxes before donations	-1.1	2.8	3.5	1.3	0.6	0.1	0.2	2.2
Cash and cash equivalents	-	-	-	-	-	-	-	15.1
Cash and cash eqv. (% of assets)	-	-	-	-	-	-	-	13.2%
Debt-to-equity ratio	6.2	6.7	5.8	5.9	5.3	5.7	6.1	5.8

ProCredit	1996	1997	1998	1999	2000	2001	2002	2003
Liabilities and equity	13	22	32	39	48	54	71	94
Total liabilities	11	19	28	35	43	48	64	83
Total equity	1.9	2.8	3.7	4.2	5.5	6.0	6.8	11.4
Net income after taxes before donations	0.3	0.9	0.9	0.5	0.7	0.8	1.2	1.8
Cash and cash equivalents	-	-	-	-	-	-	-	11.6
Cash and cash eqv. (% of assets)	-	-	-	-	-	-	-	12.3%
Debt-to-equity ratio	5.7	6.7	7.6	8.3	7.8	7.9	9.5	7.2

Prodem	1996	1997	1998	1999	2000	2001	2002	2003
Liabilities and equity	14	25	33	30	31	39	53	76
Total liabilities	3	14	19	15	26	35	46	69
Total equity	11.1	11.0	14.1	14.5	4.6	4.5	6.2	6.9
Net income after taxes before donations	1.3	2.1	2.4	0.4	0.1	0.0	0.5	0.8
Cash and cash equivalents	-	-	-	-	-	-	-	8.9
Cash and cash eqv. (% of assets)	-	-	-	-	-	-	-	11.7%
Debt-to-equity ratio	0.3	1.3	1.4	1.1	5.6	7.7	7.5	9.9

Table 19 – Financial Structure for Bolivian MFIs
Source: MixMarket (2011)
Values are in $US millions.

during the reform. The last important step of the reform was to let international players enter the financial market in Bolivia.

Many foreign banks established in Bolivia and increased the competition in the whole banking sector, not only in microfinance. Rhyne (2001b) lists several effects from this. Large banks with low financial costs entered the upper-class market and targeted the prime customers of Bolivian banks. Other banks entered the middle- and lower tier of the ordinary bank segment and competed successfully with the use of technology and techniques that were more efficient than the mainstream approach in Bolivia.

Those two effects combined set a lot of pressure on the existing banks. They were forced to aim at the lower tiers of the population to maintain a client

base. As their most profitable clients disappeared, they were also forced to increase their proportion of poor customers to maintain their profit level.

As the ordinary banks saw that microfinance succeeded with lending small amounts with a profit and low arrears, many of them found their way into the niche of microfinance without really knowing how that part of the industry worked. Many of these banks also established consumer-lending products that were marketed towards the same segments that MFIs served. Others created loan products that mainly used traditional bank concepts instead of the established microfinance methodologies.

The entry of commercial banks drove loan sizes up, as they were motivated to bring clients up into the profitable area for the commercial banks as quickly as possible.

Consumer Credit

Prior to the entrance of consumer credit, MFIs usually avoided giving loans for consumption purposes. Rhyne (2001b) explains how new institutions with a focus on consumer credit came to Bolivia through initiatives with inspiration from Chile. In Chile, consumer credit had appeared as a response to a credit demand among salaried employees with stable income. To explain how consumer credit works, I will introduce *Acceso FFP*, the first and largest consumer lender in Bolivia.

Acceso FFP works like a classic consumer lender. As implied by the name, the intent of each loan is often consumer goods and the lender does not put restrictions on the purpose of the loan. The decision on whether a person is eligible for a consumer loan is based exclusively on a credit-scoring model. Rhyne explains this as a model that creates a score for each customer, reflecting how likely he is to repay the loan. The score is calculated based on publicly available information and a survey that each applicant has to complete prior to applying for a loan. Some categories of people are always refused, for example young men below the age of 25 and people with monthly salaries below a certain threshold. Others are scored according to the model, and offered a loan. The size of the loan depends on the score.

Client Handling

A characteristic difference between consumer lenders like Acceso and microfinance institutions is the process from acquiring a customer until the loan is repaid. In a typical MFI, a single loan officer is responsible for each customer, and the reward of a loan officer is often directly coupled to the quality of "his" borrowers. In Acceso, the process is divided into eight separate steps with different people handling each step. This is a more mechanical, industrialized way of serving credit.

Certain employees acquire customers and make them apply for loans. Other employees rate them and decide their possible loan size. Even other employees are responsible for following up a customer that does not repay the loan. Obviously, the credit-scoring model has to be good to screen all customers correct, as the trust and responsibility that MFIs focus on, isn't present in a consumer lender's process.

The consumer lenders depended heavily on their credit scoring methods, and they did not change their approach when they entered the segment also covered by MFIs. However, their credit scoring models weren't much good, as the microentrepreneurs usually didn't have any stabile income that the consumer lenders could use as guarantee for repayment.

Instead, consumer lenders used an aggressive marketing strategy by targeting the best clients away from MFIs by offering them larger loans. This way, they could rely on the credit assessment done by the MFI instead of their own models.

Delinquency

Acceso also represents another culture when it came to delinquency. Most MFIs flag a customer already on the first day after a payment isn't met. They usually follow up with a personal visit and start working with the borrower to find a solution immediately.

Consumer lenders don't really care the first 30 days after a payment should have been met. They add extra interest and fees, but they aren't concerned like the MFIs. Their method for following up only involves sending a reminder in a letter, and they actually expect a delinquency rate of 15-20%. This is a significant contrast to the MFIs that expect less than 3-5% of a portfolio to default.

To be able to run profitably, even with arrears of 15-20%, consumer lenders usually charge higher interest rates that actually cover the expected losses. Their marketing advantage was their high loan sizes, not their interest rates.

Vogelgesang (2000, p.10) tells an anecdote of how consumer lenders stole clients: "clients were asked whether they obtained a loan from one of the established microlenders. If so, they were offered a considerably higher consumer loan without a further analysis of their repayment capacity".

Obviously, the culture for both repayment and screening users were very different between the two kinds of lenders. We can easily understand that the entry of consumer lending companies opposed as a threat to the existing MFIs.

Clients

As mentioned, the consumer lending model was imported from Chile. Chile had a much larger stock of salaried employees than Bolivia, and Acceso experienced a lack of clients when they brought the model into Bolivia. They targeted employees of large companies, and used their credit scoring model for assessing employees of smaller companies.

As we know, MFIs mostly targeted microenterprises and individuals that set up small businesses of their own. Rhyne (2001b) points out that it would have been an overlap between the customers of MFIs and consumer lenders in any case, as some families had members that were eligible for loans from each of the kinds.

This overlap became much more extensive when Acceso and other consumer lenders started lending to lower-grade employers and individuals to reach high volumes of clients. Rhyne (2001b,

p.142, my note in []) tells that "La Faye *[the leader of Acceso]* estimated that about 30% of Acceso's clients were independents (their name for microenterprises). This would mean more than 25,000 clients, putting Acceso on par with the microlending FFPs in number of microenterprise loans".

This effect was of course also enforced by the acquisition process of the consumer lenders, implied in the anecdote mentioned above. Thus, the client bases of MFIs and consumer lenders were to a large extent the same, and this increased competition substantially.

Multiple Lending

In traditional microfinance, borrowers were highly dependent on the *one* MFI that they could get a loan from. In light of competition, microfinance became a borrower's market; the borrower were actually targeted by multiple lenders and had several ways to obtain credit. Most of the MFIs targeted either rural districts or urban areas. In the urban areas, especially in La Paz, several MFIs operated in the same districts and targeted many of the same clients.

An important part of the story is that many of the potential clients for microcredit has limited education and doesn't learn how economics and credit work. Vogelgesang (2000) states that the educational level is considerably lower in the micro-enterprise sector than elsewhere. In Bolivia's microfinance sector the average length of education is 6.8 years. Rhyne explains that to the borrowers, a relationship to several banks can seem to reduce the risk by widening their choices.

An anecdote told by Carmen Velasco, the executive director of ProMujer, gives an impression of the situation in Bolivia. The story is from a home visit to a delinquent client, and retells a discussion with the husband of the borrower:

"At one very poor house the husband came out asking 'Who are you?' The group identified itself as ProMujer staff. The husband began a tirade. 'Oh, the people from FIE were just here ten minutes ago. Yes, this stupid woman of mine has taken two loans.' They could see the woman sitting on a bench inside weeping. 'But don't worry,' he said. 'Tomorrow she's getting a loan from BancoSol.'" (Rhyne 2001b, p.145)

The husband actually believed that a third loan would improve their situation, and when clients have this view on the situation, it's easy to understand how the excessive credit supply led to cases of multiple lending.

Rhyne cites Fassil staff claiming that as many as 90% of their clients had another loan. Thus, multiple lending was a significant problem in Bolivia prior to the crisis.

MARKET DYNAMICS WITHIN MICROFINANCE

Growth Rates of Total Volume of Loan Portfolio

In Table 20, we see an overview of the loan portfolios of the most important MFIs in Bolivia from 1992-2000. As we can see, portfolios grew consistently and reached a top level around 1999 for most MFIs. The lack of numbers for certain periods is due to lack of report-

	1992		1994		1996		1997		1998		1999		2000	
BancoSol	9	-	33	267%	49	48%	67	37%	74	10%	82	11%	77	-6%
Prodem	-	-	3	-	8	167%	18	125%	24	33%	22	-8%	24	9%
ProCredit	0	-	3	-	12	300%	21	75%	29	38%	36	24%	47	31%
Banco FIE	2	-	4	100%	-	-	12	-	15	25%	19	27%	22	16%
AgroCapital	-	-	-	-	9	-	11	22%	12	9%	13	8%	12	-8%
Accesso	-	-	-	-	-	-	80	-	88	10%	32	-64%	5	-84%
Fassil	-	-	-	-	-	-	13	-	19	46%	15	-21%	13	-13%
Total Gross Portfolio	11	-	43	290%	78	81%	232	197%	267	15%	228	-15%	215	-6%
Total Gross Portfolio without Accesso and Fassil	11	-	43	290%	78	81%	139	78%	160	15%	181	13%	197	9%

Table 20 – Gross Loan Portfolio Growth, Bolivia
Source: See Appendix A
First number is portfolio size, measured in US$ millions. Second number is annual growth.

ing of financial data in the early periods.

The overview is somewhat distorted from new institutions being added and from the large variations in the consumer lenders Accesso and Fassil. I therefore also present the growth of the portfolio excluding these two institutions. However, the data material for Bolivia is too small for us to conclude on anything at this point.

Market Penetration

According to Rhyne (2001b), Bolivia experienced a level of active microfinance loans around 300,000 in 1997, and a similar level of consumer credit loans in addition to this. Rhyne further cites a second-tier lender, Funda-Pro, who has made a very rough estimate of the number of microentrepreneurs in Bolivia at the same time. The estimate is 600,000 which would indicate a market penetration of around 50%.

If we apply the approximations introduced in chapter 3.5, we find the situation in 1997 to be quite different. Measured against the total population I find a penetration rate of only 2.1%, and using the definition of *Market Penetration*$_2$ I find the value to be around 10%. The calculations for these numbers are discussed in Appendix B.

This penetration rate is quite low, especially compared to the numbers referred to by Rhyne. Some of the reasons for this may be that my proxy includes a broader client base than sole microentrepreneurs, and that I only count active borrowers based on MIX data, which is about half the size suggested by Rhyne.

The total penetration rate is well below the suggested threshold of 10% discussed in chapter 2.7.2, and market penetration should thus not be a problem in itself in the case of Bolivia.

Level of Competition

A characteristic of the Bolivian microfinance market is the abundance of institutions. As we saw in the intro-

ductory sections, several MFIs started operations with differing strategies and methodology, and a lot of them converged in the early 1990s. This created a highly competitive market, and the entry of commercial banks and consumer lenders increased the competition even further.

To give an impression of the level of competition I use the Herfindahl-Hirschman Index (HHI), introduced in chapter 3.5. A challenge with using this method is the lack of available data for the period until 1997. Throughout the 1990s, more and more MFIs started reporting to MIX – but especially a lot of small and medium size actors have not been reporting since the start.

If we look solely on microfinance operators, we find HHI values of 0.27 in 1997 and 1998. If we add the consumer lender companies Accesso and Fassil, we find index values of 0.10 for the same years. Thus, we see a moderate value for the microfinance sector, but a highly competitive market if we include the consumer lenders as well.

Quality and Use of Credit Information Systems

The Superintendency of Banks in Bolivia regulated the whole financial industry, including the microfinance industry. They operated a credit bureau for the formal banks, and other companies were prohibited from offering credit information services. Few microfinance companies reported data, and even fewer acquired credit information from the bureau prior to the crisis in 1999. However, after the crisis, MFIs were included to a much larger extent and could use the system in the same way as formal banks.

4.1.6 After the Crisis

The Superintendency of Banks took action in light of the repayment crisis. In early 1999 they introduced new regulations that was meant to make credit institutions, and especially consumer lenders, more solid. One of the most important regulations was that any client should be restricted to a total debt service of 25% of his salary. To most clients with car, house, or business loans this meant that a consumer loan was out of the question.

Rhyne tells of various responses to this regulation. Fassil dropped their consumer lender product and focused on microfinance business loans, while Acceso continued as before and paid the penalty of the regulation.

The regulation came too late to prevent the crisis and all the consumer lenders experienced large losses. The Superintendency of Banks directly intervened in Acceso and the CrediAgil division of Union Bank when their equity disappeared in covering losses. Most of the consumer lenders that were active prior to the crisis in 1999 disappeared from the market few years later.

4.2 Bosnia and Herzegovina

Bosnia and Herzegovina (BiH) is an East-European country with a widespread microfinance sector. With regard to standard of living, people are normally better off in Bosnia than in countries like Bolivia. The population that is characterized as poor is relatively small, and the typical microcredit client is often someone who lost their job during the war in 1992-1995 and struggles to earn a living in the post-war time.

The total microcredit loan portfolio reached its maximum in 2008 at about 1 billion USD and has experienced a decrease since that point. The industry experienced a rapid growth in the period from 2003 to 2008 and faced a repayment crisis in 2008, set off by the global financial crisis. Before the crisis, the competition was intense. High penetration rates indicate multiple lending in the most densely populated areas, and the credit-only approach, enforced by regulations, made the organizations vulnerable to such a crisis.

4.2.1 Historical Background

The Civil War of 1992-1995

Bosnia and Herzegovina was positioned in the Yugoslavian federation until the early 1990s. At that time, Yugoslavia broke up and Bosnia and Herzegovina tried to declare independence in 1992. This became the start of a three year long war that led to massive civilian casualties. Estimates say that about 100,000 people were killed and about 2 million people displaced during the war. The economic activity was also severely reduced. Demirguc-Kunt (2008) report a 75% drop in the per capita GDP in the period 1990-1995, from 2,400 USD to 600 USD, and Hartashka and Nadolnyak (2008) report unemployment rates of up to 85% after the war. When the war was over in 1995, international humanitarian and development organizations set up programs to help the unemployed and displaced Bosnians. Among these were also microfinance institutions.

Local Initiatives Projects (LIP I and II)

An important contribution to the establishment of microfinance in BiH was the *Local Initiative Projects (I and II)*, initiated by the World Bank. The first project was launched in 1996 and had the following primary objective:

"Address the urgent need to assist economically-disadvantaged and war-affected groups in Bosnia and Herzegovina restart economic activities and make the transition from dependence on humanitarian assistance to active employment. This will be achieved by disbursing about 7,000-10,000 subloans up to a maximum of 10,000 DM each for income-generating activities based on self-employment and micro-enterprises".

(TheWorldBank 1996, p.12)

The LIP I-initiative should also work to ensure financially viable MFIs within 5-10 years time, and work to improve the regulations for MFIs. Along with the World Bank, United Nations High Commissioner for Refugees (UNHCR), the Netherlands, Italy, Japan, Switzerland and Austria supported the project financially. The project was ended in 2000 and considered a success (Welle-Strand, Kjollesdal et al. 2010).

	2002	2003	2004	2005	2006	2007	2008	2009
Offices	-	-	-	18	30	39	44	26
Personnel	171	226	291	430	576	831	888	662
Gross Loan Portfolio ($ mn)	33.4	55.7	82.8	95.1	155.2	238.4	225.9	172.1
Active Borrowers ('000)	7.1	10.8	20.1	29.4	42.5	68.8	65.2	39.8
Avg. loan balance per client	4,724	5,179	4,114	3,237	3,654	3,467	3,464	4,328
PAR30 (% of portfolio)	-	-	-	-	0.81	1.63	3.11	8.35
Write Offs (%)	-	-	-	-	0.43	0.42	2.13	5.87
Profit Margin (%)	16.1	8.4	14.4	9.0	6.5	5.2	-1.0	-34.5
Return on Assets (%)	-	1.3	2.2	1.3	0.9	0.7	-0.2	-3.6

Table 21 – Key Figures, ProCredit BiH
Source: MixMarket (2011)

In 2002, the World Bank launched the LIP II-project with a budget of 24 million USD. Welle-Strand et al. (2010, p.155) explain that the aim of LIP II was "*to raise incomes, develop businesses and increase employment through the use of microfinance institutions*". An important goal was to support the transition towards more sustainable sources of funding for MFIs. During the LIP II-period (2002-2005), a consolidation of certain MFIs occurred, and LIP II financed eight microcredit organizations in contrast to LIP I's 17 supported projects.

Regulations

BiH is composed by two autonomous entities: *the Federation of Bosnia and Herzegovina* and *the Republic of Srpska*. The MixMarket country briefing (MixMarket 2010a) explains that both the entities have regulatory agencies that supervise the activities of microfinance providers. Both entities have their own laws regulating the industry of microfinance, and there are some differences between the two regions. The first legal regulations on microfinance were adapted around 2000, and allowed MFIs to be regulated as microcredit organizations (MCOs) that were non-profit, credit-only institutions (Welle-Strand, Kjollesdal et al. 2010).

A new law was adapted in 2006, enabling MCOs to become non-profit microfinance foundations (MCF) or for-profit microfinance companies (MCC). For-profit companies have higher minimum capital requirements and need to have larger loan loss reserves than non-profit companies – and can also lend higher amounts to their clients. Turning into an MCC will make it easier to raise more capital and is therefore beneficial for most large MFIs.

4.2.2 Introducing Microfinance Institutions

As mentioned in the previous section, a broad range of organizations emerged in the microfinance segment right after the war ended in 1995. As many as 70 initiatives were identified, and a set of 17 organizations received funding and support from the *LIP I project*. The microfinance companies benefitted from many international experiences and could start their operations with knowledge of how to perform well.

However, the scene of microfinance is somewhat different in BiH than in

	2001	2002	2003	2004	2005	2006	2007	2008	2009
Offices	-	-	20	23	-	36	82	85	77
Personnel	45	60	79	94	112	157	293	338	325
Gross Loan Portfolio ($ mn)	4.7	9.5	18.4	28.8	35.6	64.1	144.6	161.6	156.3
Active Borrowers ('000)	4.4	5.6	7.4	14.0	20.4	28.8	51.5	55.7	51.1
Avg. loan balance per client	1,065	1,693	2,473	2,050	1,746	2,222	2,807	2,902	3,055
PAR30 (% of portfolio)	0.0	0.0	0.0	0.2	0.2	0.3	1.3	1.5	7.1
Write Offs (%)	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.4	2.9
Profit Margin (%)	36.0	36.4	38.6	42.2	34.3	26.9	28.5	21.7	2.7
Return on Assets (%)	10.2	10.2	9.5	9.1	6.6	4.6	5.1	3.6	0.2

Table 22 – Key Figures, MIKROFIN
Source: MixMarket (2011)

countries like Bolivia. Many of the clients were successful prior to the war, but got displaced or lost their jobs when the production industry collapsed. Hartashka and Nadolnyak (2008, p.2606) explain that the new poor in BiH were "highly educated and usually with good physical asset base". Microfinance played an important role in helping these people back into the economic activity. The different characteristics also affected the lending methodologies, and most MFIs in BiH lended on an individual basis.

The set of microfinance organizations in BiH consists of various types of organizations. The largest provider of microcredit is *ProCredit*, which is the only organization that is regulated as a bank. This also makes ProCredit the sole provider of deposit services in the microfinance segment. ProCredit was among the projects that became financially self-sustainable during the LIP I project.

Apart from ProCredit, *MIKROFIN*, *EKI* and *Partner* are the top credit providers with regard to portfolio size. MixMarket (2010a) reports that there are currently 18 registered microcredit foundations in the territory of the Federation and 2 registered foundations in the territory Republic of Srpska. There are two microcredit companies operating in the Republic of Srpska only. Ten of the foundations report to MixMarket, and these serve 70% of the total borrowers and comprise 45% of the micro-

	2001	2002	2003	2004	2005	2006	2007	2008	2009
Offices	-	-	27	34	44	43	49	59	15
Personnel	68	76	93	125	134	169	240	293	296
Gross Loan Portfolio ($ mn)	6.0	9.9	15.9	30.5	34.2	59.2	117.4	128.5	97.9
Active Borrowers ('000)	6.8	7.1	11.9	19.7	20.2	33.2	52.0	63.6	54.6
Avg. loan balance per client	886	1,394	1,333	1,548	1,691	1,785	2,258	2,020	1,794
PAR30 (% of portfolio)	0.2	0.3	0.6	0.6	1.2	0.9	0.6	1.6	7.8
Write Offs (%)	0.3	0.2	0.2	0.2	2.9	0.7	0.8	1.3	5.9
Profit Margin (%)	33.0	30.6	40.4	43.7	18.9	30.5	24.6	29.1	-5.9
Return on Assets (%)	10.2	8.9	11.2	11.4	3.9	6.2	4.5	5.5	-1.2

Table 23 – Key Figures, Partner
Source: MixMarket (2011)

	2001	2002	2003	2004	2005	2006	2007	2008	2009
Offices	-	-	21	32	35	44	62	14	15
Personnel	66	85	102	119	153	211	281	320	316
Gross Loan Portfolio ($ mn)	6.5	11.8	19.2	25.8	31.9	58.4	117.3	144.5	113.6
Active Borrowers ('000)	6.4	9.0	13.3	18.8	22.6	28.1	44.5	53.0	51.6
Avg. loan balance per client	1,021	1,311	1,443	1,373	1,410	2,082	2,639	2,724	2,201
PAR30 (% of portfolio)	0.6	0.2	0.3	0.4	0.1	04	0.4	1.6	10.8
Write Offs (%)	1.6	0.5	0.3	0.4	0.5	0.5	0.3	1.4	6.4
Profit Margin (%)	31.1	30.8	30.2	30.7	28.0	35.4	33.5	15.2	-26.1
Return on Assets (%)	8.3	7.5	6.5	6.1	5.4	7.5	6.8	3.2	-5.2

Table 24 – Key Figures, EKI
Source: MixMarket (2011)

finance portfolio. The two companies in Republic of Srpska comprise a total of 35% of the portfolio. Table 21, Table 22, Table 23 and Table 24 show some key performance indicators for each of the top four microcredit organizations in Bosnia and Herzegovina.

4.2.3 Microfinance from Launch to Crisis

As we have seen, the intent of microfinance in Bosnia was both to reduce poverty and to be a means to rebuild the country after the Civil War. Many initiatives were supported and over a few years, the activities of microlending turned into a whole industry with multiple actors and even received its own regulation by law that supported it.

The MFIs in Bosnia really started to grow in terms of loan portfolio and number of borrowers around 2003. The years that followed coincided with microfinance getting a whole lot of attention through media and politics all over the world. Financial supplies were therefore easily accessible, and the growth accelerated over the following years. Lending policies and the absence of a credit information system prevented the MFIs from controlling their borrowers in terms of avoiding multiple lending and enforcing repayment.

As we will see, the MFIs concentrated much of their lending activity to the same geographical areas and got into trouble as clients started bicycling loans. Around 40% of the borrowers in Bosnia in 2009 had loans from more than one MFI, and market penetration rate became artificially high with levels above 10-15% of the total population for the period 2008-2009. These numbers are further discussed in chapter 4.2.5.

When the crisis hit in 2009, borrowers of microcredit suffered in more than one way. Their own income-generating activities failed as consumption and exports dropped, and incoming remittances from other affected countries also dropped significantly. Many households in Bosnia depended on the received remittances. Many clients thus reduced their income dramatically when facing the crisis, and could no longer handle their excessive loans, leading to delayed payments and defaulted loans at all MFIs.

4.2.4 The Repayment Crisis

In 2007, many western economies showed signs of distress as a consequence of a global financial crisis. I will only give a short introduction to the crisis here, and refer interested readers to check out e.g. Brunnermeier (2009) for the whole story.

An Introduction to the Global Financial Crisis

Brunnermeier explains how liquidity markets dried up as a consequence of a 'credit bubble' that was driven by overconfidence in high housing prices. 'Structured' investment products like *collateralized debt obligations* enabled banks to circumvent capital requirements like the ones in BASEL I, which was meant to regulate the banking industry. Through an "originate and distribute" approach, various loans where repackaged, sliced up and sold based on risk-preferences.

Banks managed to sell off their risky loan products and provide credit lines that did not need to be secured in the same way, increasing their real risk exposure. Many banks also relied on short-term financing while their loan products often were long-term. When estate prices started to drop, delinquency became a problem and banks got into trouble covering their losses and maintaining their capital requirements.

Liquidity dried up and many banks and insurance companies faced problems acquiring funds. Many federal banks provided "rescue packages" to prevent the capital markets to stop completely. The liquidity shortage also affected the banks' willingness to provide new loans to their clients.

The Repayment Crisis in Bosnia and Herzegovina

The global financial crisis affected Bosnia and Herzegovina as well. Traditional banking industry most likely experienced the same difficulties as other European banks, and the macroeconomic environment affected the country as a whole.

ProCredit says the following in their annual report from 2009: "The global financial crisis had a significant impact on macroeconomic stability in the country, making it difficult for smaller businesses to obtain credit from local institutions. Additionally, international and domestic orders fell sharply, which led to a slump in turnover and decreased levels of production" (ProCredit 2009, p.10).

The primary effect of the recession was that the liquidity of most Bosnians became constrained. Income dropped and businesses were likely to have tied up their money in assets that were non-liquid.

	2003	2004	2005	2006	2007	2008	2009
PAR30 (%)	0.47	0.41	0.55	0.75	1.25	2.31	8.96
Write Offs (%)	0.42	0.35	0.81	0.62	0.66	1.50	5.79
Total RISK (%)	**0.88**	**0.77**	**1.36**	**1.36**	**1.91**	**3.90**	**14.75**

Table 25 – Repayment Behavior, BiH
Source: MixMarket (2011)

Table 25 shows that the risk levels of the loan portfolios increased significantly, starting in 2008 and really becoming evident in 2009. The MixMarket country briefing (MixMarket 2010a) also looks at the levels in Q1 2010 and sees a similar trend of continued high delinquency there. PAR30 came close to 9% both in 2009 and Q1 2010, and write-off levels were 5.79% in 2009 and passing 8% in Q1 2010. MixMarket state that the high risk levels came as a direct result of a lending bubble with widespread over-indebtedness.

Return on assets (ROA) has been negative for several MFIs in 2009 and are likely to be so in 2010 as well. Certain MFIs with small loan loss reserves and small amounts of equity are likely to be unable to continue lending unless the situation can be turned quickly. The industry has most likely been operating at an unsustainable level and we should expect to see consolidation, bankruptcies and changed market dynamics in the years ahead.

4.2.5 Crisis Indicators

This section contains the analysis of the 12 chosen indicators, according to the framework presented in chapter 3.5.

CONSUMER DYNAMICS

Remittances

Table 26 shows remittances received by inhabitants of Bosnia and Herzegovina in the period 1998-2009.

The first and foremost observation that can be made from the table is that the level of remittances is very high compared to the region average. In 1998, three years after the war, remittances were about half the size of Bosnias GDP. We also observe that the values are much higher than in Bolivia, in the range 1,500 - 2,700 millions compared to 5 – 130 millions in Bolivia. Obviously, remittances were important to

Year	Annual Growth (%)	Bosnia and Herzegovina (current US$, mn)	Bosnia and Herzegovina (% of GDP)	Europe and Central Asia, average value (% of GDP)
1998	-	2,048	49.7%	1.7%
1999	-7%	1,903	40.6%	1.7%
2000	-16%	1,607	29.2%	1.5%
2001	-5%	1,525	26.5%	1.5%
2002	0%	1,526	22.9%	1.4%
2003	14.6%	1,749	20.9%	1.2%
2004	18.5%	2,072	20.7%	1.2%
2005	-1.4%	2,042	19.0%	1.4%
2006	5.6%	2,157	17.6%	1.4%
2007	25.2%	2,700	17.7%	1.5%
2008	1.3%	2,735	14.8%	1.4%
2009	-23.9%	2,081	12.2%	1.4%

Table 26 – Workers' remittances and compensation of employees received, BiH
Source: The World Bank (2010)

the poorest people living in Bosnia and Herzegovina.

We also see that the remittances are volatile. In 2003 and 2004, remittances increased significantly. Those who received remittances probably improved their liquidity and felt more confident in their own economy. Remittances stayed high until 2008, when the global financial crisis hit most countries. We see a significant drop in remittances in 2009; probably a consequence of recession in most of the countries where foreign workers worked as well.

This coincides with the increased risk levels of the loan portfolios. Certain borrowers may have become used to the inflow of cash from remittances, and included this in their repayment capacity on loans. Combined with over-indebtedness, it is easy to see that the changes in cashflow through remittances may have severely affected the borrowers' ability to repay their loans.

Average Loan Balance per Borrower

Table 27 shows the average loan sizes for each of the MFIs reporting to MIX in the period 2003-2009. We observe that the loan sizes vary, both across MFIs and across time spans. The general trend is that MFIs increased their loan sizes moderately in the period up until 2007-2008, and that movements in 2009 go in both directions.

Some of the large MFIs start the period by decreasing their loan sizes. This may be due to the changed characteristics of their market. Until 2003, few MFIs had grown real large, and the companies had probably started by targeting the clients with the most potential for profit. This is supported by Berryman and Pytkowska (2004) who suggest that early MFIs were risk-averse and pre-

	2003	2004	2005	2006	2007	2008	2009
EKI	1,443	1,373	1,410	2,082	2,639	2,724	2,201
LIDER	2,568	1,591	1,227	1,087	1,409	1,499	1,186
LOK Microcredit Foundation	1,575	1,817	1,648	2,005	2,444	2,111	1,692
MI-BOSPO	993	1,014	1,108	1,262	1,392	1,696	1,582
MIKRA	831	898	711	1,022	1,795	1,249	1,012
Mikro ALDI	553	608	638	791	1,393	1,650	1,644
MIKROFIN	2,473	2,050	1,746	2,222	2,807	2,902	3,055
Partner	1,333	1,548	1,691	1,785	2,258	2,020	1,794
Prizma	615	731	708	764	1,263	928	1,256
ProCredit Bank BiH	5,179	4,114	3,237	3,654	3,467	3,464	4,328
Sinergija	2,000	2,506	2,690	2,241	2,692	3,503	3,769
Sunrise	1,209	1,242	1,259	1,599	2,085	2,320	2,047
Women for Women	561	507	514	716	940	1,132	1,075
Client-weighted average	**1,317**	**1,635**	**1,524**	**1,923**	**2,323**	**2,339**	**2,443**
Mix Market overall average	248	332	360	420	513	521	707

Table 27 – Average Loan Balance per Borrower, BiH
Source: MixMarket (2011)
Values are in $US.

dominantly serving clients with higher income.

As the client bases grew, it is natural to think that more low-end clients joined the portfolios, and the loan sizes then naturally decreased. However, the competition that affected the period prior to the crisis most likely pushed the banks to increase their loan sizes to compete with the others again. Again, we recall that the average loan size is expected to increase naturally as a result of dynamic incentives.

We observe that the level is generally higher than in Bolivia, and higher than the worldwide average reported by MixMarket. This is natural if we consider that the clientele of Bosnian MFIs differed as a result of the war.

The response to the crisis varies. Some MFIs constraint their borrowers to smaller loans to re-establish a sound lending practice, while others increased their minimum loan sizes to prevent the worst-off clients from receiving a loan.

ProCredit (2009) explains that they experienced the worst repayment statistics for loans below a limit of 2,000 EUR, and that they therefore raised their minimum loan size to this threshold. Clients that aren't eligible for such loan sizes are therefore left out of the ProCredit portfolio, and this is reflected in their decrease in 2009, both in gross loan portfolio (2008: 226 million USD; 2009: 172 million USD) and number of borrowers (2008: 65,000; 2009: 40,000).

Loan Requirements and Lending Methodologies

As mentioned in the introduction to the Bosnian case study, the characteristics of borrowers in Bosnia are quite different from borrowers in the poorest Asian and African countries. Hartashka and Nadolnyak (2008) explain that individual lending was the most viable practice, while solidarity groups were successful to certain sub-groups of the population. They also suggest that restrictive lending methods like regular repayment with frequent repayments were quickly abandoned in Bosnia.

The potential borrowers had a higher educational level than microfinance borrowers in many other countries. Thus, they were also able to take advantage of the market dynamics that rose from competition to a larger extent. The MFIs met this by adapting to the client needs and constructed a client-focused lending practice. Hartashka and Nadolnyak tell of a market with many diverse products that were tailored to various borrower groups.

Similar to the situation in Bolivia, we thus find that the bargaining power of the consumers in BiH, as a result of lending methodologies, were quite high in the time prior to the crisis.

Productivity

The productivity level of Bosnian MFIs is quite high. We can see from Table 28 that most MFIs have had borrower-to-staff ratios well above the MixMarket median value. Some of the minor variations in the ratio across different year come from opening or closing branch offices that alter the need for overhead personnel.

	2003	2004	2005	2006	2007	2008	2009
EKI	131	158	148	133	158	166	163
LIDER	62	93	136	135	131	127	111
LOK Microcredit Foundation	78	108	109	109	154	149	132
MI-BOSPO	184	225	251	175	253	209	161
MIKRA	132	144	117	153	132	93	96
Mikro ALDI	191	211	200	156	135	126	106
MIKROFIN	94	149	182	184	176	165	157
Partner	128	157	151	196	217	217	184
Prizma	211	203	220	237	211	308	220
ProCredit Bank BiH	48	69	68	74	83	73	60
Sinergija	85	101	94	125	155	142	133
Sunrise	105	121	127	144	128	133	129
Women for Women	234	195	211	157	185	139	126
Client-weighted average	**140**	**154**	**155**	**154**	**163**	**163**	**141**
Median	**128**	**149**	**148**	**153**	**155**	**142**	**132**
Mix Market median	97	103	104	102	103	98	101

Table 28 – Borrowers per staff, BiH
Source: MixMarket (2011)

However, we observe that most MFIs reached their top level 1-2 years in advance of the repayment crisis. The reductions in 2009 are most likely an effect of severe reductions of the loan portfolio and its clients.

SUPPLIER DYNAMICS

MFI Liquidity and Perceived Investment Flows

Table 29 shows some financial key performance indicators for the key players in the microfinance market in Bosnia in the period 2003-2009. We observe that the level of assets increased significantly in the period prior to the crisis, as is expected considering the growth rates of the loan portfolios. What's interesting though, is to see that both equity and liabilities increase. The equity increases beyond the financial results, which indicates that investors invested into the operations.

The debt-to-equity ratio, and the level of liabilities, also increased for most companies. The companies were thus able to acquire funding through the capital market, and available capital is thus not likely to have been working as a constraint to lending. This is consistent with findings from Bolivia. We can also see that the level of cash and cash equivalents increased, and this actually indicates that the banks had excessive funds that they could not find any demand for in the market.

We notice that ProCredit has very large amounts of cash and cash equivalents compared to their total assets, with levels of 20-30% in the whole period. They grew significantly in the same period, and this observation thus supports the hypothesis on an easy funding situation for the largest MFIs.

Some cash reserves were necessary to meet the requirements from legal

EKI	2003	2004	2005	2006	2007	2008	2009
Liabilities and equity	21	28	34	62	123	145	123
Total liabilities	17	21	26	47	99	118	101
Total equity	4.5	6.8	8.0	15.1	23.8	27.3	21.2
Net income after taxes before donations	1.1	1.5	1.7	3.7	6.3	4.3	6.9
Cash and cash equivalents	1.1	0.8	0.6	0.7	1.1	1.3	17.8
Cash and cash eqv. (% of assets)	5.2%	2.9%	1.8%	1.1%	0.9%	0.9%	14.5%
Debt-to-equity ratio	3.7	3.1	3.2	3.1	4.1	4.3	4.8

MIKROFIN	2003	2004	2005	2006	2007	2008	2009
Liabilities and equity	19	30	38	72	151	169	175
Total liabilities	11	18	26	54	118	132	138
Total equity	7.9	11.4	12.1	18.3	33.0	36.1	37.0
Net income after taxes before donations	1.4	2.2	2.3	2.5	5.7	5.8	0.4
Cash and cash equivalents	0.1	0.2	2.4	7.1	4.8	3.9	18.8
Cash and cash eqv. (% of assets)	0.5%	0.7%	6.3%	9.9%	3.2%	2.3%	10.7%
Debt-to-equity ratio	1.4	1.6	2.2	3.0	3.6	3.7	3.7

Partner	2003	2004	2005	2006	2007	2008	2009
Liabilities and equity	18	33	38	65	127	143	127
Total liabilities	11	21	27	47	102	112	97
Total equity	7.2	12.1	11.4	18.1	25.0	30.6	30.1
Net income after taxes before donations	1.8	3.1	1.8	5.1	4.5	7.4	-1.5
Cash and cash equivalents	0.5	1.2	-	3.2	3.1	7.1	23.7
Cash and cash eqv. (% of assets)	2.8%	3.6%	-	4.9%	2.4%	5.0%	18.7%
Debt-to-equity ratio	1.5	1.7	2.4	2.6	4.1	3.7	3.2

ProCredit	2003	2004	2005	2006	2007	2008	2009
Liabilities and equity	64	96	121	199	319	329	247
Total liabilities	52	81	102	182	290	298	221
Total equity	11.7	14.4	19.4	17.0	28.3	31.7	25.7
Net income after taxes before donations	0.6	1.7	1.4	1.4	1.8	-0.6	-10.5
Cash and cash equivalents	-	-	25.2	40.6	76.1	99.9	75.2
Cash and cash eqv. (% of assets)	-	-	20.8%	20.4%	23.9%	30.4%	30.4%
Debt-to-equity ratio	4.5	5.7	5.3	10.8	10.3	9.4	8.6

Table 29 – Financial Structure for Bosnian MFIs
Source: MixMarket (2011)
Values are in $US millions.

regulation, but cash-on-hand certainly creates a drive for growth to new client markets, as financial investors will want a certain return on capital that is hard to acquire by having cash-on-hand. Therefore, MFI liquidity may have been an additional push factor for achieving short-term growth in the period prior to the crisis. We also observe that after the crisis, most MFIs got large

cash reserves as they restricted lending practices.

SUBSTITUTES

Commercial Banks

Berryman and Pytkowska (2004) conducted an analysis of the Bosnian microfinance market in 2003. They found that commercial banks did not play an important role at that point, but they expected that it would become more important in years ahead. Around year 2000, commercial banks in BiH served the SME[1] market with loans starting at 25,000 KM (Convertible Mark), which were similar to 11,904 USD. In 2002, some of the commercial banks in Bosnia had joined a project led by the European Union, offering smaller loans, starting at 5,000 KM (2,673 USD).

As we saw above, the average loan size of MFIs in 2003 was around 1,600 USD, with four MFIs reporting average loan sizes above 2,000 USD. The gap between minimum loan sizes at commercial banks and MFIs were thus reduced significantly in the period from 2000 to 2003. As the products of the two kinds of institutions overlap, it is also natural to believe that the competition from commercial banks has influenced the market to a larger extent in the recent years.

Multiple Lending

Chen et al. (2010) report multiple lending as one of the core problems present in Bosnia and Herzegovina. They cite studies indicating that as many as 40% of borrowers in BiH had active loans with more than one MFI in 2009. There are few studies that quantify multiple lending and without the presence of a working credit information bureau, it is hard to investigate this issue any further.

MARKET DYNAMICS WITHIN MICROFINANCE

Growth Rates of Total Volume of Loan Portfolios

Table 30 and Figure 3 show how the loan portfolios of the reporting MFIs changed in the period 2004-2009. We see high growth in almost all portfolios, with a peak in 2006-2007 for the total loan portfolio growing 68% and 89% year over year.

We also observe that EKI, MIKROFIN and Partner exceed the market's total growth rate. The largest MFIs thus contribute highly to the growth, which supports the hypothesis of the largest players being able to attract most funding that enables further growth. ProCredit is the only of the largest banks that grew less than the total market, but they were usually close to the overall growth rates.

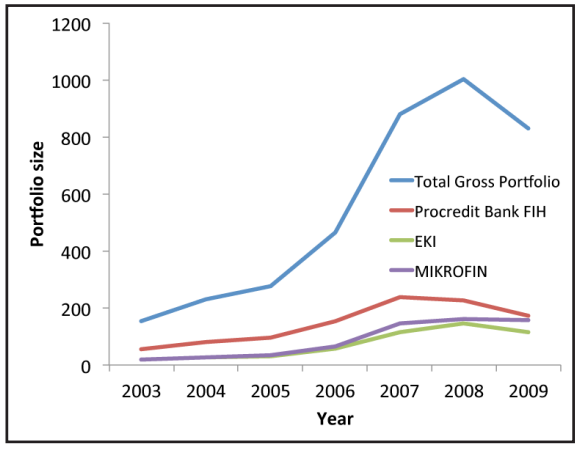

Figure 3 – Gross Loan Portfolios, BiH
Data Source: MixMarket (2011)
Values are in US$ millions.

1 Small and Medium sized Enterprises

	2004		2005		2006		2007		2008		2009	
EKI	26	34%	32	23%	58	83%	117	101%	145	23%	114	-21%
Lider	3	63%	4	23%	5	12%	7	46%	9	28%	6	-29%
LOK MF	9	53%	11	20%	23	108%	66	186%	94	42%	68	-27%
Mi-Bospos	9	31%	16	67%	24	57%	43	74%	52	23%	38	-28%
Mikra	7	38%	6	-13%	12	91%	22	88%	16	-28%	10	-39%
Mikro Aldi	2	46%	3	16%	3	6%	4	52%	5	20%	4	-16%
Mikrofin	29	57%	36	24%	64	80%	145	126%	162	12%	156	-3%
Partner	30	91%	34	12%	59	73%	117	98%	128	9%	98	-24%
Prizma	9	36%	11	21%	16	43%	37	132%	52	40%	63	21%
ProCredit BiH	83	49%	95	15%	155	63%	238	54%	226	-5%	172	-24%
Sinergija	8	41%	12	39%	14	23%	26	84%	36	36%	38	5%
Sunrise	13	46%	16	21%	28	78%	48	75%	66	38%	56	-16%
Women for Women	1	-6%	3	83%	5	74%	9	84%	12	40%	10	-20%
Total Gross Portfolio	**231**	**50%**	**278**	**20%**	**466**	**68%**	**880**	**89%**	**1003**	**14%**	**832**	**-17%**
Reference weight (2008 = 1.0)		**0.23**		**0.28**		**0.46**		**0.88**		**1.0**		**0.83**

Table 30 – Gross Loan Portfolio Growth, BiH
Source: MixMarket (2011)
First number is portfolio size, measured in US$ millions. Second number is annual growth.

Table 31 presents the aggregated growth in number of borrowers in the period 2004-2009. We observe that the level of growth is below the critical threshold of 63-84% suggested by Gonzalez (2010). However, Gonzalez suggests that growth combined with e.g. high market saturation can affect repayment behavior on lower growth rates, and as we will see, the saturation in Bosnia was quite high prior to the crisis. The growth is therefore considered significant.

Market Penetration

The population of Bosnia is rather small, only about 3.7 million. As discussed above, the *poor* population is even smaller. The microfinance portfolio is quite large though, and this suggests that the market penetration may be high. This is confirmed by the approximations of market penetration introduced in chapter 3.5 and further discussed in Appendix B.

	2004		2005		2006		2007		2008		2009	
Number of borrowers	**130**	**48%**	**168**	**29%**	**234**	**39%**	**366**	**56%**	**440**	**20%**	**375**	**-15%**
Reference weight (2008 = 1.0)		**0.30**		**0.38**		**0.53**		**0.83**		**1.0**		**0.85**

Table 31 – Number of borrowers, BiH
Source: MixMarket (2011)
First number is number of borrowers in thousands. Second number is annual growth.

Table 32 presents the approximated values for market penetration in the period from 2001 to 2009. We see that the market penetration compared to the total population became very high prior to the crisis, and that it increased rapidly in the period from 2003-2008. It even surpasses the implied threshold of 10% presented by Gonzalez (2010).

The penetration rate compared to the potential market is also higher than in Bolivia, but far from fully penetrated. This number is held down by a microfinance industry that includes many borrowers that are less poor than the '1.25$ a day'-definition. The potential market thus becomes quite large.

The penetration levels are considered high, and calculations indicate that the client base is artificially large.

Level of Competition

Sapundzhieva (2011) has conducted a study of geographical concentration and lending in Bosnia on behalf of the Microfinance Information eXchange (MIX) and describes the conditions for lending in several geographical sub-regions in Bosnia. Bosnia consists of ten cantons (in the Federation of Bosnia), seven regions (in the Republic of Srpska), and a third district called the Brčko District.

Year	Market Penetration$_1$	Market Penetration$_2$
2001	1.2%	3.7%
2002	2.2%	
2003	3.4%	
2004	4.9%	15.1%
2005	6.3%	
2006	8.8%	
2007	13.8%	42.2%
2008	16.5%	
2009	14.1%	

Table 32 – Market Penetration, BiH
Source: See Appendix B

The largest subregions are *Sarajevo*, *Banja Luka* and *Tuzla*. Sapundzhieva reports that microfinance is limited in the Sarajevo, most likely because this region is an economical hub with several ordinary banking institutions that cover some of the potential market. Both Banja Luka and Tuzla are central in the microfinance story though.

In 2007-2008, when the industry grew the most, a large proportion of the growth happened in these two subregions. These areas were also among the ones that got into most trouble in 2009, when the crisis occurred. Berryman and Pytkowska (2004) suggest that client segmentation between various MFIs were rarely seen in 2003. To perceive growth, many MFIs still target the same markets and focus geographically quite similarly.

Further, Sapundzhieva explains that, across all of the regions, MIKROFIN is the only microfinance operator in four of the sub-regions. By applying the Herfindahl-Hirschman Index (HHI) on each geographical sub-region, Sapundzhieva finds that the competition is high in several markets, but that Banja Luka and Tuzla are the regions with toughest competition.

Table 33 shows the HHI-values for the largest areas in the period 2004-2009. We observe that the level of competition has increased in all regions and the index-values in 2008-2009 indicate a high level of competition, especially in the regions Banja Luka and Tuzla. Figure 4 illustrates the changes in gross

Region	2004	2005	2006	2007	2008	2009
Banja Luka	0.091	0.078	0.115	0.086	0.073	0.069
Doboj	0.218	0.192	0.186	0.166	0.127	0.143
Herzegovina-Neretva	0.272	0.255	0.263	0.244	0.205	0.193
Sarajevo	0.223	0.238	0.206	0.190	0.163	0.164
Tuzla	0.191	0.153	0.127	0.079	0.056	0.055
Una-Sana	0.343	0.265	0.346	0.186	0.176	0.184
Zenica-Doboj	0.241	0.245	0.262	0.177	0.128	0.126

Table 33 – HHI-values for geographical subregions in BiH
Source: Sapundzhieva (2011)

loan portfolios (GLP) and HHI-values for each of the largest sub-regions in the period 2004-2009.

We can also perform a similar HHI-analysis for the market as a whole. By looking exclusively on the MFIs reporting to MIX, we also find relatively low HHI-values, around 0.10-0.20, depending on which key indicator is used to measure market shares. The results are presented in Table 34.

We can thus conclude that the level of competition is high, and increased prior to the crisis. Sapundzhieva also concludes that the areas where competition increased the most were the areas with the highest level of microfinance activity prior to the increase.

Measure	2004	2005	2006	2007	2008	2009
HHI based on Numer of Active Borrowers	0.113	0.102	0.108	0.107	0.110	0.116
HHI based on Gross Loan Portfolio Size	0.184	0.174	0.173	0.150	0.134	0.132

Table 34 – HHI-values, overall market, BiH
Data Source: MixMarket (2011)

Figure 4 – Gross Loan Portfolio and HHI-values, by subregion, BiH
Source: Sapundzhieva (2011)

Quality and Use of Credit Information System

According to MixMarket (2010a), a credit bureau was established by the Central Bank of BiH in 2009. This registry primarily contains data from banks, but MFIs and similar organizations can report on a voluntary basis. However, this bureau is so recent that it has probably not had any effect on the market up until 2009. The quality and use of credit information systems is therefore considered to be very low prior to the crisis.

4.3 Morocco

Morocco has been highlighted as one of the best examples of microfinance throughout the early 2000's. The industry has experienced stable returns and low arrears, and has seen considerable growth. Morocco is described as a middle-income country, but still has a rather high poverty ratio. In 1999, 19% of the country's population lived below the national poverty line, nd as many as 24% lived for less than $2 a day (TheWorldBank 2010). Mourji (2002) claims that the situation is more acute in rural areas, with as many as 65% living under the national poverty line.

Both political and economic conditions have been beneficial for microfinance. A set of five MFIs have taken key positions in the market, and performed seemingly well until 2007. In 2007, Morocco started to experience that the 'microcredit bubble' bursted. Delinquency rose and many MFIs suffered large losses. In 2008 and 2009 PAR30-levels increased further and one of the MFIs had to be rescued through a merger with one of the other MFIs.

4.3.1 Historical Background

According to MixMarket (2010c), the first initiatives of microfinance in Morocco occurred in 1993-1994. Five MFIs established operations before 1998, when the Government of Morocco and the United Nations Development Program started a program to support the microfinance sector. The program was called *Micro Start Program,* and provided financial and technical support to six different MFIs in the period 1998-2001. Another important contributor was the *Hassan II Fund,* which had 100 million EUR to invest in microfinance in Morocco.

Morocco also passed a *Microfinance Law* in April 1999. Parts of the regulations are that MFIs are supervised by the Moroccan central bank, *Bank Al Maghrib*, and that MFIs are prohibited from collecting savings.

4.3.2 Introducing Microfinance Institutions

Two of the most important MFIs in Morocco are *Association Al Amana* and *Fondation Zakoura*. In 2002, these two organizations controlled about two-third of the microfinance portfolio in Morocco (Mourji 2002).

	2003	2004	2005	2006	2007	2008	2009
Offices	138	272	364	418	434	437	435
Personnel	421	686	1,064	1,843	2,373	2,073	2,133
Gross Loan Portfolio ($ mn)	27.4	49.4	82.6	219.1	304.8	333.6	347.6
Active Borrowers ('000)	101.6	160.2	249.5	405.6	477.2	483.4	407.5
Avg. loan balance per client	270	309	331	540	645	706	866
PAR30 (% of portfolio)	0.09	0.12	0.16	0.48	1.29	3.73	6.35
Write Offs (%)	0.31	0.31	0.39	0.47	0.63	0.00	6.40
Profit Margin (%)	35.5	23.6	23.0	21.0	8.9	3.5	3.3
Return on Assets (%)	10.7	5.8	5.9	3.9	1.3	0.6	0.5

Table 35 – Key Figures, Al Amana
Source: MixMarket (2011)

	2003	2004	2005	2006	2007	2008	2009
Offices	75	61	97	148	234	222	219
Personnel	242	262	433	533	779	949	832
Gross Loan Portfolio ($ mn)	15.3	24.9	31.9	70.1	134.3	131.2	125.7
Active Borrowers ('000)	47.1	70.1	82.6	131.8	176.7	177.9	146.6
Avg. loan balance per client	324	356	385	532	760	738	858
PAR30 (% of portfolio)	0.13	0.56	0.17	0.28	0.46	3.00	5.37
Write Offs (%)	1.58	0.23	0.00	0.34	0.23	0.00	3.39
Profit Margin (%)	33.8	40.2	39.9	46.5	51.4	24.1	17.8
Return on Assets (%)	6.5	8.7	9.9	11.9	10.3	4.6	3.4

Table 36 – Key Figures, FBPMC
Source: MixMarket (2011)

Al Amana started operations in 1997 with both financial and non-financial services targeted towards microenterprises. Zakoura started in 1995 and focused on increased quality of life for the poor. Zakoura focused on lending to women, and Mourji indicates that 97% of their loans given up until 2002 were given to women. Both MFIs experienced default rates well below 1% and delivered good financial results. Other important MFIs were *Fondation de la Banque Populaire pour le Micro-Credit (FBPMC)*, *Fondep*, *AMSSF* and *Al Karama*.

In the period 2003-2009, three MFIs have dominated the scene of microcredit. Al Amana, FBPMC and Zakoura have had more than 90% of the microfinance market, both in terms of gross loan portfolio and number of active borrowers. Table 35, Table 36 and Table 37 show some financial indicators for these three MFIs. As we will see in the next section, Zakoura merged with FBPMC in 2009 as part of a rescue operation.

4.3.3 Microfinance from Launch to Crisis

As mentioned, six MFIs were supported in the period 1998-2001. Since then, three players have dominated the market, but several small MFIs have occurred as well. MixMarket (2010c) reports that 12 MFIs were present in Morocco in 2009, and 10 of these report to MixMarket.

	2003	2004	2005	2006	2007	2008	2009
Offices	63	69	87	459	540	617	260
Personnel	472	531	706	1,240	1,654	1,744	1,143
Gross Loan Portfolio ($ mn)	11.9	25.1	29.6	83.4	198.3	127.4	43.0
Active Borrowers ('000)	119.0	172.1	198.3	316.2	443.0	326.8	122.3
Avg. loan balance per client	100	146	149	264	448	390	352
PAR30 (% of portfolio)	0.34	0.46	0.29	0.25	2.87	11.07	14.24
Write Offs (%)	0.01	0.00	0.00	0.48	0.58	14.34	30.87
Profit Margin (%)	25.5	39.8	23.1	17.1	20.8	-28.5	-94.9
Return on Assets (%)	6.5	13.1	6.8	4.0	5.4	-6.7	-14.0

Table 37 – Key Figures, Zakoura
Source: MixMarket (2011)

	2003	2004	2005	2006	2007	2008	2009
PAR30 (%)	0.28	0.35	0.23	0.44	1.64	5.08	6.68
Write Offs (%)	0.58	0.28	0.24	0.47	0.55	3.32	7.69
Total RISK (%)	**0.86**	**0.63**	**0.47**	**0.91**	**2.19**	**8.40**	**14.37**

Table 38 – Repayment Behavior, Morocco
Source: MixMarket (2011)

Mourji (2002) reports that in 2002, 80% of all microfinance clients were located in urban and peri-urban areas. Even though there are only a limited number of MFIs in Morocco, much of the activity has thus been concentrated in the same areas. Reille (2009) cites a 2006 Planet Finance Study that lists both Casablanca, Fez and Marakesh as highly saturated markets with elements of multiple lending.

As we will see, the period from 2003-2007 can be characterized as a high-growth period with annual increases in gross loan portfolio of 45-154% increases year-on-year. The number of clients has increased with 33-57% annually in the same period. This growth has been accelerated by domestic banks being willing to provide the MFIs with proper financing alternatives.

However, Reille (2009) suggests that the growth has been unsustainable, in terms of bad lending practices, lack of internal control systems and too much focus on short-term goals.

4.3.4 The Repayment Crisis

2007 brought a repayment crisis that revealed the poor quality and high risk profile of MFI loan portfolios. The crisis was partly set off by the global economic crisis, but became a crisis because of bad MFI government and unsound lending methodologies over the previous years. Table 38 presents the annual, portfolio-weighted average values for PAR30, Write-Offs and the total RISK for the years around to the crisis.

All MFIs experienced rising delinquency, and portfolio-weighted average values for RISK went from 0.86% in 2003 to 14.37% in 2009. Zakoura experienced a total risk level of 45% in 2009, and was close to bankruptcy. They decided to merge with FBPMC and managed to keep alive. Zakoura suffered extreme losses in terms of both assets and borrowers through the distress period.

In response to the crisis, both the MFIs and the government have initiated industry changes. Regulations have become tighter, MFIs have put on the breaks to improve internal control and lending policies, and information sharing through credit bureaus has been initiated.

4.3.5 Crisis Indicators

This section contains the analysis of the 12 chosen indicators, according to the framework presented in chapter 3.5.

CONSUMER DYNAMICS

Remittances

Table 39 shows how remittances changed through the period 1998 – 2009. We observe that the level of remittances is rather high compared to the average for Middle East and North Africa, but not extremely high though.

Year	Annual Growth (%)	Morocco (current US$, mn)	Morocco (% of GDP)	Middle East and North Africa, average value (% of GDP)
1998	-	2,011	5.0%	-
1999	-3.6%	1,938	4.9%	-
2000	11.5%	2,161	5.8%	-
2001	50.9%	3,261	8.6%	-
2002	-11.8%	2,877	7.1%	-
2003	25.6%	3,614	7.3%	-
2004	16.8%	4,221	7.4%	-
2005	8.7%	4,589	7.7%	2.3%
2006	18.8%	5,451	8.3%	2.1%
2007	23.5%	6,730	9.0%	2.2%
2008	2.4%	6,894	7.8%	2.0%
2009	-9.1%	6,269	6.9%	2.1%

Table 39 – Workers' remittances and compensation of employees received, Morocco
Source: The World Bank (2010)

In monetary values, the level is higher than in both Bolivia and BiH.

We observe a similar volatility in the cashflow as we found in the case of BiH. In the period 2003 – 2008, which coincides with the strongest growth in microfinance, remittances increased steadily. This may have contributed to improvements in the cashflow and liquidity of many poor families in Morocco.

The global financial crisis is likely to have had a negative effect on workers who were employed abroad, and the level of remittances decreased by 9% in 2009. This is likely to have had the opposite effect on households and hence contributed to the situation of failing income from informal business.

However, the similarity to the BiH case is not surprising. Remittance is a macroeconomic measure and is likely to be affected by economic conditions in the countries where people work abroad. Especially the global financial crisis is likely to have affected both countries, as their time period is the same.

Average Loan Balance per Borrower

Loan sizes in Morocco are rather small compared to many other countries, and are about level with the worldwide weighted average reported by MixMarket. Table 40 shows the average loan balance per borrower for each of the MFIs in the period 2003-2009. In 2003, only one MFI had an average loan balance above $300. In 2009, average values ranged from $208 to $866. Most initiatives were targeted towards the poor population and few programs aimed especially at high-end, larger microenterprises.

However, we do see a significant trend in average loan sizes. From 2003 to 2009, Al Amana increased their average loan size from 270 to 866, an increase of 220%. The increase is likely to be an effect of multiple factors, e.g. the natural expected increase and an effect

	2003	2004	2005	2006	2007	2008	2009
Al Amana	270	309	331	540	645	706	866
Al Karama	145	160	177	217	276	270	311
AMOS	-	137	121	202	201	206	208
AMSSF/MC	148	203	182	237	303	283	337
ARDI	129	157	109	199	253	209	243
ATIL	290	293	258	304	269	-	475
FBPMC	324	356	385	532	760	738	858
INMAA	132	177	197	262	295	272	435
Zakoura	100	146	149	264	448	390	352
Client-weighted average	**201**	**243**	**261**	**422**	**551**	**563**	**685**
Mix Market overall average	248	332	360	420	513	521	707

Table 40 – Average Loan Balance per Borrower, Morocco
Source: MixMarket (2011)
Values are in $US.

from high competition, especially in urban areas.

MixMarket (2010c) also suggests that the good performance records of Moroccan MFIs in early 2000's made them overconfident and willing to stretch their limits beyond what was reasonable considering the risk level. Reille (2009) also suggests that MFIs introduced new loan categories with higher loan sizes, as part of diversifying their loan products – often without the proper policies to back up such new products.

Loan Requirements and Lending Methodologies

The lending methodologies of microcredit in Morocco have changed over the period from 2003 an up until the crisis in 2007. Mourji (2002) reported that most MFIs used solidarity groups in 2002, but that some had started experimenting with individual loans. MixMarket (2010c) report that, in 2009, individual loan products to a large extent have supplanted solidarity group loans as a means to meet the growing demand over the previous years.

Reille (2009, p.2) criticizes Moroccan MFIs of growing in an unsustainable manner, and blames the crisis on "lenient credit policies, obsolete Management Information Systems (MIS), lack of internal controls and substandard governance". He also cites a Private IFC study conducted in 2008 that shows that as much as 40% of the loan delinquency problems during the crisis were due to changed lending methodology. He especially mentions "a shift to individual lending, increase in loan size, and shift from weekly to monthly installment frequency".

This indicator thus seems to have a consistent behavior across all three case markets.

Productivity

Productivity levels across Moroccan MFIs, in terms of borrowers per staff, have been somewhat stable in the period from 2003 to 2009. The ratio has been rather high, though, with numbers of 150-250 borrowers per staff – with some MFIs experiencing ratios above 300 for a short period of time.

	2003	2004	2005	2006	2007	2008	2009
Al Amana	241	234	235	220	199	228	188
Al Karama	195	153	185	137	174	166	139
AMOS	-	166	164	177	158	118	107
AMSSF/MC	141	143	138	145	134	115	115
ARDI	184	186	317	244	184	179	177
ATIL	130	144	184	121	100	-	63
FBPMC	195	268	191	247	227	187	176
INMAA	86	257	229	182	162	137	73
Zakoura	252	324	281	255	268	187	107
Client-weighted average	**233**	**271**	**243**	**234**	**225**	**202**	**168**
Median	**190**	**186**	**191**	**182**	**174**	**172**	**115**
Mix Market Median	97	103	104	102	103	98	101

Table 41 – Borrowers per staff, Morocco
Source: MixMarket (2011)

These values are well beyond the MixMarket median value, and should indicate that each employee is less able to maintain a relation with each borrower and perform the required monitoring and follow-up of each client. Table 41 shows the borrower-to-staff ratio for various MFIs in Morocco in the period 2003-2009.

Even though the ratio between employees and borrowers doesn't change consistently, we do see a dramatic increase in the number of employees. For instance, Al Amana has increased their staff from 421 in 2003 to 2,373 persons in 2007. That is a huge leap, and it requires good internal procedures to maintain quality of the loan portfolio with so many new loan officers in the organization.

As mentioned in chapter 3.5, rapid increases in the organization size also require additional middle management. This is challenging to acquire with many inexperienced loan officers in the organization. It's especially challenging for companies like Al Amana, who opened 296 new branch offices in the period 2003-2007 – each requiring some kind of middle management.

SUPPLIER DYNAMICS

MFI Liquidity and Perceived Investment Flows

Many of the MFIs in Morocco started out as NGOs and received substantial donor funds to start their operations. Throughout the 2000's, the funding structure has become more commercial and less based on gifts and 'free equity'. A specific structure of the microcredit industry in Morocco is that domestic banks fund a large part of the assets in MFIs. MixMarket (2010c, p.4-5) states that in 2009, "81% of MFI assets are financed by local financial institutions, and almost half of that (40%) comes from commercial banks".

MixMarket also shows that the debt-to-equity ratio for the industry has changed since 2005. In 2005, equity made up over 40% of the capital structure, while in 2009, the ratio was below 20%. The change is dampened by

Al Amana	2003	2004	2005	2006	2007	2008	2009
Liabilities and equity	30	53	86	252	364	382	391
Total liabilities	12	30	61	218	313	339	346
Total equity	17.8	22.8	24.6	33.9	50.5	42.1	45.4
Net income after taxes before donations	2.5	2.4	4.1	6.6	4.2	2.4	1.8
Cash and cash equivalents	1.0	1.3	1.8	4.6	14.7	48.4	44.5
Cash and cash eqv. (% of assets)	3.4%	2.6%	2.1%	1.8%	4.0%	12.7%	11.4%
Debt-to-equity ratio	0.7	1.3	2.5	6.4	6.2	8.1	7.6

ARDI	2003	2004	2005	2006	2007	2008	2009
Liabilities and equity	0.6	0.8	2.3	4.7	20.6	19.3	25.3
Total liabilities	0.5	0.6	1.8	3.2	18.2	17.0	22.8
Total equity	0.04	0.2	0.5	1.4	2.4	2.3	2.5
Net income after taxes before donations	-0.2	-0.1	0.1	0.5	0.3	-0.4	0.3
Cash and cash equivalents	-	-	-	0.1	1.0	0.9	0.9
Cash and cash eqv. (% of assets)	-	-	-	2.8%	5.1%	4.8%	3.5%
Debt-to-equity ratio							

FBPMC	2003	2004	2005	2006	2007	2008	2009
Liabilities and equity	28	36	38	77	155	158	145
Total liabilities	6	5	7	38	99	98	78
Total equity	21.3	31.2	30.6	39.6	55.6	60.6	67.5
Net income after taxes before donations	1.5	2.8	3.6	6.9	11.6	7.2	5.2
Cash and cash equivalents	10.7	9.0	4.4	7.3	16.5	24.2	14.4
Cash and cash eqv. (% of assets)	38.9%	25.0%	11.6%	9.4%	10.7%	15.3%	9.9%
Debt-to-equity ratio	0.3	0.2	0.2	1.0	1.8	1.6	1.2

Zakoura	2003	2004	2005	2006	2007	2008	2009
Liabilities and equity	14	27	35	90	212	172	110
Total liabilities	5	14	22	72	183	158	115
Total equity	8.9	12.6	13.5	17.7	28.7	15.1	-4.8
Net income after taxes before donations	1.0	2.7	2.1	2.1	8.2	-12.9	-19.8
Cash and cash equivalents	1.6	0.9	0.8	4.0	4.3	11.7	64.4
Cash and cash eqv. (% of assets)	11.4%	3.4%	2.3%	4.5%	2.0%	6.8%	58.7%
Debt-to-equity ratio	0.6	1.1	1.6	4.1	6.4	10.4	-23.8

Table 42 – Financial Structure for Moroccan MFIs
Source: MixMarket (2011)
Values are in $US millions.

certain small MFIs that have had excessive liabilities since their start, and amplified by large changes in MFIs like Al Amana and Zakoura. Al Amana have gone from a debt-to-equity ratio of 0.65 in 2003 to 7.61 in 2009, and Zakoura have changed its ratio from 0.62 in 2003 to 10.37 in 2008.

Table 42 shows financial key performance indicators for the three large MFIs, Al Amana, FBPMC and Zakoura – plus the same indicators for a smaller MFI, Ardi. Ardi is included to show that characteristics for the small banks deviate somewhat from the large organizations. We observe that the level of total assets increases significantly through the period 2003-2009, for all MFIs. As discussed above, we also see that the level of debt compared to the level of equity increased in the period. Both equity and liabilities increase though, indicating that capital was available on demand. This is consistent with findings in the other two cases.

If we turn to look at "cash and cash equivalents", we see that the selected MFIs all reduce their cash positions (relative to their total assets) in the period 2003-2006. This indicates that demand in the market is high, and all available capital is allocated into the market. In the crisis period 2007-2009, we see that cash positions increase significantly though. This is likely an effect of the slow-down in portfolio growth while the MFIs focus on internal policies and methodologies. It may indicate though, that some of the recovered loans weren't renewed as clients failed to meet the new requirements. In that case, the increased cash positions represent assets that were "pushed" into the market without the proper assessments upfront.

SUBSTITUTES

Commercial Banks

As mentioned above, MixMarket (2010c) states that local financial institutions are an important source of funding for Moroccan MFIs. Local financial institutions provided 81% of the total assets, and Reille (2009) explains that local banks and development funds have cooperated well through the repayment crisis – maintaining their credit allocations and not withdrawn funds.

This indicates that they support the MFI industry rather than compete directly with it. We can also see the commercial banks as a stakeholder in the MFIs' operations, as they have large debt positions – and this can probably also explain some of the goodwill shown through the periods of crisis.

We also saw earlier that the average loan size of a Moroccan MFI is rather small, and this makes this end of the financial market less attractive to the commercial lenders. Hence, commercial banks are not opposing as a threat to the microfinance industry in Morocco.

Multiple Lending

Several assessments of the crisis in Morocco state that overindebtedness and multiple lending were widespread problems (See e.g. Reille 2009; Chen, Rasmussen et al. 2010). Studies show that in 2007-2008, as many as 40% of the borrowers had multiple loans – and the saturation was even higher in ur-

	2004		2005		2006		2007		2008		2009	
Al Amana	49	80%	83	67%	219	165%	305	39%	334	9%	348	4%
ARDI	0.8	61%	2	185%	4	101%	19	330%	17	-10%	23	33%
FBPMC	25	63%	32	28%	70	120%	134	91%	131	-2%	126	-4%
Zakoura	25	111%	30	18%	83	182%	198	138%	127	-36%	43	-66%
Other MFIs	5	67%	6	30%	9	57%	14	50%	15	6%	15	4%
Total Gross Portfolio	**105**	81%	**152**	**45%**	**386**	**154%**	**670**	**73%**	**624**	-7%	**554**	**-11%**
Reference weight (2007 = 1.0)		**0.16**		**0.23**		**0.58**		**1.00**		**0.93**		**0.83**

Table 43 – Gross Loan Portfolio Growth, Morocco
Source: MixMarket (2011)
First number is portfolio size, measured in US$ millions. Second number is annual growth.

ban areas. Through an informal credit information sharing bureau led by Al Amana, the MFIs managed to reduce this number to 29% by the end of 2009.

MARKET DYNAMICS WITHIN MICROFINANCE

Growth Rates of Total Volume of Loan Portfolios

The microcredit portfolio in Morocco grew in the whole period 2003-2007, with the heaviest growth rates in 2005 and 2006. Most MFIs grew in this period, and all the large MFIs had high annual growth rates. Many of the MFIs doubled their portfolios in certain years, representing huge leaps in operational levels.

As an example, Al Amana's portfolio in 2009 was about ten times the size of their portfolio in 2003. Al Amana had the largest portfolio in the whole period, but Zakoura grew faster every year from 2003 to 2007, with 2004 as the only exception. In 2007, Zakoura grew by 138% while Al Amana only grew 39% - representing portfolio increases of about 100 million USD for both institutions. Reille (2009) claims that Zakoura aimed to catch up with Al Amana, through aggressive growth strategies initiated early in 2007.

We thus see a significant growth period prior to the repayment crisis. It is natural to question whether any microfinance institution can sustain such growth and still maintain sound lending policies. When Morocco faced the repayment crisis, many MFIs had to reduce their portfolios, while others just slowed down the growth. The overall decrease in gross loan portfolio is much

	2004		2005		2006		2007		2008		2009	
Number of borrowers	432	52%	583	35%	914	57%	1,215	33%	1,103	-9%	809	-27%
Reference weight (2007 = 1.0)		0.36		0.48		0.75		1.00		0.91		0.67

Table 44 – Number of borrowers, Morocco
Source: MixMarket (2011)
First number is number of borrowers in thousands. Second number is annual growth.

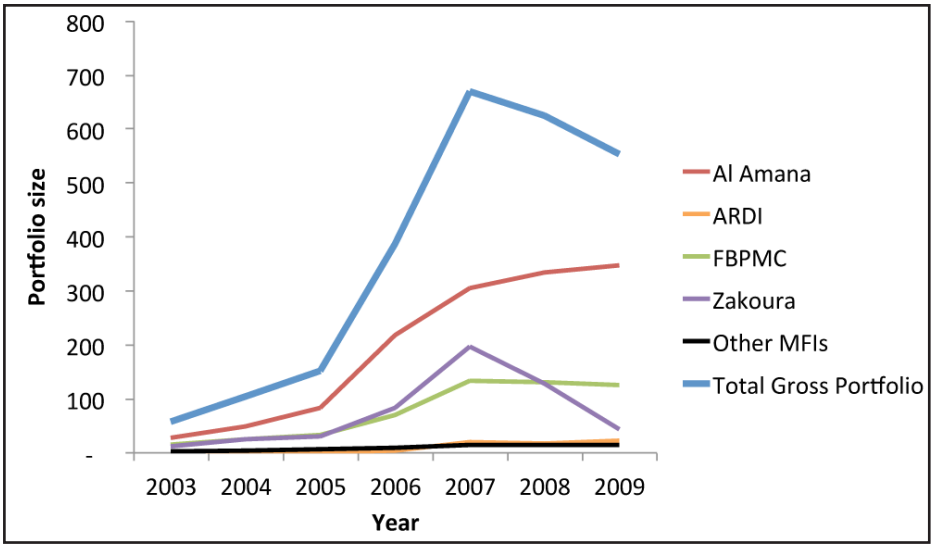

Figure 5 – Gross Loan Portfolios, Morocco
Source: MixMarket (2011)

due to the dramatic situation in Zakoura up until the merger in 2009.

Market Penetration

Market penetration in Morocco as a nation has been moderate in the period 2003-2009. Table 45 presents the approximated values for market penetration in the period. The calculations are further outlined in Appendix B.

The penetration rate increased from 1 % of the total population in 2003 to above 4% in 2007, but is still well below the suggested threshold of 10% indicated by Gonzalez (2010). If we limit the population to match the selection targeted by MFIs in the region, calculations indicate that the market is over-saturated though. A penetration rate above 100% is extreme, but as mentioned in chapter 3.5, these calculations are only illustrative and contain potential errors that can explain this level. However, it is an indication that microfinance in Morocco target a concentrated group of clients and thus has reached a high level of penetration in the chosen segment.

Mourji (2002) claims that, in 2002, less than 20% of the microfinance demand was being met. The number of clients have increased by more than 5 times since then, and in this manner, we can say that microfinance in Morocco probably have come much closer to reaching its full potential. Multiple lending and the inclusion of new demographic groups, to create a potentially larger market, are likely to over-estimate this effect. There is probably still a significant unmet demand, especially in rural areas where operations are more costly than in urban areas.

Year	Market Penetration$_1$	Market Penetration$_2$
2003	1.0%	
2004	1.4%	
2005	1.9%	
2006	3.0%	
2007	3.9%	109.4%
2008	3.5%	
2009	2.5%	

Table 45 – Market Penetration, Morocco
Source: See Appendix B

Level of Competition

Through this analysis of the Moroccan microfinance market, we have found that 3-5 MFIs cover most of the market, both in terms of gross loan portfolio and number of borrowers. The market is thus close to an oligopoly rather than a market with free competition. Several small providers are present though, and especially in urban areas, competition may be fierce despite the limited number of MFIs. However, regional data aren't available for Morocco, and therefore we cannot calculate any measures for competition in local areas.

A nation-wide analysis based on the Herfindahl-Hirschman Index reveals a moderate level of competition. Table 46 shows how these values have developed from 2003 to 2009. We find HHI-values in the range 0.3-0.45 for all years. The competition has been quite stable over the years. The merger of Zakoura and FBPMC is likely to increase the index values for 2010 and beyond, decreasing the internal pressure from competition even further.

Quality and Use of Credit Information System

Until 2007, the Moroccan microfinance industry had no mechanisms of information sharing among the various MFIs. MFIs reported to the central bank, but the information was not made available through information sharing systems. This is likely to be one of the reasons that multiple lending occurred as a problem until 2007-2008.

In 2007, the large MFIs realized that they faced problems of over-indebtedness and multiple lending. As a response to this, the four largest MFIs initiated an informal credit bureau that was led by Al Amana (MixMarket 2010c). The country briefing from MixMarket further explains that eight of the twelve present MFIs share information through the system. The central bank also initiated a project in 2009, creating a formal credit bureau that is to be lead by the central bank. This system was still under implementation in 2010.

As mentioned, information sharing improved the situation in Morocco quickly. Reports tell of multiple lending decreasing from 40% of borrowers in 2007-2008 to 29% in 2009. Information sharing is a likely cause of this effect.

Measure	2003	2004	2005	2006	2007	2008	2009
HHI based on Numer of Active Borrowers	0.33	0.32	0.32	0.34	0.31	0.30	0.32
HHI based on Gross Loan Portfolio Size	0.34	0.34	0.38	0.40	0.34	0.37	0.45

Table 46 – HHI-values, overall market, Morocco
Data Source: MixMarket (2011)

5. Phase Theory

In this section, I will attempt to synthesize the findings from the three case studies and formulate the phase theory that describes six stages of development in a microcredit market, from launch through a crisis period, and beyond.

The phase theory will consist of six different phases that are consecutive in order, and that each have certain characteristics that are important for the further development. Even though the three case studies are quite different from each other in certain ways, we can see traces of the same phase development in each of them.

5.1 Phase 1: Emerging Market

Microcredit is a relatively new branch of the banking industry, and we see a clear mark for when this activity started in each of the three cases. The market in Bolivia emerged far earlier than in Morocco and Bosnia, but they all have quite marked start points. The first initiatives in Bolivia took place around 1986, while in Morocco we find the start point around 1993-1994, and in Bosnia it's closer to 1996.

By looking at the three case studies, we can see that the reason for why microcredit emerged is a little bit different, but two factors are important: There was a large population of poor people in the country, and the regulations made microbanking possible. In Bolivia, the inflation crisis had increased poverty and a new government made significant changes to the economic system that affected both the supply and demand side of the credit market. In Bosnia, the Civil War had increased poverty and unemployment to very high levels, and microcredit was used as one of many tools for improving development in the country after the war. Morocco maintained a high level of poverty for a long period before microfinance, and political initiatives were essential for the emergence of microcredit. Thus, we find different start-up conditions, but similar key characteristics.

An important aspect to notice is that up until this point, the potential borrowers faced few options for credit. Their options were mainly commercial banks and informal moneylenders (Dahl 2010). Commercial banks are reluctant to deal with the poor customers, as their systems aren't suitable for dealing with that kind of risk. Informal moneylenders were thus the only real option, and they usually charged usury interest rates. The level of substitute products to microcredit is thus low in this phase, and makes the market attractive to microcredit organizations.

The first phase is often characterized by "trial and error". In all three countries we find several companies that try different approaches from the start. In Bolivia, we find an apparent convergence of methodology, while in all three countries we identify certain key players that succeed and get hold of large market shares throughout this phase. In Bosnia, we see the screening process clearly from LIP I to LIP II where the number of supported projects dropped from 17 to 8. On one side, we may thus say that the rivalry in the market is quite fierce, but high demand and di-

versified approaches makes the rivalry quite moderate.

Another thing that is important to notice in this phase is that many MFIs still use traditional microfinance mechanisms that rely on e.g. trust and social mechanisms. In both Morocco and Bolivia we find group lending to be the most used method in the early days, and we see that the bank controls its customers to some extent. If borrowers had no other options than informal moneylenders, we can see that banks could basically dictate how the relationship should work – and the bargaining power of consumers are thus really low in this phase. The market situation in this first phase is therefore very similar to the conditions that many microfinance-specific mechanisms were designed for.

5.2 Phase 2: Accelerated Growth

At the end of the first phase, we can normally point out the most successful MFIs in term of outreach, profitability, and portfolio size. These MFIs are the central players of the second phase. At this point, some MFIs prove that the market is solid - that it's possible to run profitably and also show a steady growth rate.

The lack of data for the first half of the 1990's in Bolivia makes it hard to identify the transition from the first to the second phase, but it's likely that we find it a few years after ProCredit started their operations in 1992. From the numbers in Table 30 we can at least find a clear difference between 1994 and 1996-1997. In the latter we can easily identify the market leaders, while in 1994 the conditions are more even among the companies. In Bosnia and Morocco we find a commencing growth around 2003.

An important pre-requisite for this phase is that the macroeconomic situation is stable and positive. In all three case studies we find that GDP had a positive growth in the period (TheWorldBank 2010) and I have shown that remittances normally rise through this second phase. Such factors give the people confidence in their economic situation, and they are more willing to use their available credit. If the phase becomes long enough, people might also become over-confident in their own situation. This may be some of the explanation to why people take multiple loans that in sum almost capture all their cash flow, not leaving any slack for financial distress.

Table 47 shows indicators of size and the respective growth rates, for the largest MFIs in each of the three countries. The observations are aligned according to a time perspective that I call "C-0", "C-1", "C-2" and so on. "C-0" can be interpreted as "Crisis minus 0 years", "C-1" refers to one year before the crisis and so on. We see differences in both pace and amplitude, but all markets show a significant growth in their gross loan portfolios. We find annual growth rates above 100% in both Morocco and Bosnia. In Figure 6 I have illustrated the relative growth of several MFIs and markets in the period before the crises, leaving everyone to the reference point 1.0 at C-0. We see clearly that all the large MFIs increase their portfolio significantly from C-2 to C-0.

	C-4		C-3		C-2		C-1		C-0 (Crisis emerging)	
Bolivia	**1995**		**1996**		**1997**		**1998**		**1999**	
BancoSol	-	-	48.7	-	66.5	37%	74.1	11%	82.3	11%
ProCredit	-	-	11.9	-	20.5	72%	28.6	40%	36.2	27%
Bosnia	**2004**		**2005**		**2006**		**2007**		**2008**	
EKI	26	34%	32	23%	58	83%	117	101%	145	23%
MIKROFIN	29	57%	36	24%	64	80%	145	126%	162	12%
ProCredit	83	49%	95	15%	155	63%	238	54%	226	-5%
Morocco	**2003**		**2004**		**2005**		**2006**		**2007**	
Al Amana	27	-	49	80%	83	67%	219	165%	305	39%
FBPMC	15	-	25	63%	32	28%	70	120%	134	91%
Zakoura	12	-	25	111%	30	18%	83	182%	198	138%

Table 47 – Gross Loan Portfolio Growth, Phase 2
First number is portfolio size, measured in US$ millions. Second number is annual growth.

We also observe that the growth continues until the crisis is a fact. There are counter-examples like ProCredit in BiH that downsized prior to the crisis, but for most of the MFIs we see continued growth. This makes it hard to use growth as an indicator that can predict when we can expect to see the start of the next phases.

5.2.1 Financing as a Catalyst on Growth

These conditions attract investors, both foreign and local. Through the three case studies we have seen that governmental funds support the industry, but in this phase, we also find investors with pure financial interests. As mentioned earlier, Chen et al. (2010) suggest that the majority of investments

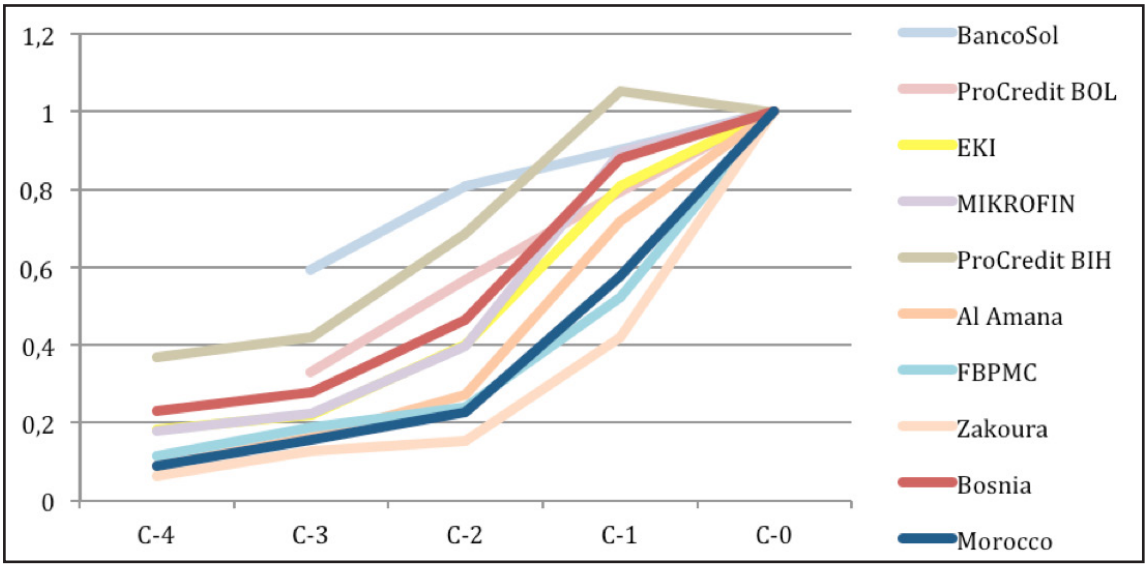

Figure 6 – Portfolio Growth, Phase 2

into microcredit flows to the players with the largest portfolios and highest growth rates. Of course, with a steady inflow of new funds, these players are also the ones best suited for sustained growth. This mechanism thus works as catalyst on the system; creating incentives to accelerate the growth beyond sustainable limits.

In the starting phase, many MFIs are established as non-profit organizations and many are based on donor funding or governmental support. In this second phase, the leading MFIs often turn into for-profit companies and position for growth through acquiring new investors and increasing their debt ratios. In all three case studies we have seen that the regulating authorities passed specific microfinance laws, or change dexisting regulations in a way that included microfinance specifically – creating customized organization types with lower capital requirements and limitations to which services they are allowed to offer. This often prohibited them from taking savings for instance. The new kind of financing mechanisms creates a demand for a certain return on assets, which increases the importance of profitable operations.

5.2.2 Microfinance Investment Vehicles

Microfinance Investment Vehicles (MIVs) have become important in the microfinance industry throughout the 2000s. They operate like intermediaries between a set of potential investors and the MFIs, and have a good knowledge about the microfinance market. Reille et al. (2009; 2010) report on the trends among MIVs and point to a couple of interesting facts. First, they point out that MIVs concentrate their investments. In 2009, 43% of all investments controlled through MIVs were concentrated in Eastern Europe and 36% in Latin America. As implied by Chen et al. (2010), Reille et al. also claim that MIVs cluster their investments into a few, large MFIs. On average, as much as 25% of an MIV's portfolio is invested into only five MFIs. Cordier et al. (2011) also claim that up to 70% of the microfinance investments made in the Arab world is made in Morocco, supporting the theory of concentrated investments.

Second, Reille et al. suggest that MIVs usually have preferred fixed-income investments, but that they increased their exposure for equity investments from around 2008. They also report that MIVs have increased their cash positions over the last years, in lack of good investment opportunities. We thus see a similar incentive for pushing investments to acquire a return on the capital for MIVs as we find with MFIs that experience a push effect of credit to less good clients when their inflow of funding is excessive. This mechanism is important to understand in order to see how the high growth can happen in the second phase of the market. Also, without available funding, the growth face is unable to commence, and funding is thus very essential for this phase.

A side note that explains the MIVs' supply of financing is that both political and media attention for microfinance has been extraordinarily high in the period from around 2005. Microfinance has gained international recognition through events like the Nobel Peace

Price awarded to Muhammad Yunus and Grameen Bank in 2006 and the marking of 2005 as the official year of microcredit, under the aegis of UN. The academic literature has also discussed the commercialization of microfinance and highlighted the potential for profits in this industry. This has made investors and governments positive to direct funds towards microfinance.

MIVs are thus important for enabling the acceleration in growth that appears to exist in the second phase.

5.2.3 Competition

Another main thing that we need to understand about this second phase is that competition is commencing at this point. I have described how the funding situation creates an incentive for growth, and the companies that have taken the top positions in the market will strive to stay in the top region and challenge the company that is currently the market leader. We have seen several examples of institutions taking aggressive market challenger positions because of a late entry or other conditions, both in Bolivia and Morocco.

Throughout this phase, we also often see that the competition concentrates, especially in urban areas. This is a result of multiple factors. First, the desire for an increased loan portfolio is easiest to achieve where there are large concentration of people. Second, many companies strive to improve their efficiency in this phase. This requires cost-effective operations, and we often see the result as high borrower-to-staff ratios. This is also easiest to achieve in densely populated areas.

Third, some regions and cities have characteristics that are better suited for profitable operations than others. This becomes obvious to the MFIs as they can observe the performance of the various MFIs and branch offices. Other MFIs are likely to follow and to open new branch offices in the most profitable areas, to harvest the greatest profits for the least cost (economic efficiency theory). The last effect is especially relevant for new MFIs that start operations in the country. They will often tend to choose existing markets, unless they focus specifically on rural areas with very poor clients.

The HHI-analyses of the markets provide us with some data to evaluate the market competition. The case studies revealed that for the countries as a whole, HHI-values only vary slightly through the second phase. However, when we evaluate geographical regions we find more interesting results. Unfortunately, I only have regional data from Bosnia for this study, but further research may enhance the conclusions made here with examples from other countries as well.

In Bosnia, we see that several regions experienced increased competition in the period of the second phase. In 2003, only one region had an HHI-value of less than 0.10. The rest of the mentioned regions had values in the range from 0.19 to 0.34. This indicated a market with a moderate level of competition, but we found a more fierce competition when the effect of the crisis was apparent in 2009. Then, two regions had HHI values below 0.10, and the rest was positioned in the range from 0.12-0.19. It's evident that competition increased in

certain regions in the phase prior to the crisis. In Morocco and Bolivia, we find HHI-values around 0.3 in the years before the crisis, and the variations over time for the whole-country values are rather small.

5.2.4 Substitute Products

In the first phase, commercial banks didn't want anything to do with the poorest clients. However, we have seen that they become more positive towards this segment as MFIs show that they are able to lend successfully to this group, even with lower arrears than ordinary banks. One of the cases where this was most evident is Bosnia. The situation in Bosnia leads to high average loan sizes among MFIs, and this reduced the gap between them and more traditional banks. Ordinary banks thus had an easy way in, and became a competitor with a substitute product through this second phase.

In Morocco, we see another approach. There, microfinance serves a clientele that is less profitable to the ordinary banks, as their demands for loan sizes were less than in countries like Bosnia. Moroccan banks have taken the role of investors by providing financing and are thus less likely to enter the market as a competitor. As discussed by Dahl (2010), MFIs might benefit from a hand-over arrangement with an ordinary bank to serve their high-end clients when their demands become too large for an MFI to serve. This might be easier to achieve with a relationship like the one in Morocco than in countries like Bosnia.

The role of commercial banks in the market is thus dependent on the characteristics of the microfinance market, but as MFIs prove to be able to profit from lending to the poor, commercial banks will want to have some kind of role in the market during this phase.

In the case of Bolivia, we see another substitute product entering the market during the second phase. Consumer lenders were much like ordinary banks. They saw that MFIs succeeded in lending to the poor and thought that their own approach would work just as well. There is less information regarding the outreach of consumer lenders in Bosnia and Morocco, but it's likely to believe that similar companies have entered the market there as well – even though the providers in Bolivia reached a much more significant scale.

We thus see that various substitute products may appear on the market in this phase, as a result of the MFIs' profitability.

5.3 Phase 3: Portfolio Impairment

Phase 3 can best be seen as an integrated part of the second phase, but I choose to describe it as a separate phase to illustrate that it appears at a later point in time than the second phase. The situation of accelerated growth and increased competition leads to an impairment of the loan portfolios in the MFIs. This impairment is hard to detect at first, and loan clients appear to have good control of the repayment situation. However, that does not mean that the impairment is not a problem.

As we will see in the description of the fifth phase, the problem acts like a bubble that bursts. The third phase

contributes to blowing more air into the bubble. As an illustration, we may say that the market expands like one big balloon (*the market*) with a lot of smaller balloons (*e.g. MFIs*) inside of it. The smaller balloons keep growing simultaneously without concern for the other balloons – and even if the small balloons are within their capacity, the market balloon may have been stretched beyond its capacity without "anyone" noticing. This is what happens through the third phase.

As implied, the second and third phase are integrated into each other when we consider the time aspect. The market can still continue to grow and the competition can still increase further, after the portfolio starts to impair. The effects of more growth and competition will lead to a further impairment of the portfolio. These two phases thus work as catalysts on each other and must be considered as integrated effects.

5.3.1 Creating a Borrower's Market

One of the important aspects that deteriorate the market conditions for MFIs is the shift of bargaining power from the MFI towards the borrower. We have seen through the case studies that MFI executives describe that the consumers get so much power that it essentially becomes a borrower's market.

We have seen examples of changed loan requirements and methodology in all three countries. There has been a clear shift from group lending towards individual lending. If we look at the theory presented in chapter 2.4, we find that group lending was an important mechanism to meet the problems of asymmetric information that could enable the borrower to take advantage of the MFI in their relationship. In traditional microfinance, group structures both helped the MFI screen customers to maintain a high-quality portfolio, and to monitor and ensure payment when the loan was given.

With individual lending being the main product, MFIs have to do much of this job themselves – and they need to use other mechanisms to make sure the client isn't taking advantage of them. New ways of using collateral and new screening procedures have appeared, but considering the widespread problems related to e.g. multiple lending, it's evident that the MFIs haven't been able to maintain their quality through the new mechanisms.

In the case studies, we also found that repayment terms have changed. Regular repayment schedules have changed from weekly to monthly or irregular repayment for a large proportion of the loans. Again, looking to the theory of microcredit mechanisms, this will give the MFIs less chance to observe the loan performance continuously, and it becomes easier for a client to cover up short-term problems. Through multiple lending, a client can bicycle loans by taking new loans to cover repayment if the cash flow isn't high enough in a single period. Increased borrower-to-staff ratios also make it hard for the MFI representatives to stay updated on all their client relationships.

Another factor that is changing through this phase is the size of the loans. In all three countries, we have seen that the average loan size increases significantly

in the years prior to the crisis. We expect to find a certain increase in loan size, but the high market competition is likely to drive this increase beyond the natural pattern. As the consumers' bargaining power increase and both commercial banks and consumer lenders are willing to provide larger loans, many MFIs may be tempted to accept higher loan sizes than they would have done otherwise. The entry of other service providers like commercial banks and consumer lenders also led to a shift in the mentality of consumers toward e.g. repayment. As these groups took lighter on this issue, similar attitudes affected the MFIs and impaired their portfolios.

5.3.2 Overstretched Management Systems

As a consequence of the growth in terms of loan portfolio, the MFIs need to scale up their organizations to be able to serve all their customers. In example, we saw that Al Amana in Morocco scaled up their staff from 421 employees in 2003 to 2,373 employees in 2007. This is an increase of 450%. We also find other MFIs in the case studies that have tremendous increases in their organization over short periods of time. As discussed earlier, Chen et al. (2010) suggest that the MFIs aren't able to give new employees the necessary amount of training before they are put into the organization to interact with clients.

Many MFIs also have poor Management Information Systems that are not able to scale in the way that is necessary to keep track of the portfolio growth. This makes it hard for the top management to stay up to date on the development, and gives them little information on key parameters for the whole portfolio, like risk levels and aggregated portfolio data that show signs of distress.

Another management issue is the balance between short-term and long-term goals. Employees with only a short period in the MFI may be too focused on growth and outreach, as this was very important for the MFIs in this period. Such short-term goals were also easy to incorporate through e.g. performance-based salary that measured the number of new clients. Long term performance that ensure repayment and a high quality on the loan portfolio are much harder to incorporate through similar mechanisms, and are to a large extent incorporated through the company culture.

This becomes a real challenge when the organization scale in such a way that poorly trained employees are promoted into middle-management positions. The lack of training both makes employees less qualified to assess new loan applications correctly, and certainly doesn't incorporate company values and the desired culture. This leads to poor management and a lack of quality that spreads to large parts of the organization when under-trained personnel are leading branch offices. This is thus part of the explanation to why the portfolio is able to impair without the MFI being aware of it as it happens.

5.3.3 Multiple Lending and Oversaturated Markets

Two parameters that can actually say something about the present conditions of the portfolio are the level of multiple lending and the saturation of the mar-

ket. They can be measured continuously and both may imply unhealthy lending conditions.

Multiple lending is best measured if all MFIs report *positive credit information* to a credit bureau that consolidates information from all MFIs. To be extensive enough, this credit bureau should also gather information from commercial banks, consumer lenders and other credit providers in the market. If all companies use the same standard common identification, like a social security number, the credit bureau can measure the level of multiple lending in a market at any point in time.

The problem with using this approach in the case studies is the absence of such credit bureaus. At least in the second and third phase, none of the markets covered by the case studies had working credit bureaus that could perform this operation. However, as we have seen, statements from researchers and MFI executives imply that multiple lending was widespread in all the three case markets. In both Bosnia and Morocco, levels of multiple lending are implied to be as high as 40% prior to the crisis.

The approximated values for market penetration show significant increases prior to the crisis. Especially, the penetration in Bosnia reached high levels over only a few years, and we find indications of a highly concentrated, and saturated, market in Morocco. These approximations are probably affected by the problems of multiple lending, and should thus be considered separately as more data on multiple lending becomes available. However, we do see signs of a significant increase in penetration prior to the crises. A high saturation or outreach is not problematic in itself, but as the saturation increases, more low-profit, high-risk clients will enter the portfolios – leading to impaired portfolios.

5.4 Phase 4: Macroeconomic Instability

The timing of phase four is extremely hard to predict based on observations in the microfinance market itself. In all three case studies, the crisis has been initiated by macroeconomic instability that is uncontrollable to the MFIs themselves. Such instability occurs from time to time, and the microfinance industry just has to be prepared for this – they can't try to avoid the instability itself. Local economic instability on a national level would also count as this kind of phase, but most often, the shock is external rather than internal.

In Bolivia, the instability came from changes in trade conditions for their neighbor Brazil. This instability affected several Latin American countries, and both the government, the central bank and the MFIs in Bolivia were unable to avoid being affected by such instability. In Bosnia and Morocco, a global financial instability hit both the countries about the same time. Again, the countries themselves were not particularly active in creating the instability, but the macroeconomic system is so tightly woven that they couldn't avoid being affected.

A macroeconomic measure that we have investigated in the case studies is remittances. One of the effects we have

seen is that just prior to the crisis, remittances have become more volatile or just dropped. This will be the case if the instability emerges abroad before it reaches the country in question. Remittances can thus be a seen as a warning signal. However, a country would normally be aware of the instability in other countries long before it is noticed on remittance levels. A reduction in remittances affects the cash flow of the recipients, and people in e.g. Bosnia would probably feel this effect quite strongly as their level of remittances as percentage of GDP were quite high.

5.5 Phase 5: Repayment Crisis

The fifth phase is where the bubble bursts. For this to happen, two factors are required. First, we need to have had a certain time period with the combined effect of the second and third phase. Second, we need the instability created in the fourth phase. If both these factors are significant, we can expect a crisis to emerge within a short period after phase four starts.

The main events of this phase are quite similar among the case studies. The borrowers experience a drop in their cash flow, either from lower remittances, falling demand in their home market or other similar conditions. Multiple lending, or loans with sizes that surpass the borrower's credit capacity, will lead to repayment problems. The MFIs seem to become aware of the problems quite fast, and they tighten their lending policies with a reduction in the loan portfolio as the result. We both see clear reductions in the gross loan portfolio and we find increased levels of cash and cash equivalents among the MFIs in the case studies. Then, many clients will face problems with refinancing their loans – and in the event of multiple lending, they will thus normally also default their other loans, creating a systemic effect. The result is a broad increase in Portfolio-At-Risk and an in-

	C-2		C-1		C-0 (Crisis emerging)		C+1		C+2	
	PAR30	W-O	PAR30	W-O	PAR30	W-O	PAR30	W-O	PAR30	W-O
Bolivia	**1997**		**1998**		**1999**		**2000**		**2001**	
BancoSol	1.2%	-	3.0%	-	5.5%	-	9.6%	-	10.2%	-
ProCredit	3.6%	0.2%	6.2%	0.4%	4.2%	0.9%	5.4%	2.0%	6.3%	2.8%
Bosnia	**2006**		**2007**		**2008**		**2009**		**2010**	
EKI	0.4%	0.5%	0.4%	0.3%	1.6%	1.4%	10.8%	6.4%	-	-
MIKROFIN	0.3%	0.1%	1.3%	0.1%	1.5%	0.4%	7.1%	2.9%	-	-
ProCredit	0.8%	0.4%	1.6%	0.4%	3.1%	2.1%	8.4%	5.9%	-	-
Morocco	**2005**		**2006**		**2007**		**2008**		**2009**	
Al Amana	0.2%	0.4%	0.5%	0.5%	1.3%	0.6%	3.7%	0.0%	6.4%	6.4%
FBPMC	0.2%	0.0%	0.3%	0.3%	0.5%	0.2%	3.0%	0.0%	5.4%	3.4%
Zakoura	0.3%	0.0%	0.3%	0.5%	2.9%	0.6%	11.1%	14.3%	14.2%	30.9%

Table 48 – PAR30 and Write-Offs, Phase 5

crease in loans that are written off by the MFIs. Returns drop and their performance is worsened through these events.

Table 48 lists the PAR30- and Write-Off-values for some key actors in each of the three case studies. Figure 7 illustrates how the total RISK level developed around the crisis. We can see that the RISK levels are quite low prior to the crisis. Except from a single observation from ProCredit in Bolivia, all the MFIs perform with total RISK levels below 5% before the crisis. As implied by Rhyne (2001b), PAR30-levels below 3-5% were considered to be a healthy sign in the early days of microfinance.

After the crisis, all MFIs show a sharp increase in their RISK levels over the first following years. We can observe that the Bosnian MFIs appears to have risen faster than the Moroccan and Bolivian MFIs. This may be due to a low-resolution graph with regard to the number of data points. I only use annually reported values, and the difference in time between the crisis in Bosnia and Morocco is not likely to have been a full year – and so the scale is somewhat distorted in this illustration. A similar graph with monthly reported data would probably reveal a more similar pattern between the various MFIs.

During the global financial crisis, many ordinary banks also got into trouble because their own financing consisted of short-term debt that they were unable to refinance. MFIs usually had quite long-term financing, and thus few MFIs have experienced bankruptcy or similar conditions. We have seen some examples though, e.g. Accesso in Bolivia and the merger of Zakoura and FBPMC in Morocco. If the crisis conditions consist for a while, we would expect to see similar events with MFIs as other banks.

In theory, we would expect that consumer lenders that expect a higher rate

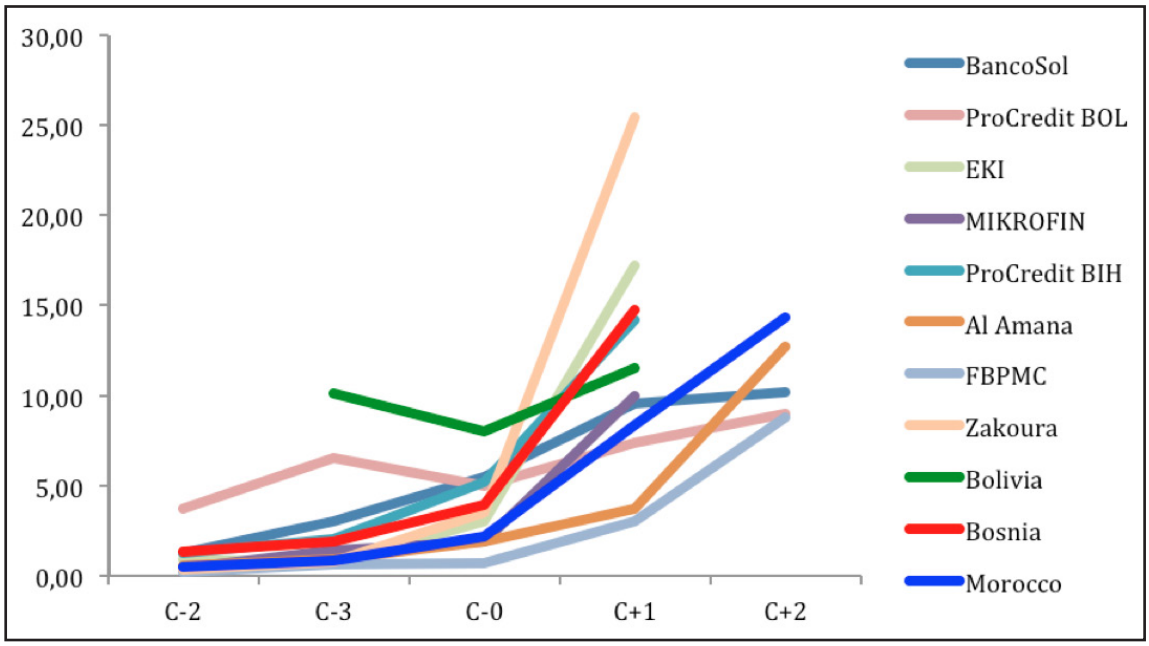

Figure 7 – Total RISK, Phase 5

of delinquency would perform well when delinquency in fact increases. In the event of Accesso, this was not the case. The problem is that delinquency levels often surpass their level of expectation, and the characteristics of their clients will make them more vulnerable to economic instability.

Thus, during phase 5 we expect that the credit institutions regain much of the bargaining power from the borrowers, as many struggle with repayment and multiple lending is discovered. We would also expect that the supply side is worsened by constraints from investors or debt holders. This does not appear to have been a problem in the case studies though, and microfinance seems to benefit from having socially-oriented investors that are willing to invest even if the financial performance worsens. The substitute situation remains quite stable, and the competition inside the market is equal or somewhat intensified, as the MFIs want to focus on the best clients again. The threat of new entrants is low; no one would want to establish in a market that is facing a crisis.

5.6 Phase 6: Quality Assurance and Information Sharing

In all three case studies, we observe similar reactions to the crisis. We find two measures that are especially important. First, MFIs re-establish their focus on quality assurance and long-term performance. They often pause to assess their own routines, and we have observed that new requirements have been introduced that lead to short-term reductions in the loan portfolio. For example, Procredit BiH introcuded a new minimum loan size requirement that excluded what they found to be a more risky segment from their portfolio.

Second, MFIs have started sharing information with each other. In Bolivia, a credit bureau was initiated by the Central Bank in 1999, the year of the crisis. In Morocco, several MFIs started their own credit bureau in 2007, and the Central Bank also initiated a project in 2009. In Bosnia, a credit bureau was opened in 2009. As described in chapter 2.6, theory and Latin American experiences predict that the use of a credit bureau makes it possible to prevent multiple lending to a much larger extent than without sharing information.

5.7 Phase 1-6: The Phase Theory

In this section I will try to summarize the key findings in the six phases to provide a short overview of the theory as a whole.

In the first phase, MFIs establish and find out how to operate successfully in the market. There are few substitutes, market rivalry is quite low and both consumer and supplier relations are quite beneficial to the MFIs. New entrants appear frequently, often with diverse approaches. At the end of the first phase, a few MFIs have taken the lead positions and proved that operations can be profitable.

The second and third phases are integrated and accelerate each other, with growth as the main theme. The macroeconomic conditions are usually healthy and developing positively, and all MFIs grow through serving more clients and

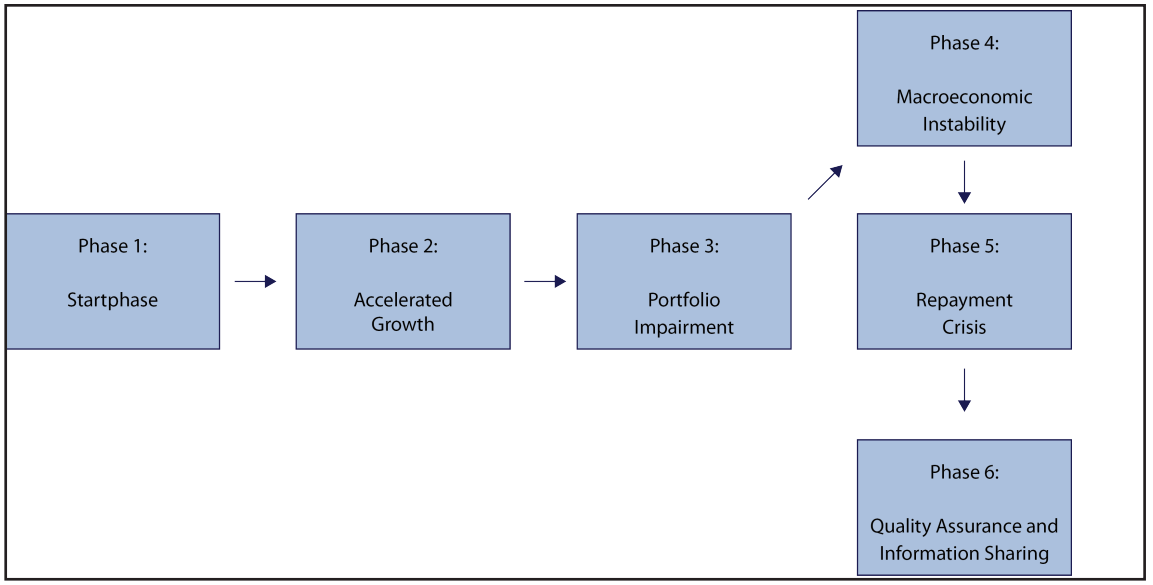

Figure 8 – Phase Theory Model

increasing their portfolios. Suppliers offer excessive funds, but as competition increases, borrowers gain bargaining power. The transition to the third phase happens gradually and results in a portfolio with a higher risk profile. This happens through several changes, e.g. the increase of individual lending, the lack of proper monitoring, multiple lending, and the inclusion of more low-end clients with low profit and high risk. Through these phases we also see other substitute products emerging, e.g. through commercial banks or consumer lenders.

The fourth phase brings macroeconomic instability and is often triggered externally. Such instability often spreads to several countries and may thus affect MFIs in other countries than where the instability emerges. We often find a reduction in remittances parallel with this instability.

The fifth phase appears if the portfolio has been impaired through phase 2 and 3, and the instability in phase 4 is great enough to distort the borrowers' cash flow. In this event, borrowers will struggle to repay their obligations and the presence of multiple lending helps spread the problem to all credit institutions. In the fifth phase, consumers lose much of their bargaining power, new entrants are rare, and the situation of substitutes and market rivalry is more or less unchanged. In the case studies, we have observed that the supply side stays beneficial to the MFIs, even when they face such a crisis.

The last phase represents a mental shift towards reality again. The unhealthy growth-strategies of the second and third phase are somewhat replaced by more sound lending methodologies and a focus on long-term performance. Information sharing is also implemented on a national level during this phase, and the MFIs are positioned to continue their operations in a competitive, but sustainable, market.

The six phases altogether make up the *phase theory* for microfinance markets in trouble. We can illustrate the development like in Figure 8. We find that

the length of the faces vary somewhat from market to market, but the pattern is similar in all of them. I have also shown that the same pattern can be found in different geographical areas, different time periods and with different reasons to why microfinance emerged in the first place.

5.8 An Improved Path

In essence, the phase theory predicts that a market that grows beyond what is sustainable and controllable will eventually crash when macroeconomic instability occurs. A natural question to ask is: What needs to be done to ensure that the growth stays within sustainable and controllable boundaries? This question is somewhat beyond the scope of this study, but I will try to make some suggestions based on the observations in the case studies.

The two components of the sixth phase seem important in this manner. Information sharing is essential for being able to control the market as a whole. Traditional banking has used this approach for a long time, and have proved that it's possible to have several credit institutions cooperate and compete at the same time. Microcredit traditionally relied on social mechanisms that could be utilized through group lending. As the methodology has shifted towards individual lending, MFIs will need to add credit information systems to their operational routines in order to maintain control. This way, it's possible to avoid many cases of multiple lending and overindebtedness.

A credit bureau itself won't help though. The MFIs need to realize that the industry as a whole needs to operate sustainably. This means that the focus needs to be on long-term performance and not only on short-term growth. MFIs and other credit institutions have to stop targeting each other's clients, or at least make sure that the borrowers don't maintain multiple relationships to banks. Many MFIs should also adjust their short-term growth strategies to see that growth is not unlimited and costless. As credit is a homogenous

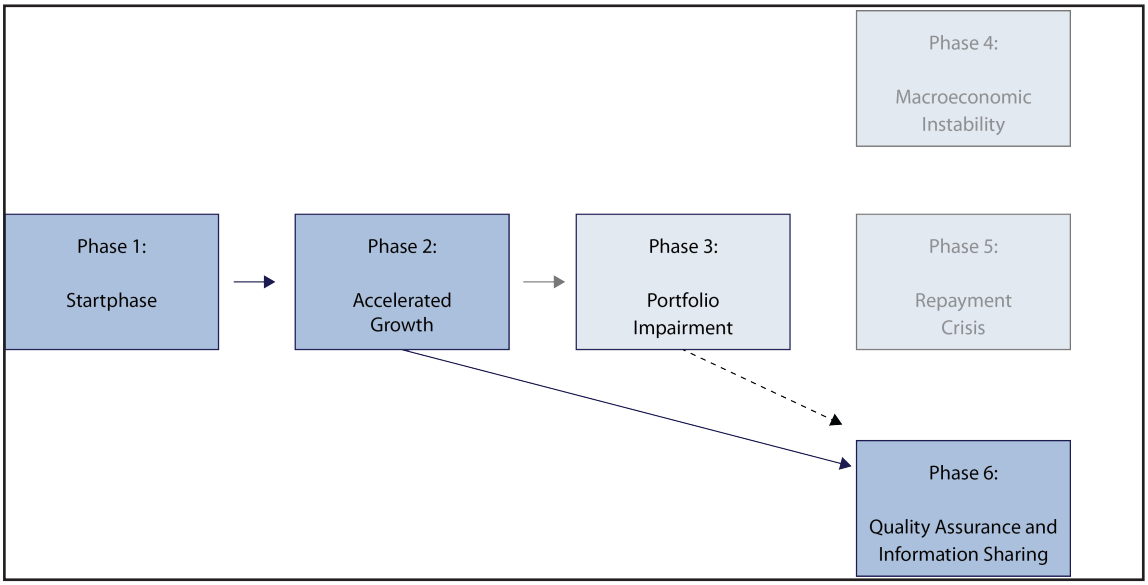

Figure 9 – Phase Theory Model, An Improved Path

product, market competition will become fierce if MFIs don't diversify their target clients or geographical presence. We should also expect to see a consolidation in markets with many credit providers if the smaller MFIs stop targeting the same clients as the larger MFIs.

We thus see that the industry should create credit bureaus already in the first phase, so that the growth in the second phase can be held at a sustainable level. The focus on long-term performance and quality assurance should also be included from the start, and MFIs need to work hard to maintain these as core values in periods with large staff increases.

In an established microfinance market, one can make these changes effective from any point in time, up until phase 4 starts. A market with an already impaired portfolio can, in theory, become a high-quality market again, without facing a repayment crisis – but the question is whether MFI executives are willing to commit to such changes without seeing the consequences through a crisis first. Figure 9 illustrates the improved path. As mentioned, the 'leap' can come from any phase before the macroeconomic instability, but should preferably come during the first two phases.

6. Developing Markets

In this section, I will look into a less mature microfinance market and apply the phase theory to evaluate the conditions in this market. Based on the findings in the phase theory I will also give a brief discussion of how the market is likely to develop in the future.

6.1 Cambodia

Cambodia is located in East Asia, and has a microfinance market that is similar in size to Bosnia and Herzegovina. The country had close to 15 million inhabitants in 2009, and the World Bank (2010) reports that 26% of these live below the poverty line of 1.25$ a day, in 2007.

Microfinance emerged in Cambodia around 1992 after the ending of two decades of conflict. The country has seen a considerable growth in several parts of its economic sector since then, and by 2009, we can find 22 active microfinance institutions in the market.

I will apply the phase theory when I examine this market, and try to identify the same phases in Cambodia as in our three mature markets.

Most of the qualitative information that is presented is collected from two sources. The first is a description of the Cambodian microfinance market (CMA 2011) from Cambodia Microfinance Association *(CMA)*. The second is MixMarket's country briefing for Cambodia (MixMarket 2010b). When other references aren't mentioned or specified, these are the sources of the presented information.

6.1.1 Phase 1: Emerging Market

In the phase theory, I pointed out two important conditions for the emergence of microfinance: A poor population and beneficial regulations.

As mentioned above, microfinance emerged in Cambodia after a period of political conflict. There was a high poverty level in the country after the conflict, and the World Bank (2010) reported that almost half the population lived below the poverty line of 1.25$ a day in 1994. As many as 78% lived below a threshold of 2$ per day. The ratios decreased to 26% (below 1.25$) and 58% (below 2$) in 2007, but the level of poverty is still significant.

MixMarket reports that the first MFIs in Cambodia were internationally funded NGOs, but that the government in Cambodia quickly recognized the importance of microfinance and made contributions to help the sector. According to CMA, governmental support increased from around 1995 and beyond. Microfinance was incorporated into the national financial regulatory system in 2000.

Microfinance became a success story in Cambodia, and MixMarket (2010b, p.2) describes the same development as we have seen in the three cases of the mature markets: "The success of these programs attracted several foreign donors and investors, leading to the rapid growth of the sector throughout the 1990s".

By 2000, four MFIs had started reporting to MIX. Three of these MFIs took the lead positions in the market

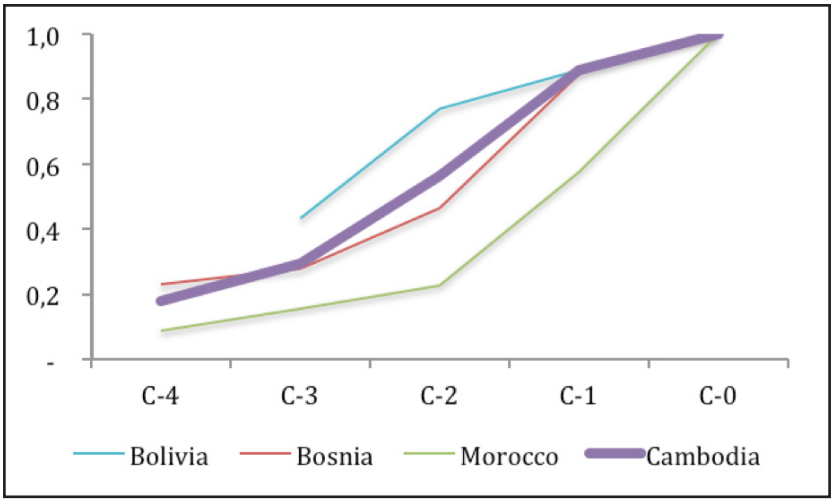

Figure 10 – Portfolio Growth, Cambodia

and have the majority of the gross loan portfolio and the number of borrowers. These are ACLEDA, AMRET and PRASAC. The total portfolio in 2000 was only about 24 million USD.

6.1.2 Phase 2: Accelerated Growth

The second phase started just after year 2000. In 2002-2003, we are able to distinguish which MFIs have key positions in the market, and growth commenced for real. The phase theory highlights growth, improved supply of financing, structural changes to the key MFIs, commencing competition and the entry of substitute products as important topics in the second phase.

Growth

If we investigate the growth of the total loan portfolio, reported to MIX, we find a significant growth in the portfolio size. Table 49 presents the development in number of borrowers and gross loan portfolio for the period 2003-2009. Figure 10 aligns the most recent years to the pre-crisis years in the three investigated case studies (with all ending in a reference point of 1.0 at C-0). We see a similar development as in the mature markets if we consider C-0 to be the last year of reporting for Cambodia (2009).

	2004		2005		2006		2007		2008		2009	
Number of borrowers ('000)	409	20%	487	19%	599	23%	792	32%	1,039	31%	1,100	6%
Total Gross Portfolio (US$ mn)	98	61%	147	51%	242	64%	463	91%	731	58%	822	12%
Reference weight (2009 = 1.0)	0.12		0.18		0.29		0.56		0.89		1.00	

Table 49 – Market Growth, Cambodia
Source: MixMarket (2011)
Second number is annual growth.

Financing

CMA claims that many foreign private investors entered the supply side of the microfinance market, and that around 80% of the MFIs' portfolios were financed through this source from around year 2000. The same trends are confirmed by the MixMarket country briefing. We thus find the same trends of eased access to new financing in the second phase of the Cambodian market.

Structural changes

The market leader, ACLEDA, started as an NGO MFI, but was converted into a commercial bank in 2003. We recall to have seen similar events in the other case studies of mature markets. ACLEDA has maintained the sole market leader position since then. The changed organization type for ACLEDA opened new possibilities for financing, and we observe a similar trend with regard to financing flowing towards the large and growing institutions in Cambodia as well.

Competition

As mentioned, MixMarket's country briefing reports 22 active microfinance companies in Cambodia at the end of 2009. The top three MFIs cover 50% of the clients and control 80% of the gross loan portfolio in 2009. Competition has increased through the second phase, and we find that the same three MFIs covered 73% of the clients and 87% of the portfolio in 2003.

One of the MFIs that have increased their market share of clients significantly is AMK. They increased their market share from 5% in 2003 to 20% in 2009. However, AMK has a very low average loan size, and is probably targeting low-end clients in rural areas.

By using the Herfindahl-Hirschman Index, we find some competition in Cambodia. Table 50 presents the HHI-values for the period 2005-2009 and compares them to pre-crisis values in the other three case markets. We find HHI-values starting at 0.19 and decreasing further to 0.15 in 2009. This indicates a high level of competition. Regional data are not available, and we can thus not conclude on whether there are areas with especially high competition or not. However, we see that the HHI-values based on gross loan portfolio are significantly different. This is a combined effect of ACLEDA's large market share and their high average loan size.

Measure	Market	C-4	C-3	C-2	C-1	C-0
HHI_{GLP}	Bolivia	-	-	0.10	0.10	0.17
	Bosnia	0.17	0.17	0.15	0.13	0.13
	Morocco	0.38	0.40	0.34	0.37	0.45
	Cambodia	0.48	0.45	0.48	0.42	0.45
$HHI_{Borrowers}$	Bolivia	-	-	-	-	-
	Bosnia	0.10	0.11	0.11	0.11	0.12
	Morocco	0.32	0.34	0.31	0.30	0.32
	Cambodia	0.19	0.18	0.16	0.15	0.15

Table 50 – HHI-values, Cambodia

CMA reports "lack of product diversification" as one of the most pressing issues with Cambodian microfinance. The primary financial product is credit, and CMA also claims that the credit products aren't tailored to the actual needs and preferences of the clients. This also contributes to making the MFIs more similar and increases the competition between them.

Substitute Products

Commercial banks are focused on urban areas, and have been so since before MFIs appeared. We have little available information on whether they have been moving down-market through the second phase or not – and it is thus hard to conclude on this issue. The change of ACLEDA into a commercial bank is an example of convergence between the two financial institution types though, and as average loan sizes increase in microfinance – commercial banks are more likely to compete for the same clients. In rural areas, commercial lenders are less likely to enter the competition, due to their lack of presence. Consumer lenders are not mentioned especially by either MixMarket or CMA, and are thus assumed to be of less importance in this market.

6.1.3 Phase 3: Portfolio Impairment

Important topics in the third phase are changed loan requirements and methodology, increased loan sizes, overstretched management systems, rapid increase of staff, multiple lending and market saturation.

Loan Requirements and Methodology

CMA's description of the microfinance market indicates that there is a shift towards individual lending. Apart from this, we know little about the loan methodology in this market.

Increased Loan Sizes

The average size of a microcredit loan has increased in Cambodia from 2003 and until 2009. In 2003, the client-weighted average loan size was 177 USD, while in 2009 it had become 748 USD. ACLEDA is the main driver of loan sizes, moving from an average of 410 USD in 2003 to 2,170 USD in 2009. This is partly a result from their change towards being a commercial bank. If we exclude ACLEDA, the client-weighted average in 2009 was 334 USD and the 2003-value becomes 82 USD. Thus, we still see a significant increase from the 2003 level, even when we exclude ACLEDA. Table 51 shows average loan sizes for Cambodia in the period 2004-2009.

The average loan sizes are likely to have been driven up more rapidly by the high level of competition in Cambodia, which we can see indications of in Figure 11. It shows how the average loan size developed in Cambodia compared

	2004		2005		2006		2007		2008		2009	
All MFIs	239	35%	303	27%	404	33%	585	45%	704	20%	748	6%
w/o ACLEDA	110	34%	137	24%	190	39%	245	29%	323	32%	334	3%

Table 51 – Client-weighted average loan size, Cambodia
Source: MixMarket (2011)
First number is loan size, measured in US$. Second number is annual growth.

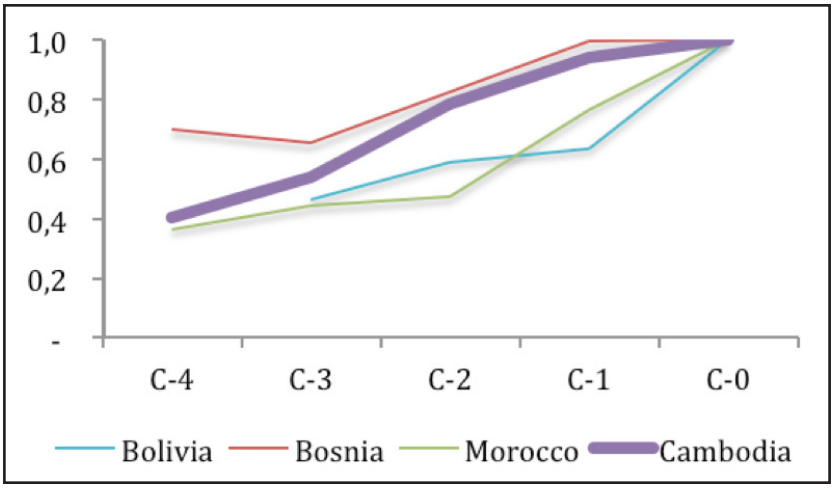

Figure 11 – Average Loan Size Comparison

to the mature markets' development prior to the crises. We see that the four markets have taken somewhat different paths, but that Cambodia's development is quite consistent with the other findings.

Overstretched Management Systems and Rapid Staff Increase

Cambodias borrower-to-staff ratio has in fact decreased steadily throughout the second and third phase. This is not consistent with the other case studies. The median in 2003 was 157 (ranging from 51 to 443) while the median value in 2009 was 81 (ranging from 34 to 284). The median is kept low by several small institutions with small client bases though, and the client-weighted average is significantly higher. Table 52 compares the client-weighted average in Cambodia for the last 5 years to the pre-crisis values in the mature markets.

Table 53 presents borrower-to-staff ratios for the largest MFIs in Cambodia, and compares the annual median to the worldwide median reported by MixMarket. ACLEDA is among the MFIs with rather low borrower-to-staff ratios, while AMRET is the MFI with the highest ratio. The approach is thus quite different between MFIs. Even though the ratio has decreased, we thus observe that some MFIs have ra-

	2003	2004	2005	2006	2007	2008	2009
ACLEDA	77	58	66	53	42	35	35
AMK	279	225	335	356	344	334	284
AMRET	443	446	407	356	307	295	225
PRASAC	277	196	178	155	131	98	71
TPC	195	220	226	243	279	302	248
VFC	210	148	133	156	167	150	126
Client-weighted average	**239**	**212**	**208**	**199**	**195**	**192**	**158**
Median	**157**	**136**	**107**	**72**	**93**	**92**	**81**
Mix Market Median	97	103	104	102	103	98	101

Table 52 – Borrowers per staff, Cambodia
Source: MixMarket (2011)

Measure	Market	C-4	C-3	C-2	C-1	C-0
Borrowers-to-staff Ratio	Bolivia	-	182	177	156	168
	Bosnia	155	154	163	163	141
	Morocco	233	271	243	234	225
	Cambodia	208	199	195	192	158

Table 53 – Borrowers per Staff, Comparison

tios that are high compared to the other cases we have seen.

Most MFIs have increased their staff quite rapidly in the period. ACLEDA went from 1,284 employees in 2003 to 7,013 in 2009 – an increase of close to 450%. AMRET has increased its staff from 208 in 2003 to 1,288 in 2009 an increase above 500%. Both increases thus happened over a period of six years, and represent a significant increase that is likely to have stretched both the organizational structure and any management systems present.

Multiple Lending

As for most developing microfinance markets, empirical evidence of multiple lending is missing. However, CMA lists multiple lending as one of the most critical issues with microfinance in Cambodia, indicating that it does in fact happen there as well. They point to examples of borrowers taking four or five loans, which they are unwilling or unable to repay. This comes from a lack of proper preliminary credit assessment, weak credit information exchange and issuance of multiple land titles by local authorities.

Year	Market Penetration$_1$	Market Penetration$_2$
2003	2.5%	
2004	3.0%	12.6%
2005	3.5%	
2006	4.3%	
2007	5.5%	34.7%
2008	7.1%	
2009	7.4%	

Table 54 – Market Penetration, Cambodia
Source: See Appendix B

Market Saturation

The microfinance sector in Cambodia covered a total of just above 1 million borrowers in 2008 and 2009. This number has grown significantly over the last years. If we measure the penetration as the fraction of the total population, the penetration rate was 7.4% in 2009, up from 2.5% in 2003. This is still a moderate number when we compare it to the theory around market penetration.

Using the same proxy for measuring the market size that I used in the three mature cases, I find that MFIs covered 34.7% of their market in 2007, up from 12.6% in 2004. The significant increase in this measure comes from two separate effects. First, as we have seen, MFIs have increased their portfolio of borrowers. Second, the part of the population that is living in poverty was reduced in the same time span, from 40% to 25%.

Thus, it seems that the saturation of the Cambodian microfinance market is moderate, but increasing.

Information Sharing

In Cambodia, credit information sharing is in fact somewhat implemented already. CMA explains that a credit

bureau was started in 2006, and that MFIs share *negative credit information* through this bureau. This helps the MFIs to maintain a high-quality portfolio of borrowers, as they are able to prevent those with a history of loan defaults to attain a new loan. However, *positive credit information* is not shared among the MFIs, and this is probably part of the explanation to why multiple lending has become a problem.

The Cambodian microfinance sector is thus better developed in terms of information sharing than several of the mature cases we have studied, but it's still not comprehensive enough to neutralize the new information asymmetries that come as a result of increased competition in the industry.

6.1.4 Phase 4 & 5: Macroeconomic Instability and Repayment Crisis

Cambodia is treated as a developing market in this study. This is because it hasn't experienced a repayment crisis. Phases 4 and 5 are thus less relevant to measure and investigate. However, we can find traces of similar development in Cambodia, and I therefore include these phases briefly.

Macroeconomic Instability

Both Morocco and Bosnia faced macroeconomic instability from the global financial crisis. This also affected Cambodia. We find that growth in microfinance slowed down in 2009, in accordance with the slow-down in the general Cambodian economy. The World Bank (2010) reports that in the period 2000-2008, Cambodia's GDP had an annual growth of 8-13%. In 2009, it experienced an annual growth of -2%.

Cambodia's dependence on remittances is quite low, ranging around 3-4% of the GDP in the period from 2003 to 2009. However, we do find a similar pattern as in the other cases, with steady growing remittance levels prior to the global financial crisis, and a drop in 2008-2009 (TheWorldBank 2010).

Repayment Problems

We also find increasing RISK-levels for Cambodia in 2009. It is far from a repayment crisis, but the increase is significant and is seen in all MFIs. In 2008, the Cambodian microfinance industry had a remarkably low RISK level of 0.45%, measured as the portfolio-weighted average of all MFIs reporting to MixMarket.

This level increased to 1.83% in 2009, and is kept down by the large market share of ACLEDA. ACLEDA, as a commercial bank, has a high average loan size and probably serves the low-risk, high-end microfinance market – and is thus less exposed to the risk. If we exclude ACLEDA from our calculations, the measured RISK level increased from 0.51% in 2008 to 3.49% in 2009.

We thus see a significant increase, but it's far from the crisis levels above 10%. I will discuss how to interpret this increase in the next section, where I conclude on the assessment of Cambodian microfinance from the perspective of the phase theory.

6.1.5 Conclusion and Forecast

Through this case we have seen that there are similarities between the mi-

crofinance sector in Cambodia and the more mature markets that I have looked into. There are some obvious similarities that can be seen as indictors of an emerging repayment crisis. However, we also find discrepancies that can be used as arguments in the other direction. I will briefly re-visit each of the phases and point out some conclusions on the findings and how to interpret them.

The first and the second phase in Cambodia have many similarities when we compare them to the theory. We find a similar growth path as in the mature markets and we see a similar development in terms of increased access to financial supplies. These effects seem to drive one another in Cambodia in accordance with the theory.

The portfolio impairment phase doesn't seem to be quite as strong in Cambodia as in the other markets I have examined. I found indications of changed loan methodology in the direction of individual lending, and occurrences of multiple lending. Both these findings are consistent with the phase theory and are expected to impair the quality of the portfolio.

However, market saturation is only moderate, and the remarkably low level of defaults indicates that the established credit information sharing system is effective. This separates Cambodia somewhat from the other markets.

The case study is far from comprehensible, and it is thus hard to give exact predictions for the future development. However, my impression is that Cambodia suffers from much of the same problems as the mature markets, through a hidden impairment of the portfolio that is driven by unhealthy growth mechanisms in the market.

The findings make me believe though, that the impairment hasn't come too far yet – even though this is close to speculation in the absence of necessary data on e.g. multiple lending. It also seems as though the industry has realized some of the problems already, and through an expansion of the established credit bureau, I think Cambodian microfinance can solve the present issues before they reach the RISK levels of a repayment crisis.

This being said, Cambodian microfinance presently struggle with the same issues as the mature markets have done, and if no measures are taken, a repayment crisis can very well occur. We have seen the rising levels of default in 2009, and any actions must thus be implemented shortly to prevent the emerging crisis.

7. Conclusion

In this study, I have investigated three mature microcredit markets and found similarities in how different indicators developed in the years before a repayment crisis.

First, I found a significant growth in all of the three markets. Second, I found an increased competition between the MFIs. Third, I found that repayment problems are insignificant until the crisis emerges, and then they increase rapidly. This indicates that the markets behave like bubbles that burst when the crisis begins.

Further, I found a similar shift in lending methodology in all three markets. MFIs have abandoned the traditional microfinance mechanisms and converged towards the ordinary banking industry. This has come as a result of MFIs adapting to a "buyer's market" and increased the borrowers' bargaining power even further. Problems arise, as banks are no longer able to control their borrowers through credit mechanisms.

The new competitive market situation has also led to problems like multiple lending and oversized loans. MFIs have also lost the power from mechanisms like dynamic incentives when borrowers have several credit providers to choose from. Lack of information sharing among MFIs makes them unable to identify borrowers with a bad credit history.

Based on all these findings, I have formulated a phase theory that consists of six phases. This theory describes how a microcredit market develops from its emergence to a crisis is resolved. The history starts with the establishment of the market through several different MFIs with different approaches with regard to location, clientele, and financial products. After a few years, some MFIs succeed in becoming the market leaders and start to grow rapidly. They have easy access to capital and expand significantly, both in terms of customers and employees. Other MFIs often adapt to the leading MFIs in terms of lending methodology and location, making the loan products more homogenous to the borrowers.

At this point, a very important mechanism starts taking effect. We have seen that a large part of the funding is directed towards credit providers with large growth and large market shares. Further, we know that the MFIs that receive most funding are also best positioned for further growth. This thus creates a catalyst for growth through the funding situation, leading to a situation where everyone's goal is to grow fast enough to be included in this spiral.

The situation of excessive funding into microcredit also creates a 'push effect' on the MFIs to increase their loan portfolios. This puts even more focus on short-term growth over long-term profitability.

The focus on short-term growth leads to intense competition between MFIs and increases the bargaining power of consumers. This leads to problems like multiple lending and loan sizes beyond the capacity of the borrower. The

problems are hidden behind a general economic growth and a healthy macroeconomic situation. As long as the borrowers' cashflow keeps steady they're able to pay back their loans, or refinance them through new credit relationships. Problems occur when the macroeconomic situation becomes unstable. This is when the 'bubble bursts' if problems have gotten far enough at this point in time. The borrowers are unable to refinance their loans, and when their cashflow decreases, they get into repayment trouble. In this situation, many borrowers default their loans at the same time, and the result is a repayment crisis.

I have also applied the phase theory on a developing market: Cambodia. In this case, I find many of the same signs as in the mature markets. The market may thus be on its way towards a similar crisis. However, Cambodia experienced the same macroeconomic instability as both BiH and Morocco in 2007-2008 without an immediate crisis. This may indicate that the portfolio impairment isn't come far enough for a crisis in this market yet. If MFIs in Cambodia maintain the same practices in the following years, the impairment may increase further and a new macroeconomic instability may set off a repayment crisis in this market as well. However, I also found that MFIs in Cambodia have started to take action with regard to issues like information sharing. This may contribute to eliminating some of the problems from increased competition, but is not enough to prevent the crisis in itself. Other measures are necessary as well.

In essence, the findings can be broken down to two elementary problems:

First, an MFI must be able to trust in a client repaying his loan. This requires the MFI to do screening, monitoring, state verification, and enforcement, as described by Ghatak and Guinnane (1999), and relates to the information asymmetry between a lender and a borrower. Microfinance originally succeeded because it approached lending in a different way than commercial banks and other credit institutions, e.g. through the use of specific microfinance mechanisms like joint liability, dynamic incentives, and regular repayment schedules. Increased competition has led many MFIs to abandon these mechanisms, and they thus need to repair the imbalance from these information asymmetries through other mechanisms. This has not been accomplished in the investigated markets, and MFIs therefore include bad borrowers in their loan portfolios.

Second, the MFIs in a market need to cooperate to eliminate the new information asymmetries from increased competition. An important step to achieve this is implementing information sharing of both negative credit information (bad borrowers) and positive credit information (active loans). Currently there are some challenges to this issue that explain why all microcredit markets haven't already implemented it. These challenges need to be resolved if the industry wants to prevent more repayment crises. The information sharing mechanisms also need to include other credit providers like commercial banks and consumer lenders.

I have thus established a model for microcredit markets that seems to be persistent across the investigated markets.

Further research should enhance this model through examining larger data sets and examine each of the implied connections of indicator developments with extensive quantitative research. Further research should also be directed to the problems of multiple lending, and investigate how information sharing can be implemented effectively to eliminate this problem.

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Appendix A – Data Collection, Bolivia

This appendix describes data sources for the case study of Bolivia's microfinance market. The repayment crisis in Bolivia occurred in 1998-1999, and the primary data source of this study, MixMarket, only has limited data for the period prior to the crisis.

The data presented in this study is therefore a consolidated data set that is constructed based on information from several sources. Here, I present a description of how the data is acquired for the tables in chapter 4.1 that consolidate information from several data sources.

Table 3 - Key Figures, Prodem FFP
All numbers from the period 1996-2003 are collected from MixMarket (2011).
Numbers from 1994 are collected from Rhyne (2001b, Table 4.2).

Table 4 - Key Figures, BancoSol
All numbers from the period 1996-2003 are collected from MixMarket (2011).
Numbers from 1992 and 1994 are collected from Rhyne (2001b, Table 4.2).

Table 5 - Key Figures, ProCredit
All numbers from the period 1996-2003 are collected from MixMarket (2011).
Numbers from 1994 are collected from Rhyne (2001b, Table 4.2).

Table 6 - Key Figures, ProMujer
All numbers from the period 1997-2003 are collected from MixMarket (2011).

Table 7 - Key Figures, CRECER
All numbers from the period 1999-2003 are collected from MixMarket (2011).
Numbers from 1998 are collected from Marconi and Mosley (2006, Table 2).

Table 8 - Key Figures, Banco FIE
All numbers from the period 1998-2003 are collected from MixMarket (2011).
PAR30 from 1997 is collected from Marconi and Mosley (2006, Table 2).
Gross Loan Portfolio from 1994 and 1997 are collected from Rhyne (2001b, Table 4.2).

Table 9 - Key Figures, Idepro
All numbers are collected from Rhyne (2001b, Table 4.2).

Table 10 - Key Figures, Fades
All numbers are collected from MixMarket (2011).

Table 11 - Key Figures, Sartawi
Gross Loan Portfolio and PAR30 are collected from Marconi and Mosley (2006, Table 2).
The other numbers from 2003 are collected from MixMarket (2011).

Table 20 - Gross Loan Portfolio Growth, Bolivia
The numbers marked in blue are collected from Rhyne (2001b, Table 4.2).
The numbers marked in orange are collected from Marconi and Mosley (2006, Table 2).
The numbers marked in black are collected from MixMarket (2011).
The greyed-out numbers are aggregated or calculated data, based on these sources.

	1992		1994		1996		1997		1998		1999		2000	
BancoSol	9	-	33	267%	49	48%	67	37%	74	10%	82	11%	77	-6%
Prodem	-	-	3	-	8	167%	18	125%	24	33%	22	-8%	24	9%
ProCredit	0	-	3	-	12	300%	21	75%	29	38%	36	24%	47	31%
Banco FIE	2	-	4	100%	-	-	12	-	15	25%	19	27%	22	16%
AgroCapital	-	-	-	-	9	-	11	22%	12	9%	13	8%	12	-8%
Accesso	-	-	-	-	-	-	80	-	88	10%	32	-64%	5	-84%
Fassil	-	-	-	-	-	-	13	-	19	46%	15	-21%	13	-13%
Total Gross Portfolio	11	-	43	290%	78	81%	232	197%	267	15%	228	-15%	215	-6%
Total Gross Portfolio without Accesso and Fassil	11	-	43	290%	78	81%	139	78%	160	15%	181	13%	197	9%

Appendix B – Market Penetration

This appendix describes data sources and detailed calculations of the market penetration indicator, for each of the four cases. In chapter 3.5.2 I introduced two different proxies for market penetration.

Number of Active Borrowers

Both proxies for market penetration compare the number of actual clients to an approximation for the market size. Thus, the level of actual clients is the same in both calculations. For this number, I use data from MixMarket (2011), aggregated for all MFIs in a country to reflect the total portfolio of borrowers in the market.

Market Penetration Proxy #1

As described in chapter 3.5.2, the first proxy is as follows:

$$Market\ Penetration_{\ 1} \stackrel{\text{def}}{=} \frac{Number\ of\ Active\ Borrowers}{Total\ Population}$$

The numbers for the total population is collected from World Development Indicators (TheWorldBank 2010).

Bolivia

The calculations for Bolivia becomes:

Year	Total Population	Actual Clients	Market Penetration$_1$
1996	7 649 893	54 222	0.7%
1997	7 815 308	160 594	2.1%
1998	7 981 049	182 155	2.3%
1999	8 148 173	188 396	2.3%

Bosnia

The calculations for Bosnia becomes:

Year	Total Population	Actual Clients	Market Penetration$_1$
2001	3 748 354	31 559	1.2%
2002	3 776 053	56 661	2.2%
2003	3 783 067	88 337	3.4%
2004	3 781 764	129 976	4.9%
2005	3 781 274	167 505	6.3%
2006	3 781 488	234 145	8.8%
2007	3 778 410	366 100	13.8%
2008	3 773 100	440 161	16.5%
2009	3 766 579	374 966	14.1%

Morocco

The calculations for Morocco becomes:

Year	Total Population	Actual Clients	Market Penetration$_1$
2003	29 820 777	285 189	1.0%
2004	30 151 789	432 125	1.4%
2005	30 494 991	583 333	1.9%
2006	30 852 971	914 854	3.0%
2007	31 224 136	1 216 433	3.9%
2008	31 605 616	1 103 443	3.5%
2009	31 992 592	808 748	2.5%

Cambodia

The calculations for Cambodia becomes:

Year	Total Population	Actual Clients	Market Penetration$_1$
2003	13 432 081	341 215	2.5%
2004	13 646 804	408 599	3.0%
2005	13 866 051	487 401	3.5%
2006	14 091 823	599 894	4.3%
2007	14 323 842	792 142	5.5%
2008	14 562 008	1 038 991	7.1%
2009	14 805 358	1 100 254	7.4%

Market Penetration Proxy #2

The second approximation for market penetration considers the potential market size to be of another size than the whole population. Definitions and formulas are shown below, and calculations for each country follow thereafter.

Total Population is the same number as used in the first proxy, and is collected from WDI (TheWorldBank 2010).

Economically Active is the number of persons that are between 15 and 65 years old. I use the indicator 'Population ages 15-64 (% of total)' reported by WDI, and call this proportion *EA*.

$$Economically\ Active = Total\ Population * EA$$

Further, I find the pool of *Poor Potential Clients* by only looking at people living for less than 1.25$ a day. Data is again collected from WDI, and I use the indicator 'Poverty headcount ratio at $1.25 a day (PPP) (% of population)', here referred to as *PHR*. To ease calculations I assume that the poverty headcount ratio is equal

across various age levels, and thus that it can be applied in combination with the *EA-index*.

This ratio is only reported for a small set of years in the WDI data, and the second proxy for market penetration is therefore not calculated for every year prior to the crises.

$$Poor\ Potential\ Clients = Economically\ Active * PHR$$

$$Poor\ Potential\ Clients = Total\ Population * EA * PHR$$

Even though microfinance is targeting poor clients, we know that they also include people in their portfolios that do not live for less than 1.25$ a day. Reed (2011, Table 7) reports from the microfinance summit campaign and presents numbers for the level of poor clients (below 1.25$) in the total microfinance portfolio. The numbers are reported for a total of eight world regions and for two separate years, 2007 and 2009. Again, to ease calculations, I choose to assume that the levels are equal for all countries in the region, and apply the same *Poverty Inclusion Ratio (PIR)* to the single markets as their region reports.

$$Potential\ Clients = \frac{Poor\ Potential\ Clients}{PIR}$$

$$Potential\ Clients = \frac{Total\ Population * EA * PHR}{PIR}$$

At last, I adjust for the demand of loans. Navajas and Tejerina (2006) did a study of five Latin American countries and found that as many as 25-50% of households did not request a loan because it was "not needed". To keep the estimates conservative, I choose the lower end of the interval and therefore only exclude 25% of the potential borrowers. I thus define the *Demand Ratio (DR)* as 0.75.

$$Potential\ Clients\ with\ Demand = Potential\ Clients * DR$$

$$Potential\ Clients\ with\ Demand = \frac{Total\ Population * EA * PHR * DR}{PIR}$$

As I have found the potential market size, I compare this to the number of active clients.

$$Market\ Penetration_2 \stackrel{def}{=} \frac{Number\ of\ Active\ Borrowers}{Potential\ Clients\ with\ Demand}$$

$$Market\ Penetration_2 \stackrel{def}{=} \frac{Number\ of\ Active\ Borrowers}{\left(\frac{Total\ Population * EA * PHR * DR}{PIR}\right)}$$

Bolivia

Reed (2011, Table 7) reports a *Poverty Inclusion Ratio* for Latin America of 28.4% and 23.1%, for 2007 and 2009 respectively. The interesting period for market penetration in Bolivia is prior to the crisis in 1999, but I only have data for 2007 and 2009. We see that the ratio drops with a total of 5.3 percentage points in the period 2007-2009 and can also assume that the ratio has been higher in the 1990s, as factors like mission drift may have affected this ratio after the crisis. I therefore adjust this ratio upwards a little bit, and use a *Poverty Inclusion Ratio* of 40% for the years before 1999.

Year	Total Population	EA	PHR	DR	PIR	Active Borrowers	Market Penetration$_2$
1997	7 815 308	0.556	0.189	0.75	0.40	160 594	10.4%
1999	8 148 173	0.559	0.247	0.75	0.40	188 396	8.9%

Bosnia

Reed (2011, Table 7) reports a *Poverty Inclusion Ratio* for Eastern Europe and Central Asia of 4.7% and 4.5% for 2007 and 2009, respectively. I therefore use the average of 4.6% for all included years in the Bosnia case.

Year	Total Population	EA	PHR	DR	PIR	Active Borrowers	Market Penetration$_2$
2001	3 748 354	0.693	0.02	0.75	0.046	31 559	3.7%
2004	3 781 764	0.697	0.02	0.75	0.046	129 976	15.1%
2007	3 778 410	0.704	0.02	0.75	0.046	366 100	42.2%

Morocco

Reed (2011, Table 7) reports a *Poverty Inclusion Ratio* for Middle East and North Africa of 34.5% for 2007.

Year	Total Population	EA	PHR	DR	PIR	Active Borrowers	Market Penetration$_2$
2007	31 224 136	0.655	0.025	0.75	0.345	1 216 433	109.4%

Cambodia

Reed (2011, Table 7) reports a *Poverty Inclusion Ratio* for Asia and the Pacific of 74.6% for 2007 and 74.9% for 2009. I therefore use 75% for both 2004 and 2007.

Year	Total Population	EA	PHR	DR	PIR	Active Borrowers	Market Penetration$_2$
2004	13 646 804	0.590	0.402	0.75	0.75	408 599	12.6%
2007	14 323 842	0.616	0.258	0.75	0.75	792 142	34.7%

Abbreviations and Descriptions

BiH	Bosnia and Herzegovina
FFP	Private Financial Funds. *Organizational form for MFIs in Bolivia.*
HHI	Herfindahl-Hirschman Index. *Tool for measuring level of competition in a market based on relative market shares.*
MFI	Microfinance Institution
MIV	Microfinance Investmen Vehicle *Operates like intermediaries between a set of potential investors and MFIs as investment objects.*
MIX	Microfinance Information eXchange. *MIX delivers data services, analysis, research and business information on the institutions that provide financial services to the orld's poor.*
MixMarket	MIX Market. *MIX Market is a source for financial and social performance data on MFIs across the globe*
NGO	Non-governmental Organization
PAR30	Portfolio-At-Risk. *Payments more than 30 days overdue. Measure for risk of default.*
WOR	Write-Offs. *Measure for defaulted loans.*