Microfinance: The effect of commitment to social goals

An empirical analysis of reverse mission drift in microfinance institutions

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Executive summary

Due to allegations of relentless profit seeking and studies showing limited social impact, microfinance is no longer considered the panacea to poverty that it once was. The industry is however still growing, and with it, an increasing body of research. Much of this literature points towards a co-existence of the two main goals of microfinance: to provide financial services to the poor and at the same time ensure financial sustainability. Simultaneously, there is ample evidence that many institutions are giving up some of their social outreach in order to perform financially. This theory of mission drift is usually investigated through financial data, as social performance outcome has been hard to measure and the availability of data has been scarce. This thesis takes the discussion one step further, and raises the question of whether commitment to social goals creates a "reverse mission drift"; in other words increases the social outreach, but dilutes the financial sustainability.

Using financial and social data on more than 600 microfinance institutions (MFIs) in 90 countries from the MIX database, the thesis intends to assess the quantitative effect of three proxies for the commitment to social goals. The dependent variables are commonly used measures of social outreach, financial performance and portfolio quality. By constructing a model with more than 1500 observations in the period 2010-2012, it estimates the effects through linear regressions on a short, unbalanced panel.

The findings reveal that a social performance committee on the board of directors' decreases loan size, and increases the amount of both total borrowers and female borrowers, yet has no significant effect on financial performance. The effect on both repayment rates and risk coverage is positive. Employing a poverty measurement tool has the same positive effect on all social outreach variables, and again there is no evidence for a relationship with financial performance measures. The amount of defaults significantly decreases for MFIs measuring client poverty levels. Requiring compulsory insurance has less unequivocal indications. Whereas only weak evidence for decreasing loan sizes can be found, the operational self-sufficiency is consistently lower for MFIs requiring clients to take on insurance. Defaults, in terms of the write-off ratio do significantly decrease, but the use of compulsory insurance overall seems questionable as a client responsibility tool.

The model is subjected to a number of robustness tests that overall confirm the findings. The magnitudes of the effects vary, with poverty measurement being the most robust. The main findings contradict some previous literature that finds a trade-off between social and financial performance. It also supports other claimants of no mission drift. At the same time the evidence points to an important new effect: The commitment to social goals has a positive impact on social outreach measures and to some extent repayment rates, but only minimally affects financial performance. Consequently, this raises a new suggestion, namely that it is possible to commit strongly to social goals whilst independently seeking profits and financial sustainability. More research with more longitudinal and stronger social data is therefore warranted on this particular issue. The implications are still important for future research, for investors seeking responsible yet strong returns, and for MFIs in search of a balanced business model.

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1. Introduction & motivation

A bi-product of modern capitalism has been the unintended exclusion of the lowest social classes from the formal financial system. The poor, especially in developing countries, have effectively been denied access to credit, savings possibilities, and other financial needs. The finances in these communities have been dealt with mostly through informal, community-based arrangements (Brau & Woller, 2004). Through an innovative approach to customers, repayments and collateral, microfinance has however led the way for financial inclusion of the poor (Traca, 2013). The term microfinance basically covers all provisions of small loans, extensions of credit, savings and other financial services to those of low economic classes (Robinson, 2001).

With Mohammad Yunus and the Grameen Bank receiving the Nobel Peace Prize in 2006, microfinance quickly rose to public fame, presented as a miracle cure to poverty reduction. The conventional perception was that of a poor microentrepreneur whose only barrier to empowerment and wealth was access to financing (CGAP, 2014). Instead of pure aid, the poor just needed access to capital in order to create a sustainable business, which would eventually take them out of poverty. The real story is however more complex and many studies have partly discredited the cure-all ability of microfinance (Banerjee et al., 2013).

Still, microfinance institutions (MFIs) have quickly risen in amount and degree of formality, along with rating agencies, financial databases, investors and a full eco-system of supporting services. From a "grassroots movement" of development, the microfinance paradigm has largely shifted into a global industry with commercial purposes in addition to social objectives (Brau & Woller, 2004). Much recent empirical literature has therefore focused on financial performance, contemplating why many MFIs remain unprofitable (Cull, et al., 2007). This literature has simplistically implied that social impact follows financial sustainability. At the same time, studies measuring the social impact of microfinance have largely ignored the individual characteristics of MFIs.

It is here that the motivation for this thesis lies. Social objectives or the social performance (SP) of individual MFIs has to a large extent been unexplored. Social performance is in many ways counterintuitive, as it implies some sort of return from a purely social initiative. The effect it has on the overall performance of a MFI is still up for debate, mainly because it has not been reliably measured yet. Furthermore, a numerous amount of definitions essentially making abstract claims such as it *"measuring how well the institution has translated its social goals into practice"* (CGAP, 2004) have made quantitative investigations hard. With increased commercialization proven by many studies (Roberts, 2013), examining whether an institution can balance this double bottom-line is nonetheless of great interest. Additionally, increased attention from stakeholders has led to more transparency and increased reporting on the social efforts of MFIs (Pistelli, et al., 2014). The combination of new data availability and a lack of empirical research introduces an opportunity to explore the social performance from a new perspective.

1.1. Research question

From the mentioned desire to investigate how the social performance of microfinance institutions (MFIs) affects their overall performance, a research question has been developed.

- *How do board commitment to social goals, client poverty measurement and compulsory insurance affect the social outreach, financial sustainability and portfolio quality of a microfinance institution?*

Early research revealed why this question had remained largely unexplored by most previous studies; 1) A lack of a proper, concrete and unilateral definition of social performance within academic research, and 2) a general scarcity in data on social performance measurement. The reason for the formulation of the question came from an availability of newly gathered data. In addition, although social *performance* was not easily measured, the *commitment* towards social goals was a more objective tool. This commitment is to be understood as the intent of a MFI to focus on social objectives, hereunder employing the tools mentioned in the research question. Therefore, the aim of this study is to investigate how MFI social outreach, financial performance and repayment rates (portfolio quality) are affected by a commitment to social goals. The specificity of the research question is substantiated by the literature review in chapter 3 and the model specification in chapter 6.

The following three exploratory questions, along with the main research question, make up the body of this thesis. Together they act as a guideline both for the structure and thought process to develop the model used. The interrelationship between them, as illustrated in Figure 1, has driven the process of investigation.

1. *What are the key research areas in microfinance?*

In order to determine how existing literature views the social performance of microfinance, as well as to gain a broad understanding of the concept, this sub-question helps with establishing a body of knowledge from previous relevant research.

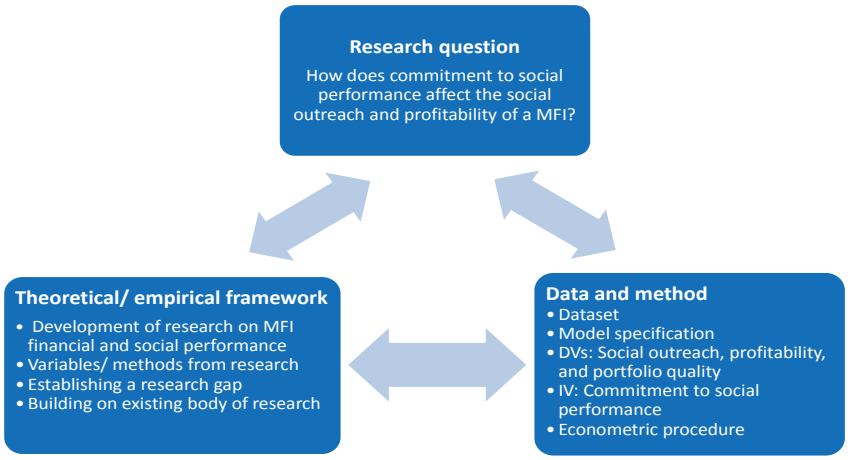
2. *How does previous research measure the financial and social performance of a microfinance institution?*

In order to reach the level of specificity required to build a quantitative model, the determining of the *variables* used to measure the intended factors of profitability, social outreach portfolio quality and commitment to social performance are of great importance.

3. *What data is available and how can this be utilized to measure the desired relationships?*

Subsequent of the first two questions, a need to establish the data availability and the proper quantitative method is the last important factor.

Figure 1: Research process



Source: Author's own illustration (DV, IV; Dependent and Independent variables respectively)

1.2. Hypotheses

To answer the proposed research question, an overall hypothesis has been developed. This has been done from an understanding of previous research.

A commitment to social goals leads to a "reverse mission drift" in microfinance institutions, i.e. a stronger social outreach, higher repayment rates and a poorer financial performance.

A brief explanation of the logic behind the main hypothesis follows: Christen (2001), Cull et al. (2007), and Hermes et al. (2011) among others give theoretical reasoning and empirical evidence for a mission drift within microfinance. That is, that an increased commercialization leads to MFIs leaving their social obligations to secure financial returns. It implies that the two goals of microfinance, of financial sustainability and impact on the poor are at least partly mutually exclusive, as first proposed by Morduch (2000). Following this line of thought, an increased focus on social performance should therefore lead to a reversed effect, due to finite resources. If an institution increasingly focused on financial returns must give up some of its social outreach, then focus on social goals should lead to lower financial returns.

Subsequent of this central hypothesis, other "sub-hypotheses" with more specificity have been developed. This is done to connect the proxies measured to the overall relationships. Average loan size, proportion of female borrowers and total borrowers are common proxies for the depth and scale of social outreach, and the operational self-sufficiency (OSS) is the ratio of revenues against costs in a MFI and a common proxy for profitability. The proportion of borrowers in more than 30 days delinquency (Portfolio-at-risk-30) is the repayment rate (1- PAR-30). Thorough explanations can be found in sections 6.2 and 6.1 on the model variables.

1. Social performance commitment on the board of directors, measured through the existence of a SP committee on the board, a) *reduces average loan size, increases the % of female borrowers and the total amount of borrowers,* b) *lowers the operational self-sufficiency and other profitability measures, and* c) *decreases the portfolio-at-risk and write-off ratio*

2. Measurement of the social performance outcome, through the existence of a poverty measurement tool, a) *reduces average loan size, increases the % of female borrowers and the total amount of borrowers,* b) *lowers the operational self-sufficiency and other profitability measures, and* c) *decreases the portfolio-at-risk and write-off ratio*

3. Client protection, measured through the requirement of compulsory insurance, a) *reduces average loan size, increases the % of female borrowers and the total amount of borrowers,* b) *lowers the operational self-sufficiency and other profitability measures, and* c) *decreases the portfolio-at-risk and write-off ratio*

These hypotheses are explained and rejected or verified after a thorough structuring of the data and the modeling. The results and implications can be found in chapter 8.

1.3. Constraints & limitations

Several scholars have pointed out that although much research has been carried out on microfinance, it seems that empirics and theory has followed different paths (Armendáriz & Labie, 2011a). The scientific process of hypothesis formation and testing is bypassed in many ways it is claimed. Empirical studies built on personal experience and rationalized logical assumptions have become the norm rather than the exception (Armendáriz & Szafarz, 2011). As such, a deliberate choice has been made to focus mostly on empirical studies. This does of course create a limitation in the creation of a theoretical framework, which is just as much an "empirical framework".

This thesis will not center on microfinance in a macro-economic context. It will furthermore not discuss the area of funding structures and investments directly. This implies a possible limitation in results interpretations, as ownership dimensions will not be considered. Apart from the impact on MFIs, aspects of microfinance as an asset class are not included here. Another constraint is the conscious choice not to get involved in ideological discussions. The impact of microfinance on poverty is presented as evidenced in empirical studies.

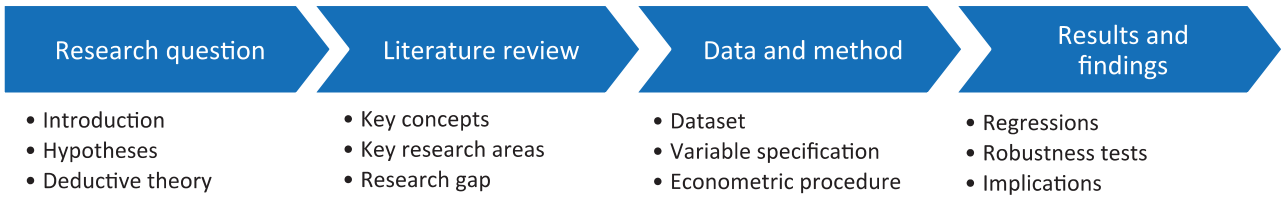
In choosing to use secondary data, another limitation is the inability to directly verify or shape the data collection process. A limitation that will be discussed thoroughly is the use of proxies in the regressions

employed. Still, it is important to emphasize that the variables employed only serve as tool for the unobservable factors they are meant to measure. As such, interpretations and implications of the findings are at all times subject to this limitation.

1.4. Thesis structure

In order to give the reader a quick understanding of the thesis structure, an overview of the overall components can be seen in the illustration below:

Figure 2: Thesis structure



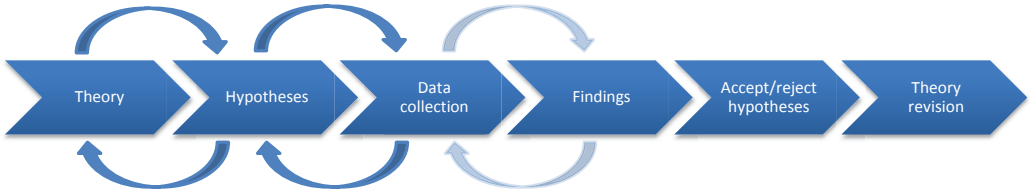
Source: Author's own illustration

After an introduction to the research questions and hypotheses, a brief explanation of the deductive theory used follows. Then, a literature review of microfinance research will be conducted. This review has two main objectives: 1) to give an overview of the most relevant literature on microfinance, mission drift and social performance measurement and 2) to introduce the rationale behind the research question, the hypotheses and the method chosen. A section on the theoretical and empirical foundation will complement the review. Then the data used will be presented, followed by a specification of the model and the rationale behind the variables used. Finally, an explanation of the econometric procedure carried out will be rounded off with a discussion of the results found, robustness testing of the model, and a part on implications for stakeholders and future research.

2. Deductive theory and methodology

In writing this thesis, a reliance on deductive theory has been central. Existing knowledge on microfinance, coupled with developing theories, has been the foundation for deducing the hypotheses tested. The empirical inquiry has been developed through a review of theories, as proposed by Merton (1967). From this understanding, the research question and hypotheses have been "operationalized" to functional terms through an investigation of data and measurable relationships. Then, the hypotheses were subjected to empirical scrutiny through a falsification/verification process. The process can be viewed in Figure 3 below:

Figure 3: Deductive theory



Source: Author's own illustration based on Bryman & Bell (2011)

The structure of the process is linear, following a clear and sequential logic (Bryman & Bell, 2011). This thesis has been structured in a similar way, with each sequence in chronological order. As the illustration also depicts, the process has been highly iterative. This has especially been true for the first three steps, as new insights into the theory, constructive discussions with the supervisors, obstacles with data collection, and practical discussions with practitioners and the data provider have set the need for changing the approach. Even the fourth sequence of initial findings has contributed to a revalidation of the robustness and relevance of the hypotheses. The process has therefore been more circular than linear, but still followed a logic pattern. It has also been the basis for the structure of the thesis.

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2.1. Choice of quantitative method

As an overall deliberate choice, this thesis is based on the use of quantitative research. In the field of economics and finance, this form of research is more widely used, whereas qualitative methods are more commonly employed in social sciences such as anthropology and history (Corbin & Strauss, 2008).

Quantitative research broadly refers to the use of statistical, mathematical and numerical data or computational techniques. These are used in order to conduct a systematic empirical investigation of social phenomena (Given, 2008). The objective is hereunder to develop models that prove or disprove the existence of theories and hypotheses. Qualitative research on the other hand, conventionally produces knowledge on a particular small sample or simple observation studied in depth. On the one hand, knowledge derived from this type of research is seen to have a lower degree of generalizability. On the other hand, case studies and in-depth observations of a single phenomenon produce propositions or informed assertions, which serve as "guidelines" for creating theories and/or hypotheses (Corbin & Strauss, 2008). These hypotheses and theories can then be subject to empirical testing through the use of quantitative model.

That is what this thesis seeks to do: to test certain existing hypotheses through the lens of newly available data. Microfinance research has had a strong body of mostly empirical research develop over the past 25 years. From this research, both quantitative and qualitative, a large number of theories have emerged. Rather than create new theories, there is a strong enough consensus to build on existing knowledge.

2.2. Research method: Linear regressions

To test the hypotheses formulated, an econometric method has been chosen. The specific econometric procedure will be discussed in section 7, and model development in section 6.2-6.5. The basics of multiple linear regressions will not be thoroughly reviewed, and an understanding of fundamental concepts in statistics is expected.

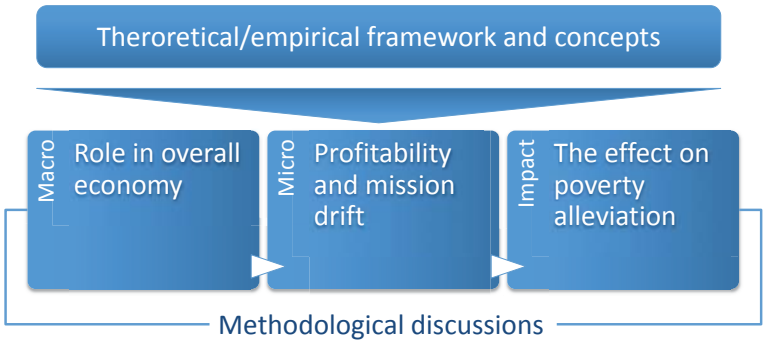
Econometrics is basically an application of mathematical statistics to economic data, which helps to support models constructed by mathematical economics and to obtain numerical results (Tintner, 1968). In other words, it uses statistics, data, and empirical modelling to verify or falsify hypotheses. These hypotheses are based on postulated relationships between factors, which are usually tested with a random sample out a full population. Although the final econometric model in the thesis tweaks the typical *ordinary-least-squares* (OLS) model, much of the intuition is grounded in this basic linear model. This again is based on the classical approach to econometrics. The standard classical linear regression model (CLRM) makes a range of assumptions. If these assumptions hold, then the model is considered to be the best, linear, unbiased estimator (BLUE) as postulated by the Gauss-Markow theorem (GMT) (Schroeder, 2010). What this means in layman terms, is basically that the estimator $\hat{\beta}_i$ from the sample, is the best possible estimate of the true β_i of the population (Gujarati & Porter, 2009). If the statistics and methods employed do indeed give BLUE estimators, then econometric modelling serves as an important tool to verify and falsify economic theories.

The key weakness of regression models is that they are only as strong as their assumptions. From general ones of normal distributions in most populations, to more specific ones such as no endogeneity in regressors, they all need to be thoroughly analyzed if the model is to be generalizable. The second weakness is an extension of that problem; knowing whether or not a specific model fully follows all the assumptions can never be empirically tested, and to a large extent relies on a combination of the tester's logic reasoning and econometric knowledge (Gujarati & Porter, 2009). The model specification and statistical method employed should therefore always be subject to a set of robustness checks. These tests and checks can however never fully eliminate the possibility of wrongful conclusions, a fact that must be kept in mind when interpreting results.

3. Literature review

In the following parts of the thesis, an understanding of microfinance and its specifics will be built. In establishing this understanding, a review of some relevant academic literature will be conducted. First, an understanding of the concept of microfinance will be set, followed by an introduction of some of the key concepts within microfinance and microfinance performance. Then, a review of microfinance research within two most important aspects in this thesis will be conducted: an MFI-specific perspective and an impact assessment perspective. Lastly, an overview of the scarce research on commitment to social performance will be conducted. After conducting a preliminary analysis of available research, it became clear that microfinance literature could be broadly categorized into three dimensions. The development of microfinance research can be viewed as illustrated in Figure 4. Those parts most relevant to this thesis do however lie within the MFI-specific (micro) body of research, and this part is therefore more thorough.

Figure 4: Microfinance research areas



Source: Author's own illustration

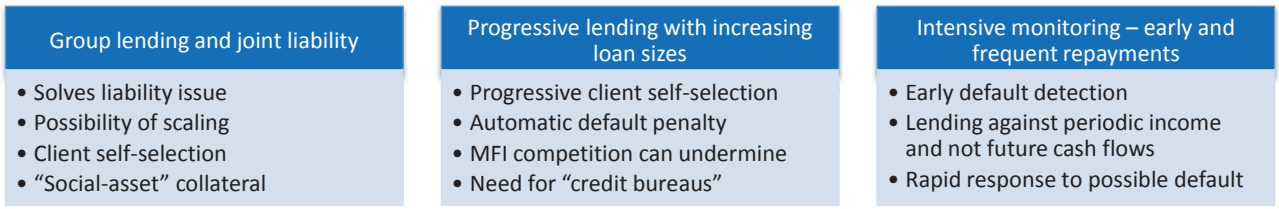
3.1. Microfinance and microfinance institutions (MFIs)

In the field of development, modern microfinance first came to prominence in the late 1970's, with the creation of small and ultimately successful micro banks such as Grameen Bank by Mohammed Yunus in Bangladesh, and BancoSol in Bolivia. These banks started with giving small, personalized loans to micro-entrepreneurs, who were in need of capital to finance their operations and expand (CGAP, 2014). The concept of microfinance is relatively straightforward as defined by some scholars: "the provision of financial services to low-income and very poor self-employed people" (Otero, 1999). Schreiner and Colombet (2001, p.339) take a more ideological approach by defining it as "the attempt to improve access to small deposits and small loans for poor households neglected by banks."

From an economic standpoint, access to credit for poor individuals should not yield profits (Cull, et al., 2007). Traditional market failures in credit markets stem from information asymmetries, limited liability and costly monitoring, and the poor suffer from all these. Due to no collateral and a dispersed client-base, serving

the poor has been found to have a large "poverty premium" (Prahalad & Hammond, 2002). The innovation of microfinance has been the ability to overcome these obstacles. Rather than depending on collateralized loans, MFIs have used innovative contracts and a form of social capital to secure high repayment rates[1]. Traca (2013) points to three key success factors of microfinance, as seen in Figure 5.

Figure 5: Securing high repayment rates



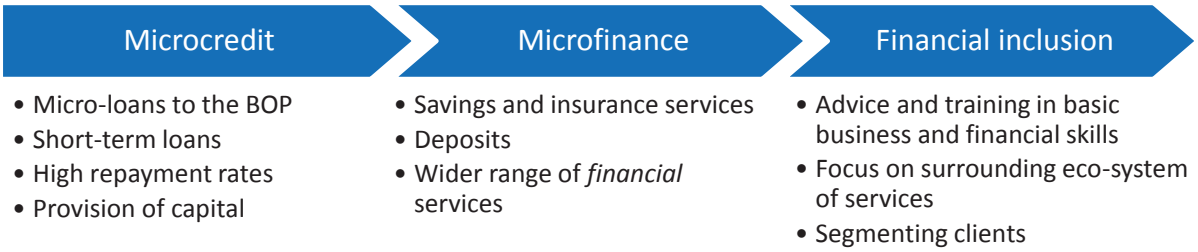
Source: Author's own illustration based on (Traca, 2013) and (Armendáriz & Labie, 2011a)

Additionally, Karlan & Goldberg (2007) list some other characteristics to the innovative processes: Small transactions and minimum balances (whether loans or savings), loans for entrepreneurial activity, collateral-free loans, targeting poor clients, targeting female clients, simple application processes, provision of services in underserved communities, and lastly, applying market level interest rates. One interesting aspect is the focus on service of female clients, which has lead some to call microfinance a "women's business" (Strøm, et al., 2014) and others to explain its success (Armendáriz & Morduch, 2010). The business model of microfinance is ever changing, and some aspects, such as group lending is under heavy scutiny (Armendáriz & Labie, 2011a). The fundamentals of supplying capital to the poor do however remain the same.

Microfinance does not only cover microloans and microcredit, which are maybe the first associations with the word. Insurance, micro savings and all other financial needs are also covered by the term. This interchanging use of different "micro-terms" often creates the wrongful assumption that microloans is all there is to it. Several scholars in the past two decades pointed out that the definition of microfinance should be specified to avoid wrongful understanding, and emphasized that microcredit is in fact only a component of the range of services that can be offered by a microfinance institution (Sinha, 1998). Researchers, practitioner reports and investors alike have highlighted a strong trend in the world of microfinance, with a concept that has moved from microcredit to an overall inclusion of the poor in the financial system (See e.g. CGAP, 2014; Economist Intelligence Unit, 2013; Traca, 2013; Kasper Svarrer, 2014). Figure 6 gives an overview of the development:

[1] A traditional bank serving the poor in Bangladesh was found to have 51% repayment, whereas an MFI had ~97% (Traca, 2013)

Figure 6: Development of concept



Source: Author's own illustration based on (Traca, 2013) and (CGAP, 2014)
**BOP= Bottom-of-the-pyramid, referring to the poorest segment of the population (Prahalad & Hart, 2002)*

As the figure illustrates, what was initially seen as a way of allowing capital to the poorest segment of the population, has today moved towards a full inclusion into the capital system. Recent reports even state that the microfinance institutions are now competing not only against the traditional banking sector, but also against other innovative services such as mobile banking, crowd-funding and peer-to-peer loans (Economist Intelligence Unit, 2013). For the purpose of this thesis, microfinance refers to the broader concept of serving the poor with a wide range of financial services.

Over the past 30 years the number of MFIs has skyrocketed, with more than 10 000 institutions in 60 countries, covering a potential market of an estimated 400-500 million people (MIX, 2014). With this exponential growth, the number and depth of services offered by MFIs has also increased tremendously over the past decades. MFIs have historically operated in fragmented markets, with low supervision, unknown industry standards and no common framework (Brau & Woller, 2004) Microfinance services have however long since moved from exotic and unknown territory into a global and well analyzed business (Stewart, 2010). A full MFI "eco-system" has developed in the past decade, with financial benchmarking, academic literature, rating agencies, and not least funding sources from the developed world.

A widening of the term *microfinance institution* has also occurred. From small, but conventional micro banks "on the corner", to large publicly owned institutions serving millions of clients, MFIs have become more and more diverse. There are however mainly 5 types of institutions that fall under the traditional MFI umbrella (CGAP, 2006; MIX, 2014c). The informal and member based financial co-operatives, non-governmental organizations (NGOs) that have pioneered the industry, and three different types of financial institutions. Rural banks, which target clients in non-urban areas and for mostly agricultural activities, have emerged in contexts with large agricultural sectors (CGAP, 2006). Non-bank financial institutions (NBFIs) are mortgage lenders, insurance companies, consumer credit companies, insurance companies and other specialized MFIs. Lastly, commercial and specialized microfinance banks are licensed and usually regulated institutions that either fully or partly focus' on services to the poor. Additionally, Internet based sources of funding for different groups of the poor such as www.kiva.org, have in many ways re-innovated microfinance institutions. This type of credit access will not be considered here.

3.2. Key concepts of microfinance research

3.2.1. Institutionalists versus welfarists: the paradigms of microfinance

One of the most fundamental discussions in microfinance is the basic definition of the goal and mission. Microfinance institutions are institutions with a so-called double-bottom line (Morduch, 1999). This concept refers to the fact that mot MFIs act not only in the best interest of financial returns, but also has an obligation towards creating social impact (Christen, et al., 2004). Although there has been a shared goal of providing credit for small enterprises and a common rhetoric for poverty alleviation, approaches to the issue differ amongst MFIs, stakeholders and scholars. Where the early proponents of microfinance saw it as a pure social instrument, the financial viability soon became apparent. Morduch (2000) identified an apparent division and misalignment between two schools of thought, which he dubbed the "microfinance schism". These two schools take fundamentally different approaches to the goal of a microfinance institution. Woller, Dunford & Woodworth (1999) explain this debate in detail through a theoretical discussion.

On the one hand, the *welfarists* emphasize the concern for the poor, and trump the social goal of an MFI over all other objectives. This approach is less interested in using financial services per se, and more focused on the *depth of outreach*[2]. Self-employment of the poor, direct alleviation of the worst effects of poverty, and an inherent focus on the poorest of the poor, hereunder women, is the central objective. The requirement of subsidies, either through external donors or by cross-subsidization of richer segments of clients, is seen as necessary. This approach has much in common with more traditional aid programs, and above all else seeks to improve life conditions for all of the poor (Woller, et al., 1999). The early microfinance players such as Grameen Bank and village banking programs in Latin America pioneered this understanding.

Institutionalists on the other hand, argue that the primary objective is to create financial *system* in which financial services to the poor is dominated by the regular capitalistic free market. The focal point is on financial self-sufficiency, and the number of clients takes precedence over the depth or levels of poverty reached. In other words, the attention lies on the institution and its survival, thereby followed by an implicit assumption that survival equals success. Subsidies are therefore shunned, as they are believed to lead to lower efficiency. The ultimate goal of microfinance is in other words "to reduce poverty without ongoing subsidies" (Cull, et al., 2007, p. 2). The most prominent examples of this approach to microfinance have been the hugely successful Banco Solidario (BancoSol) in Bolivia and the recently publicly noted Compartamos in Mexico.

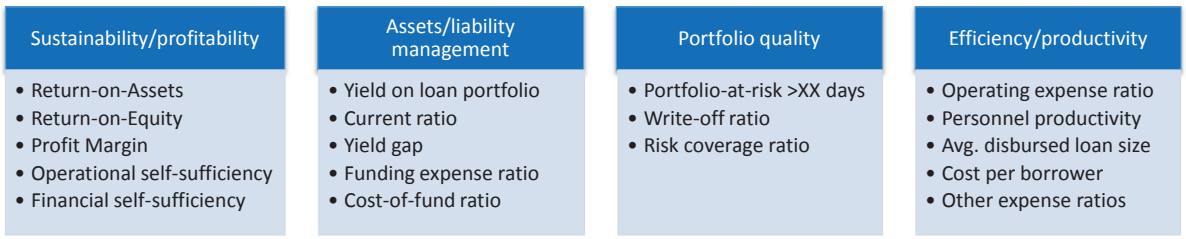
[2] See next section on social outreach for explanation

Both schools of thought have simply assumed a beneficiary impact. In the last fifteen years since Morduch formulated these paradigms, a school of literature has come out to prove and disprove different approaches. An overwhelming majority of the most cited studies, reports and books such as Armendáriz & Morduch (2010), Cull et al. (2007) and Duflo & Banerjee (2013) take an institutionalist view. The different understandings of microfinance would imply different ways of measuring the "success" of a microfinance institution. Just as Morduch (2000) and Cull et al. (2007) suggest however, these two approaches need not be mutually exclusive. The thesis therefore explores the impact on social outreach and financial performance in unison.

3.2.2. Measuring financial performance

Together with a shift in focus from purely social to financial returns, the measuring of financial performance has also been standardized. The Consultative Group to Assist the Poor created a set of guidelines for the measurement of what they saw as four key categories for MFI financial performance, as seen in the illustration below.

Figure 7: Financial performance categories



Source: Author's own illustration based on CGAP (2003)

Financial sustainability is mostly based on traditional metrics' such as return-on-assets/equity (ROA/ROE) and profit margins. The argument has been made that these metrics' do not provide a full enough picture of MFI profitability (Cull, et al., 2007). In order to understand the full uses of inputs and outputs in MFIs, the *operational self-sufficiency* (OSS) has been developed. The OSS basically measures the ratio of revenues to costs in an MFI (Ahlin, et al., 2011). It indicates how well an MFI is able to cover its costs through operating revenues (Hartarska, 2005). Equation 1 shows the full formula, as formulated by MIX and supported by e.g. Karlan & Goldenberg (2007).

Equation 1: Operational Self-Sufficiency

$$OSS = \frac{Financial\ revenue\ (including\ subsidies)}{(Financial\ Expense + Impairment\ Loss + Operating\ Expense)}$$

Source: (MIX, 2012a)

As a stricter "de-subsidized" measure, Cull et al. (2007) also employed the *financial self-sufficiency,* which excludes subsidies. Both are decomposed into three components; 1) Financial costs and revenues, 2) losses due to default, and 3) the operating costs (Ahlin, et al., 2011).

Lastly, the *quality* (repayment rate) of an MFI portfolio has been measured through the proportion of loans outstanding with more than 30 days delinquency (e.g. MIX, 2012a; Mersland & Strøm, 2009; CFDG, 2014). The portfolio-at-risk for 30 days (PAR-30), has been used as a financial metric actually measuring the social effect on clients in terms of their ability to repay loans. These variables will be further discussed and analyzed when defining the model used in section 6.2.

3.2.3. Measuring social performance and outreach

On the other hand, the definition of social performance, or social impact of an MFI is an issue that has been much more widely discussed. It is a debate that is still ongoing, but some patterns are nonetheless observed. Social *performance* as such has in literature been defined very differently, depending on what the authors seek to measure. Some cite the effect on macro level poverty indicators such as income inequality and proportion under poverty lines (e.g. Hermes, 2014 & Imai et al., 2012), whereas others focus on effects on the immediate community surrounding an MFI (Banerjee, et al., 2013). Lastly, some practitioner reports have focused on individual business owners and their families (e.g. McNamer (2010)). The Social Performance Task Force (SPTF), a coalition of microfinance stakeholders, emphasizes a dual-objective approach; "*the effective translation of a microfinance organization's mission into practice*: *A double bottom line institution seeks both social and financial performance*" (SPTF, 2014). It is therefore important to emphasize that social performance per se has different meanings, and is not entirely clearly defined among all stakeholders.

Karlan & Goldenberg (2007) in their review of impact evaluations argue for a holistic view on social performance and social impact indicators, as summarized in Table 1. The sheer number of methods and factors to consider indicates the depth of the impact discussion.

Table 1: Social impact indicators

Impact indicator	Characteristics and potential problems
Enterprise income	• Change in household income/consumption • Change in business *profits*, needs to be higher than the loan to measure loan *improvement* • Increased investment into enterprise
Consumption or income levels	• Number of clients moving out of poverty – measured against "standard poverty line" – relative to other instruments of poverty alleviation
Consumption smoothing	• Measuring the decrease in risk or the ability to use credit as insurance device • Number of "hungry days", interviews on coping with deaths/illnesses etc.
Wider impacts	• Non-monetary effects, including but not limited to: education, nutrition, empowerment (of e.g. women), social capital • Can be measured through monthly consumption of nutritious food, % enrolled in school, height/weight-for-age, water access, etc.
Spillovers	• Positive and/or negative spillovers on general community – increased economic activity, can also be transfer of sales instead of generating new • Programs can be expected to generate effects for non-participants as well, control groups often inefficient
Impact on the MFI	• Standard financial ratios • Repayment, client retention, client composition, new clients • Do not directly measure client outcome, takes institutional approach • World Bank distinguishes inputs, outputs who contribute to *outcome/impact*
Timing of measurement	• Impacts on consumption, debt levels and welfare must include time dimension • Longer term effects to distinguish from control groups • Consider different effects between e.g. consumption loans and investment loans

Source: Author's own table and description based on Karlan & Goldenberg (2007) and Woller et al. (1999)

All of these indicators are – although holistic – still academic ideals that are hard to measure, and even more so to determine the *causal* effect of. The author's also discuss a range of barriers that are attached to each method acknowledging the difficulty in impact measurement. The 'impact on the MFI' category is the most commonly used in quantitative analyses, although it has limitations.

In most academic use of social measurement on the institution level, the social *outreach* rather than performance has been used. This outreach also encompasses a sort of social performance, but is centered on the *social benefits* of microfinance for poor clients (Schreiner, 2002). Academic research as early as Yaron (1992) suggested the use of outreach, because this term could be more directly and more easily measured. He proposed using the size of loan portfolio, the average loan size, the amount of savings, variety of services offered, number of branches, percentage of target population reached, and lastly the ratio of women served, as outreach indicators. The logic was that these quantitative measures could better truly indicate e.g. how poor the clients were compared to self-reporting or other qualitative measures (Yaron, 1992). Christen, Rhyne and Vogel (1995) complemented this discussion by characterizing these measures into three dimensions: *quality* of outreach, *depth* of outreach, and *scale* of outreach. Schreiner (2002) added to this, citing the worth and cost to clients as equally important, measured through proxies such as waiting time for a loan and net gain by the client. Lastly, the *scope* of outreach referred to the number of services and products

for clients. Most pertinent of these categorizations has been the depth of outreach, which has become a common tool in quantitative research. Average loan sizes as a proxy for the poverty level of MFI clients, percentage of female borrowers as a proxy for the diversity of clients, and number of borrowers as a proxy for the scale of an MFI are the most commonly used variables (Brau & Woller, 2004).

For the relevance of this thesis, it is important to realize both the implications and not least limitations of this approach. First of all, the explanatory power for actual social outreach is limited, as loan size and percentage of female borrowers may have many other non-measurable exogenous factors affecting them, as discussed in section 3.3 and 6.2.1. Secondly, the results that are found will be restricted to finding the effect on e.g. average loan size; the generalization from loan size to reaching poorer clients is not necessarily direct. The discussion around the theoretical limitations, as well as the strategy to mitigate these will be conducted in section 6.5.

3.2.4. Mission drift

Many early proponents of microfinance advocated a "win-win" proposition, in which they claimed that those MFIs following best-practices and traditional banking principles would also be the ones alleviating the "most" poverty. In other words, that financial performance and social outreach were complementary rather than substitutes. This largely follows the institutionalist view, yet as microfinance has evolved, many doubts have been cast upon this belief (Morduch, 2000).

A number of researchers have proposed that there exists a "trade-off", in which an MFI needs to sacrifice its social outreach and performance in order to perform financially. In other words, that rather than do good *and* perform financially, an institution has to choose. The key argument being that the average MFI has very finite resources, and a choice to follow. This choice, or rather, this move, is called *mission drift* within the field of development (Christen, 2001). As microfinance has evolved and become more and more like commercial banking, the question of institutions sacrificing outreach to gain competitive financial returns has been widely discussed and researched. The increased commercialization of microfinance institutions is undisputable, as evidenced in several articles (e.g. Cull et. al, 2007; Armendáriz & Szafarz, (2011); Mersland & Strøm, 2010). The implications of this commercialization is however a subject of much more debate. Some early literature actually suggests that the benefits from commercialization outweigh the risks of a mission drift (Woller, 2002).

In empirical studies, and for later use in the thesis, what this mission drift basically means is the increase of financial metrics such as the discussed OSS, ROA and profit margins, in "exchange" for less depth in outreach, meaning higher loan sizes, less female borrowers and total borrowers and to a certain extent a lower repayment rate (PAR-30). Copestake (2007) builds a theoretical framework for why mission drift

should occur; using the financial and social performance variables suggested by Yaron (1992) and Schreiner (2002). He finds theoretical evidence both for why mission drift should occur (e.g. higher interest rates creating higher profitability due to inelastic demand), but also for how it can be avoided through responsible management practices.

3.2.5. Key research areas

A preliminary look into the most prominent articles revealed that much of the empirical research conducted has been done in order to answer 2 main questions:

1. *What drives profitability and mission drift in microfinance?*
2. *What is the impact of microfinance on poverty?*

The next part of the review will therefore focus on these parts of the literature. In some instances the focus will consciously lie on quantitative over qualitative studies.

3.3. What drives profitability and mission drift in microfinance?

This has until recently been the largest area of research. Based on the most relevant areas for the thesis, it has been divided into 5 sections as seen below.

Figure 8: MFI specific research overview

Source: Author's own illustration

3.3.1. Profitability

Most microfinance research conducted before the turn of the century was either limited to specific areas or institutions, or suffered from a lack of sufficient data to generalize conclusions (Brau & Woller, 2004). Many of the theories established ere unsupported by empirical findings. As databases such as the Microfinance Information Exchange (MIX) were established[3], quantitative evidence for many unsupported claims could be constructed.

Cull et al. (2007) conduct the most comprehensive quantitative analysis to date, by analyzing the financial performance and social outreach of early MIX data on more than 124 MFIs in 49 countries. Through a rigorous adjustment and validation of data, they use the *financial self-sufficiency*, *average-loan size* and a

[3] See section 5.1 about the Microfinance Information Exchange

number of other profitability and social outreach variables as dependents. These variables have become standards in following research. They ask a series of questions from earlier literature on trade-off and mission drift between profitability and depth of outreach (Morduch, 2000) and on the impact of interest rates on agency-problems (Stiglitz & Weiss (1981) & Morduch (1999)). Supporting theory on interest rates, they find that higher interest rates also means higher portfolio-at-risk (PAR-30), or lower repayment rates. Surprisingly however, they find that interest rates increase profitability (FSS), but only up to a certain point, consistent with traditional supply-demand theory (Nicholson & Snyder, 2011). Using average loan size as a proxy for outreach, they do encounter some institutions that achieve both financial sustainability and have a high outreach. As they disaggregate the MFIs into individual-lenders, group-lenders and village banks however, there is a clear trend that highly profitable individual-lenders are those with the highest loan sizes. This supports the perception of a mission drift, but the authors point out that the trade-off occurs when serving the poor*est* client group. They also find that village banks (who typically have a higher social focus) serve a much higher percentage of women. Their study set the baseline for a multitude of following studies performed, and their overall conclusions have been confirmed and replicated by a number of studies (e.g. Kar & Swain, 2014; Mersland & Strøm 2009; and Hermes et al., 2014). In many ways, the study was the first to empirically investigate the existence of a trade-off between social outreach and portfolio quality, and profitability. To a large extent, their main conclusions did support the theoretical claims made in the decade before.

3.3.2. Commercialization

In 2008, the World Bank reported that the funding of MFIs had attracted $14,8 billion in foreign capital, a 24% growth from the year before. This shift also led to an increasing number of MFIs pursuing a for-profit strategy, and led to a discussion on whether microfinance was losing sight of its mission to alleviate poverty (WSJ, 2010). The empirical investigations of this commercialization have also increased over the past decade.

A number of studies find some evidence of mission drift, employing more or less qualitative research methods (e.g. Hishigsuren (2007) and Fernando (2004)). Mersland & Strøm (2010) further investigate the claim of mission drift in the microfinance industry, following the public offering of MFI Compartamos in 2007, which lead to allegations of relentless profit-seeking (Rosenberg, 2007). Using a number of mission drift measure proxies such as average loan size, lending methodology, main target market and gender bias, they use panel data regressions to estimate the effect. They find that neither measure show significant tendencies toward mission drift, and suggest that focus should lie on cost efficiency and operating costs rather than on revenues. They argue for a co-existence of MFI objectives, and that efficiency should be the main target of investigation. This is as such the most cited empirical study to disprove the existence of mission drift.

In one of their follow up studies of the 2007 overall assessment, Cull et al. (2011) find that regulatory supervision may actually contribute to a larger degree of mission drift. They find evidence that effects are however different by institution type. Whereas profit-oriented institutions are more likely to maintain profit rates and diminish outreach with supervision, less commercial institutions maintain outreach and reduce their profitability. This gives an important indication, with mission drift not being an overall movement of the industry, but rather a decision dependent on MFI management and goal. As such, it establishes an important precedence for later use in this thesis; MFIs make individual, conscious choices when it comes to their focus on objectives, and are not driven by an overall need for financial returns.

Some later theoretical research has tried to disaggregate the discussion, separating commercialization and mission drift. The most cited pointed at the need to review the entire discussion of mission drift. Commercialization and a following move from depth of outreach to profitability is only one explanation for increasing loan sizes it is argued. Through a theoretical one period framework, Armendáriz and Szafarz (2011) explain how "mission drift" as it is usually empirically measured, may just as well occur due to cross-subsidization of clients and progressive lending. Region-specific clientele parameters and the interplay between all these factors are just as probable to cause an increase in average loan size. Therefore they argue, the empirical conclusions towards mission drift should be revised, as one cannot simply deduce a deviation from poverty reduction objectives through larger loans.

In another study on microfinance commercialization, Cull et al (2009) further argue against a mutually exclusive outcome between financial and social performance. Microfinance will probably follow several paths in the future they argue; although commercial investment is necessary to fund growth in the industry, MFIs with strong social missions and subsidy requirements can serve the poor in the best way. This remark is in many ways what is tested in the thesis.

3.3.3. Interest rates

The setting of interest rates has been one of the most controversial aspects of MFIs. Claims that profit-hungry, commercially driven institutions have run their clients into bankruptcy through skyrocketing, unsustainable interest rates have recently increased (WSJ, 2010). At the same time, some argue that MFIs are justified to charge higher interest rates, due to the nature of their clients and services (Rosenberg, et al., 2010). As the region of Andhra Pradesh in India faced financial crisis in 2010, many blamed the increasing and irresponsible practices of MFIs in the region (Kaur & Dey, 2013). Consequently, research on the interest rates of MFIs expanded.

The use of the average yield on gross portfolio (all interest and fees) as a proxy for interest rates is established and discussed by Gonzalez (2010) and (Rosenberg, et al., 2013). The latter find that global MFI interest rates have actually declined, before leveling off in 2007-2011. An increased commercialization of funds have actually meant that the cost of these have risen, and along with rising administrative costs have contributed to the leveling off in interest rates. The proportion of both total loan payments and interest payments that go to profits has decreased significantly, evidence *against* increased exploitation of clients due to profit seeking. The interest rates of those institutions serving the poorest have however risen, as opposed to the rest of the market. These institutions are also the most profitable. The conclusion regarding a mission drift is thus ambiguous.

Answering to the question of whether commercialization affects the setting of interest rates, Roberts (2013) further investigates the claim. He analyzes the relationship between adopting a for-profit legal form and interest rates. With a subset of 358 MFIs he uses the average 'Yield on Gross Portfolio' as a dependent variable, and has three explanatory factors; the adoption of a for-profit legal form, private sector and banking 'acumen' representation on boards, and for-profit networks. He finds consistent evidence that these variables do in fact increase interest rates. More surprisingly however, is the fact that these increased interest rates do not contribute to higher profits, but actually cause higher costs and lower sustainability. Roberts' study thus contributes to an explanation of interest rates as being determined by more than just commercial motivations. Still, it is another indication of a form of mission drift. Although not sustainable, the MFIs tend to set higher interest rates and thus focus more on profits than social outreach.

Some recent evidence supporting the claim of higher interest rates for financial sustainability has however also surfaced. Kar & Swain (2014), find that real YGP *positively* impacts both financial performance and repayment rates. This contradicts the evidence of both Roberts (2013) and Mersland & Strøm (2009). Mission drift as measured by loan size also occurs, but differs depending on lending methodology. Where individual lenders show greater profitability and higher mission drift, village banks are weaker at both. These diverging findings indicate the need to further investigate the area, as mission drift is more complex than a simple trade-off at the overall level.

3.3.4. Efficiency

One of the great challenges of an MFI is to "lower its operating costs in order to reduce the cost of service borne by borrowers" (Gonzalez, 2007a, p. 1). Rather than interest rates, the focus should lie on increasing efficiency and decreasing operating costs, as these are the largest contributor to interest rates (Rosenberg, et al., 2010).

Gonzalez (2007a) first argued for the importance of efficiency, and finds that it is connected with characteristics such as age, scale and loan size. The benefits from scale are diminishing, whereas loan size increases the efficiency of an institution. This is a clear indication of a trade-off. Lastly, he supports the later findings of Ahlin et al. (2011), by finding evidence of country-specific and regulatory effects on the level of operating costs.

Developing on this analysis, several studies have investigated what other organizational features determines efficiency. Some evidence surprisingly shows that NGOs are the most efficient for fulfilling their dual-objectives, although microfinance banks are the most efficient as intermediaries for capital (Haq, et al., 2010). Banks are also expected to perform the best in the long run.

Another study tries to measure the efficiency of different microfinance institutions, and finds a mission drift-similar trade-off between outreach and efficiency (Hermes, et al., 2011). Efficiency is measured as the operating costs as a proportion of total assets. In other words, the most efficient MFIs serve clients that are not as poor. Earlier research has furthermore focused on the impact of country and organizational specific effects, and found that these are what matters most for efficiency, and in turn profitability (Gutierrez-Nieto, et al., 2007). The evidence found further strengthens the notion of a trade-off between financial and social performance. Still, it is unclear whether organizations become efficient from serving poorer clients, or if those serving poorer clients are less efficient.

3.3.5. Governance

Many early studies in microfinance emphasized the critical role of good governance for the success of MFIs (e.g. Campion (1998) & Rock, Otero & Saltzman (1998)). The empirical analysis of effects from governance has until recently still been of secondary interest in the industry and in research (Pistelli, et al., 2012).

Hartarska (2005) performs one of the earliest quantitative studies on MFI governance. She argues that the different organizational forms of MFIs make it hard to benchmark different governance practices. Regular corporate governance theories still apply to many MFIs she argues. Her evidence shows external governance mechanisms such as regulation and rating have only limited impact on both outreach and financial performance, although audit committees shows a significantly positive effect on the depth of outreach. Internal governance mechanisms such as the board of directors are key factors for both sustainability and

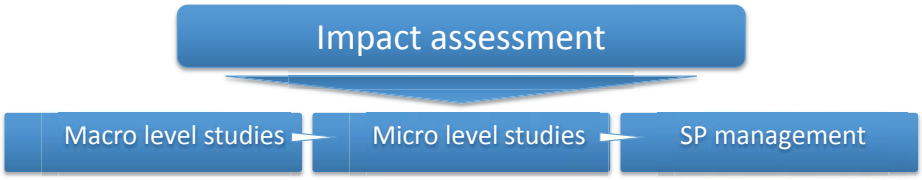
outreach. A finding interesting for this thesis is that whereas boards with higher numbers of donor representatives increase outreach and worsen financial sustainability, financiers on boards promote financial sustainability more than others. Where Hartarska implies that MFI governance has similarities to public company governance, Mersland & Strøm (2009) underline the need to have an industry specific approach to MFI governance. Their findings contradict a number of agency theory supported governance research. Surprisingly, shareholder firms seem to not perform differently than non-profits. These studies confirm the need to investigate governance more broadly and from an institutional point of view. The lack of recommendations on governance mechanisms for improved MFI to customer relations is significant.

Lastly, a subset survey of the MIX dataset makes a number of interesting observations. The study finds that there exists a strong positive correlation within governance mechanisms, indicating that good governance procedures exist in unison (Pistelli, et al., 2012). This is interesting in regards to the findings of Pistelli et al. (2011), as it implies that MFIs with regular governance mechanisms in place should also be the ones prevalently focusing on social performance committees and training on boards. They find no significant relationship between board independence and audit committees, and financial performance. This contrasts the evidence of both Hartarska (2005) and Mersland & Strøm (2009), and leaves the governance impact on MFIs unclear.

To summarize, mission drift in MFIs cannot be conclusively determined, and one should be careful in interpreting evidence towards it. Repayment rates seem to be driven largely by strong financial performance. However, multiple sources indicate a trade-off between social outreach and financial performance. This is only partly translated into client exploitation through higher interest rates, as they are not just a result of profit maximization motives. Literature on efficiency further implies a trade-off, as efficient MFIs are less likely to serve the poorest. Risk in MFIs has different definitions depending on the stakeholder, but commonly translates as volatility in repayment rates, loan methods, operating costs (efficiency) and interest rates. Governance in MFIs seems to share some similarities with public companies, but the need to be industry specific is also evidenced Some evidence arises for *internal* governance mechanisms having a positive effect on sustainability and outreach. Furthermore, the need to include MFI-specific institutional factors when modeling any effects is highly relevant for future use in the thesis. Age, size, institution type and interest rates are all determinants of a MFIs social and financial performance. Lastly, a key point is the fact that the mission drift phenomenon is consistently measured as the impact of financial variables on social outreach indicators such as average loan size and proportion of female borrowers.

3.4. Studies on social performance: Does microfinance work?

Figure 9: Impact studies research overview



Source: Author's own illustration

As has been pointed out, there are several reasons why an assessment of social impact is relevant: Impact evaluations are good for market and client research, and provide information on what services products works best for particular types of clients. This information is of great use to practitioners and policy makers alike. Finally, in order to justify the use of microfinance and the funding of these institutions, they need to be economically viable relative to the next best solution (Karlan & Goldberg, 2007). Deviating somewhat from a holistic perspective, impact assessment has generally taken three forms (Imai, et al., 2012): 1) Randomized control trials, 2) financial diaries/portfolios of the poor, and 3) quasi-experimental estimation techniques on cross-sectional and panel data.

3.4.1. Micro level studies

The first two categories refer to micro level studies that measure the community-, area- or family level effect of microfinance. Duflo & Banerjee (2013) pioneered the use of randomized control trials (RCTs) by following the Spandana microfinance institutions opening of a branch in 52 out of 104 neighborhoods in the Indian town of Hyderabad. Through a lengthy program of trailing the individuals in both sets of neighborhoods, they measure the effects from taking loans. They find that although small business investment and pre-existing business profits increases, effects on health, education and women empowerment are largely lacking. The initial study was conducted in 2010, and the authors conducted a check-up on participants two years later. Although the overall poverty level had gone down, there seemed to be no significant differences persistent as a result of MFI presence. Similar studies conducted in Bolivia, Bangladesh and Zambia find similar effects.

The broad range of RCTs and self-reporting studies of the poor has had a profound effect on one of the fundamental assumptions of microfinance; that it is an effective tool to combat poverty. The evidence however has been inconclusive and in some instances seems biased by the authorship. The overall conclusion is nonetheless in the direction that "microfinance *is not* miraculous, but it *is* working" (Traca, 2013).

3.4.2. Macro level studies

The third category of impact studies takes a more quantitative approach. The findings of macro level research indicate that microfinance is indeed associated with the alleviation of poverty. The depth of that connection is however very different. Up until the end of the 00's, evidence ranging from sizeable positive effects in Bangladesh to a net-zero effect in Thailand emerged (Cull, et al., 2009). As one of the first truly national level studies, Imai, Arun & Annim (2010) try to measure whether access to microfinance reduces poverty in household in India. They find a significant positive effect from MFI access. This is supported by later evidence that a higher presence of MFIs, as measured by the MFI gross loan portfolio per capita, is associated with lower levels of poverty indices (Imai, et al., 2012). Using a combination of MIX and World Bank panel data for 48 countries, the study even argues strongly that the use of subsidies for microfinance is justified by their findings.

New research however suggests that their claim may be a bit rash. Hermes (2014) approaches the subject through a different lens, and addresses the question of whether microfinance affects income inequality as measured by the GINI coefficient. He does find a positive relationship between MFI presence and less inequality. The effect is noted to be significant yet petite, and the author specifically warns against seeing microfinance as a universal cure-all to poverty. Secondly, as noted by Traca (2013) and Banerjee & Duflo (2013), there are pitfalls in using the relative small size of the microfinance industry compared to the national economies in the samples of all quantitative studies.

Overall, the impact assessment discussion of microfinance has distinctly taken the edge of the traditional "silver-bullet" argument of microfinance on poverty. A number of MFI specific qualitative studies find that MFIs have a limited impact on poverty, and question the justification of subsidies. Macro level studies on the other hand, find some evidence that microfinance decreases poverty on national levels, although the size of the effect is still open to doubt. MFIs have come under intense scrutiny, and the debate is still inconclusive. It has simultaneously created an awareness of the need for monitoring and employing responsible practices in the individual MFI.

3.5. Social performance management (SPM)

As a response to impact discussions and an increased demand for transparency on impact, more data has emerged on the measurement and reporting of *individual* MFI social effects (MIX, 2010). There is however limited research on social performance *reporting*. A new line of studies provided in the Micro Banking Bulletin in the past couple of years have investigated the link between newly available social performance data from the MIX database and different characteristics of MFIs. Their relevance for the thesis lies both in their findings and their definitions of social performance, as the data they use will be the basis for later model building. It is moreover interesting to note the focus on aligning both financial and social goals.

In a survey of the intial social data collected by MIX in 2009 and 2010, Pistelli, Simanowitz & Thiel (2011) report a number of interesting findings related to the *measurement and self-reporting* of social performance[4]. First of all, the reporting of social performance is not an area only considered by the non-profit sector, but a wide variety of legal form MFIs report on the matter. Furthermore, competitive/mature market MFIs, those funded by impact investors, and those with strong local microfinance networks are more likely to report on the matter. The external environment in other words matters for the *reporting* on SP, and as an extension, one could assume it also matters for the social *performance* itself. Secondly, implementation of SP measures and reporting benefits strongly from a governance structure that emphasizes social goals. Training and social committees to review SP indicators are important, yet in 2009-2010 they were not very widespread. Lastly, some MFIs have indiated that they measure their poverty outreach. The effects of this tracking is still unexplored (Pistelli, et al., 2011).

Extending the 2011 analysis, Pistelli, Pierantozzi & Hamadi (2014) investigate the reporting on social performance in relation to investor characteristics. Their analysis of 658 MFIs conversely finds no evidence that funding structure is dependant on social agenda. This is also because most MFIs do indicate that they operate after social goals and not just financial goals. Interestingly, only a fraction of MFIs report on the social *outcomes*, regardless of ownership. The article emphasizes that MFIs have a number of tools available to measure poverty levels and outcomes, and imply that measuring the poverty data of clients is an important tool towards ensuring social impact. A number of trends for MFIs at least partially funded by social investors are also uncovered. These MFIs tend to report stronger focus on start-up development, and a broader array of services such as voluntary savings and mobile banking. In contrast with much previous literature, it is also indicated that they demonstrate higher portfolio quality as measured by the PAR-30 and a higher return on assets (Pistelli, et al., 2014). This finding is interesting as it is an add-on to earlier evidence of mission drift. If impact investors serve as valid a proxy for MFI social focus, yet these MFIs have higher repayment rates

[4] Their dataset is a previous version of the one used for the thesis, and a full explanation can be found in section 5

and ROA, then it is actually a contradiction of mission drift. Specifically, it may actually indicate that the trade-off between financial and social returns is not as strong as previously believed.

Measuring the social dimension of individual MFIs is fairly new, and only preliminary research is available. The findings from these are however indicators that the social dimensions are increasingly reported on, and that ownership, legal form and commercial objectives are of low importance in terms of measurement and reporting. Other tools such as governance mechanisms, poverty outreach and client responsibility do need to be researched further.

3.6. Summary

First and foremost, a microfinance institution (MFI) exists in order to serve two very different yet interrelated goals; financial sustainability and social impact. Depending on the fundamental view on the purpose of microfinance, one may be more prevalent than the other in any given MFI. Financial performance is usually measured based on the MFIs *operational self-sufficiency*. Measures of social goals and performance are hard to determine, yet conventional research uses social *outreach* proxies such as the average loan size, the ratio of female borrowers and the number of borrowers to measure it.

- The **institutional branch** of research reveals several important aspects. Predominantly, the commercialization of institutions has initiated a debate on mission drift in MFIs. The empirical results are inconclusive, although most evidence points towards a trade-off between financial performance and social outreach. There is however a need to broaden the discussion from just traditional social outreach proxies to a more holistic view. The extent to which regular governance mechanisms can be applied is still on debate; however internal mechanisms such as audit committees seem effective. Some evidence for ownership affecting mission drift surfaces. MFI-customer dimensions within governance should be explored in more depth. Secondly, a number of structural characteristics such as age, size, legal form and profit status are important determinants to MFI financial and social performance
- The **impact assessment** studies show that microfinance is not a panacea by itself. Whereas studies on the macro level find evidence for poverty alleviation, random control trials are less certain on the size and depth of this effect.
- **Social performance measurement** is a relatively unexplored area of MFI research. Data on SPM has only recently become available, and preliminary investigations imply that most MFIs report *intent* and *commitment* rather than outcome. The increasing number of social performance management tools should be explored in more depth.

It is clear that the research within microfinance has moved from establishing determinants of MFI profitability and outreach, to a discussion on its wider social impact.

4. Empirical and theoretical foundation

In this chapter of the thesis, the theoretical/empirical framework and hypotheses will be presented. The chapter will focus on creating a rationale for the research question and its overall hypothesized answer. This will be based on the findings in the literature review.

4.1. Research question rationale

- *How do poverty measurement, compulsory insurance, females on boards and board commitment to social goals affect the profitability, repayment rates and social outreach of a microfinance institution?*

From a review of the literature and theories within microfinance, the rationale behind the research question can be more easily understood. The question comprises two important dimensions, derived from MFI-specific and impact assessment research. First, there are individual MFI characteristics in play. Secondly, those characteristics are all related to the social commitment and by extension performance and impact of a MFI.

The impact branch of research lacks a very important dimension. Rather than taking the individual MFI characteristics into account, it generalizes all institutions. Macro level studies see microfinance and MFIs as a whole and measure the impact general MFI presence has on the overall economy. This presence is however microscopic in comparison to overall economic variables and even the authors of some studies are careful in drawing inferences from the results (Hermes, 2014). RCTs such as that of Banerjee et al. (2013) choose a more or less random MFI and take little consideration into the exact practices and services utilized. The studies focus more on the *if* and *how* rather than the *why* and *when* of impact assessment. Newer studies on SP reporting try to cover those dimensions, but are scarce and lack a scientific approach.

The MFI specific studies covered are on the other hand much more focused on those exact questions. Cull et al. (2007, 2009, 2011), Hermes et al. (2011) and Mersland & Strøm (2010) all focus on the determinants of profitability and outreach. They seem to find existing evidence of commercialization, and to a certain extent, mission drift in MFIs. They all investigate the issue from a financial sustainability angle. In doing so, they neglect the dimension of impact assessment. This raises a series of questions. What about social performance then? If relentless profit seeking in MFIs leads to less focus on social outreach, what about the effect of social performance focus on profitability? In other words, assuming that mission drift does occur in MFIs, should there be a reverse mission drift effect from an inordinate focus on social goals?

Cull et al. (2009, 2011) propose the notion that MFI individual characteristics should determine which objectives it focuses on. Additionally, they argue that both socially oriented and profit-seeking firms will be needed in the world of microfinance in the future. They do not however empirically test concrete social orientation proxies other than organizational status and stated objectives. The reason why this has not been investigated thoroughly is twofold. Measuring and evaluating the social impact of individual MFIs is still a broad discussion, with no framework for methodology set, as discussed in section 3.2.3 on impact evaluation possibilities. As a result, the data availability has been scarce at best.

Literature bridging the gap between impact assessment studies and MFI specific research is largely inexistent. The studies of effects from financial and institutional characteristics on proxies for social outreach are widespread, yet *the effects of social performance on profitability* have not yet been thoroughly investigated. Mission drift and measurement of its effects has only been done using financial data. The gap then lies in combining the questions:

1. Why and when do microfinance institutions have an impact on their community?
2. Does focus on social performance affect the financial performance of MFIs?

The answers to these questions, with two slight revisions, are the build-up to the final research question. First, as evidenced by MIX' latest efforts of measuring social performance, elaborated on in section 3.5 on SPM, the *outcomes* of social goals are rather hard to measure. As a result, very few MFIs report on these numbers, most do not know exactly what to report on, and the efforts are rather hard to benchmark. Additionally, reporting on these factors may be subjective at best and highly biased and unreliable at worst (Krell, 2014a). Therefore, rather than a confusing focus on social performance in itself, the *reporting, commitment and intent* towards social goals is the most appropriate proxy available. This can be more easily measured, is more objective in the sense that it requires no subjective benchmarking, and has a larger pool of data available. Therefore, the research question focuses on social commitment. The logic lies in that those MFIs who report on SPM, and who commit to focusing on social goals are by extension also those with a better social performance. The overall performance however, is as shown in the literature review dependent on many factors. Most empirical studies have looked at social outreach and portfolio quality as well as financial performance. The previous questions are at this point merged into one:

How does a commitment to social goals affect the social outreach, financial performance and portfolio quality of a microfinance institution?

Second, in building a quantitative model, the use of proxy variables is common as data on the relevant variables may not be directly observable. Since there is always a risk that these proxies are inherently weak, a general caution should be exercised in generalizing (Gujarati & Porter, 2009). To avoid this potential pitfall, there is a need to concretize the research question. Therefore, the revised research question is specified to include the actual variables included in the model, rather than the wider concepts they proxy for. The choosing of the dependent and explanatory variables of the model is discussed in section 6.2 and 6.1. The explanatory variables are however fundamentally chosen because they are believed to be unbiased, easily interpretable and quantifiable. The dependent proxy variables for social outreach, average loan size and female borrowers are chosen based on much established research as discussed in section 3.2 by e.g. Yaron (1992). The same is the case with profitability (OSS) and repayment rates (PAR-30), which have been widely established and cited as reliable for the use in MFI research. The variables used are as such supported by much existing literature, but also suffer from the constraints imposed by using proxies.

4.2. Hypotheses rationale

In principle, the rationale behind the theory of mission drift implies that the two objectives of an MFI are mutually exclusive. That is, that as proposed by Morduch (2000) and Woller et al. (1999), the co-existence of financial and social sustainability is not directly achievable. The original institutionalist view emphasized that the goals existed in unison, and that financial sustainability secured social impact "by itself". The welfarist paradigm completely disregards financial goals, and as such MFIs with a pure focus on social goals should not see high financial returns. Theoretical models on the subject largely support the existence of a mission drift, but also stress the fact that it can be avoided (Copestake, 2007).

In building the hypotheses answering the research question here is therefore a need for extensive consideration of the objectives of an MFI: To cover its costs, and to create social impact. Specifically, the need to take a position on the co-existence is necessary. Is the double-bottom line of a MFI a liability or an asset? Do the goals of a MFI exist in unison or exclusivity? The answer to this question can have three possible outcomes: 1) There is no particular relationship between the two goals of a MFI and they should be treated separately, 2) there is a negative relationship between the two and there is a trade-off (mission drift), or 3) there is a positive relationship between the two goals and a combined focus will lead to dual improvement.

Most empirical literature points toward the two first, either indicating a trade-off (Cull, et al., 2007) or finding no connection (Mersland & Strøm, 2010). From the investor perspective, a robust and profitable MFI needs to have a strong and proven focus on both goals (Svarrer, 2014). New empirical discussions have also indicated this notion, but without robust evidence (Pistelli, et al., 2014). The thesis has chosen to build its

hypothesis on most existing literature, i.e. implying the second alternative of a trade-off between the two objectives of microfinance. The main hypothesis is thus:

A focus on commitment to social goals leads to a "reverse mission drift" in microfinance institutions, i.e. a better social outreach, higher repayment rates and a poorer financial performance.

The need to consider other possible outcomes than those hypothesized is nonetheless present. The logic in a way also follows on the fundamental economic argument of exhaustible resources (Dasgupta & Heal, 1979). Only here, it is an organization that must allocate these finite resources between two goals. The remaining sub-hypotheses presented in section 1.2 will be discussed and explained in detail in section 6.6 after a variable specification in the next sections. Their underlying logic is the same, and they can all be derived from the overarching hypothesis.

5. Dataset

In the following, an overview of the dataset used is given. Descriptions, characteristics and potential problems are discussed.

5.1. Microfinance Information Exchange

The primary datasets used in this thesis have been collected by the Microfinance Information Exchange (MIX)[5], and contains panel data on more than 2000 microfinance institutions. As of 2012, these institutions serve approximately 80% of the world's microfinance clients (MIX, 2012). The company is a non-profit incorporated in 2002, as a result of a wish to categorize MFI information. It was initiated as collaboration between the Consultative Group to Assist the Poorest (CGAP) and a range of private foundations. It has gathered self-reported financial and qualitative information for a decade, and has helped in establishing industry benchmarks and standard for MFI reporting. It currently has the largest database available on individual MFI indicators (MIX, 2014).

5.2. Financial performance data

The financial dataset contains a list of more than 80 individual variables for each MFI, categorized into several key categories (MIX, 2014a). A number of raw data financial figures such as revenues, costs, defaults, gross loan portfolio etc. are reported. Additionally, MIX calculates several standard financial ratios such as return on assets (ROA), return on equity (ROE), operational self-sufficiency, and profit margins. Detailed operational information on number of borrowers, percentage of female borrowers, average loan size etc. is also available. Lastly, a list of categorical information such as MFI age, country, region, regulation and profit status follows each MFI (MIX, 2014b).

The quality of the data is assessed and monitored by MIX, who standardize, audits and ensures compliance and validity of the data submitted. It goes through a number of quality checks by MIX analysts, including direct contact with the MFI. The data is self-reported by the individual MFI, and the availability of information (i.e. number of variables) can therefore vary. As such, MIX has established a diamond rating system, in which it rates an MFI according to the transparency and reliability of the information. The more reliable, the more diamonds an institution gets. See appendix 8 for a full description.

The data spans from 1999, with the latest observation for the 1st quarter of 2104. For this thesis the observations used were limited to data from 2010-2012, with 2010 and 2011 having by far the most observations. Furthermore, only institutions with financial data on level 3 or above has been utilized, a

[5] from here on MIX

common way to ensure reliability (Ahlin, et al., 2011). For future use in this thesis, the number of *observations* refers to a specific MFI from a specific country in a specific year.

Equation 2: Identification of observation

$$MFI_{i,j,t} \; where \; i = MFI \; , j = Country, t = year$$

5.3. Social performance data

The social performance dataset contains information on more than 1000 microfinance institutions and their practices, commitments and mechanisms in relation to social performance. The Social Performance Task Force (SPTF) here defines the concept of social performance[6]. They focus on the dual fulfillment of financial and social sustainability. It is important to emphasize that their definition, although overlapping with many aspects of academic definitions, is not the same.

Based on this definition, MIX and the SPTF have developed a set of 11 social performance indicators. The criteria were that the variables gathered should be *relevant* for the industry, easily *collectible and verifiable*, and not least *publishable* (MIX, 2010). The data used in this thesis contains data gathered from 2010 and onwards, as the data collection process is still new. It is a survey-based approach that is sent annually to all institutions reporting to MIX. There are a list of sub questions for each indicator on key areas such as governance, social goals and mission, poverty outreach and range of products and services. A complete list of indicators as well as the full survey can be found in Appendix 7. The collected data is divided into two overarching categories; 1) Results indicators and 2) process indicators.

The *results indicators* are time-bound, quantified and focus on MFI outcomes and output, tied to a specific reporting period. The *process indicators* are non-time bound, and give qualitative information on policies and processes for a specific MFI (MIX, 2011). It is however important to note that these are only collected once for each institution, as MIX assumes they do not change over time (MIX, 2014b). As such, the point in time when they were collected does not inflict their use in the dataset. It also has measurement effects discussed in section 7.2 on the econometric procedure. They include information on the board commitment to social performance, the measurement of poverty levels, the position towards compulsory and/or voluntary insurance and deposits, the range of services offered, as well as a number of other factors. The ones used in the model will be discussed in section 6.1.

[6] See page 20 section 3.2.3 for their full definition

5.4. Macro indicators and regulatory framework

The last datasets to be used in the model are macro growth indicators for countries, as well as a dataset to proxy for the regulatory environment in different countries. The macro growth dataset contains annual data on the inflation rate, deposit rate and the gross national income (GNI) per capita. The Doing Business indicators are variables developed by the World Bank, measuring the regulatory framework in each country, and ranking it accordingly. It includes information on several indicators on the difficulty of starting a business, getting credit, paying taxes, enforcing contracts etc. The dataset contains information on what the World Bank calls "distance to frontier", meaning that a country is given a score according to its distance to the best performing country in each category (The World Bank, 2014a).

5.5. Potential problems with the dataset

Due to the relative newness of the social data and collection process, some of the social performance has not been externally verified yet. This creates an obvious risk, as MFIs are incentivized to "enhance" their social profiles. It decreases the reliability of the social performance indicators, and can ultimately affect the results of the model. MIX has however started a desk review process, in which they require all institutions to document their survey answers (MIX, 2013). The desk review has shown that a majority of the data in the model is reliable and truthful, and erroneous reporting is corrected continuously (Krell, 2014).

Another issue is the validity of the financial data. As mentioned, there are several gaps where institutions do not report on data, causing an unbalanced panel. The fact that MFIs report their own numbers may result in numbers that are incorrect or even purposefully favorably distorted. The problem of sample selection arises on several levels. Since the data is self-reported, one may argue that only those institutions with sufficient resources (i.e. size) or those that want to promote themselves (i.e. profitable) will choose to report their numbers. There may also be an issue with survival bias, and there is no variable to indicate whether a specific MFI has had financial difficulties or not (MIX, 2014a).

MIX researchers report that that they view the dataset as a random sample of the best and most efficient MFIs. They argue that this actually strengthens the dataset, as any findings within a high-quality portion of the MFI population probably means an even stronger presence of the finding in the general population (Gonzalez, 2007). Earlier use of the dataset has argued that the data contains too little exogenous variation to reliably estimate causal impacts (Cull, et al., 2007). This problem is mitigated through the growth of the MIX dataset. As an example, the number of yearly observations for OSS has risen from 124 in 2000 to 754 in 2011.

Although there are some weaknesses with the dataset, it is not only the most reliant data that exists, but there are also a number of academic and practical studies that have relied on the same data used in the thesis. The World Bank (Cull, et al., 2007) and the Consultative Group to Assist the Poor (Rosenberg, et al., 2013) have

relied on it before. It is also used and recommended as a source in several reports by acclaimed publishers such as The Economist (Economist Intelligence Unit, 2013) and Deutsche Bank (CFDG, 2014).

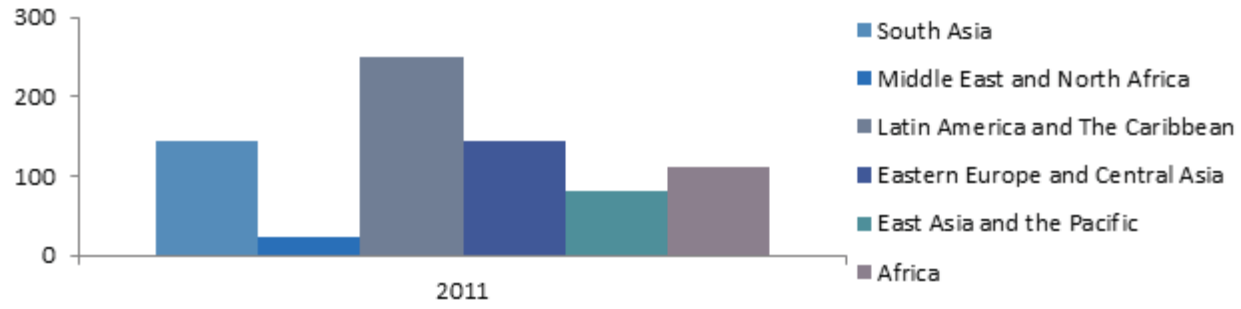
5.6. Outliers

Preliminary research and testing of the dataset revealed a potential problem with outliers. In the case of MIX data, these outliers can be a particular problem due to the self-reported nature of the numbers. Both Roberts (2013) and Ahlin et al. (2011) report similar problems and subsequent "cleaning" processes to MIX data. The values determined to be outliers are regularly defined by common sense and rules-of-thumb, such as if they create a significant change in the estimate of a parameter (Hansen, et al., 1983). Thus, a qualitative investigation of all included variables was carried out, to find and account for the problems that might arise. The nature of the outliers took two forms; instances of errors, or values considered to be genuine but extreme (Ghosh & Vogt, 2012). Measurement errors, such as ratios that could only be between 0-1, but reported as e.g. 7,43 were simply deleted. Secondly, extreme but genuine values were removed because of the impact they were found to have on the estimations. Some values of 0 were also excluded when this was deemed appropriate. Resnick (2007) points out that financial data may suffer from this extremeness in volatility. Lastly, for variables with large variations such as borrowers and assets, the natural logarithm was used to dampen the effect. As such, these coefficients should be interpreted as semi-elasticities in the results (Gujarati & Porter, 2009). A full list of outlier specifications and limits can be found in appendix XX. Less than 0,8% of the observations were excluded as a result of the process.

5.7. General characteristics of MFIs in the sample

As mentioned, the data contains several gaps, and the actual number of observations used in the modelling vary from the approximately 700 in the final sample. Due to the same uneven distribution of information available, the averages, proportions and dispersions may vary for each model. The picture depicted by the dataset is however strongly representative of the main characteristics in the final models as well, as indicated by sample checks (MIX, 2014c).

Figure 10: MFI by region

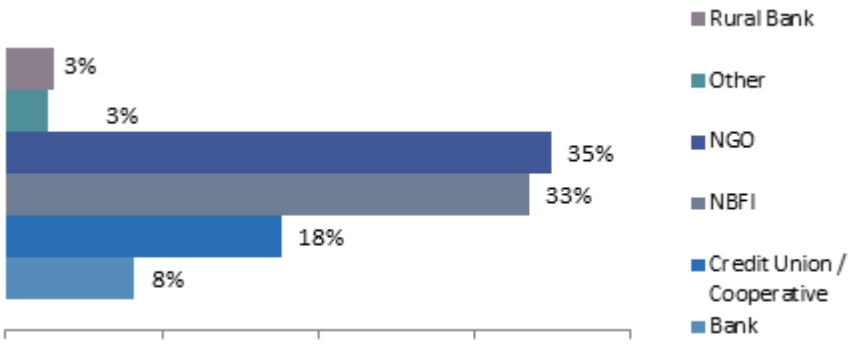


Source: Author's own illustration based on MIX data

Figure 10 shows the geographical dispersion of the institutions in the sample. MIX splits the world into six regions: Africa (which is sub-Saharan Africa), East Asia an the Pacific, Eastern Europe and Central Asia, Latin America and the Carribean, the Middle East and North Africa and finally, South Asia. Latin-America has an overwhelming presence with almost 30% of the MFIs, whereas the Middle-East and North Africa are only minimally represented in the sample. In terms of MFI per country however, the top ten countries have a fairly equal distribution between regions, as seen below.

Figure 11: Top 10 counties and institutional forms

	Country	# of MFIs
1	India	54
2	Mexico	33
3	Nepal	33
4	Ecuador	32
5	Peru	30
6	Philippines	27
7	Russia	24
8	Azerbaijan	23
9	Colombia	22
10	Pakistan	21



Source: Author's illustrations and tables based on MIX data (MIX, 2014c)

The broad geographical distribution of microfincance institutions clearly indicate a need to correct for circumstances unique to the *countries* in which the MFI operates. Additionally, as shown in Figure 11, more than two-thirds or of the MFIs in the dataset are either Non-bank financial institutions (NBFI) or Non-Governmental Organizations (NGO). Only a fraction is banks or rural banks, and almost a fifth are credit unions or co-operatives. The skewedness of the sample in this sense can create a bias in the sense of organizational form being correlated with the dependent variables of the model.

More broadly speaking, there are a number of *institutional* factors that are distinctive for the specific MFI. Apart from the different organizational form, the number of MFIs reporting a for-profit business model accounts for 42% over the time span of the data used, a number that revolves around 40% for all the years that data has been collected (2000-2014). Furthermore, the age or experience of an MFI can affect how it runs its operations (Gonzalez, 2007a). More than 2/3 of the MFIs have been in operation for 8 years or more. This is obviously another critical factor to account for in building the final model.

Finally, the size of the different institutions plays a major role. As discussed by (Robinson, 2001), (Cull, et al., 2007) and (CGAP, 2014), as well as in section 3.2 of this thesis, microfinance institutions vary widely in characteristics. Most notably, and more so for MFIs than for other banks, the size of an institution can be

anything from a small "roadside" bank with less than 100 clients, to multinational organizations with billions in assets such as Banco Estado, Compartamos and Khan Bank. Figure 12 illustrates the spread in asset value over the 200 largest microfinance firms in the sample for the year of 2011.

Figure 12: 200 largest MFIs by asset value

Source: Author's illustration based on MIX data (MIX, 2014c)

The overall average is USD 7,2 million, and the median is USD 8.3 million, but the standard deviation of more than 30 million USD illustrates the large variance in size of firms.

6. Variables and model specification

In the following paragraphs a description of the variables in the quantitative model will be made, before the model and specified hypotheses will be discussed. The paragraphs on variables will be structured so they cover 1) the rationale behind choosing them, 2) an in-depth description including their use in previous literature, and 3) the general characteristics of the variable group. First, a thorough discussion of the key explanatory variables will be made. Then, the dependent variables will be discussed. Lastly, control variables will be listed.

6.1. Definition of key explanatory variables

Social performance (SP) and impact has already been discussed extensively in this thesis. So has the development of SP indicators by the MIX. Although not fully comprehensive, the microfinance industry today has a number of tools to measure intent, performance and outcome (SPTF, 2013). More so than most other social investment fields it has been argued (Pistelli, et al., 2014).

As the lack of a common framework for SP demonstrates, one must be very careful both in utilizing and interpreting the variables that do exist. In order to avoid premature conclusions or wrongful implications, the explanatory variables for social performance are all in the category of intent and commitment instead of outcome. Rather, the variables serve as proxies for social performance. The explanatory power is therefore limited to the commitment and intent of an MFI towards social goals, and there is a danger that these are not necessarily correlated with actual social performance. It is also necessary to point out that these are all related to the *institution*. The effect on clients cannot be directly measured. As such, they only relate to one of the dimensions discussed in section 3.2.3.

Because the data used is relatively new, not much research exists that employ the same variables. Roberts (2013) does use other variables from the same database of social performance, and is endorsed by e.g. Serrano-Cinca & Gutierrez-Nieto (2014). Furthermore, other studies on transparency have also indicated that there is indeed a relationship between reported practices and actual behavior (Healy & Serafeim, 2013). Additionally, MIX is currently in the process of validating all claims made by the MFIs. This process has thus far only led to a less than 10% change for the key variables used (Krell, 2014).

The choosing of variables is based on a practitioner framework. The SPTF have defined a set of "Universal Standards for Social Performance Management" (SPM). These are based on six categories, as seen in Figure 13.

Figure 13: Universal standards for SPM

Source: Author's own illustration based on the Universal Standards for Social Performance Management (SPTF, 2012)

They have been developed through an iterative process with practitioners and policymakers alike (SPTF, 2012). In terms of managing social performance, they are the most comprehensive and widely available guidelines that exist. To date, no empirical work exists that have tested the effect of implementing these practices. They are however the basis for the SP dataset collected by MIX (MIX, 2014c). Based on the standards of SPM, an analysis of the available data, and the discussion in the paragraphs below, 3 variables have been chosen to depict the commitment to social goals. Three main criteria were used in order to determine which to be used. First of all, the variable had to be available and quantifiable. Second, it had to be reliable, in the sense that it could be easily verified and was not subject to misunderstanding. Lastly, it had to have a logical and theoretical connection to the commitment to social performance. Preliminary testing, communication with MIX and exposure to theoretical evidence thus led to the exclusion of many variables. The variables used as explanatory are listed here: 1) whether the board of directors has a *committee* that monitors social performance, 2) if the MFI employs a *poverty measurement too*l, and lastly 3) if the MFI requires clients to take on a *compulsory insurance*.

6.1.1. Board commitment to social performance

The first variable refers to how the board of directors treats the issue of social goals. As discussed in section 3.3.5, the board of an MFI has a large capacity to influence the actions of both the management and the institutions as a whole (CMEF, 2005). It falls directly under the second category defined by the SPTF, board commitment to social performance. The SPTF states focus should lay in two areas; the monitoring of existing practices and the inclusion of strategic goals in future strategies. Interestingly, it is specifically mentioned that efforts against mission drift should be included in this practice.

Some evidence as presented in section 3.3.5 further adds to the use of this variable, as governance mechanisms are found to have a high correlation (Pistelli, et al., 2012). In other words, one can by extension expect an institution with a social performance committee to have a number of governance mechanisms in place. It is important to emphasize however, that the *presence* of a social committee does not in any way measure the *quality* of it.

There are also several theoretical inclinations towards including the variable in the research. The role of the board of directors has been widely discussed in corporate governance research, finding monitoring, advising and resource providing as the most prominent contributions of boards (Adams, et al., 2008). From a classical agency-theory perspective, it is a matter of the board monitoring the practices of the microfinance institution, just as a regular board would do. In this sense, a committee specifically created to monitor any kind of activities should theoretically enhance the ability of the board to oversee and enhance that particular activity. In other words, just as an audit committee would be expected to increase the integrity of financial reports (Anderson, et al., 2004), so would a social performance committee be expected to increase the social outreach. Some evidence in microfinance has also been presented towards this conclusion (Hartarska, 2005).

Secondly, research on governance in microfinance find that internal mechanisms such as the board and audit committees have strong effects on both performance and outreach (Hartarska, 2005). In addition, the size and composition of the board is also correlated with performance (Hartarska & Mersland, 2012), but in different ways than for traditional corporate governance (Mersland & Strøm, 2009). In other words, the importance of governance mechanisms, and by extension for this research a board committee on social performance, is undisputed. The effect of it however remains largely uninvestigated. The framework behind choosing this as a strong proxy for a commitment to social goals should be clear.

6.1.2. Poverty measurement tool

This dummy variable is built on the answer to the question *"Does your institution measure the poverty levels of your clients?"* The measurement of poverty is the explanatory variable most related to social performance *outcome*. It does not however relate to what the outcome is, or how closely it is being monitored. It simply shows whether or not the MFI somehow keeps track of the poverty level of their clients and not least the progress they are making. In the MIX SP dataset, it is in the category of poverty outreach. The SPTF framework allows for multiple interpretations as to which category to connect it with. A focus on balancing the double bottom line by *"assessing whether growth policies ensure both financial sustainability and client well-being"* (SPTF, 2012, p. 35), is obviously one way to interpret poverty measurement. Another is the MFIs ability to account for the individuality of clients, in line with the third dimension of services portfolio. Lastly, a responsible treatment of clients through the prevention of over-indebtedness is assumed to be correlated with knowing their level of wealth. As discussed in section 3.5, the effect of this poverty level measurement remains empirically unexplored, yet Pistelli et al. (2014) cite it as one of the most important tools for reliable social *outcome* measurement.

The institutions indicating that they do employ a poverty measurement tool for their clients have to elaborate on which tool they use. This shows that a somewhat large variability of tools is being employed. Some

institutions use their own proxies; others use the household income or expenditure, whereas others again use established measures such as the Grameen Bank's Progress out of Poverty Index (PPI). A simple yes or no does not exhaustively cover whether or not an institution fully commits to measuring the poverty of its clients, nor if it succeeds to do so. It does however serve to indicate a commitment to its clients, and whether or not the MFI focuses on *client awareness*, as suggested by e.g. Morduch (1999). Another point that has been made is that the measurement of poverty levels increases the transparency of MFIs. It also implicitly incentivizes an MFI to comply with social goals, as the monitoring possibility of external stakeholders increases distinctly (Henry, et al., 2003). Lastly, it has been suggested that monitoring clients is extra important for MFIs as compared to traditional banks, not only due to financial security and repayment, but also to ensure the responsible use of the means they acquire through the MFI (Armendáriz & Morduch, 2010). The theoretical implications of using this variable also follow the logic of Copestake (2007), who asserts that mission drift can be avoided by employing responsible management practices. To the extent that poverty level tracking is considered such a "responsible management practice" his assertions are as such tested here.

All in all, the employment of a poverty measurement tool is meant to proxy for social performance measurement. An important point made in the Universal standards, is the fact that poverty assessment tools is only relevant if the MFI states that poverty reduction is one of its objectives, as related to the first category of defining and monitoring goals (SPTF, 2012). As such, it also serves as a proxy for the stated commitment to poverty reduction. The interpretations of any results should also take this into consideration.

6.1.3. Compulsory insurance

In the same manner as poverty measurement, compulsory insurance is a dummy variable based on the answer to *"Does your institution require compulsory insurance".* This falls under the fourth dimension of the SPTF categories and the responsible treatment of clients. Although there are a range of particular client protection principles that apply to this category, the reliability and objectivity of these variables is questionable (Krell, 2014a). The SPTF emphasize monitoring the risk of over-indebtedness and products that benefit clients, in line with social goals.

It can be argued that is has a two-folded interpretation. On the one hand, it implies stronger client responsibility and is subject to many of the same supporting arguments as a poverty measurement tool. On the other, its compulsory nature also directly benefits the MFI, as it serves to ensure the quality of the clients, and to secure the MFI from personal bankruptcies etc. Client selection may also be the motive behind it. The insurance market has been the focus of much adverse selection discussion (see e.g. Pauly, (1974). From an economic perspective, the MFI clients could be subject to adverse selection, as only responsible clients

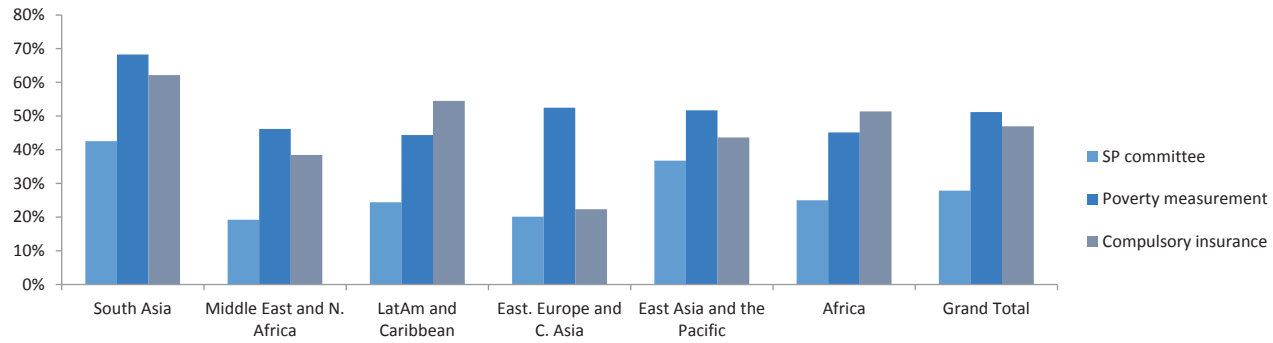
willing to pay for insurance will choose to commit to that specific MFI. Some research has even suggested that insurance can be mainly to the benefit of the MFI (Brown, 2001). This is because many institutions actually outsource the insurance and the policy itself to third party actors (Roth, et al., 2007).

The argument assumed here is that insurance, and also the compulsory version, is to the benefit of the client. As microfinance has moved towards financial inclusion described in section 3.1, the need for proper insurance also rises. A client-centered rather than a product centered approach induces the use of a broad range of products, and micro insurance is considered by most to be essential in this sense (Churchill, 2002). The reasoning has been that exactly because the poor have low resources and few assets; an unexpected event causes a disproportionately large impact on their lives. The problem is that the same lack of resources prevents them from spending any on insurance. As such, requiring insurance is a way to ensure responsible client practices (Roth, et al., 2007). Due to this dual logic nature, the expected outcome for this variable is not as unambiguous as the other explanatory variables. It hinges on whether the tool is used for the sake of the client or the MFI.

6.1.4. Summary statistics and characteristics

Analyses of the variables reveal that while the measurement of poverty and compulsory insurance is present in almost half of the sample, only about 28% of the MFIs in the sample have a SP committee on the board. The age and institutional form does not seem to have a major effect on neither SP committee nor compulsory insurance requirements, but incidentally, rural banks do not employ a poverty measurement tool nearly as often as NGOs. The differences in the use of the social commitment tools are most prominent in different regions, as demonstrated by Figure 14 below.

Figure 14: Regional use of social commitment tools



Source: Author's own illustration after calculations based on MIX data (2014c)

Together, these variables serve as strong proxies for the commitment to social performance. Their effect on the commitment to social performance has been discussed through the framework presented by the SPTF. The variables have also been given some theoretical explanations and implications.

6.2. Definition of dependent variables

Most dependent variables were introduced in the literature review. They are common empirical proxies for what they are intended to measure, although some are more disputed than others.

6.2.1. Social outreach indicators

The category of social outreach is the one most widely disputed by academics. As mentioned, the discussion on impact assessment in general centers on the need to use holistic tools. Data availability and difficulty in quantifying the proper social *outcomes*, has lead to a use of MFI specific instruments for impact assessment. Most empirical research has based itself on the definition of social outreach rather than *performance,* as discussed in section 3.2. The variables presented for use in the model are those most commonly employed in empirical investigations; 1) average loan size, 2) percentage of female borrowers, and 3) number of active borrowers.

As mentioned in the rationale behind the hypotheses, they should be positively affected by the explanatory variables. The model thus provides a sort of empirical test of the social outreach variables as well; if they are proper instruments for social outreach, then they should necessarily be affected by focus on social performance.

Average loan size

The average loans size is calculated as follows:

$$\frac{Gross\ loan\ portfolio}{Number\ of\ active\ borrowers}$$

It is the most commonly used proxy for the *depth* of outreach, as discussed in section 3.2.3. The primary rationale behind it lies in the fact that it is an objective proxy of the wealth of the clients served by the MFI. By extension, institutions with smaller average loan sizes have more *depth* in outreach in that they serve the poorer of the poor, and thus focus more on the social objectives. The theoretical framework is derived from welfare theory, where depth is the weight of a client in the social-welfare function (Arrow, 1962). It follows a rather simple logic. Schreiner (2002) argues that *"smaller amounts (..) usually mean greater depth, because as clients are poorer, they are less able to signal their risk to lenders, and so they get smaller loans to reduce the exposure the exposure of the lender to losses from default (..)"* (Schreiner, 2002, p. 8).

Although theoretical and conceptual discussions criticize an indiscriminate use of the average loans size, empirical research consistently employs it as a tool to measure depth of outreach. In studies of mission drift (Mersland & Strøm, 2010), profitability (Cull, et al., 2011), efficiency (Hermes, et al., 2011), macro dependence (Woolley, 2008) and governance (Mersland & Strøm, 2009), some form of the average loan size is employed as a dependent variable. Most of these also employ the variable corrected for the purchase power in a country, by dividing it on the GNI per capita. Another measure is to divide it by the GNI per

capita of the 20% poorest in a country. Schreiner (2001) however argues against employing the correction for GNIPC, as he claims it is not necessarily a representative measure for the poorest in a country. In this thesis both approaches are used; with GNIPC both as a control variable in the regressions and as a ratio with average loan size.

Percentage of female borrowers

This ratio is simply calculated as the amount of female borrowers divided by the total number of active borrowers. As discussed in section 3.1, the extension of credit not only to poor, but to the women of poorer segments of the population has been cited as a major success criterion for microfinance (Armendáriz & Morduch, 2010). The social discrimination and gender inequalities often particularly strong in developing countries can be counteracted through access to capital. As such, some MFIs have an innate focus on servicing women (Cheston & Kuhn, 2002). The rationale behind using female borrowers as a proxy for social outreach is thus the implied focus on servicing the weakest clients. It implies that MFIs who service more female clients are in a way more engaged in a wider societal debate (Sengupta & Aubuchon, 2008). Evidence that access to capital in itself is enough to empower women is inconclusive (Cheston & Kuhn, 2002), and the effect on female borrowers should be large to indicate anything (Strøm, et al., 2014). Nevertheless, the Social Performance Task Force uses the women outreach as one of their impact measurements, and a magnitude of literature has established it as an alternative proxy for depth of social outreach (e.g. Cull et al., 2007; Mersland & Strøm, 2009).

Number of active borrowers

This number is simply the amount of borrowers in a MFI. It has been used empirically as a supporting factor for measuring outreach. The rationale behind this proxy does not cover the *depth* of outreach, but rather the *scale* at which a MFI operates. The number of clients, when controlled for size, indicates how many poor the MFI is reaching. The correlation with the size of an institution has resulted in a diminished use, as the variability in MFI size has increased tenfold in the last decade (Gonzalez, 2007a).

Summary statistics and descriptive characteristics

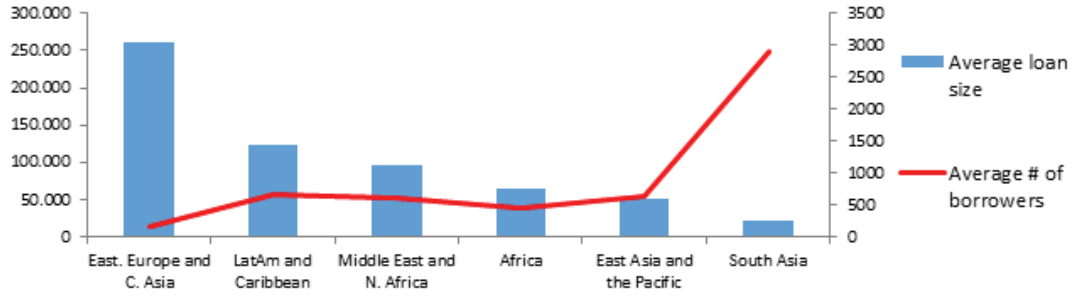
Table 2: Social outreach - summary statistics

Social outreach	Obs	Mean	Std. Dev.	Min	Max
Average loan size (USD)	2223	1.351	1.952	5	14.782
% Female borrowers	1981	0,65	0,26	0,01	1,00
# of Borrowers	2270	79.918	342.178	2	4.959.133

Source: Author's own illustration after calculations based on MIX data (2014c)

The average loan size in the sample is larger overall than those in samples from older literature, as follows from a trend of generally increasing loan sizes.

Figure 15: Regional average loan size and # of borrowers



Borrowers on left axis, avg. loan size on right.
Source: Author's own illustration after calculations based on MIX data (2014c)

Additionally as can be seen in Figure 15, Eastern Europe and Central Asia contribute to inflated loan sizes, an effect that consists even when controlling for GNIPC. It should also be noted that these higher loan sizes are indicators of some sort of trade-off, as the same region had the by far highest profitability. Interestingly to notice, there seems to be a correlation between smaller loan sizes and number of borrowers, as Figure 15 illustrates the difference in average number of borrowers between regions. Banks on average give higher loans and rural banks give the smallest. The pattern of female borrowers in general can be noticed across institutional type, age and region with South and East Asia serving around 80% women.

6.2.2. A note on average loan size as a proxy for social outreach

These variables are chosen in spite of the mentioned weaknesses. First of all, there is a large precedence in their usage, and secondly they are data points that are reliable and quantifiable (Christen, et al., 1995). There should however be a special underlining of not overextending the meaning in any findings. Where Schreiner's (2002) logic is usually employed to support the use of average loan size, he also argues for the use of *seven* dimensions of loan size; the frequency of repayments and the time to maturity are for example just as important as size (Schreiner, 2001). He also pointed to an argument similarly used in later literature; that loan sizes only proxy for poorer clients when cross-subsidization and progressive lending are accounted for (Armendáriz & Szafarz, 2011). The use of the loan (e.g. consumption, entrepreneurship, liquidity) is of just as much importance to the size as is the demographics of the clients (Dunford, 2002). Lastly, he states something that is also of great importance for this thesis, by saying that "(..) *loan size focuses only on credit and fails to acknowledge the fundamental importance for the very poor of savings-based programs and nonfinancial services"* (Dunford, 2002, p. 8).

Although the inadequacies in using average loan size as a proxy for social outreach are numerous, it is as discussed a normal proxy in empirical investigations. It is therefore employed here, although with careful interpretational limitations. Since the research employs a number of robustness regressions and is focused on the effect on *financial* performance, the use of average loan size is deemed as the best available proxy.

6.2.3. Financial performance indicators

As discussed in section 3.2.2, performance variables for MFIs are primarily operational measures. Operational and accounting measures are more prone to manipulation than market valuations, and should thus be considered with more concern (DeAngelo, 1986). The main variables employed here are 1) the operational self-sufficiency, 2) the return on assets and return on equity and 3) the profit margin. The latter ones are primarily used for purposes of robustness. The selection is done based on previous literature and the guidelines presented by CGAP in 2003, as discussed in section 3.2.2.

The operational self-sufficiency

The OSS of a MFI is the most commonly used tool to measure the financial sustainability. As discussed and shown in section 3.2.2 Equation 1, it essentially shows how well a MFI covers its costs of operation. The ratio, which includes subsidies, does not take into account the amount of subsidization an institution receives. This is important in interpreting results, as it explicitly measures the *sustainability* and not the *profitability* of an institution. If for example an institution has a ratio above 1, it is sustainable, but it may be so due to a large amount of subsidies. It is still a strong measure as *"sustainability implies that the institution generates enough income to at least repay the opportunity cost of all inputs and assets"* (Gutierrez-Nieto, et al., 2007). Due to lack in data availability, the *financial* self-sufficiency was not utilized as well.

The ratio is nonetheless the most commonly used for measuring financial sustainability. Studies trying to find effects from mission drift (Cull, et al., 2011), governance mechanisms (Mersland & Strøm, 2009), regulation and institutional types (Roberts, 2013), efficiency (Hermes, et al., 2011) and macro effects (Ahlin, et al., 2011) have all employed the operational self-sufficiency in their baseline regressions. Hartarska (2005) also emphasizes its superiority to self-reported ratios such as ROA, who do not give as full a picture. Lastly, practitioners have included it as a common criterion for investment plans, rating and sustainable business practices (see e.g. Morgan Stanley, 2007; Microrate, 2014 & Economist Intelligence Unit, 2013).

Return on assets (ROA) and return on equity (ROE)

The return on assets is a common ratio that indicates how well a company is using its assets to generate return. It is normally represented by the net operating income, divided by the book value of the total assets that a company has (Petersen & Plenborg, 2012). The return on equity is a similar ratio, but the return generated is measured in terms of its equity. MIX reports both ratios, where both equity and assets are calculated as an average of a specific financial year (MIX, 2012a). Previous literature has largely relied on the ROA to substantiate claims on profitability. In addition to being a part of the CGAP guidelines, Cull et al. (2007; 2009; 2011) uses the ratio to support their conclusions, and Olivares-Polanco (2004) measures the financial performance mainly based on the ROA.

Profit margins

Both as a supplement for robustness and as a check of true profitability, the profit margin has been included. The ratio is equated as:

$$\frac{Net\ operating\ income}{Financial\ revenue}$$

The net operating income excludes subsidies. As such, it measures the percentage of *"remaining operating revenue after all financial, loan-loss provision and operating expenses are paid"* (CGAP, 2003, p. 13). Because of the exclusion of subsidies, the number varies tremendously.

Summary statistics and general characteristics

Table 3 presents the summary statistics for all financial performance variables in the sample used. It can be seen that the average MFI in the sample is both financially *sustainable* and marginally *profitable* on average. This follows a general trend also found in investigations by MIX and academic research (e.g. CGAP, 2014; Gonzalez, 2010). There is a large deviation however, both for profitability and sustainability. The returns on equity and profit margins are both hugely variable, even when controlled for outliers.

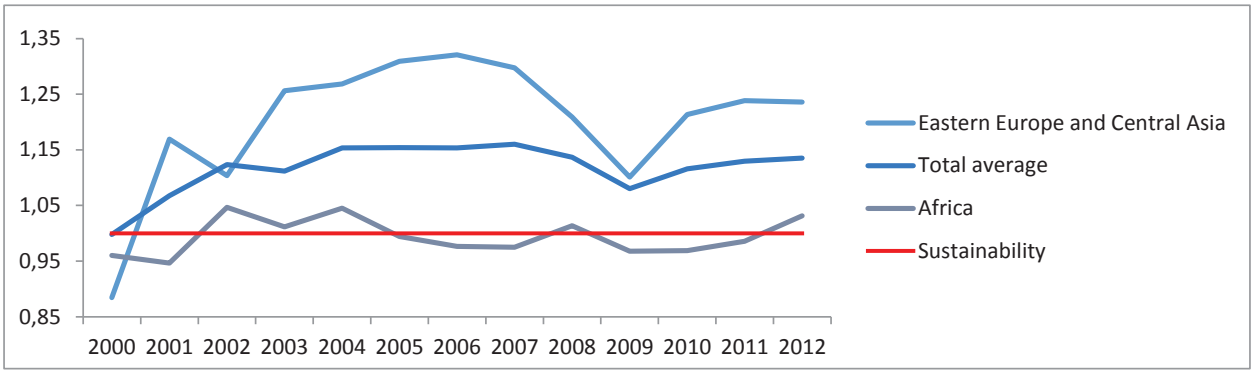
Table 3: Financial performance - summary statistics

Financial profitability/ sustainability	Obs	Mean	Std. Dev.	Min	Max
Operational self-sufficiency	2113	1,13	0,32	0	2,49
Return on Assets	2021	0,02	0,07	-0,40	0,38
Return on Equity	2004	0,08	0,29	-1,91	2,79
Profit margin	2127	0,03	0,48	-4,96	2,09

Source: Author's own illustration after calculations based on MIX data (2014c)

As can be seen in Figure 16 below, the overall OSS has been fairly steady in the past decade and sustainability achieved. Region wise, Africa has struggled to become consistently sustainable and profitable, with Eastern Europe and Central Asia being the top performers on both dimensions. In terms of institutional type, banks and rural banks in particular have been able to stay sustainable to a much larger extent than other types, which may be a result of a clearer focus on financial performance rather than social objectives.

Figure 16: Development of operational self-sufficiency



Source: Author's own illustration after calculations based on MIX data (2014c), OSS only for total, top, and bottom regions

6.2.4. Portfolio quality/repayment rate indicators

The next category that will be considered is the portfolio quality. This category reflects a MFIs ability to control, monitor and ensure repayment from its clients. The by far most used variable is the portfolio at risk, which will also be used in the model. The write-off ratio and the risk coverage ratio will also be included. By using the terms portfolio quality and repayment rates interchangeably, much current literature confuses readers. Both terms have been used here. This category has multiple implications to it. On the one hand it is a purely financial measure, and thus serves for financial performance purposes and measures (CGAP, 2003). On the other hand, practitioners emphasize it as a measure of MFI social quality, in the sense that it shows the ability to balance relentless profit seeking and responsible treatment of clients (Svarrer, 2014). Empirical research has used the portfolio quality both as a risk measurement variable and a repayment rate dependent variable (e.g. Mersland & Strøm, 2009 & 2010; Roberts, 2013; Cull et al., 2007 & 2009). As discussed in section 4.2, the expected outcome from this category is also ambiguous. In the context of the main hypothesis on reverse mission drift, portfolio quality is seen to be something that is enhanced through social responsibility, and diminished by relentless profit seeking. The model will focus on the portfolio quality as a dependent variable.

The reasons for its ambiguous relationship to the double bottom-line is because the repayment rate is a function of several factors. On the one hand, higher focus on social objectives can indicate the acceptance of clients that are poo*rer*, and not necessarily creditworthy even by microfinance standards, thus leading to lower repayment rates (Schreiner, 2002). On the other hand, commitment to social performance, especially as measured in this thesis, can imply a better screening of clients, to ensure a more socially responsible service. The expected outcome is thus not as clear for this group of dependent variables.

Portfolio at risk >30/90 days (PAR)

The portfolio at risk measures the amount of outstanding loans that have installments of payments more than X number of days overdue (CGAP, 2003). As discussed in section 3.2.3, the most common number of days specified are 30. For robustness, the PAR-90 will also be included. The relative ratio is calculated as

$$\frac{Portfolio\ at\ risk > X\ days}{Gross\ loan\ portfolio}$$

It is important to emphasize that the ratio indicates loans that are *at risk* of becoming defaults, not actual defaults. In literature, it is cited for measuring repayment rates, with studies finding lower PAR-30 as a result of higher yield on gross loan portfolio (Kar & Swain, 2014) and a for-profit motive (Roberts, 2013). Mersland & Strøm (2010) use it as a dependent variable to measure mission drift. The extensive use is however an indication of its importance, and the possible relationship to social performance commitment of great interest.

Write off ratio

The write-off ratio is a second proxy for portfolio quality and repayment rates. As with the PAR-30, its interpretation can be seen both in financial and social light.

$$\frac{Value\ of\ loans\ written\ off}{Average\ gross\ loan\ portfolio}$$

A high ratio thus may indicate problems with collection efforts and repayments. Due to differences in reporting practice, there may be troubles in using it. On the other hand, since it measures loans that have already been written off, it is a stronger measure than the PAR-30. It also corrects a potential problem in that PAR-30 actually does not include loans that are already written off, leading to a potential misleading in the true repayment rates. A case study investigating a MFI in Ghana found large discrepancies, and called for a "true" repayment rate, rather than the most common use of the PAR-30 (Give Well, 2009). The variable is therefore used for robustness.

Risk coverage

The risk coverage is the last measure of portfolio quality mentioned by CGAP (2003). It is a rough indicator for how prepared a MFI is to absorb loan losses in the event that all loans at risk fail. It is a ratio measured as the loan-loss reserve over the PAR-30 by MIX (MIX, 2012a).

$$\frac{Loan - loss\ reserve}{PAR - 30}$$

As opposed to the other portfolio quality ratios, higher risk coverage means the ability to cover for possible defaults. It is in its essence a measure of how a MFI is able to adjust to its repayment rates, not the repayment rates by themselves.

Summary statistics and descriptive characteristics

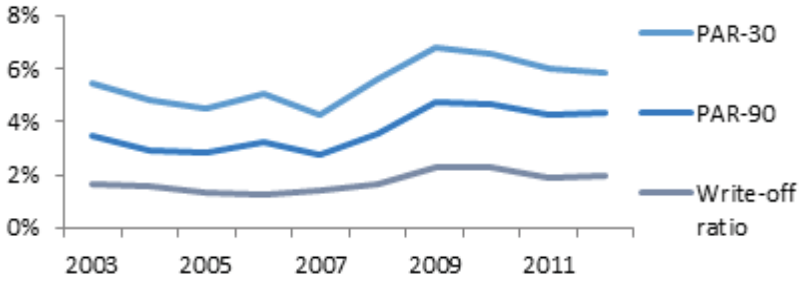
Table 4: Portfolio quality - summary statistics

Portfolio quality	Obs	Mean	Std. Dev.	Min	Max
Portfolio at risk >30 days	1932	0,06	0,09	0	0,80
Portfolio at risk >90 days	1934	0,04	0,08	0	0,79
Write-off ratio	1936	0,02	0,03	0	0,28
Risk coverage	1692	1,35	1,89	0	14,44

Source: Author's own illustration after calculations based on MIX data (2014c)

The statistics provided in Table 4 shows that the average portfolio at risk for the sample is a little higher than found in previous studies. However, the repayment rates (1-PAR-30), as it is usually measured still shows more than 90%. As mentioned, the write-off ratio is about one third of the PAR-30, an indication that actual defaults are not as common as "late" payments.

Figure 17: Development of portfolio quality indicators



Source: Author's own illustration after calculations based on MIX data (2014c)

There seem to be no geographical or age related effects as strong as for other financial measures, although rural banks have a significantly higher risk, which may stem from the higher inherent risk in agricultural products they offer (Traca, 2013).

6.3. Control variables

As evidenced by previous research, there is an explicit need to account for a number of operational, institutional and geographical effects when measuring the posited relationships. Additionally, due to the use of the random effects model (REM) discussed in section 7.2.3, only time-invariant *variables explicitly introduced in the model* can be accounted for (Gujarati & Porter, 2009). A number of control variables have therefore been employed.

6.3.1. Country-specific controls

Cull et al. (2009) and Wagner (2010) argue for why microfinance has become a part of the financial system and the formal economy. Ahlin et al. (2011) further evidence the effect of regulatory frameworks on MFI performance. As an overall determinant, the geographic region of the MFIs should be accounted for. This has been done by using a control variable for all regions apart from Latin America (baseline).

The first group of country control variables is related to the size and economic climate in a country. More precisely, the gross national income per capita (GNIPC), the inflation rate and the deposit rate in a country have been used to account for effects that may arise due to these factors. This comes as a result of evidence by Wagner (2010) and others, implying that MFIs are dependent on national characteristics and macroeconomic events. They also serve to control for differences among countries in overall economic welfare, monetary policies and purchasing power. Secondly, as supported by Ahlin et al. (2011), the regulatory environment plays an important role in determining the profitability of microfinance institutions. The overall Doing Business criteria (distance-to-frontier), serves as a proxy for the institutional environment and ease of doing business in a country.

6.3.2. Institutional and operational controls

The operational drivers of an MFI are of obvious importance in determining its profitability, social outreach and portfolio quality. Much of the research reviewed found that the efficiency of an institution plays a large role in determining its profitability. To control for this effect, the operating expenses as a proportion of total assets has been used as a proxy for this efficiency, similar to models of Hermes et al. (2011), Ahlin et al. (2011) and Rosenberg et al. (2010).

Additionally, the interest rates of an institution have been found to have an impact on MFI performance. As argued by Rosenberg et al. (2013), the yield on gross portfolio is seen to be the most reliable and available proxy for interest rates. It is calculated as

$$\frac{Cash\ financial\ revenue\ from\ loan\ portfolio}{Average\ gross\ loan\ porftolio}$$

In this thesis it is the relationship, if any, that matters, not the size of the coefficients, nor the preciseness of the estimate.

The size of an MFI was determined to have large effects on its efficiency and profitability by e.g. Gonzalez (2007a). Therefore a control variable used is the size of the firm, as measured by the natural logarithm of its assets (book-value). In addition to size, a number of institutional characteristics have been included as controls, due to previous empirical evidence found by e.g. Mersland & Strøm (2010), Roberts (2013) and Cull et al. (2009a). Below is a description of all controls employed.

Table 5: Control variables description

Control variable	Description
Age	* 2 dummies for MFIs that are new (1-4) or young (5-8) years
Region	* 5 dummies with Latin-America as baseline
Operating expenses/assets	* A proxy for efficiency of an MFI
Nominal yield on portfolio	* A proxy for the interest rates of an MFI
For-profit status	* Dummy indicating whether or not MFI acts for profit
Assets	* Proxy for size - Variable in model is the natural logarithm of assets
Deposit rate	* The general savings rate in a country %
Inflation	* The inflation rate in a country %
GNI per capita	* Gross national income per capita, proxy for purchasing power
Distance-to-frontier w/electricity	* The overall regulatory framework, indicated by distance to best
Institutional type	* Dummies for banks, NGOs and credit unions, rest as baseline
Regulated dummy	* Dummy indicating whether a MFI is regulated by authorities

Source: Author's own illustration based on MIX descriptions (MIX, 2012a) and (CGAP, 2003)

Further analysis of the data shows a clear trend towards more efficient MFIs in the sample. Some indication in support of efficiency and outreach trade-off emerges, as NGOs and credit unions are vastly less efficient than their financial counterparts. In terms of interest rates, they seem to be slowly falling overall, but are surprisingly similar across regions and for organizational types and age. Credit unions seem to charge by far the lowest interest rates, an interesting note in connection with their low efficiency as compared with other institutional types.

6.4. Research question specification

Section 4.1 discussed the rationale behind the research question. In the previous paragraphs, the logic behind the choosing of the exact variables in the first part of the question has been made. The variables were chosen because they were found to be relatively objective, hard to manipulate, easy to revise and strong proxies for what they were intended to measure: Board commitment to SP, intent to measure social impact, and client protection (Krell, 2014). Furthermore, the second part of the question was thoroughly reviewed, determining the proper and common proxies for financial performance, social outreach and portfolio quality. From this, the research question developed from an overall measure to quantifiable, direct relationships.

6.5. Model specification(s)

The model can now be set up as follows; let $y_{i,j,t}$ be a year-t outcome of MFI i located in country j; $M_{i,t}$ be a set of MFI-specific control variables at time t; and X_{jt} be a set of macroeconomic variables describing country j at time t. Including the main explanatory variables, who are non-time variant, the baseline model looks like this:

Equation 3: Baseline OLS model

$$y_{ijt} = \alpha + \beta_{SPcom} SPcom_i + \beta_{povM} povM_i + \beta_{compIns} compIns_i + \beta_M M_{it} + \beta_X X_{jt} + \varepsilon_{ijt}$$

Note that M and X comprise a group of control variables that are not included due to limited space

For this thesis the y_{ijt} is the variable that changes for the regressions. The right hand side of the model to a large extent stays the same. It is important to emphasize however that the OSS and PAR-30 are included as control variables in the models on social outreach factors. Most research regarding mission drift has measured the effect on social outreach variables through financial explanatory variables (e.g. Mersland & Strøm, 2010; Cull et al., 2007) The novelty of the thesis is that it measures the explanatory effect of social commitment variables on social outreach, financial performance and portfolio quality. The regressions are therefore split into 3 different groups:

1. *Social outreach regressions*
2. *Financial performance regressions*
3. *Portfolio quality regressions*

6.6. Expected findings

The expected findings are discussed as they relate to each individual regression group. They are an extension of the hypotheses specified in section 1.2.

6.6.1. A positive effect on social outreach variables

Following on the discussions in section 6.1, the explanatory variables are expected to positively affect social outreach variables. An SP committee should lead to an increase in the depth of outreach because it steers the organization to focus on clients that are not necessarily the most profitable ones, but rather those in most need. Moreover, it is assumed that MFIs who measure the poverty level and progress of their clients have a stronger focus on social responsibility. Following empirical literature, this would mean poorer clients, with more women and a higher number of total borrowers. Compulsory insurance, if seen as a client protection tool, would again imply that the MFI services clients in need, rather than those who are the most profitable. Compulsory insurance is however the only explanatory variable not necessarily expected to directly increase outreach. Requiring compulsory insurance means that the institutions probably select their clients carefully, and thus they do not directly serve poorer clients (Traca, 2013), as discussed in section 6.1.3. The positive effect on social outreach may hence be less pronounced, depending on whether the insurance benefits the clients or the MFI. These expected results are all based on the assumption that the social outreach variables serve their role as proxies.

6.6.2. A negative effect on financial performance

Siding with the majority of literature that implies at least a trade-off between financial performance and social outreach, a negative impact is expected. This is primarily as an extension of the discussion in section 4.2 on the overall hypothesis. The logic can be interpreted as follows: an MFI is typically an institution of very finite resources (Armendáriz & Morduch, 2010). If these resources are spent on social objectives, which are independent of financial performance, then the resources spent on financial sustainability must necessarily be decreased. For the specific variables, there are also different rationales behind this expectation. The most direct is poverty measurement. An institution that monitors its clients can be expected to incur monitoring costs, which do not necessarily translate into extra revenues. The net effect would therefore be negative. The SP committee is expected to decrease the profitability primarily due to a focus shift in the organization. Again applying the argument of finite resources, a MFI board is not expected to be able to have a multiple number of committees and focus areas. Seeing that only a small number of MFIs do use these committees as found in section 6.1.4, there is assumed to be a trade-off of resources on the board level. The effect from compulsory insurance again hinges on the motivations behind the use of it. If the adverse selection argument applies, then it should increase revenue and decrease impairment losses, leading to a positive effect. If helps to safeguard clients, but increases administrative costs, then the effect should be

negative. There is supporting theory both for social and financial motivations. The expected outcome however follows the logic of the other commitment tools; a decreasing effect on financial performance.

6.6.3. A positive effect on portfolio quality

The hypothesis regarding the portfolio-at-risk 30 is from previous empirical findings less clear. On the one hand, commitment to social goals and poorer clients can mean lower repayment rates if they are not somehow screened by the MFI. Also, some scholars have found a negative relationship between loan size and repayment rates (Godquin, 2004). On the other hand, as pointed out by the SPTF, *social responsibilities also encompass* a balance with financial goals. As explained, preventing over-indebtedness is a major factor. If a SP committee and poverty measurement is considered monitor tools, then a decrease in defaulting clients is expected. Lastly, mission drift proponents have claimed that relentless profit seeking leads to more defaults in the long run (Armendáriz & Labie, 2011a). By employing the same reverse logic as with the overall hypothesis, social focus should lead to less defaults in the long run. Compulsory insurance should serve to lower default rates, regardless of whether the insurance benefits the client or the MFI. That is, the variable PAR-30 can be expected reduced as a result of commitment to social goals. There is clearly a more ambiguous relationship here, as discussed in section 6.2.4 on the portfolio quality. The relationship may just as well turn out to be insignificant, or even negative. The hypothesis is nevertheless that it improves repayment rates.

Table 6 below shows an overview of the hypothesized relationships A plus sign indicates a positive impact, i.e. not a positive relationship. For example, the reduction of average loan size is considered a positive effect, although the coefficient is expected to have a negative sign.

Table 6: Hypothesized outcomes

Variable	Description	Hypothesis		
		Outreach (A)	FinP (B)	Quality (C)
1. Social performance committee on Board of Directors	A dummy variable taking the value of 1 if there is a formal committee monitoring social performance, acts as a proxy for commitment to social goals	+	-	+
2. Poverty measurement tool	A dummy variable indicating whether the MFI employs a tool to measure the poverty level and progress of its clients, acts as a proxy for measurement of SP outcome and client protection	+	-	+
3. Compulsory insurance	A dummy variable indicating whether the MFI requires insurance, acts as a proxy for client protection/selection	+	-	+

Source: Author's own illustration. (FinP = Financial performance)

From the table, a matrix of hypotheses should be clear. The number indicates an explanatory variable, and the letter indicates A) social outreach, B) financial performance and C) portfolio quality respectively.

7. Statistical methodology

The following paragraphs will cover an explanation of the statistical method used. The nature of the dataset, expected effects and specific methods will be analyzed. A basic understanding of econometrics is assumed, and only the topics and explanations most relevant to this thesis will be covered. Additionally, most explanation will take an intuitive rather than technical perspective.

7.1. Panel data

Panel data is basically cross-sectional data surveyed over time. It has several advantages over both cross-sectional and time series data. The dataset by definition gets larger, but it is also more informative, has more variability, less collinearity among variables, and more degrees of freedom (Baltagi, 1998). As will be shown, there is also a possibility to account for unobserved heterogeneity (Gujarati & Porter, 2009).

There are however some setbacks to the panel data in the sample. First of all, the longitude or history of the data used is only spread over the years 2010-2012. This decreases the explanatory power due to fewer observations. Secondly, it is a very unbalanced panel and short panel, as each entity (MFI) has a different number of observations (Gujarati & Porter, 2009). It has certain gaps in reporting, sometimes leading to the exclusion of several observations due to one missing category. This leads to uneven numbers of observations and groups (MFIs) for different methods and regressions. Lastly, some of the key explanatory variables are assumed fixed over time, which affects the choice of regression model.

7.2. Econometric procedure

The statistical methods employed are based on two factors, econometric standards and the use in previous literature. As such the concepts will be discussed from both standpoints.

7.2.1. Review of methods in previous literature

Empirical methods in microfinance have been diverse. A number of studies employ similar models as the one used here, and the most important methods and models will be briefly discussed here.

As a baseline for the current study, Mersland & Strøm (2009) use random effects and GLS estimations to investigate the effect of governance mechanisms on performance. From a panel dataset spanning 1998-2007, they also make the assumption that governance mechanisms that are only observed once are time-invariant. As such, they make two contributions to this thesis. First, their assumption on time invariance creates academic precedence and is much stronger than for the data in the sample. Second, their use of random effects and GLS serves as an indication for which regression model to estimate. In their study on mission drift they build a different model, using random and fixed effects for data spanning the same time period.

A surprising number of panel data studies use simple OLS estimations pooling all the observations. Woolley (2008), Roberts (2013), and Cull et al. (2007) are all using regular least squares, with only Woolley controlling for year fixed effects. Ahlin et al. (2011) do however increase the robustness of their models through a conditional median regression with bootstrapped standard errors due to small sample sizes. Cull et al. (2007) also control for country fixed effects, and report robust standard errors as well. Hudon & Traca (2011) use OLS, but actually find fixed effects because they manually average the data across years and find the difference from the mean.

Hermes (2014), Imai, Arun & Annim (2010) and Imai et al. (2012) only take cross-sectional data into account in their research on macro factors, with the latter two using robust standard errors.

The methodologies largely rely on OLS estimations, and are surprisingly simple. There is however consensus on controlling for country specific and MFI specific effects, although this is done through model specification and not through REM or FEM Within-Group, explained in the section below.

7.2.2. Regression model

The estimation models for panel data have obvious differences from cross-sectional regressions. Simply using one regression for each year would not exploit the nature of the data. There are three choices for modeling panel data: 1) pooling the observations in a regular OLS estimation, 2) fixed effects (FEM) and 3) random effects (REM).

A regular OLS estimation ignores the fact that there is *heterogeneity* in the observations, or in other words "camouflages" the existence of individuality of MFIs in the sample. By doing this, there is a potentially severe problem that may arise, and the assumptions of the standard CLRM can be breached (Gujarati & Porter, 2009). This issue can also be explained logically. MFIs or companies all have some sort of effect that is obvious, but cannot necessarily be measured, for example the quality of its management. If the CEO is friends with a number of the clients, then that may be the reason he (or she) gives low interest rates. This effect is probably time-invariant, and what it does is basically to cause the unobserved or the error term u to be correlated with one of the regressors. There are probably a number of these effects that cannot be observed. For the sake of this analysis, it is important to remember that the model does not in itself seek to determine the impact of this unobserved heterogeneity. In order to obtain BLUE estimators however, it has to be able to *account for* the unobserved individuality within firms.

This is what can be achieved through the latter 2 models. As discussed, the explanatory variables in this case are all assumed to be fixed over the time in the sample. The difference from the mean would therefore always be zero, as e.g. the social performance committee on the board would for any given MFI at any time

always be 1 or 0. Fixed effects can therefore not be used, as this type of model would simply omit the variable. Therefore, the random effects model will be employed in the regression.

7.2.3. Random effects model (REM)

The random effects model also accounts for unobserved heterogeneity, but through a different approach. A firm fixed effect does exist as an unobserved error term, ε_i. As the name implies, the random effects model (REM) assumes it is a random effect with a mean of 0 and a constant variance. This means that there will be a mean intercept, α, with each firm deviating randomly from this. In other words, there are two error components to the model; ε_i which is the individual specific error, and u_{it} which is the normal idiosyncratic error. These error terms form the composite v_{it}, and the model now looks like this:

Equation 4: Baseline Random Effects model

$$y_{i,j,t} = \alpha + \beta_{SPcom} SPcom_i + \beta_{povM} povM_i + \beta_{compIns} compIns_i + \beta_M M_{it} + \beta_X X_{jt} + v_{it}$$

$$\text{where } v_{it} = \varepsilon_i + u_{it}$$

As such, there are two important assumptions. One is that the REM assumes that the firm-specific effect is random because it is taken from a larger sample of firms or MFIs, which is true. The second is that this effect is not correlated with any explanatory variables, which is a much stronger assumption that can potentially create biased estimators. For this reason, a number of robustness checks are performed on the initial results. Lastly, the random effects model implies a correlation structure between the error components that assumes no difference over time or subject (X's). To account for this assumed structure, the generalized least squares method is the most common tool (Gujarati & Porter, 2009).

7.2.4. Generalized least squares (GLS)

The generalized least squares (GLS) method is in principle a method that takes the uneven variability of the dependent variable into account. Through a transformation of the data to weighted observations, it is able to account for shocks that may arise in only one period or for a group of observations (Kariya & Kurata, 2004). An example here could be the 2010 Andhra Pradesh "microfinancial crisis" mentioned in section 3.3. The estimation process for GLS with panel data becomes rather complicated. The basic differences for GLS and OLS are still fairly easily described. For standard OLS, one seeks to minimize the *sum of the squared residuals*, that is: $min \sum u_i^2$. For GLS, we want to minimize the *weighted sum of residual squares,* where the weight is inversely proportional to the variance of its observation. In other words all we are doing is adding the weighting $w_i = \frac{1}{\sigma_i^2}$ so that observations with a higher variance is weighted less in the estimation. This in turn creates more efficient estimators (Gujarati & Porter, 2009). Due to the use of random effects as explained in the last paragraph, GLS is a good technique to take the aforementioned heterogeneity into account.

7.2.5. Heteroscedasticity, autocorrelation and multicollinearity

One of the assumptions of a linear model is that the variance in the error term of each explanatory variable is constant, or homoscedastic. In other words, that the variance around the regression line is the same for various values of an X. In many instances, this is not the case, and the variance does in fact increase or decrease as X varies. This is the concept of heteroscedasticity, and although estimators are still unbiased, they do not have minimum variance. This may lead to wrongful inferences about the estimators, as the confidence intervals are erroneously constructed (Gujarati & Porter, 2009).

In large samples, heteroscedasticity can be hard to detect. It can also be corrected for by using White's heteroscedasticity corrected standard error, which does not affect the estimator much (Gujarati & Porter, 2009). In the model, a version of these standard errors is used, and they are adjusted to account for possible correlations within clusters. The clusters can take multiple forms, e.g. within MFIs and countries. Therefore, robust standard errors for both types of clusters are run for all regressions. This is to account for the possibility of a different error structure. All reported results are for clusters in MFIs, but have been tested for clusters in countries as well.

Autocorrelation is another of the fundamental assumptions of the CLRM. It implies that the error term of one observation does not affect the error term of another (Gujarati & Porter, 2009). Typical examples of this assumption breached is for trending financials such as stock prices, that tend to move up for a successive order of days or even months. Due to the short panel and infrequent (annual) interval, autocorrelation does not seem like a big problem. There are however probably instances of e.g. OSS moving in one direction over the entire period for a specific MFI. As such, there may be problems with autocorrelation. As with heteroscedasticity however, the only causes inefficient, not unbiased estimators. Through robust and clustered standard errors, possible autocorrelation is also dealt with.

Multicollinearity is the situation where a strong linear relationship exists between some or all of the explanatory variables in a model. This situation may lead to many of the coefficients being insignificant, as the variances and covariances are inflated (Gujarati & Porter, 2009).

Table 7: IV correlations

Pearson's correlations	SP committee	Poverty measure	Compulsory insurance
SP committee	1		
Poverty measure	0.1624	1	
Compulsory insurance	0.0345	0.1187	1

Source: Author's own illustration after calculations based on MIX data (2014c)

As can be seen in Table 7 above, most of the variables display no strong correlation, indicating that they do not necessarily appear in unison. There does not seem to be evidence of multicollinearity, using a typical upper limit of 0,7 (Lind, et al., 2008). This is also the case when checking for all other variables included in the model[7]. Another typical feature of high multicollinearity is a high R^2 (Gujarati & Porter, 2009). This was not found to be the case, and therefore, multicollinearity is not deemed to be a big problem here.

Having presented the logic behind the theoretical/empirical framework, the dataset at hand, and the technical features of the model, the regressions results are now produced.

[7] All correlations can be found in Appendix 4

8. Results and findings

In the following, the results will be presented, divided by the regression categories presented in section 6.5. This also follows the pattern of the hypotheses, which will be individually discussed. Then, a discussion on the findings in connection with the overall hypotheses of reverse mission drift will be conducted, before a number of robustness checks. Lastly, a discussion and the implications for future research and different stakeholders will be presented.

It is important to point out that since the key explanatory variables in the regressions are dummy variables, the effect here is an increase or decrease in the constant term, not the slope. Secondly, the focus will lie on the *sign* and *significance* of the coefficients rather than magnitude. Only relevant variables will be reported, but regressions with all variables can be found in the appendices. The Wald test, a test to determine whether the model is overall significant (Harrel, 2001), has also been employed and confirmed all regressions.

8.1. Social outreach regressions

Table 8: Results from social outreach regressions

Random effects GLS regression	Avg. loan size	Avg. Loan/GNIPC	Female borrowers	(Log) Borrowers
spcommittee	-221.5**	-0.0349	0.0302*	0.219***
	(92.36)	(0.0425)	(0.0172)	(0.0602)
povmeasure	-356.6***	-0.0793*	0.0303*	0.311***
	(101.1)	(0.0427)	(0.0163)	(0.0609)
compinsurance	111.7	-0.0874**	-0.00986	-0.00233
	(109.7)	(0.0425)	(0.0162)	(0.0646)
Observations	1,522	1,524	1,469	1,528
Number of MFIs	657	658	645	659
Robust standard errors in parentheses	*** p<0.01, ** p<0.05, * p<0.1			

The regression table with all control variables can be found in Appendix 3.1. Total borrowers also checked as ratio to total assets

On average, MFIs with a committee dedicated to assessing the social performance will serve a larger amount of credit clients, have a higher proportion of female borrowers, and a lower loan size. The evidence on loan size is actually quite large, considering an average loan size of 1350 in the sample[8]. The finding regarding female borrowers is only barely significant, and rather small in comparison to the average in the sample. A reason for this could be that microfinance is already an industry with a heavy focus on females as borrowers. As such, the primary focus of the SP committee would not necessarily be to increase an already existing female customer base, but rather to reach poorer, and additional clients. This can be reasonably backed up by the large positive effect on borrowers. On average, MFIs with a SP board committee have 21,9 % more

[8] The constant term is negative in the regression, and the averages are therefore used for comparison

borrowers than those without, having controlled for size of the institution. The findings mostly follow on the discussion in section 6.1.1. The results seem to indicate that when the board, and by extension the MFI owners commit to social objectives, there is an effect on the depth and scale of outreach. This also partly follows the evidence presented by Hartarska (2005), who indicated internal governance mechanisms and (impact aware) donors have an effect on outreach proxies. Hypothesis 1A seems verified.

The measurement of poverty has an even stronger significant positive effect on all areas of outreach. An institution that measures the poverty of its clients will on average be an institution serving poorer, more diverse and a broader set of clients. Some of the same arguments as for a board committee can be used here as well, especially regarding the female borrowers. The reason for measuring the poverty level of clients in many way trumps the objective of having female clients. Furthermore, an implication can be that MFIs who employ these kinds of tools are those that have stated objectives of poverty reduction rather than financial goals, as discussed in section 6.1.2. The implications seem to be that the measurement of clients as such is done primarily in order to benefit the client, and ensure that the MFI tracks their progress. Hypothesis 2A seems verified.

Only weak evidence that compulsory insurance affects loan sizes emerges. This evidence supports the theory of client beneficial insurance. There is no significant effect on other outreach variables, nor the regular loan size variable. This promotes the second theory presented in the discussion of the variable, namely that the requirement of insurance primarily serves financial goals for the MFI, and does not serve the portfolio of clients. Due to adverse selection, only clients who are willing and capable of having insurance will go to that institution. Those individuals are necessarily not the weakest (females) or poorest (loan size), and furthermore the MFI excludes a segment of the possible market (number of borrowers). Hypothesis 3A is not rejected, but not fully verified.

Summarizing, there is a significant effect on average loan size and borrowers both for MFIs with a SP committee on the board and those employing a poverty measurement tool. The effect from compulsory insurance is much less interpretable, as the effects are mostly insignificant.. The purpose of these regressions was to assess the effectiveness of the tools employed. With evidence for this now presented, it becomes even more relevant to evaluate any effect on the other objective of the MFI; it’s financial sustainability.

Lastly, it should be mentioned that close to all control variables come out significant, with effects that reflect earlier literature. Most notably, operating expenses (efficiency) and yield on gross portfolio (interest) are strongly positively and negatively related to loan size.

8.2. Financial performance regressions

Table 9: Results from financial performance regressions

Random effects GLS regression	OSS	ROA	ROE	Profit margin
spcommittee	0.0136	0.00329	0.0120	0.0164
	(0.0171)	(0.00367)	(0.0202)	(0.0244)
povmeasure	0.00170	0.00522	0.00245	0.0232
	(0.0173)	(0.00388)	(0.0161)	(0.0222)
compinsurance	-0.0461***	-0.00321	-0.0126	-0.0153
	(0.0168)	(0.00402)	(0.0201)	(0.0244)
Observations	1,54	1,545	1,532	1,549
Number of MFIs	659	663	660	663
Robust standard errors in parentheses	*** p<0.01, ** p<0.05, * p<0.1			

The regression table with all control variables can be found in Appendix 3.2

Effects of having a social performance committee on the board are not found here. The estimations are actually positive, but largely insignificant. The hypothesis expected decreased sustainability due to a trade-off in use of resources. The evidence found here does not support this. From the governance perspective discussed in section 6.1.1, it seems that the monitoring role of the board in one area does not hinder its function in another. In this manner it also contradicts earlier indications that boards with social focus contribute to worsened financial sustainability (Hartarska & Mersland, 2012). Hypothesis 1B is rejected.

A poverty measurement tool is also widely insignificant on financial performance, according to the findings here. This is also contradictory of the hypothesis. Seen together with the previous section, it implies that even institutions focusing heavily on the poverty level and outreach to clients are not less sustainable as a result. Following the discussion in section 6.1.2, some theoretical evidence that responsible management practices can counteract mission drift has also risen, in accordance with the findings here (Copestake, 2007). Hypothesis 2B is rejected.

Compulsory insurance has the only strongly significant effect, with negative impact on the operational self-sufficiency. One interpretation is that although compulsory insurance serves as a tool of client selection, rather than client protection, it may be that the loss of potential marginal revenue is actually larger than the loss of marginal costs, following the discussion in section 6.1.3. That is, the clients excluded by such a practice, would actually bring in, on average, more revenue than costs. Deriving from the OSS formula on page 16, the MFI suffers a loss to the financial revenue that is larger than the decrease in impairment losses as a result of more creditworthy clients. There are however limitations to the argument, as MFIs typically have high monitoring costs (Armendáriz & Labie, 2011a). The negative effect should be seen in the context of the other areas investigated; outreach and repayment rates. Hypothesis 2C is as such not rejected.

Overall, only weak evidence can be significantly presented from the regressions. Neither of the first two variables have significant effects across the range of profitability measures. This is surprising in a number of ways, based on the discussion in previous sections. First of all, several scholars have evidenced a trade-off between the social and financial objectives of an MFI. The evidence presented here instead induces an alternative interpretation. Although the objectives are not intertwined, they are not mutually exclusive. Rather, they function separately from each other, and as such a focus on one area does not in itself hinder the ability to excel (or fail) in the other. The logic is not necessarily weakened by the negative effect from compulsory insurance, as the interpretation may just as well be that it is not a client protection tool, and as such not a sign of commitment to social goals.

It should also be noted that although they are insignificant, all estimates of coefficients apart from compulsory insurance are positive, but small. Additionally, efficiency and interest rates are again noted to have strong effects, this time both positive, in line with most previous research. Among all control variables, these seem to be the strongest determinants of profitability.

8.3. Portfolio quality regressions

Table 10: Results from portfolio quality regressions

Random effects GLS regression	PAR-30	PAR-90	Write-off ratio	Risk Coverage
spcommittee	-0.0145*	-0.00978	0.00136	0.312*
	(0.00743)	(0.00628)	(0.00249)	(0.159)
povmeasure	-0.0134*	-0.00863	-0.00563***	0.168
	(0.00726)	(0.00575)	(0.00206)	(0.128)
compinsurance	-0.0129	-0.0117*	-0.00382*	-0.0579
	(0.00820)	(0.00668)	(0.00216)	(0.141)
Observations	1,551	1,553	1,584	1,463
Number of MFIs	663	663	676	634
Robust standard errors in parentheses	*** p<0.01, ** p<0.05, * p<0.1			

The regression table with all control variables can be found in Appendix 3.3

Only weak indications that a SP committee strengthens the portfolio quality are found. The PAR-30 is seen to decrease at a marginally significant level. An interesting finding is that employing a SP committee on the board increases the risk coverage. Keeping in mind that the risk coverage is the amount of funds set aside to cover potential defaults, there are several intuitive explanations. Although the board committee only weakly improves the quality, their monitoring role can ensure a more financially responsible way of dealing with those potential defaults. It is in a way saying that "we know there will be defaults, so we're going to be prepared for it". The hypothesis of improved quality, 1C, can therefore not be rejected, although not fully verified.

The poverty measurement tool has a strong effect on the write-off ratio, or the actual defaults of the MFI clients[9]. The framework of the SPTF presented the responsibility to avoid over-indebtedness as a major factor in SPM. The effect can therefore be explained through the logic of poverty measurement as a responsible management tool. Fewer defaults may be as a result of having stronger safety nets in place, due to the constant monitoring of client portfolios that a poverty measurement implies. Hypothesis 2C cannot be rejected.

Compulsory insurance has a weak significant effect on repayment rates, through a decrease in the PAR-90 and write-off ratio. This then extends the indicative discussion from the last section. If compulsory insurance is not a client protection tool, but still decreases financial performance, it would at least be expected to have a strong impact on repayment rates. The innovation of microfinance has been based on high repayment rates (Armendáriz & Morduch, 2010). If repayment rates are already high, then the marginal benefit from requiring insurance is miniscule. Furthermore, a large number of clients are excluded from engaging with the insurance-requiring MFI because they cannot afford or do not want insurance. As such compulsory insurance seems to improve repayment rates at the expense of lower sustainability. Hypothesis 3C can as a stand-alone not be rejected, but the positive effect is smaller than expected.

Summarizing, the findings regarding portfolio quality are not as clear as the other categories. Some evidence emerges for all commitment variables positively impacting the portfolio quality. Statistically, the significance is weaker. There seem to be effects unaccounted for that affect the repayment rates and quality of the portfolio, as many control variables are also insignificant. Seen in relation to the other regression categories, there is not as strong evidence neither for no impact nor for strong positive impact. Whereas financial performance overall is mostly unaffected by the tools measured, the commitment to avoiding over-indebtedness seems to increase. As such, this strengthens the discussion from the section above. Although social commitment tools helps in retaining a stronger portfolio quality, this does not translate into a stronger financial sustainability.

8.4. Robustness checks

Although the baseline model has a strong theoretical framework behind it, both in terms of logic and methodology, its quality should be ensured through robustness checks. The practices here vary widely, and there are endless tests depending on the assumed pattern of potential errors (Barnett & Lewis, 1994). The approach here will therefore be to use tests, regressions and logical deductions made in previous literature.

[9] Keeping in mind that the sample average was around 2%, or 0,02

8.4.1. Regressions on efficiency and interest rates

As discussed in section 3.3.3-4, the trade-off between financial and social performance does not simply imply an effect on final profitability. Other studies have found the same trade-off for efficiency (Hermes, et al., 2011) and interest rates (Roberts, 2013). The findings could as such be weakened by the fact that lower efficiency and interest rates are an unwanted result of social focus. In other words, that MFIs are less efficient and set artificially low interest rates to serve social goals. The model is therefore ran using the operating expenses over assets ratio and the nominal yield as dependent variables. The results however are consistent with the main findings. Neither of the explanatory variables are found to have significant effects on efficiency or interest rates. As such, the initial findings are further supported by this result. Full tables for these regressions can be found in Appendix 3.4.

8.4.2. Cross-sectional regression for 2011

An inherent risk in the estimations is the assumption that the key explanatory variables are non-time variant. This assumption is as discussed based on precedence in previous literature (Mersland & Strøm, 2009), the nature of the data available (MIX, 2014c), and information given by MIX (Krell, 2014a). To check the robustness of this assumption, an ordinary least squares regression of cross-sectional data from 2011 is also run. The results from this regression to some extent support the initial findings. An SP committee has a significant, but smaller effect on loan size, and the effect on female borrowers becomes insignificant, but overall clients is still on average higher. Effects on financial variables are still insignificant, but portfolio quality is not as strongly affected. Poverty measurement has almost the exact same effects on all DVs as in the GLS regression, but the effect of female clients also becomes insignificant here. PAR-30 still decreases with the use of poverty level measurements. Compulsory insurance has the same non-effect on outreach variables. The effect on all financial measures is negative and significant, adding to the results found in section 8.2. The effect on portfolio quality is mainly the same. The full regression table from this estimation can be found in Appendix 3.5.

8.4.3. OLS regression with time-fixed effects

A critical assumption of the REM model is that the independent variables are uncorrelated with the error term. If the assumption is breached, estimations will be biased and inefficient (Gujarati & Porter, 2009). This is a rather strong assumption in the case of the current model. As an example one could picture that the SP committee is correlated with ownership structure. Since this variable is unobserved, it may bias the results. To test the robustness in this assumption, an OLS regression with year-specific controls is run instead. The results are almost exactly replicated. The full tables can be seen in Appendix 3.6.

8.4.4. Sub-sample geographic regression

The inclusion of regional dummies in the original model does not necessarily cover all regional preferences. The explanatory variables are all proxy measures for a certain mindset. In that sense, there may be cultural factors affecting e.g. the preference for a social committee or the need to measure poverty. These cultural factors may by extension be what are actually driving the posited relationships, not the social commitment in itself. Following the same logic as Cull et al. (2007) and Rosenberg et al. (2013), the model is re-run using only observations from Latin-America and the Caribbean. A social committee on the board and poverty measurement actually has a stronger impact on outreach. The financial performance is still unaffected. Repayment rates however seem unaffected in this sub-sample, decreasing the ability to say anything about the portfolio quality. Compulsory insurance only has a weak effect on the OSS here. Overall, the financial and outreach effects are confirmed. The full result tables from this regression can be found in Appendix 3.7.

8.4.5. Conditional median (quantile) regression

As noted in section 5 on the dataset, it suffers from several potential problems. In estimations this may have two effects. There may be MFI-specific shocks, or the self-reporting nature of the MFIs may lead to errors that are correlated within MFIs. Second, the outliers are a possible issue. To address this problem, the thesis follows the solution of Ahlin et al. (2011), running a model where the conditional *median* rather than the mean is calculated. Instead of minimizing the sum of *squared* residuals, this process does the same for the *absolute* residuals (Koenker, 2006). From these regressions, the overall results on profitability are the same: compulsory insurance has a negative impact on OSS in the same magnitude as the baseline regression, and the other two variables do not significantly impact financial measures. The other two categories are not as unequivocal. Whereas the effect on social outreach from a SP committee now becomes insignificant apart from on total number of borrowers, the repayment rates significantly increase in this regression. The poverty measurement tool is still robust, and shows significant effects on outreach and quality variables, but still no effect on financial performance. Full tables for these regressions can be found in Appendix 3.8.

8.4.6. Conclusion from robustness tests

First of all, the outcomes overall support the baseline results from section 8.1 on financial performance. Apart from compulsory insurance, there are no indications of a significant effect on any measure of profitability, including efficiency and interest rates. The effect on outreach is somewhat consistent, although the poverty measurement effect is the only one significant across all robustness checks. The evidence for more depth in outreach through a SP board committee is weakened, leaving the role of this committee more ambiguous than initially described. The evidence on repayment rates still signify positive effects, but could also be affected by cultural factors in different regions. Additionally, the magnitude of the effect on both outreach and repayment rates should be more thoroughly investigated.

8.5. Discussion

Summarizing, there seems to be only weak evidence for reverse mission drift. The overall hypothesis is as such rejected, as there is no sign found here of poverty level measurement or SP committees affecting financial measures significantly. Compulsory insurance has a partly negative, but still small effect. The commitment to social objectives seems almost completely unrelated to financial performance based on the evidence found here. In the rationale behind the main hypothesis, 3 theories were presented; a negative relationship, no relationship or a positive relationship with financial performance. The theory that thus seems supported here is that of e.g. Mersland & Strøm (2010), who find no evidence for mission drift. If financial focus does not affect the proportionate focus on a double bottom line, then social commitment should not affect the proportionate focus on financial performance.

The quality of the portfolio even increases slightly, interpreted in the way that MFIs who commit to social goals do so in a responsible way. A number of robustness tests imply that results regarding financial performance remain firm. The effect of a SP committee on the board becomes more questionable in terms of impact on social outreach variables. Compulsory insurance acts opposite to the other variables, showing negative impact on OSS and no significant effect on outreach. This may imply it is a tool (wrongly) employed for the benefit of the MFI and not the client as proposed by e.g. Brown (2001). The all over effect has some surprising indications. It does not take away from the key finding however, namely that there is no strong impact on financial performance measures from employing these tools.

The two goals of microfinance do not seem to draw as much from each other's resource pool as some have suggested. It is still important to emphasize not over-extending the results found. Basically, the connection between committing to social goals and financial performance is not supported. The connection between pursuing financial goals and its effect on true social performance is however still up for debate. In other words this is a "one-way" finding. This is also evidenced by the consistent significance of operating expenses as a proportion of assets (efficiency) and yield on gross portfolio (interest rates). The findings strongly indicate that efficient MFIs tend to have higher average loan sizes and be more profitable, supporting e.g. Hermes et al. (2011). Interest rates are negatively correlated with loan size and positively with OSS. This is a sign that although a social commitment does not directly affect financial performance, financial goals may affect the outreach of institutions. Furthermore, it should be emphasized that the findings do not support recent suggestions that there is a *positive relation* between social and financial goals, *and* portfolio quality (Pistelli, et al., 2014).

Lastly, a discussion around the appropriateness of the social performance proxies used is justified. The social committee on the board seems to have very varying effects on social outreach variables. The question is then

if the SP committee is a poor tool for securing social outreach, or if the social outreach variables are weak proxies. The poverty measurement of clients is robust along all dimensions and tests, but it could still be that its primary function is not to simply decrease loan sizes or increase female borrowers. This is an extension of the discussion in section 6.2.2 on using the average loan size. The debate in its entirety is outside the scope of the thesis, but the results still questions the suitability of the outreach variables. This underlines the need to make quantifiable social impact *outcome* data available.

The simplest way of putting the results without over-extending their meaning, is through the direct answer to the research question: A social committee on the board of directors and measuring the poverty level of clients is not shown to have any effect on financial performance. They do however increase social outreach proxies somewhat. The portfolio quality seems to marginally increase. Compulsory insurance decreases the operational self-sufficiency, and weakly increases portfolio quality. The effect on social outreach variables is only significant through decreasing loan sizes as measured by the ratio to GNIPC.

8.6. Implications

The results and evidence provided above has a number of implications for different parties within the microfinance community.

8.6.1. Implications for future research

From the findings in this thesis, it is possible to formulate a new set of hypotheses to be investigated in the future. Overall this has one main characteristic: That it is possible to commit to social goals without giving up financial sustainability. There are still however a number of areas that remain unexplored.

The first set of factors is related to the data. The research conducted in this thesis revealed a large number of insufficiencies in terms of the data available. For the future, it would be interesting to use more longitudinal data, and study the effects of change, not just levels of outreach and profitability. Secondly, the data needs to be properly reviewed by a 3rd party. It would be interesting to test on the much broader set of SPM variables that are available. Additionally, an increased focus on measuring the *outcome*, and not just the *commitment* to social performance would greatly enhance the conclusions reached here. Some data is available, but it is still not reliable and quantitative enough to build on for academic research. Measuring *and* making available outcome data such as micro-enterprises financed, client-retention rates, jobs created etc. could make a real difference in understanding the conclusions reached here. Lastly, an understanding of the underlying logic behind the SPM tools should be more thoroughly investigated, and the results also warrant future research into the suitability of the current social outreach proxies.

Just as the principle of mission drift has been widely discussed and disaggregated from a financial perspective, so should future research disaggregate the social data and claims of reverse mission drift. Do MFIs with a certain lending methodology commit more strongly to social goals? What drives the MFI willingness to commit to social goals? What is the nature and magnitude of the relationships between the proxies used and the portfolio quality and outreach? *Why* are these social impact tools not significantly impacting financial returns? These questions, along with a modernized and quantifiable social performance management process, are interesting starting points for future empirical research.

8.6.2. Implications for institutions and investors

The interpretations and conclusions made here also have a number of relevant implications for other non-academic stakeholders. Many of these derive just as much from previous literature that finds no mission drift.

For established MFIs it presents an opportunity to revisit their goals and methods for achieving them. Although there are of course individual conditions that apply, the inclusion of social goals for financially focused for-profit institutions does not mean it has to deviate from its search from commercial returns. Rather, if robust social performance management is instituted, there may be a possibility for aligning the two goals. It also has implications for the average MFI, who has not predominantly chosen to have a specific focus. These institutions should, according to the findings, impose rigid social performance management, as it does not hinder financial success as well. Because it is not hindered by a weakened business case, ethical decisions should be made. The choice to measure the poverty of clients and institute a SP committee on the board seem to be tools that can help, whereas compulsory insurance is not necessarily helpful.

Impact investors, who seek a double-bottom line, can benefit simply by knowing that a social focus does not need to affect the financial bottom line. Rather, they should make investments in MFIs that are focused on both goals. And where they are already invested, the focus on social goals should be firmly implemented, through transparent social management such as poverty measurements and board committees. Lastly, even commercial investors can benefit from the indications of the current research. With the knowledge that a commitment to social goals does not hurt financial performance, there is an ethical duty to ensure responsible practices.

8.6.3. Concluding limitations

A last precaution in the interpretation of result should be taken. Although initial analysis and robustness checks confirm the results, the interpretation is weakened by the ongoing debate on the appropriateness of the measurement proxies. Specifically, this is tied to two factors; 1) Outreach proxies and 2) commitment to social goal proxies.

Additionally, it can be hard to determine the direction of the causality here. An alternative interpretation is for example that MFIs with lower loan sizes and more borrowers are those who choose to measure the poverty level of their clients. The reason why compulsory insurance is used as a tool can be because those MFIs are struggling with lower sustainability. There may also be issues with endogeneity, as the proxies used can be tied to something other than actual commitment to social objectives.

9. Conclusion

This thesis has sought to further the research on the relationship between the two main objectives of MFIs. It has empirically tested the connection between a commitment to social goals and the social outreach, profitability and portfolio quality of a microfinance institution. Social performance committees on the board, measuring the poverty levels of clients, and compulsory insurance have acted as proxies for social goal commitment. The evidence suggests that although there is a positive impact on certain outreach variables and to some extent the portfolio quality, financial performance is widely unaffected. In other words, there is no evidence of a trade-off between social focus and financial performance found here. Therefore, the theory of a reverse mission drift within microfinance institutions does not seem to be confirmed. The results found are in line with some literature that has implied there is no evidence for a mission drift. At the same time it contradicts others, who find evidence of financial exploitation. A key point is however to emphasize the relationship of the findings: Social focus as measured here does not affect financial performance, but that does not mean that relentless financial focus does not affect social objectives.

More longitudinal data and a disaggregated look at the practices of individual MFIs is needed in order to conclude further on the findings presented here, which are only preliminary. Furthermore, the need to explore the complexity of social performance management more in-depth is also evident. Some surprising findings (and non-findings) from the use of compulsory insurance and a board committee for social performance question the motivations and appropriateness of their use. At the same time it shows the need for a thorough discussion on the use of simplifying proxies to measure social outreach.

The results bring about an important discussion for practitioners as well. As institutions with a pronounced focus on a double bottom-line, MFIs have an even stronger ethical responsibility than regular corporations. The findings presented in this thesis not only indicate an opportunity for a socially responsible focus, it necessitates it. Microfinance will probably not become a homogenous industry in the future; some MFIs will exist purely for profit, others only to improve the living standards of its clients. However, as this thesis has contributed to indicating, the most robust and responsible ones have a chance to contribute in both areas; being financially sustainable, yet creating economic growth in the communities they operate.

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11. Appendices

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2.Full tables from regressions

2.1. Full tables from social outreach regressions

Social outreach regressions	(1)	(2)	(3)	(4)
VARIABLES	avgloansize	avgloangni	femborr	logborrowers
spcommittee	-221.5**	-0.0349	0.0287*	0.219***
	(92.36)	(0.0425)	(0.0172)	(0.0602)
povmeasuredummy	-356.6***	-0.0793*	0.0315*	0.311***
	(101.1)	(0.0427)	(0.0163)	(0.0609)
compinsurance	111.7	-0.0874**	-0.00830	-0.00233
	(109.7)	(0.0425)	(0.0161)	(0.0646)
oss	92.26	0.0696	-0.0160	0.0590
	(142.8)	(0.0485)	(0.0206)	(0.0584)
par30	180.7	-0.00484	-0.265***	0.101
	(239.7)	(0.139)	(0.0748)	(0.197)
opex_assets	-406.3	-0.0603	0.0474	1.167***
	(408.6)	(0.142)	(0.0490)	(0.292)
nomyield	-1,448***	-0.459***	0.157***	0.303*
	(393.8)	(0.126)	(0.0376)	(0.166)
africadummy	-574.6***	0.114	0.0462	0.705***
	(175.8)	(0.0768)	(0.0293)	(0.116)
eastasiapacific_dummy	-474.3***	0.000981	0.162***	0.777***
	(157.2)	(0.0958)	(0.0291)	(0.134)
easteuropecentralasia_dummy	1,008***	0.246***	-0.150***	-0.543***
	(248.6)	(0.0800)	(0.0274)	(0.106)
mideastnorthafrica_dummy	-606.2***	-0.184***	0.00867	0.380**
	(201.3)	(0.0534)	(0.0628)	(0.178)
southasia_dummy	-1,074***	-0.203***	0.287***	1.574***
	(173.4)	(0.0708)	(0.0288)	(0.104)
profitdummy	279.6	0.122	0.0117	-0.110
	(223.9)	(0.0772)	(0.0272)	(0.106)
newdummy	188.7	0.0682	-0.0153	-0.0612
	(212.3)	(0.0568)	(0.0118)	(0.0630)
logassets	176.5***	0.0638***	-0.00788**	0.813***
	(27.72)	(0.0117)	(0.00389)	(0.0247)
ngodummy	202.5	0.0429	0.0402	0.0963
	(217.0)	(0.0797)	(0.0315)	(0.120)
bankdummy	613.0**	0.351***	-0.0908**	-0.256**
	(271.6)	(0.132)	(0.0427)	(0.125)
creduniondummy	1,024***	0.368***	-0.0730**	-0.735***
	(279.1)	(0.0981)	(0.0319)	(0.125)
regulateddummy	120.5	0.0114	-0.0390*	0.0207
	(127.1)	(0.0477)	(0.0215)	(0.0831)
gnipc	0.0733**		1.72e-06	-1.48e-05
	(0.0326)		(3.37e-06)	(1.53e-05)
infl	1,653	-0.222	-0.149	-0.708**
	(1,068)	(0.389)	(0.123)	(0.343)
deposit_rate	-8.431	-0.00396	0.000243	0.000207
	(8.382)	(0.00304)	(0.00113)	(0.00433)
DTF_overall_with_electricity	15.50**	-0.0146***	0.000650	-0.00515
	(6.816)	(0.00307)	(0.000953)	(0.00369)
Constant	-2,473***	0.335	0.668***	-4.171***
	(713.1)	(0.274)	(0.0921)	(0.464)
Observations	1,522	1,524	1,468	1,528
Number of mfiid	657	658	645	659
rmse	434.5	0.148	0.0624	0.180
rho	0.890	0.918	0.900	0.939
sigma	1290	0.509	0.195	0.687
sigma_e	428.5	0.146	0.0618	0.170
sigma_u	1217	0.487	0.185	0.666
p	0	0	0	0
chi2	446.1	273.9	670.8	3335
r2_o	0.446	0.310	0.428	0.862
Robust standard errors in parentheses				
*** p<0.01, ** p<0.05, * p<0.1				

2.2. Full tables from financial performance regressions

Financial performance	(1)	(2)	(3)	(4)
VARIABLES	oss	roa	roe	profitmargin
spcommittee	0.0136	0.00329	0.0120	0.0164
	(0.0171)	(0.00367)	(0.0202)	(0.0244)
povmeasuredummy	0.00170	0.00522	0.00245	0.0232
	(0.0173)	(0.00388)	(0.0161)	(0.0222)
compinsurance	-0.0461***	-0.00321	-0.0126	-0.0153
	(0.0168)	(0.00402)	(0.0201)	(0.0244)
par30	-0.633***	-0.154***	-0.375***	-0.957***
	(0.118)	(0.0322)	(0.116)	(0.284)
opex_assets	-1.550***	-0.570***	-1.351***	-2.482***
	(0.138)	(0.0414)	(0.177)	(0.376)
nomyield	0.818***	0.300***	0.791***	1.424***
	(0.106)	(0.0294)	(0.0954)	(0.254)
africadummy	0.000825	-0.0100	-0.0120	-0.0805*
	(0.0386)	(0.00834)	(0.0329)	(0.0463)
eastasiapacific_dummy	0.0253	0.00375	0.0791***	0.00315
	(0.0292)	(0.00728)	(0.0273)	(0.0297)
easteuropecentralasia_dummy	0.0851***	-0.000604	-0.00775	0.0316
	(0.0314)	(0.00597)	(0.0220)	(0.0273)
mideastnorthafrica_dummy	0.0581	0.0131	0.00215	0.0691
	(0.0525)	(0.0161)	(0.0428)	(0.0461)
southasia_dummy	-0.0886***	-0.0356***	-0.00129	-0.184***
	(0.0314)	(0.00690)	(0.0390)	(0.0450)
profitdummy	0.0505*	0.00202	-0.0282	0.0266
	(0.0307)	(0.00622)	(0.0338)	(0.0258)
newdummy	-0.0215	-0.0118	-0.0245	-0.110*
	(0.0268)	(0.00832)	(0.0322)	(0.0575)
logassets	0.000606	-0.000938	0.0137**	0.00434
	(0.00660)	(0.00124)	(0.00571)	(0.00712)
ngodummy	0.0741**	0.0178**	0.0257	0.0573*
	(0.0320)	(0.00766)	(0.0466)	(0.0348)
bankdummy	-0.0332	-0.00996	-0.00981	-0.0126
	(0.0358)	(0.00654)	(0.0339)	(0.0295)
creduniondummy	0.0745**	-0.000891	0.00549	0.0803**
	(0.0361)	(0.00686)	(0.0347)	(0.0392)
regulateddummy	0.00426	0.00207	0.0272	-0.0254
	(0.0233)	(0.00526)	(0.0304)	(0.0307)
gnipc	3.77e-06	1.93e-06*	5.18e-06	2.05e-09
	(4.32e-06)	(1.11e-06)	(3.17e-06)	(4.33e-06)
infl	0.791***	0.138**	0.681***	0.457
	(0.240)	(0.0566)	(0.240)	(0.338)
deposit_rate	-0.000201	0.000913	-0.00139	0.00151
	(0.00221)	(0.000574)	(0.00306)	(0.00278)
DTF_overall_with_electricity	0.00177	-8.23e-05	-0.00138	0.000264
	(0.00131)	(0.000291)	(0.00152)	(0.00138)
Constant	0.983***	0.0303	-0.123	-0.0179
	(0.150)	(0.0297)	(0.145)	(0.149)
Observations	1,540	1,545	1,532	1,549
Number of mfiid	659	663	660	663
rmse	0.125	0.0317	0.145	0.241
rho	0.717	0.631	0.661	0.494
sigma	0.231	0.0514	0.249	0.331
chi2	294.7	339.1	154.8	143.1
r2_o	0.363	0.481	0.236	0.348
Robust standard errors in parentheses				
*** p<0.01, ** p<0.05, * p<0.1				

2.3. Full tables from portfolio quality regressions

Portfolio quality regressions	(1)	(2)	(3)	(4)
VARIABLES	par30	par90	writeoff	riskcoverage
spcommittee	-0.0133*	-0.00770	0.00141	0.331**
	(0.00752)	(0.00635)	(0.00254)	(0.161)
povmeasuredummy	-0.0131*	-0.00814	-0.00561***	0.174
	(0.00723)	(0.00574)	(0.00205)	(0.130)
compinsurance	-0.0115	-0.00951	-0.00375*	-0.0371
	(0.00816)	(0.00651)	(0.00214)	(0.136)
opex_assets	0.0305	0.0434	0.0207	0.182
	(0.0313)	(0.0307)	(0.0135)	(0.666)
nomyield	-0.0476**	-0.0626**	0.0305***	-0.256
	(0.0226)	(0.0248)	(0.0102)	(0.413)
africadummy	0.00637	-0.00190	7.47e-05	-0.261
	(0.0142)	(0.0115)	(0.00474)	(0.254)
eastasiapacific_dummy	-0.00222	-0.0209**	-0.0138***	0.232
	(0.0142)	(0.00921)	(0.00346)	(0.342)
easteuropecentralasia_dummy	-0.0211*	-0.00804	-0.000500	-0.0492
	(0.0109)	(0.00907)	(0.00370)	(0.184)
mideastnorthafrica_dummy	-0.0375***	-0.0294***	-9.50e-05	0.862*
	(0.00905)	(0.00758)	(0.00682)	(0.512)
southasia_dummy	-0.00454	0.00121	-0.000987	0.265
	(0.0156)	(0.0140)	(0.00389)	(0.274)
profitdummy	0.0146*	0.00571	0.000973	-0.0148
	(0.00817)	(0.00713)	(0.00356)	(0.221)
newdummy	-0.0142***	-0.0116***	-0.000771	0.579**
	(0.00490)	(0.00358)	(0.00357)	(0.256)
logassets	0.000202	0.00113	0.000985	0.0826*
	(0.00240)	(0.00218)	(0.000739)	(0.0469)
ngodummy	-0.000424	0.00325	-0.00386	0.393
	(0.00837)	(0.00702)	(0.00381)	(0.261)
bankdummy	-0.0144	-0.00563	-0.00337	0.283
	(0.0105)	(0.00906)	(0.00345)	(0.318)
creduniondummy	0.00447	0.00642	-0.0120***	-0.111
	(0.0106)	(0.00850)	(0.00389)	(0.266)
regulateddummy	-0.00772	-0.00668	-0.00352	-0.108
	(0.00924)	(0.00799)	(0.00288)	(0.175)
gnipc	-1.90e-07	-1.42e-06	1.76e-07	-1.62e-05
	(1.65e-06)	(1.30e-06)	(6.57e-07)	(2.91e-05)
infl	-0.276***	-0.218***	-0.112***	7.877***
	(0.0723)	(0.0626)	(0.0355)	(2.216)
deposit_rate	0.00238***	0.00126	-0.000484	-0.0580***
	(0.000715)	(0.000868)	(0.000311)	(0.0164)
DTF_overall_with_electricity	-0.000776	-0.000526	-9.89e-05	0.00830
	(0.000491)	(0.000403)	(0.000162)	(0.0116)
Constant	0.141***	0.0967***	0.0166	-0.853
	(0.0420)	(0.0347)	(0.0189)	(0.887)
Observations	1,551	1,553	1,584	1,463
Number of mfiid	663	663	676	634
rmse	0.0369	0.0356	0.0231	1.186
rho	0.849	0.786	0.437	0.592
sigma	0.0948	0.0766	0.0304	1.864
sigma_e	0.0369	0.0355	0.0228	1.190
sigma_u	0.0873	0.0679	0.0201	1.435
p	3.77e-10	2.49e-06	0	1.19e-10
chi2	87.86	64.62	128.0	90.76
r2_o	0.0456	0.0453	0.151	0.0836
Robust standard errors in parentheses				
*** p<0.01, ** p<0.05, * p<0.1				

2.4. Full tables from efficiency and interest rates regression

Efficiency and interest rates regressions	(1)	(2)
VARIABLES	opex_assets	nomyield
spcommittee	0.00226	0.00666
	(0.00555)	(0.00868)
povmeasuredummy	0.00605	0.00783
	(0.00481)	(0.00739)
compinsurance	-0.00649	-0.00707
	(0.00506)	(0.00788)
volinsurance	0.000764	-0.00448
	(0.00487)	(0.00728)
oss	-0.134***	0.134***
	(0.0121)	(0.0161)
par30	-0.0644***	0.000678
	(0.0241)	(0.0306)
nomyield	0.436***	
	(0.0340)	
africadummy	0.0146	0.0701***
	(0.0109)	(0.0163)
eastasiapacific_dummy	-0.0159*	0.0534***
	(0.00951)	(0.0146)
easteuropecentralasia_dummy	-0.0172**	-0.0232*
	(0.00775)	(0.0132)
mideastnorthafrica_dummy	0.00345	-0.0322
	(0.0154)	(0.0220)
southasia_dummy	-0.0419***	0.0153
	(0.00943)	(0.0137)
profitdummy	-0.0159**	0.0151
	(0.00778)	(0.0107)
newdummy	-0.00274	0.0220
	(0.00824)	(0.0138)
logassets	-0.0130***	0.00106
	(0.00177)	(0.00239)
ngodummy	0.000521	-0.0199*
	(0.00965)	(0.0120)
bankdummy	0.00386	-0.00407
	(0.00672)	(0.0151)
creduniondummy	-0.0415***	-0.0659***
	(0.00990)	(0.0138)
regulateddummy	0.00196	-0.0303***
	(0.00659)	(0.0103)
gnipc	2.44e-06*	9.97e-06***
	(1.33e-06)	(2.05e-06)
infl	0.199***	-0.144*
	(0.0615)	(0.0854)
deposit_rate	-1.99e-05	-0.000872
	(0.000678)	(0.000929)
DTF_overall_with_electricity	0.000181	0.000161
	(0.000372)	(0.000547)
opex_assets		0.810***
		(0.0711)
Constant	0.397***	-0.00517
	(0.0404)	(0.0621)
Observations	1,540	1,540
Number of mfiid	659	659
rmse	0.0384	0.0503
rho	0.642	0.731
sigma	0.0618	0.0902
sigma_e	0.0370	0.0468
sigma_u	0.0495	0.0771
chi2	1233	901.7
r2_o	0.742	0.686
thta_max	0.650	0.710
Robust standard errors in parentheses		
*** p<0.01, ** p<0.05, * p<0.1		

2.5. Full table from OLS 2011 regression

OLS for 2011	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
VARIABLES	avgloansize	avgloangni	femborr	logborrowers	oss	roa	roe	profitmargin	par30	par90	writeoff	riskcoverage
spcommittee	-151.5*	0.0243	0.0283	0.168***	0.00951	0.00126	0.0227	0.0243	-0.00597	-0.00420	0.00204	0.308
	(83.52)	(0.0470)	(0.0178)	(0.0626)	(0.0198)	(0.00444)	(0.0255)	(0.0236)	(0.00773)	(0.00653)	(0.00260)	(0.219)
compinsurance	27.97	-0.119**	0.00628	0.0264	-0.0741***	-0.0110**	-0.0449*	-0.0517*	-0.0189**	-0.0156**	-0.00404	0.110
	(113.4)	(0.0469)	(0.0181)	(0.0663)	(0.0202)	(0.00473)	(0.0262)	(0.0304)	(0.00868)	(0.00702)	(0.00268)	(0.186)
povmeasuredummy	-209.7**	-0.0950**	0.0109	0.222***	-0.00283	0.00638	0.00140	0.0359	-0.0132**	-0.00768	-0.00305	0.183
	(100.3)	(0.0461)	(0.0185)	(0.0630)	(0.0199)	(0.00440)	(0.0210)	(0.0281)	(0.00541)	(0.00580)	(0.00249)	(0.171)
oss	-281.8	0.0434	0.0635	0.348**					-0.0818***	-0.0762***	-0.0239***	1.060**
	(256.1)	(0.101)	(0.0402)	(0.155)					(0.0254)	(0.0221)	(0.00651)	(0.419)
par30	674.8	-0.110	-0.503***	-0.562	-0.615***	-0.120***	-0.354**	-0.624**				
	(625.8)	(0.202)	(0.165)	(0.442)	(0.182)	(0.0392)	(0.145)	(0.287)				
opex_assets	-2,916***	-0.575*	0.418***	3.121***	-1.851***	-0.535***	-1.714***	-1.986***	-0.0663	-0.0832**	-0.00729	2.352
	(909.1)	(0.318)	(0.152)	(0.617)	(0.222)	(0.0513)	(0.307)	(0.283)	(0.0581)	(0.0354)	(0.0225)	(1.627)
nomyield	-1,427**	-0.432**	0.0915		0.973***	0.312***	0.970***	1.127***	-0.0436	-0.0194	0.0324*	-1.404
	(638.3)	(0.202)	(0.103)		(0.163)	(0.0335)	(0.147)	(0.207)	(0.0372)	(0.0238)	(0.0174)	(0.937)
africadummy	-834.3***	-0.173	0.108***	0.896***	-0.00231	-0.00840	-0.0225	-0.112	0.0260	0.0151	0.00657	-0.512
	(213.2)	(0.109)	(0.0401)	(0.160)	(0.0587)	(0.00927)	(0.0479)	(0.0830)	(0.0167)	(0.0126)	(0.00595)	(0.442)
eastasiapacific_dummy	-545.4***	-0.223**	0.149***	0.889***	0.0325	0.00325	0.0790**	0.0194	0.0161	-0.00529	-0.0109***	0.594
	(173.8)	(0.0936)	(0.0329)	(0.129)	(0.0314)	(0.00723)	(0.0326)	(0.0329)	(0.0130)	(0.00788)	(0.00379)	(0.501)
easteuropecentralasia_dummy	762.9***	0.114	-0.101***	-0.308***	0.0683*	0.00360	0.0250	0.0309	-0.00883	0.000443	0.000554	-0.0127
	(263.2)	(0.0846)	(0.0350)	(0.109)	(0.0381)	(0.00737)	(0.0306)	(0.0343)	(0.0125)	(0.00984)	(0.00438)	(0.262)
mideastnorthafrica_dummy	-573.9**	-0.169***	0.0612	0.540***	0.0226	0.0140	-0.0472	0.0521	-0.0170*	-0.0112	0.00843	0.247
	(225.7)	(0.0603)	(0.0739)	(0.143)	(0.0808)	(0.0261)	(0.0734)	(0.0661)	(0.0103)	(0.00914)	(0.0109)	(0.369)
southasia_dummy	-1,337***	-0.440***	0.322***	1.766***	-0.111***	-0.0309***	0.00226	-0.159***	-0.00689	0.00107	-0.00467	0.416
	(203.1)	(0.0904)	(0.0383)	(0.130)	(0.0385)	(0.00898)	(0.0601)	(0.0495)	(0.0159)	(0.0134)	(0.00467)	(0.331)
profitdummy	42.08	0.0897	0.0261	0.0596	0.0333	-0.00481	-0.0629	0.00276	0.0167*	0.00913	0.00577	-0.0164
	(246.1)	(0.0816)	(0.0338)	(0.106)	(0.0370)	(0.00695)	(0.0451)	(0.0333)	(0.00952)	(0.00799)	(0.00369)	(0.365)
newdummy	312.3	0.0551	0.0245	-0.0877	-0.0278	-0.0112	0.0197	-0.170	-0.0296***	-0.0212**	-0.00272	1.295*
	(345.7)	(0.134)	(0.0521)	(0.151)	(0.0598)	(0.0147)	(0.0636)	(0.147)	(0.0109)	(0.00848)	(0.00452)	(0.691)
logassets	95.64***	0.0328**	-8.08e-06	0.971***	0.00754	-0.000487	0.00801	0.00442	0.00150	0.00440	0.000518	0.138**
	(32.88)	(0.0132)	(0.00630)	(0.0206)	(0.00795)	(0.00144)	(0.00752)	(0.0104)	(0.00367)	(0.00313)	(0.000941)	(0.0631)
ngodummy	-9.954	0.0104	0.0529	0.273**	0.0722*	0.0133	-0.0224	0.0328	0.00940	0.00913	0.00442	0.444
	(250.8)	(0.0947)	(0.0377)	(0.128)	(0.0410)	(0.00970)	(0.0656)	(0.0432)	(0.00999)	(0.00751)	(0.00415)	(0.401)
bankdummy	812.5***	0.419***	-0.121**	-0.582***	-0.0415	-0.00649	0.0197	0.00442	-0.0209*	-0.0213*	-0.00229	-0.117
	(287.6)	(0.142)	(0.0505)	(0.137)	(0.0408)	(0.00737)	(0.0461)	(0.0364)	(0.0126)	(0.0111)	(0.00428)	(0.371)
crediuniondummy	889.0***	0.383***	-0.0881**	-0.420***	0.0556	-0.00523	-0.0745	0.0751	0.000751	0.00205	-0.00429	0.146
	(322.2)	(0.118)	(0.0421)	(0.130)	(0.0415)	(0.00783)	(0.0476)	(0.0635)	(0.0116)	(0.00839)	(0.00429)	(0.427)
regulateddummy	193.3	0.0277	-0.0398	-0.116	-0.0239	-0.00338	-0.0275	-0.0338	-0.0139	-0.0132	0.000656	0.253
	(139.1)	(0.0463)	(0.0259)	(0.0834)	(0.0278)	(0.00640)	(0.0421)	(0.0361)	(0.0115)	(0.00995)	(0.00341)	(0.231)
gnipc	0.0994***	-4.33e-05***	-4.86e-06	-5.58e-05***	-4.31e-06	-7.17e-07	-4.00e-06	-7.24e-06	2.67e-06	1.49e-06	1.16e-06	1.57e-05
	(0.0336)	(1.07e-05)	(4.42e-06)	(1.85e-05)	(5.87e-06)	(1.48e-06)	(4.47e-06)	(7.31e-06)	(1.75e-06)	(1.32e-06)	(7.52e-07)	(4.02e-05)
infl	1,622	2.069**	-0.944**	-0.282	0.238	-0.201**	-1.029**	-0.239	-0.234*	-0.0909	0.00158	19.46***
	(1,920)	(0.950)	(0.460)	(1.641)	(0.691)	(0.102)	(0.456)	(1.026)	(0.136)	(0.0919)	(0.0505)	(5.863)
deposit_rate	1.144	-0.0254***	0.000557	0.0129	0.00959**	0.00330***	0.00666	0.0114**	0.00340***	0.00184*	-0.00127**	-0.156***
	(20.26)	(0.00914)	(0.00391)	(0.0127)	(0.00472)	(0.000943)	(0.00436)	(0.00484)	(0.00131)	(0.000939)	(0.000501)	(0.0348)
DTF_overall_with_electricity	-0.582	-0.0138***	0.00154	0.00700	0.00228	-0.000207	-0.00328	0.00135	-0.000561	-0.000425	7.20e-05	0.00504
	(7.377)	(0.00392)	(0.00152)	(0.00525)	(0.00174)	(0.000348)	(0.00201)	(0.00189)	(0.000543)	(0.000397)	(0.000204)	(0.0158)
wnomyield				0.649*								
				(0.383)								
Constant	605.3	1.141***	0.426***	-8.263***	0.913***	0.0505	0.283	-0.0296	0.192***	0.108**	0.0289	-3.539*
	(894.8)	(0.377)	(0.159)	(0.533)	(0.217)	(0.0372)	(0.207)	(0.259)	(0.0709)	(0.0483)	(0.0254)	(1.829)
Observations	536	536	524	538	538	539	533	539	538	538	552	506
R-squared	0.518	0.370	0.439	0.884	0.373	0.451	0.234	0.283	0.123	0.128	0.196	0.140
rank	24	24	24	24	23	23	23	23	23	23	23	23
ll_0	-4693	-480.5	-29.13	-1112	-62.46	724.4	-59.31	-181.8	570.5	686.5	1160	-1085
ll	-4498	-356.7	122.4	-533.0	63.05	886.0	11.83	-91.93	605.7	723.2	1220	-1047
r2_a	0.497	0.342	0.413	0.879	0.346	0.428	0.201	0.253	0.0851	0.0905	0.162	0.101
rss	6.100e+08	118.8	19.23	228.5	24.92	1.178	29.85	44.39	3.315	2.141	0.389	1858
mss	6.560e+08	69.72	15.06	1737	14.81	0.968	9.134	17.56	0.463	0.314	0.0946	301.7
rmse	1091	0.482	0.196	0.667	0.220	0.0478	0.242	0.293	0.0802	0.0645	0.0271	1.961
r2	0.518	0.370	0.439	0.884	0.373	0.451	0.234	0.283	0.123	0.128	0.196	0.140
F	19.75	10.17	26.34	224.9	7.367	10.79	6.498	6.571	3.148	2.802	5.432	2.615
Robust standard errors in parentheses												
*** p<0.01, ** p<0.05, * p<0.1												

2.6. Full table from pooled OLS with time-fixed effects

OLS with time effects	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
VARIABLES	avgloansize	avgloangni	femborr	logborrowers	oss	roa	roe	profitmargin	par30	par90	writeoff	riskcoverage
spcommittee	-101.9**	0.0474**	0.0173*	0.127***	0.0179*	0.00760***	0.00202	0.0202	-0.00684*	-0.00455	0.00178	0.312***
	(46.55)	(0.0204)	(0.00916)	(0.0291)	(0.00994)	(0.00245)	(0.0194)	(0.0172)	(0.00367)	(0.00318)	(0.00139)	(0.0885)
compinsurance	6.092	-0.111***	0.00274	0.0218	-0.0396***	-0.000420	0.00621	-0.0126	-0.0127***	-0.0111***	-0.00288**	0.0201
	(51.56)	(0.0208)	(0.00868)	(0.0314)	(0.00955)	(0.00237)	(0.0161)	(0.0158)	(0.00377)	(0.00326)	(0.00130)	(0.0692)
povmeasuredummy	-252.9***	-0.111***	0.0111	0.243***	0.00499	0.00670***	0.0110	0.0404***	-0.0152***	-0.00815***	-0.00649***	0.202***
	(48.71)	(0.0202)	(0.00854)	(0.0291)	(0.00957)	(0.00227)	(0.0140)	(0.0146)	(0.00322)	(0.00264)	(0.00122)	(0.0705)
d2011	15.13	0.0343	0.00990	-0.0607	0.00519	0.00599**	0.0397**	0.0114	-0.00771	-0.00680	-0.00178	0.170
	(69.74)	(0.0288)	(0.0122)	(0.0415)	(0.0140)	(0.00297)	(0.0182)	(0.0209)	(0.00536)	(0.00447)	(0.00180)	(0.116)
d2012	119.0	0.0484	0.0138	-0.0731	0.00705	0.00756**	0.0512***	0.00664	-0.00956*	-0.00695	-0.00384**	0.0707
	(85.50)	(0.0309)	(0.0128)	(0.0448)	(0.0151)	(0.00319)	(0.0176)	(0.0231)	(0.00545)	(0.00468)	(0.00193)	(0.117)
oss	-162.2	0.0555	0.0412**	0.286***					-0.0843***	-0.0704***	-0.0361***	0.760***
	(143.1)	(0.0564)	(0.0190)	(0.0835)					(0.0104)	(0.00896)	(0.00319)	(0.151)
par30	543.9*	0.189*	-0.403***	-0.615***								
	(292.4)	(0.108)	(0.0638)	(0.234)								
opex_assets	-732.5*	0.0310	0.137**	1.312***	-1.472***	-0.669***	-3.630***	-3.091***	-0.116***	-0.0824***	-0.0175*	1.335***
	(412.4)	(0.110)	(0.0601)	(0.360)	(0.313)	(0.0277)	(1.175)	(0.335)	(0.0308)	(0.0225)	(0.0100)	(0.515)
nomyield	-2,358***	-0.640***	0.271***		0.774***	0.364***	1.850***	1.761***	0.00270	-0.00635	0.0582***	-0.560*
	(360.5)	(0.0915)	(0.0419)		(0.157)	(0.0226)	(0.577)	(0.224)	(0.0186)	(0.0137)	(0.00840)	(0.324)
africadummy	-498.3***	0.0211	0.0504***	0.640***	-0.0614***	-0.0148***	-0.00625	-0.111***	0.0153**	0.00311	0.00241	-0.380***
	(85.71)	(0.0455)	(0.0180)	(0.0613)	(0.0206)	(0.00556)	(0.0419)	(0.0290)	(0.00679)	(0.00523)	(0.00287)	(0.123)
eastasiapacific_dummy	-343.9***	-0.191***	0.136***	0.782***	0.0317*	7.41e-06	0.000743	-0.0118	0.00438	-0.0126***	-0.0112***	0.0134
	(74.84)	(0.0421)	(0.0169)	(0.0613)	(0.0189)	(0.00409)	(0.0373)	(0.0178)	(0.00707)	(0.00468)	(0.00204)	(0.161)
easteuropecentralasia_dummy	948.6***	0.253***	-0.128***	-0.446***	0.0538**	-0.00289	-0.0641	-0.00841	-0.0137***	-0.00476	0.00330	0.0711
	(117.5)	(0.0377)	(0.0155)	(0.0496)	(0.0210)	(0.00378)	(0.0447)	(0.0255)	(0.00518)	(0.00421)	(0.00211)	(0.102)
mideastnorthafrica_dummy	-472.4***	-0.182***	0.0101	0.339***	0.0776***	0.0150**	-0.0454	0.0923***	-0.0210***	-0.0128***	0.00828*	0.317
	(97.17)	(0.0323)	(0.0298)	(0.0795)	(0.0285)	(0.00685)	(0.0319)	(0.0230)	(0.00465)	(0.00435)	(0.00498)	(0.231)
southasia_dummy	-1,091***	-0.436***	0.307***	1.668***	-0.0965***	-0.0350***	-0.0720*	-0.193***	-0.0153**	-0.00597	-0.00529**	0.376***
	(75.71)	(0.0351)	(0.0160)	(0.0514)	(0.0198)	(0.00399)	(0.0426)	(0.0289)	(0.00659)	(0.00592)	(0.00215)	(0.143)
profitdummy	255.8**	0.179***	-0.00635	-0.137***	0.0489**	0.000773	0.00766	0.0102	0.0211***	0.0139***	0.00465**	-0.153
	(107.5)	(0.0352)	(0.0153)	(0.0496)	(0.0197)	(0.00401)	(0.0376)	(0.0263)	(0.00463)	(0.00374)	(0.00221)	(0.138)
newdummy	255.2*	0.0942*	-0.00608	-0.0586	-0.0342	-0.0122**	-0.0257	-0.182***	-0.0193***	-0.0197***	-0.00210	0.452**
	(135.0)	(0.0555)	(0.0196)	(0.0689)	(0.0244)	(0.00609)	(0.0538)	(0.0621)	(0.00675)	(0.00439)	(0.00271)	(0.180)
logassets	118.0***	0.0434***	-0.00423	0.916***	0.00341	-0.00198**	-0.0122	-0.00517	-0.000447	0.000701	0.00167***	0.0772***
	(15.00)	(0.00603)	(0.00279)	(0.00998)	(0.00538)	(0.000938)	(0.0141)	(0.00547)	(0.00132)	(0.00114)	(0.000421)	(0.0274)
ngodummy	159.6	0.0600	0.0350**	0.146***	0.0780***	0.0141***	0.0579	0.0649**	0.00584	0.00655*	0.00180	0.222
	(104.4)	(0.0385)	(0.0172)	(0.0554)	(0.0203)	(0.00446)	(0.0377)	(0.0260)	(0.00466)	(0.00356)	(0.00236)	(0.156)
bankdummy	624.2***	0.338***	-0.0869***	-0.440***	-0.0522***	-0.0103**	-0.0243	0.00863	-0.0273***	-0.0189***	-0.00526**	0.332**
	(124.2)	(0.0579)	(0.0213)	(0.0593)	(0.0193)	(0.00407)	(0.0218)	(0.0255)	(0.00512)	(0.00452)	(0.00207)	(0.154)
crediondummy	837.8***	0.327***	-0.0913***	-0.511***	0.0703***	-0.00483	-0.0332	0.0523*	0.000975	0.00409	-0.00434*	-0.150
	(136.5)	(0.0465)	(0.0194)	(0.0618)	(0.0258)	(0.00437)	(0.0584)	(0.0271)	(0.00564)	(0.00456)	(0.00248)	(0.169)
regulateddummy	89.24	-0.0177	-0.0263**	0.000959	-0.00645	-0.00230	0.0293	-0.0278	-0.00934**	-0.00854**	-0.00365**	-0.0712
	(60.63)	(0.0227)	(0.0116)	(0.0383)	(0.0129)	(0.00350)	(0.0240)	(0.0176)	(0.00438)	(0.00368)	(0.00181)	(0.0897)
gnipc	0.110***	-7.17e-05***	-1.63e-07	-4.74e-05***	3.08e-06	4.46e-07	-2.54e-06	-2.03e-06	7.43e-07	-5.54e-07	3.50e-07	-1.67e-05
	(0.0171)	(5.02e-06)	(1.96e-06)	(8.22e-06)	(2.42e-06)	(6.61e-07)	(3.55e-06)	(2.81e-06)	(8.60e-07)	(7.02e-07)	(3.79e-07)	(1.57e-05)
infl	805.2	0.666**	-0.183*	-0.0546	0.516***	0.0506	0.167	0.247*	-0.0853**	-0.0535**	-0.0273**	4.609***
	(604.1)	(0.270)	(0.104)	(0.379)	(0.132)	(0.0344)	(0.180)	(0.147)	(0.0337)	(0.0257)	(0.0132)	(1.005)
deposit_rate	1.793	-0.0233***	-0.00583***	0.00901*	0.00300*	0.00113***	-0.000391	0.00306	0.00227***	0.00122***	-0.000787***	-0.0632***
	(8.207)	(0.00333)	(0.00150)	(0.00509)	(0.00179)	(0.000406)	(0.00358)	(0.00219)	(0.000565)	(0.000449)	(0.000228)	(0.0118)
DTF_overall_with_electricity	1.628	-0.000145	-1.42e-05	-0.00120*	0.000310	6.93e-05	0.000434	0.000512	3.96e-05	9.12e-05	4.57e-05	0.000516
	(1.100)	(0.000404)	(0.000191)	(0.000633)	(0.000224)	(4.88e-05)	(0.000305)	(0.000338)	(8.10e-05)	(6.90e-05)	(2.95e-05)	(0.00153)
wnomyield				1.558***								
				(0.227)								
Constant	-285.3	0.212*	0.581***	-6.621***	0.991***	0.0336**	0.256	0.0758	0.195***	0.140***	0.0289***	-1.105*
	(329.5)	(0.127)	(0.0585)	(0.223)	(0.101)	(0.0169)	(0.267)	(0.0962)	(0.0263)	(0.0222)	(0.00887)	(0.588)
Observations	2,562	2,564	2,441	2,569	2,811	2,808	2,807	2,827	2,585	2,585	2,610	2,435
R-squared	0.453	0.367	0.426	0.872	0.314	0.479	0.431	0.400	0.112	0.103	0.224	0.081
rank	26	26	26	26	24	24	24	24	25	25	25	25
ll_0	-22476	-2248	-164.2	-5273	-575.4	3203	-2326	-2192	2734	3254	5123	-4852
ll	-21704	-1662	513.3	-2635	-45.20	4119	-1535	-1470	2888	3394	5454	-4748
r2_a	0.447	0.361	0.420	0.870	0.309	0.475	0.426	0.395	0.104	0.0943	0.217	0.0723
rss	3.420e+09	548.7	93.85	1170	170.0	8.748	490.6	468.2	16.21	10.96	2.339	7043
mss	2.830e+09	318.5	69.64	7953	77.88	8.040	371.7	312.3	2.049	1.254	0.675	624.8
rmse	1162	0.465	0.197	0.678	0.247	0.0561	0.420	0.409	0.0796	0.0654	0.0301	1.709
r2	0.453	0.367	0.426	0.872	0.314	0.479	0.431	0.400	0.112	0.103	0.224	0.0815
F	75.59	48.74	94.27	758.9	16.06	44.01	7.246	12.95	9.874	7.942	16.34	6.955
df_r	2536	2538	2415	2543	2787	2784	2783	2803	2560	2560	2585	2410
df_m	25	25	25	25	23	23	23	23	24	24	24	24
Robust standard errors in parentheses												
*** p<0.01, ** p<0.05, * p<0.1												

2.7. Full table from sub-sample geographic regression

Sub sample regression	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
VARIABLES	avgloansize	avgloangni	femborr	logborrowers	oss	roe	roa	par30	par90	writeoff	riskcoverage
spcommittee	-512.7***	-0.0748	0.0182	0.276***	0.0102	0.0131	0.00599	-0.00958	-0.00784	0.00829	0.249
	(188.1)	(0.0545)	(0.0248)	(0.104)	(0.0250)	(0.0268)	(0.00684)	(0.0109)	(0.00957)	(0.00596)	(0.218)
povmeasuredummy	-537.9***	-0.0968**	0.0374*	0.239***	0.0143	-0.00740	0.00727	-0.00971	0.00106	-0.00599	0.201
	(171.1)	(0.0491)	(0.0213)	(0.0897)	(0.0221)	(0.0192)	(0.00595)	(0.00933)	(0.00802)	(0.00392)	(0.181)
compinsurance	68.07	-0.0826	-0.0161	-0.0619	-0.0426*	0.0382	-0.00707	-0.00924	-0.0167	-0.00319	-0.0602
	(197.7)	(0.0560)	(0.0213)	(0.0950)	(0.0251)	(0.0234)	(0.00678)	(0.0126)	(0.0105)	(0.00390)	(0.185)
oss	245.7	-0.0185	0.0195	0.149				-0.0729***	-0.0683***		
	(258.7)	(0.0553)	(0.0394)	(0.118)				(0.0262)	(0.0199)		
par30	351.2	0.314	-0.287**	-0.245	-0.479***	-0.451**	-0.147***				
	(351.1)	(0.249)	(0.140)	(0.276)	(0.136)	(0.188)	(0.0540)				
opex_assets	-614.7	-0.321*	0.192**	1.785***	-1.098***	-1.529***	-0.494***	-0.0882	-0.0937*	-0.00736	1.556
	(850.0)	(0.181)	(0.0972)	(0.558)	(0.185)	(0.285)	(0.0553)	(0.0659)	(0.0546)	(0.0198)	(1.167)
nomyield	-1,477*	-0.278**	0.154**	0.104	0.544***	0.832***	0.266***	0.0420	0.0436	0.0584***	-0.428
	(853.3)	(0.120)	(0.0641)	(0.284)	(0.128)	(0.157)	(0.0355)	(0.0329)	(0.0302)	(0.0170)	(0.580)
o.africadummy	-	-	-	-	-	-	-	-	-	-	-
profitdummy	-391.7	0.0773	0.0874*	0.347	0.0123	-0.00483	0.00451	0.0106	0.00927	0.0179***	-0.151
	(326.5)	(0.0876)	(0.0528)	(0.235)	(0.0374)	(0.0330)	(0.00823)	(0.0119)	(0.00999)	(0.00477)	(0.174)
newdummy	-490.3	-0.0794	-0.0164	-0.0482	-0.0525	-0.0760	-0.0267	-0.0163	-0.0140	0.00108	0.281*
	(469.4)	(0.0600)	(0.0309)	(0.0862)	(0.0418)	(0.0472)	(0.0175)	(0.0138)	(0.00931)	(0.00651)	(0.150)
logassets	272.8***	0.0804***	-0.0146**	0.760***	0.0120	0.0159*	0.000415	-0.000739	0.00137	0.00155	0.228***
	(59.86)	(0.0149)	(0.00728)	(0.0566)	(0.0109)	(0.00931)	(0.00226)	(0.00418)	(0.00326)	(0.00190)	(0.0807)
ngodummy	-266.9	-0.0273	0.0816	0.273	0.0578	0.0476	0.0315***	0.00148	0.00901	0.00625	0.304
	(363.6)	(0.0866)	(0.0603)	(0.267)	(0.0410)	(0.0388)	(0.00994)	(0.0146)	(0.0114)	(0.00624)	(0.264)
bankdummy	659.9	0.0819	0.0615	0.0232	-0.0271	-0.0156	-0.00685	-0.0188	-0.0205	-0.0141**	0.106
	(544.9)	(0.177)	(0.0394)	(0.212)	(0.0425)	(0.0345)	(0.00993)	(0.0148)	(0.0132)	(0.00695)	(0.423)
crediunondummy	498.2	0.106	0.0150	-0.298	-0.00623	-0.0202	-0.000991	-0.0154	-0.00707	-0.00504	0.0494
	(361.5)	(0.0713)	(0.0577)	(0.237)	(0.0393)	(0.0340)	(0.00805)	(0.0139)	(0.00997)	(0.00570)	(0.257)
regulateddummy	222.7	-0.000162	-0.0648*	0.0162	-0.0101	0.0324	0.00778	-0.00748	-0.000367	-0.00258	-0.265
	(262.7)	(0.0557)	(0.0346)	(0.159)	(0.0385)	(0.0256)	(0.00737)	(0.0123)	(0.00925)	(0.00688)	(0.206)
gnipc	0.0799*	-4.06e-05***	-9.74e-07	-2.16e-05	8.04e-06*	5.50e-06	2.08e-06	-1.46e-06	-2.92e-06*	-4.93e-07	1.94e-05
	(0.0450)	(9.74e-06)	(3.98e-06)	(1.86e-05)	(4.81e-06)	(3.80e-06)	(1.34e-06)	(2.20e-06)	(1.70e-06)	(9.19e-07)	(4.17e-05)
infl	5,543***	1.030*	-0.240**	-1.978***	0.449*	0.696*	0.150	-0.297**	-0.283**	-0.174**	3.518
	(1,830)	(0.595)	(0.121)	(0.559)	(0.270)	(0.407)	(0.0965)	(0.134)	(0.121)	(0.0774)	(3.689)
deposit_rate	-10.45	-0.00486	0.00223*	-0.00119	0.000177	0.00437	0.000777	0.00343***	0.00310***	5.06e-06	-0.0713***
	(11.75)	(0.00428)	(0.00115)	(0.00641)	(0.00253)	(0.00292)	(0.000780)	(0.00107)	(0.000904)	(0.000426)	(0.0206)
DTF_overall_with_electricity	22.29*	-0.0112***	0.00118	-0.00574	-0.000953	-0.00123	-0.000274	-0.00129	-0.00170**	-0.000588	-0.0485**
	(12.57)	(0.00369)	(0.00154)	(0.00621)	(0.00200)	(0.00222)	(0.000562)	(0.000976)	(0.000826)	(0.000362)	(0.0232)
Constant	-4,129***	0.210	0.631***	-3.573***	0.978***	-0.206	0.00648	0.265***	0.232***	0.0243	0.217
	(1,185)	(0.261)	(0.168)	(0.867)	(0.214)	(0.176)	(0.0500)	(0.0706)	(0.0602)	(0.0377)	(1.201)
Observations	661	665	628	666	676	677	680	676	675	671	675
Number of mfiid	251	252	246	252	252	252	253	252	252	254	251
thta_95	0.842	0.818	0.834	0.847	0.688	0.530	0.622	0.745	0.724	0.528	0.638
thta_50	0.842	0.818	0.834	0.847	0.688	0.530	0.622	0.745	0.724	0.528	0.638
thta_5	0.732	0.695	0.721	0.740	0.506	0.322	0.422	0.585	0.554	0.320	0.442
thta_min	0.732	0.695	0.721	0.740	0.506	0.322	0.422	0.585	0.554	0.320	0.442
g_max	3	3	3	3	3	3	3	3	3	3	3
g_avg	2.633	2.639	2.553	2.643	2.683	2.687	2.688	2.683	2.679	2.642	2.689
g_min	1	1	1	1	1	1	1	1	1	1	1
N_g	251	252	246	252	252	252	253	252	252	254	251
Tcon	0	0	0	0	0	0	0	0	0	0	0
Tbar	2.390	2.404	2.278	2.408	2.463	2.467	2.476	2.463	2.459	2.400	2.477
rmse	394.5	0.122	0.0441	0.177	0.0983	0.138	0.0306	0.0359	0.0314	0.0238	0.894
rho	0.928	0.907	0.922	0.933	0.756	0.540	0.666	0.827	0.801	0.538	0.689
sigma	1429	0.392	0.150	0.591	0.194	0.201	0.0518	0.0857	0.0703	0.0349	1.610
sigma_e	382.4	0.120	0.0420	0.153	0.0958	0.136	0.0299	0.0356	0.0313	0.0237	0.898
sigma_u	1377	0.373	0.144	0.570	0.169	0.148	0.0423	0.0780	0.0629	0.0256	1.337
p	.	.	.	.	.	.	.	.	.	.	.
chi2	.	.	.	.	.	.	.	.	.	.	.
df_m	18	18	18	18	17	17	17	17	17	16	16
rank	19	19	19	19	18	18	18	18	18	17	17
N_clust	251	252	246	252	252	252	253	252	252	254	251
r2_w	0.164	0.0593	0.0676	0.334	0.152	0.159	0.299	0.0898	0.0995	0.0198	0.0136
r2_b	0.353	0.431	0.378	0.846	0.318	0.400	0.464	0.0467	0.0995	0.208	0.119
r2_o	0.404	0.430	0.339	0.842	0.298	0.327	0.430	0.0673	0.0981	0.163	0.119
thta_max	0.842	0.818	0.834	0.847	0.688	0.530	0.622	0.745	0.724	0.528	0.638
Robust standard errors in parentheses											
*** p<0.01, ** p<0.05, * p<0.1											

2.8. Full tables from conditional median (quantile) regression

Conditional median regressions	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
VARIABLES	avgloansize	avgloangni	femborr	logborrowers	oss	roe	roa	profitmargin	par30	par90	writeoff	riskcoverage
spcommittee	-74.69	-0.000240	0.0169	0.0761	-0.00831	-0.00115	-5.04e-05	-0.00752	-0.00575**	-0.00656***	-6.61e-05	0.0899**
	(54.13)	(0.0183)	(0.0116)	(0.0481)	(0.0107)	(0.00795)	(0.00274)	(0.00842)	(0.00282)	(0.00198)	(0.00113)	(0.0400)
povmeasuredummy	-151.6***	-0.0672***	0.0280***	0.176***	0.00923	0.00174	0.00287	0.00298	-0.00908***	-0.00756***	-0.00177*	0.0967***
	(50.49)	(0.0171)	(0.0108)	(0.0447)	(0.00996)	(0.00735)	(0.00253)	(0.00781)	(0.00260)	(0.00183)	(0.00105)	(0.0366)
compinsurance	12.44	-0.0565***	-0.000342	0.0566	-0.0400***	-0.00614	-0.00379	-0.0248***	0.00529**	0.00212	-0.000503	-0.0355
	(51.72)	(0.0175)	(0.0111)	(0.0458)	(0.0101)	(0.00750)	(0.00258)	(0.00795)	(0.00265)	(0.00186)	(0.00106)	(0.0375)
oss	-196.2*	-0.0344	0.0244	0.358***								
	(107.5)	(0.0363)	(0.0228)	(0.0953)								
par30	128.1	0.0956	-0.373***	-0.363	-0.639***	-0.318***	-0.127***	-0.560***				
	(283.9)	(0.0959)	(0.0600)	(0.252)	(0.0549)	(0.0429)	(0.0145)	(0.0437)				
d2011	-15.47	0.00277	0.0144	-0.0463	0.00528	0.0146*	0.00106	0.00326	-0.00252	-0.00166	0.000153	-0.00345
	(58.90)	(0.0199)	(0.0126)	(0.0522)	(0.0117)	(0.00865)	(0.00298)	(0.00918)	(0.00307)	(0.00215)	(0.00122)	(0.0434)
d2012	-27.24	0.0223	0.0177	-0.0665	0.000973	0.00833	4.01e-05	0.00567	-0.00151	-0.00116	-0.00152	-0.00243
	(63.35)	(0.0214)	(0.0136)	(0.0562)	(0.0125)	(0.00922)	(0.00318)	(0.00977)	(0.00327)	(0.00230)	(0.00131)	(0.0464)
opex_assets	-893.6**	-0.353***	0.307***	2.179***	-1.859***	-1.382***	-0.510***	-1.748***	0.0113	0.00295	0.0212***	0.759***
	(393.2)	(0.133)	(0.0831)	(0.348)	(0.0656)	(0.0504)	(0.0169)	(0.0506)	(0.0169)	(0.0119)	(0.00677)	(0.245)
nomyield	-1,534***	-0.181**	0.307***	1.646***	1.032***	0.894***	0.330***	0.925***	-0.0128	-0.00945	0.0218***	-0.117
	(264.3)	(0.0894)	(0.0563)	(0.235)	(0.0481)	(0.0366)	(0.0123)	(0.0371)	(0.0124)	(0.00870)	(0.00492)	(0.177)
africadummy	-553.1***	-0.0820**	0.0416*	0.726***	-0.0392*	-0.0614***	-0.0160***	-0.0301*	0.0131**	0.00197	0.000772	-0.336***
	(110.8)	(0.0376)	(0.0236)	(0.0983)	(0.0220)	(0.0163)	(0.00560)	(0.0173)	(0.00578)	(0.00406)	(0.00233)	(0.0813)
eastasiapacific_dummy	-349.5***	-0.215***	0.202***	0.726***	0.0299	0.0508***	0.00189	0.0255	-0.0118**	-0.00956**	-0.00565***	-0.168**
	(103.3)	(0.0351)	(0.0222)	(0.0918)	(0.0205)	(0.0152)	(0.00523)	(0.0161)	(0.00540)	(0.00379)	(0.00211)	(0.0784)
easteuropecentralasia_dummy	426.6***	0.0537*	-0.137***	-0.133*	0.0339*	-0.0114	-0.00331	0.0164	-0.00602	-0.00673**	-0.00398**	-0.0433
	(88.93)	(0.0301)	(0.0193)	(0.0789)	(0.0176)	(0.0130)	(0.00448)	(0.0138)	(0.00463)	(0.00325)	(0.00186)	(0.0647)
mideastnorthafrica_dummy	-501.8***	-0.210***	0.0688*	0.523***	0.00109	-0.0403	0.0109	0.0385	-0.0205**	-0.0187***	-0.00275	0.0683
	(180.4)	(0.0610)	(0.0382)	(0.160)	(0.0358)	(0.0252)	(0.00871)	(0.0269)	(0.00900)	(0.00632)	(0.00340)	(0.125)
southasia_dummy	-960.7***	-0.347***	0.437***	1.950***	-0.0911***	-0.0378***	-0.0250***	-0.0847***	-0.0166***	-0.0118***	-0.00489**	0.137*
	(96.97)	(0.0328)	(0.0206)	(0.0862)	(0.0191)	(0.0142)	(0.00488)	(0.0150)	(0.00503)	(0.00353)	(0.00201)	(0.0715)
profitdummy	-9.451	0.0162	0.0282	-0.127*	0.0325*	-0.00357	0.00364	0.0224*	0.00306	-0.000410	0.00291	-0.100
	(85.28)	(0.0289)	(0.0188)	(0.0758)	(0.0169)	(0.0125)	(0.00431)	(0.0133)	(0.00445)	(0.00313)	(0.00180)	(0.0646)
newdummy	100.6	-0.0279	0.0143	0.00994	0.0306	-0.0133	0.00427	0.0166	-0.00728	-0.00634	-0.00185	0.162*
	(111.2)	(0.0379)	(0.0237)	(0.0988)	(0.0221)	(0.0166)	(0.00564)	(0.0174)	(0.00582)	(0.00409)	(0.00232)	(0.0889)
logassets	72.52***	0.0208***	-0.00221	0.955***	0.00207	0.00797***	-0.000563	0.00281	0.00120	0.000886	0.00108***	0.0573***
	(16.53)	(0.00560)	(0.00357)	(0.0147)	(0.00327)	(0.00241)	(0.000829)	(0.00255)	(0.000855)	(0.000600)	(0.000340)	(0.0123)
ngodummy	-1.673	-0.0278	0.0503**	0.100	0.0918***	0.0542***	0.0205***	0.0697***	0.00323	0.00202	0.00187	0.00113
	(92.57)	(0.0314)	(0.0201)	(0.0822)	(0.0183)	(0.0136)	(0.00467)	(0.0144)	(0.00482)	(0.00339)	(0.00196)	(0.0698)
bankdummy	604.7***	0.245***	0.00124	-0.535***	-0.00903	0.00865	-0.00527	-0.0165	-0.00477	-0.00254	-0.00164	0.110
	(99.14)	(0.0336)	(0.0216)	(0.0879)	(0.0196)	(0.0145)	(0.00500)	(0.0154)	(0.00515)	(0.00362)	(0.00207)	(0.0734)
crediuniondummy	713.3***	0.222***	-0.00966	-0.574***	0.0145	0.0148	0.00165	0.00971	0.00340	0.00154	-0.00275	-0.0390
	(106.9)	(0.0362)	(0.0232)	(0.0949)	(0.0212)	(0.0157)	(0.00540)	(0.0167)	(0.00558)	(0.00392)	(0.00225)	(0.0819)
regulateddummy	84.60	0.0423*	-0.0387***	-0.186***	0.0108	0.0210**	-0.000151	0.00101	0.00520	0.00773***	0.000586	-0.0187
	(67.05)	(0.0227)	(0.0146)	(0.0596)	(0.0133)	(0.00989)	(0.00338)	(0.0104)	(0.00349)	(0.00245)	(0.00140)	(0.0494)
gnipc	0.0599***	-3.53e-05***	-6.26e-06**	-6.10e-05***	1.19e-06	-2.54e-06	-9.44e-08	8.79e-07	3.77e-07	-1.44e-07	2.55e-07	-2.28e-05***
	(0.0121)	(4.08e-06)	(2.55e-06)	(1.07e-05)	(2.39e-06)	(1.76e-06)	(6.10e-07)	(1.88e-06)	(6.28e-07)	(4.42e-07)	(2.53e-07)	(8.79e-06)
infl	492.0	0.585	-0.465**	-1.107	-0.0591	-0.183	-0.0612	-0.0267	-0.196***	-0.153***	-0.0306	1.481*
	(1,110)	(0.376)	(0.236)	(0.986)	(0.220)	(0.163)	(0.0564)	(0.173)	(0.0580)	(0.0407)	(0.0233)	(0.846)
deposit_rate	6.036	-0.0119***	-0.00488**	0.00247	0.00571***	0.00545***	0.00217***	0.00592***	0.000778	0.000770**	-3.99e-05	-0.0339***
	(9.141)	(0.00309)	(0.00194)	(0.00812)	(0.00181)	(0.00134)	(0.000461)	(0.00142)	(0.000476)	(0.000334)	(0.000192)	(0.00668)
DTF_overall_with_electricity	0.360	-0.00550***	0.00189**	0.00141	0.000839	2.11e-05	-0.000194	0.000314	6.29e-05	-0.000167	0.000192**	0.00502*
	(3.996)	(0.00136)	(0.000861)	(0.00355)	(0.000789)	(0.000585)	(0.000201)	(0.000619)	(0.000207)	(0.000146)	(8.36e-05)	(0.00295)
Constant	490.3	0.709***	0.388***	-7.471***	1.026***	-0.104*	0.0231	0.0406	0.0263	0.0332**	-0.0256***	-0.250
	(409.6)	(0.139)	(0.0879)	(0.364)	(0.0779)	(0.0577)	(0.0198)	(0.0610)	(0.0204)	(0.0143)	(0.00821)	(0.288)
Observations	1,522	1,523	1,468	1,528	1,540	1,532	1,545	1,549	1,551	1,553	1,584	1,463
df_m	25	25	25	25	24	24	24	24	23	23	23	23
Standard errors in parentheses												
*** p<0.01, ** p<0.05, * p<0.1												

3. Full list of correlations

	spcommittee	povmeasure	compinsoss	profitmarg	roe	roa	avgloansi	avgloangn	femborr	borrowers	log(borr)	par30	par90	writeoff	riskcovr	opex_assets	nonyield	africae	eastasiap	easteurope	mideastnr	southasia_	profitdum	newdummy	logassets	ngodummy	bankdummy	creditunion	regulated	gnipc	infl	deposit_r	DTF_overal
spcommittee	1																															
povmeasure	0,164	1																														
compinsoss	0,0386	0,1129	1																													
oss	0,0255	-0,0009	-0,1186	1																												
profitmargin	0,0651	0,0334	-0,0267	0,8117	1																											
roe	0,0768	0,0361	0,0018	0,5972	0,5759	1																										
roa	0,0607	0,0481	-0,0497	0,8382	0,8375	0,7	1																									
avgloansize	-0,1252	-0,1889	-0,052	0,1059	0,0898	0	0																									
avgloangni	-0,0598	-0,1309	-0,0945	0,1015	0,0706	0	-0	0,5888	1																							
femborr	0,1614	0,16	0,0955	-0,042	-0,0334	0	0	-0,54	-0,4098	1																						
borrowers	0,0672	0,0687	0,0488	0,1087	0,0643	0,1	0,1	-0,104	-0,0781	0,1763	1																					
logborrowers	0,1814	0,2177	0,1212	0,0492	0,0901	0,2	0,1	-0,2861	-0,1391	0,3424	0,4697	1																				
par30	-0,0721	-0,1018	-0,0551	-0,137	-0,1693	-0	-0	0,08	0,0375	-0,1794	0,0628	-0,0999	1																			
par90	-0,049	-0,0537	-0,0319	-0,173	-0,2	-0	-0	0,0927	0,0628	-0,1329	0,0982	-0,0535	0,884	1																	
writeoff	-0,0064	-0,1051	-0,0956	-0,218	-0,1967	-0	-0	-0,0666	-0,0807	-0,0741	-0,0172	-0,0447	0,201	0,174	1																	
riskcoverage	0,1046	0,0999	0,0402	0,0585	0,0479	0,1	0	-0,0367	0,0165	0,1818	0,0277	0,1512	-0,28	-0,24	-0,1333	1																
opex_assets	-0,0008	0,0023	-0,1044	-0,318	-0,3204	-0	-0	-0,3039	-0,3097	0,1816	-0,0969	-0,1457	-0,06	-0,07	0,2525	-0,035	1															
nonyield	0,0386	-0,0004	-0,1196	0,0001	0,0061	-0	0,1	-0,2929	-0,3113	0,1985	-0,0332	-0,0329	-0,1	-0,14	0,2474	-0,029	0,7922	1														
africadummy	-0,0508	-0,0193	0,0203	-0,088	-0,1016	-0	-0	-0,1267	0,1317	-0,0347	-0,0343	-0,0115	0,054	0,03	0,0168	-0,101	0,0892	0,0659	1													
eastasiapa	0,0918	0,0525	-0,0973	0,0596	0,0784	0,1	0,1	-0,115	0,0006	0,1037	-0,0131	0,0978	0,035	-0,06	-0,1024	0,0292	-0,0071	0,0661	-0,08	1											
easteurope	-0,0903	-0,0291	-0,3045	0,1482	0,0722	-0	0,1	0,3531	0,1803	-0,3955	-0,0867	-0,2536	-0,02	0,007	0,0281	-0,076	-0,083	-0,0745	-0,13	-0,1314	1										
mideastnr	0,0423	-0,0108	0,0076	-0,001	0,0109	-0	0	-0,039	-0,0656	-0,0119	-0,0041	0,0597	-0,04	-0,04	0,0424	0,0406	-0,0026	-0,0332	-0,04	-0,0415	-0,0663	1									
southasia_	0,1395	0,1617	0,1744	-0,076	-0,0937	0	-0	-0,3167	-0,1645	0,444	0,2548	0,3579	-0,06	-0,01	-0,1618	0,1444	-0,233	-0,235	-0,14	-0,1417	-0,2263	-0,0715	1									
profitdummy	0,0298	-0,0133	-0,1179	0,0655	0,0492	0,1	0	0,085	0,1335	-0,0372	0,0854	0,2127	0,015	-0,03	0,0443	-8E-04	-0,0316	0,1053	-0,01	0,098	0,0933	-0,1018	0,0904	1								
newdummy	-0,0232	-0,0341	0,0062	-0,004	-0,0797	-0	-0	0,0128	0,0197	0,0434	-0,0119	-0,0654	-0,05	-0,07	-0,0073	0,0392	0,0639	0,0668	0,037	-0,047	-0,0087	-0,0308	0,1111	0,17	1							
logassets	0,075	0,0604	0,0665	0,1135	0,1534	0,2	0,1	0,2133	0,2211	-0,1022	0,3721	0,8062	-0,04	0,005	-0,0179	0,0898	-0,3287	-0,1988	-0,09	0,0165	-0,0265	0,0532	0,0177	0,27	-0,11	1						
ngodummy	0,0378	0,1359	0,1003	-0,067	-0,0527	-0	0	-0,2611	-0,2538	0,2552	-0,0107	-0,0369	-0,02	0,021	0,01	0,087	0,161	0,0485	-0,04	-0,0341	-0,2615	0,0718	0,043	-0,66	-0,16	-0,2405	1					
bankdummy	0,0221	0,0203	0,0141	0,0246	0,0385	0,1	0	0,186	0,2545	-0,1494	0,0863	0,2577	-0,06	-0,04	-0,0085	0,0516	-0,0095	-0,0437	0,012	-0,073	0,0384	-0,0422	0,027	0,34	0,021	0,3985	-0,2	1				
creditunion	-0,0548	-0,1287	0,1358	0	0,023	-0	-0	0,2439	0,2087	-0,1922	-0,0782	-0,2509	0,039	0,035	-0,1393	-0,095	-0,2546	-0,2616	0,123	-0,0172	-0,0509	-0,0533	-0,0815	-0,27	0,002	-0,0908	-0,3	-0,11	1			
regulated	0,0728	0,0499	-0,149	0,0407	0,0098	0,1	-0	0,0887	0,2194	-0,1182	0,1428	0,269	-0,01	-0,02	-0,0673	-0,004	-0,2353	-0,1925	0,147	0,0522	0,3091	0,0636	0,2338	0,38	0,023	0,3	-0,4	0,247	-0,0372	1		
gnipc	-0,0335	-0,1582	-0,1312	0,0842	0,0819	0	0,1	0,2715	-0,2526	-0,1691	-0,085	-0,2223	-0	-0,05	0,1744	-0,085	0,2905	0,3679	-0,26	-0,1794	0,1649	0,0371	-0,4236	0,05	0,007	-0,0089	-0,1	-0,03	-0,0003	-0,2622	1	
infl	0,0509	0,1398	-0,0006	0,0076	-0,0414	0	-0	-0,1544	-0,0141	0,1687	0,1392	0,1692	-0,08	-0,04	-0,1699	0,1561	-0,0706	-0,0662	-0,12	-0,091	0,0996	-0,1364	0,5857	0,17	0,107	-0,0197	-0	0,13	-0,2275	0,195	-0,34	1
deposit_rate	0,0473	0,0365	-0,0202	0,0708	0,0098	0	0	-0,0047	-0,093	-0,0255	0,0804	0,0206	-0,03	-0,02	-0,1444	-0,05	-0,0404	-0,0616	0,014	-0,149	0,2517	-0,059	0,2951	0,04	0,075	-0,0621	0,01	0,072	-0,1226	0,1845	-0,07	0,6	1
DTF_overal	-0,0302	-0,0952	-0,0018	0,1096	0,1087	0	0,1	0,1901	-0,2364	-0,0913	-0,0877	-0,1169	-0,03	-0,05	0,0982	-0,043	0,1106	0,1875	-0,3	-0,1503	0,0995	0,0711	-0,2594	0,04	-0,03	0,0324	-0	0,01	-0,0169	-0,1977	0,55	-0	-0,0402	1

4. Explanation all DV variables

	Variable	Explanation
Portfolio quality	Portfolio-at-risk, 30/90 days (PAR-30/90)	The proportion of the portfolio with payments more than 30 days overdue, which acts as a proxy for the quality of the loan portfolio, with a lower PAR-30 indicating a higher quality, and higher repayment rates (1- PAR-30)
	Write-off ratio	Value of the loans written off compared to gross loan portfolio. A measure for actual defaults rather than just delinquency
	Risk coverage	The proportion of possible defaults (PAR-30) that a MFI has as a reserve. A proxy for its ability to absorb potential losses, not the losses themselves
Financial performance	Operational self-sufficiency (OSS)	Financial revenues (donations included) divided by all costs, such as operating expenses, financial expenses, loan loss provisions to cover default loans etc. Financial Revenue/(Financial Expense + Operational Expense + Loan Loss Provision)
	Return on assets/equity	How much return that a MFI generates from its assets/equity, measure of returns/profitability
	Profit margins	The reported profit margin of the MFI, a proxy for the profitability
Social outreach	Average loan size	Gross loan portfolio/Active borrowers, a measure for the depth of outreach, where smaller average loans means poorer clients
	# of active borrowers	A measure for the scale of outreach, where a higher number indicates a wider client portfolio
	% of female borrowers	A proxy for the depth of outreach, measured as the ratio of female clients/total clients, where a higher ratio indicates more depth in reaching weaker segments of the market

5. All outliers removed from STATA

Dropped if	Larger than	Smaller than
OSS	2,5	0
ROE	3	-2
ROA	0,4	-0,4
Profit margin	5	-5
PaR-30	0,8	0
PAR-90	0,8	0
Avg. Loan size	15000	0
Female borrowers	1	0
Borrowers	5000000	0
Avg. Loan/GNIPC	5	0
Write-off ratio	0,3	0
Risk coverage	15	0
Opex / assets	0,8	0
Nominal yield	1	0

*This resulted in the removal of a maximum amount of 90 observations on one particular variable, the OSS, out of more than 2000 available data points. Tests of the data indicated that MFIs who report outliers on one variable are also likely to report extreme values on other dimensions as well.

6. Complete list of MIX Social Performance Indicators

Process Indicators
1. Mission and Social Goals
Which of the following clients represent your target market? Please rank them in order of importance. Select only those that apply:
Which development objectives does your institution specifically pursue through its provision of financial and non-financial products and services? Please rank them in order of importance. Select only those that apply:
What is the poverty level of the clients that your institution aims to reach? Please check all that apply:
2. Governance
Have members of your Board of Directors ever been trained on social performance management
Does your Board of Directors have a formal committee that monitors social performance?
3. Range of Products and Services
Please indicate which credit products your institution offers:
Does your institution take deposits?
If your institution does not take deposits, please skip this question. Otherwise, please indicate which savings products your institution offers:
Does your institution require compulsory insurance?
If your institution does not require compulsory insurance, please skip this question. Otherwise, please indicate which insurance products your institution requires:
Does your institution offer voluntary insurance?
If your institution does not offer voluntary insurance, please skip this question. Otherwise, please indicate which insurance products your institution offers:
Please indicate any other financial services your institution offers:
Does your institution offer enterprise services?
If your institution does not offer enterprise services, please skip this question. Otherwise, please indicate which services your institution offers:
Does your institution offer education services?
If your institution does not offer education services, please skip this question. Otherwise, please indicate which services your institution offers:
Does your institution offer health services?
If your institution does not offer health services, please skip this question. Otherwise, please indicate which services your institution offers:
Does your institution offer women's empowerment services?
If your institution does not offer women's empowerment services, please skip this question. Otherwise, please indicate which services your institution offers:
4. Social Responsibility to Clients (Consumer Protection Principles)
The loan approval process requires evaluation of borrower repayment capacity and loan affordability. Loan approval does not rely solely on guarantees (whether peer guarantees, co-signers or collateral) as a substitute for good capacity analysis.
Internal audits check household debt exposure, lending practices that violate procedures including unauthorized re-financing, multiple borrowers or co-signers per household, and other practices that could increase indebtedness.
Productivity targets and incentive systems value portfolio quality at least as highly as other factors, such as disbursement or customer growth. Growth is rewarded only if portfolio quality is high.
Prices, terms and conditions of all financial products are fully disclosed to the customer prior to sale, including interest charges, insurance premiums, minimum balances, all fees, penalties, linked products, third party fees, and whether these can change over time.
Staff is trained to communicate effectively with all customers, ensuring that they understand the product, the terms of the contract, their rights and obligations. Communications techniques address literacy limitations (e.g., reading contracts out loud, materials in local languages).
Acceptable and unacceptable debt collection practices are clearly spelled out in a code of ethics, book of staff rules or debt collection manual.
The organization's corporate culture values and rewards high standards of ethical behavior and customer service.
A mechanism to handle customer complaints is in place, has dedicated staff resources, and is actively used. (Suggestion boxes alone are generally not adequate.)
Customers know how their information will be used. Staff explains how data will be used and seeks permission for use.
5. Transparency of Costs of Service to Clients
5a. How does your institution state the interest rate of its most representative microcredit product?
6. Human Resources and Staff Incentives
Please indicate which of the following, if any, are included in your human resources policy:
Please indicate whether your institution has staff incentives related to any of the following areas:
7. Social Responsibility to the Environment
Please indicate what kind of environmental policies, if any, your institution has in place:
8. Poverty Outreach
Does your institution measure the poverty levels of your clients?
If your institution measures client poverty levels, which method(s) does your institution use? (Check all that apply):
Please list any product(s) or service(s) (financial or non-financial) offered by your institution that is specifically designed to target the poor:

Results Indicators		
1. Mission and Social Goals	**Total active borrowers**	
Female		
Rural		
People less than 18 years old		
2. Governance	**Total staff**	**Female staff**
Number of board members		
3. Range of Products and Services	**Clients participating in each training during the reporting period**	
Microenterprise training		
Education courses		
Women's empowerment training		
6a. Human Resources and Staff Incentives	**Total staff**	**Female staff**
Number of employees		
Number of loan officers		
Number of managers		
6b. Human Resources and Staff Incentives	**Total staff**	
Number of employees at the end of the reporting period		
Exit during period, employees		
Staff employed for one year or more		
Staff rotation rate = Exit during the period / average (Number of employees at the end of the reporting period + Staff employed for one year or more)		
9. Client Outreach by Lending Methodology	Total outstanding loans	
Individual Lending		
Solidarity Group		
Village Banking/SHG		
10. Enterprises Financed and Employment Creation	**During the reporting period**	
Number of microenterprises financed		
Number of start-up microenterprises financed		
Number of people employed in the financed enterprises		
Sample used for microenterprises data		
Sample used for employment data		
11. Client Retention Rate	**Total active borrowers**	
Number of active borrowers at the end of the period		
Number of active borrowers at the beginning of the period		
New borrowers during the period		
Client retention rate = Active borrowers at the end of the period / (active borrowers at the beginning of the period + new borrowers during the period)		

7. Diamonds rating from MIX description

Level	Diamond
1	Profile is visible.
2	Level 1 and some data on products and clients for the year
3	Levels 1 and 2 and some financial data for the year
4	Levels 1 - 3 and audited financial statements are published for the year
5	Levels 1 - 4 and rating or due diligence report is published for the year

Source: (Microfinance Information eXchange, 2014)

8. E-mail exchange with Michael Krell, Social Peformance Manager at MIX

17. juli 2014 kl. 19:45 skrev Michael Krell <mkrell@themix.org>:
Hi Tomas,

Glad this is all helping! Unfortunately MIX doesn't have the sort of information you're looking for as such. Mostly because the notion of "primarily" is rather subjective: if an MFI offers both solidarity and individual loans, where do you draw the line? Greater than 50% of clients served by one method as opposed to another? 70%? What if the GLP of the remaining 30% is comparable to or even larger than that of the 70% (as indeed can happen)? Etc.

My suggestion is to use our data to create your own standard and use that to group MFIs, if this is something you're interested in investigating. I'm happy to answer more questions or to refer you to one of our financial analysts if you'd like.

Also, in terms of the desk review's impact on our data: in the case of profile data, if an MFI's desk review summary is already published on MIX Market, that usually means we've already modified their profile data to reflect the desk reviews findings. That's not true 100% of the time—and quantitative data corrections tend to lag significantly—but it's generally the case. Also, MFIs only report qualitative SP variables to us once, because they are bound to the strategic practices and not year-by-year performance. As for female percentages board and staff, these are some of the easiest data points for MFIs to report and hardly ever need revision.

Your finding regarding poverty measurement and comp. insurance sounds intriguing! Looking forward to hearing more! Finally, just so you're aware, we recently published this article (which may or may not help with your research): http://www.themix.org/publications/microbanking-bulletin/2014/06/Beyond-Good-Intentions-Measuring-impact-investment-and-social-performance

Best,
Mike

Michael W. Krell ♦ Analysis and Data Management Lead, Social Performance
Microfinance Information Exchange
www.themix.org ♦ www.mixmarket.org

From: Tomas Rosales [mailto:toro09ab@student.cbs.dk]
Sent: Thursday, July 17, 2014 12:57 PM
To: Michael Krell
Subject: SV: Social performance dataset (includes geo info)

Dear Michael,

In terms of lending methodology, I only seem to be able to find quantitative measures such as Gross portfolio when lending methodology is e.g. 'Individual'. Is there anyway to only get what lending methodology the institutions primarily use, i.e. Individual, Group-lending, or Village Banking?

I will have a look at the presentation, I am currently looking at governance mechanisms such as board members and female board ratio, SP board training, SP committee on Board. Some seem to be having effects, so I hope the desk review did not decrease the reliability of the data too much!
Additionally, I have found that employing some sort of poverty measure and having compulsory insurance have significant impact on both financial and social outreach variables. Will get back to you when my final report is done.

Again thank you!

Regards,
Tomas

Fra: Michael Krell <mkrell@themix.org>
Sendt: 16. juli 2014 19:25
Til: Tomas Rosales
Emne: RE: Social performance dataset (includes geo info)

Hi Tomas,

So sorry it took me a week to reply to this. My computer had a meltdown last Thursday and I've been dealing with that on top of all my regular work. And you're very welcome for the help. I'm looking forward to your findings!

As for your questions, you can get all sorts of lending methodology breakouts by using our updated Cross Market Analysis tool: http://reports.mixmarket.org/crossmarket Just type "methodology" into the search bar in the first box ("Select") and you should see many different options. Let me know if you have trouble using it.

Regarding whether the desk review has affected our SP data, I'm attaching an internal PPT that we presented to the rest of MIX in May. Slides 8-11 contain a breakdown of how the desk review has impacted the data. **Please do not share this PPT with anyone or publish it in any way.** Feel free to use the information from slides 8-11, though (just be sure to cite us). And to answer your question; those variables that can be easily verified, such as a SP board committee, are usually found to be accurate. Others that are harder to document, such as SP board *training,* have higher correction rates.

Hope everything is going well with the project!

Best,
Mike

From: Tomas Rosales <toro09ab@student.cbs.dk>
Sent: Thursday, July 10, 2014 5:03 PM
To: Michael Krell
Subject: Re: Social performance dataset (includes geo info)

Hi again,

I remembered that I forgot to ask: Regarding the desk review process, has the validation uncovered much erroneous reporting?

I am asking in relation to analysis I am making, from what I have found in the list you sent, the reporting in many of the SPI areas (not including CPP) seem to "pass the test" of the desk review?

Thank you again!

/Tomas

10. juli 2014 kl. 22:09 skrev Tomas Rosales <toro09ab@student.cbs.dk>:

Dear Michael,

I cannot remember if I thanked you for sending all of this. It is highly appreciated. Thank you also for clearing up on client-protection principles, and suggesting additional sources. It really did help in specifying my model!

I am now underway in analyzing the numbers, and realized that I cannot seem to find any data on*lending-*

methodology. Is that available too, and if so could you send it to me or direct me to where I can find it?

I am merging the social and financial datasets and have found a few interesting things, which I am testing for robustness now. Would be glad to send you my thesis when it's done, hopefully in a little more than a month.

Cheers,
Tomas

24. juni 2014 kl. 23:42 skrev Michael Krell <mkrell@themix.org>:

Hi again,

I just noticed the data I sent before doesn't have region or country info, which would probably be helpful. This one does.

Best,
Mike

<image004.jpg>**Michael W. Krell** ♦ Analysis and Data Management Lead, Social Performance
Microfinance Information Exchange
www.themix.org ♦ www.mixmarket.org

From: Michael Krell
Sent: Tuesday, June 24, 2014 5:26 PM
To: 'Tomas Rosales'
Subject: RE: Social performance dataset

Hi Tomas,

Attached is an extract containing the data you requested. I also included our board information (total members and female members).

We did collect more granular data on MFI boards as part of a research paper we wrote a few years ago but that data is confidential. However, you can find the paper we wrote here:http://www.themix.org/publications/microbanking-bulletin/2012/04/measuring-governance-microfinance. Our SP director also blogged about it here: http://www.cgap.org/blog/how-do-we-improve-microfinance-governance-start-measuring-it.

One point about our client protection principle (CPP) indicators: I wouldn't put too much faith in them. For most MFIs, these data points are purely self-reported and there's a strong incentive to "exaggerate," if you get my meaning. (No one wants to say they're weak on client protection.) We're tackling this issue through our desk review process but so far we've only reviewed about 200 MFIs. You can find a complete list of MFIs who've undergone this process (as well as the status of their CPP indicators) here:http://www.mixmarket.org/about/social_performance_validation. If an MFI has a CPP indicator listed as "documented," it means we've verified their CPP information through some sort of third party evaluation (this is the only area that we do not accept internal documents for the desk review, so it's intentionally difficult for MFIs to document their CPPs).

Hope this helps with your research. I'd be interested in reading your findings once you're finished.

Good luck!

Best,
Mike

From: Tomas Rosales [mailto:toro09ab@student.cbs.dk]

Sent: Monday, June 23, 2014 5:19 AM
To: Michael Krell
Subject: SV: Social performance dataset

Dear Michael,

Thank you so much for providing me with the data set. I really appreciate it. If you could send the quantitative as well that would be great.

I am trying to analyze how governance mechanisms, additional services offered and client protection principles affect some of the financial variables for MFIs. Do you happen to have any information on the directors on the boards as well, i.e. international, gender etc.? Anything that could enhance this analysis would be greatly appreciated in terms of data points/sets or advice.

Again thank you!

Best regards,
Tomas

Fra: Michael Krell <mkrell@themix.org>
Sendt: 20. juni 2014 22:26
Til: Tomas Rosales
Emne: Social performance dataset

Dear Tomas,

Greetings from MIX!

I'm writing in response to your email dated 6/19/2014. Attached please find a complete SP profile data set ("profile" means qualitative, basically). This does not include quantitative SP data as I could not tell from your email whether that was already included in your purchase. If not, let me know and I can send that as well.

Thanks and have a great weekend!

Best,
Mike

<image006.jpg>**Michael W. Krell** ♦ Analysis and Data Management Lead, Social Performance
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email: mkrell@themix.org ♦ skype: mike_krell

9. Abbreviations

Abbreviation	Meaning	Description
BLUE	Best Linear Unbiased Estimator	The optimal outcome of a regression estimator
CGAP	Consultative Group to Assist the Poor	An NGO of several stakeholders in the microfinance
CLRM	Classical Linear Regression Model	-----
DTF	Distance to Frontier	A World Bank measure for regulatory framework,
FEM	Fixed Effects Model	A model used on panel data
FSS	Financial Self-Sufficiency	Ratio of revenues to costs excluding subsidies
GINI	GINI coefficient	A measurement of income inequality in a country,
GLS	Generalized Least Squares	A method of estimation in econometrics
GMT	Gauss-Markow Theorem	See BLUE
GNI	Gross National Income	A measure of the total domestic and foreign output generated by residents of a country
GNIPC	GNI per capita	The GNI divided by the amount of citizens in a
MFI	Microfinance Institution	-----
MIX	Microfinance Information Exchange	An organization who collects data on institutions
MLR	Multiple Linear Regression	-----
NBFI	Non-Bank Financial Institution	-----
NGO	Non-Governmental Organization	-----
OLS	Ordinary Least Squares	The most common method of estimation in econometrics
OSS	Operational Self-Sufficiency	Ratio of revenues to costs
PAR	Portfolio at Risk	The amount of loans in more than XX days
REM	Random Effects Model	A model used on panel data
ROA	Return on Assets	Returns generated by an institutions assets
ROE	Return on Equity	Returns generated by an institutions equity
SP	Social Performance	Translation of social goals into practice
SPM	Social Performance Management	Managing the social performance of a MFI
SPTF	Social Performance Task Force	An NGO of several stakeholders in the microfinance
YGP	Yield on Gross Portfolio	A proxy for the interest rates, consists of revenues