Microfinance Institutions

Financial and Social Performance

Edited by
ROY MERSLAND
R. ØYSTEIN STRØM

Palgrave Studies in Impact Finance
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Microfinance Institutions

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Microfinance Institutions

Financial and Social Performance

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1

Microfinance Financial and Social Performance: An Introduction

Roy Mersland and R. Øystein Strøm

Until a few years ago, most microfinance research was published in development journals and often focused on whether access to finance is beneficial for economically poor entrepreneurs and families (Mersland, 2009a). Over the last few years the scope of microfinance research has broadened. In particular, the 'business' of microfinance has become an important research area (Mersland, 2013a). The central question we seek to answer in this book is what influences the performance of microfinance institutions (MFIs). The book is thus about the business of MFIs.

What actually is microfinance? To us, it is banking in small amounts, targeting low-income families, and their business activities. Most often, the formal basis of microfinance is a loan contract where a borrower promises to pay back in time and in full to a lender. The loan is small, normally between US$50 and US$5000, the repayment time is short, often between three and 24 months, and instalments are frequent, often monthly or weekly. Loans are not often backed by formal collateral but instead guaranteed by a group of borrowers, although such group loans are now increasingly being replaced by more traditional individual loans (Mersland and Strøm, 2012).

Performance and efficiency studies are common in banking research (Freixas and Rochet, 2008). Because microfinance is banking in small amounts, it is natural that performance studies are now becoming common in microfinance research (Cull, Demigüc-Kunt, and Morduch, 2007; Mersland and Strøm, 2009). However, a major distinguishing feature of microfinance is that MFIs normally claim to have double bottom lines – they want to serve poor customers (outreach) while at the same time being financially sustainable. Morduch (2000) calls this the schism debate – can providers of microfinance services reach out to poor customers while at the same time being financially sustainable?

This trade-off debate has attracted researchers' interest (Hermes, Lensink, and Meesters, 2011; Mersland and Strøm, 2010) and is making microfinance an interesting research arena, not only for those particularly interested in microfinance, but also for an increasing number of researchers (and policy makers) interested in 'hybrid organizations' and 'social entrepreneurship'.

Even though a few papers on microfinance performance are already available, we claim that research on MFI performance is still in its infancy. After all, researchers are continuing to pour out banking performance studies after more than a century of such research efforts. In addition to the trade-off dilemma, there are several reasons why performance research in microfinance is needed.[1] First, there is the simple fact that microfinance targets vulnerable people, is soon to become the world's largest banking market in terms of number of customers, and is expected to continue to grow for several decades more (Mersland, 2013b). Second, the term 'MFI' is ambiguous. Today, many types of organizations, spanning from fully fledged commercial banks to self-managed small savings groups, are involved in supplying microfinance services. What constitutes 'good performance' is not universal across organizational types and ownership set-ups (Mersland, 2009b). Third, MFIs are evolving, from focusing mostly on credit to offering a full range of banking services such as savings, money transfers, payment systems, and insurance. Such changes alter the nature of the microfinance business and increase the importance of including risk as an important performance dimension for MFIs. Fourth, while microfinance in the 1970s and 1980s was mostly financed by donors, MFIs have since broadened their funding sources and now include local depositors, national public funds, bondholders, international lenders, and stockholders. Not only has this shift given MFIs new stakeholders to attend to, but as in banking, MFIs now have to watch their lending margins, a performance dimension not commonly discussed so far in the microfinance literature. Fifth, public authorities are increasingly influencing MFIs' room for manoeuvring. The original neglect is being replaced by more proactive policies. For example, in Bolivia, one of the world's most advanced microfinance markets, MFIs organized as non-governmental organizations (NGOs) will soon no longer be allowed to offer microfinance, including credit services. Thus, the government has now become an important stakeholder, influencing the performance of MFIs to a large extent. Sixth, the international attention given to microfinance is incredible, but now changing in nature. For a long time, a rosy picture, culminating with the Nobel Peace Prize being awarded to the Grameen Bank and Mohammad Yunus in 2006, dominated the attention. Today, however, a more nuanced picture is drawn, including sometimes hard-handed collection methods, and a struggle to disentangle the positive impact for people accessing microfinance. With more critical attention, there is demand for more transparent MFIs able to demonstrate 'good performance' (Beisland et al., 2014).

Taking the above arguments together, there is definitely a need for a book like the one you now hold in your hands. So, what do we have to offer? First of all, we think we offer quality. The book is the result of papers first presented at the Third European Research Conference on Microfinance, organized by the University of Agder in Norway, 10–12 June 2013. Of 250 papers presented at the conference, around 30 papers focused on MFI performance and, from these, we have selected the best and the most interesting to be included in the book. Second, we offer papers from several contexts and written by researchers from around the globe. We are particularly proud to offer several in-debt country studies from Africa and Asia. Third, several of the papers are strong in methodology. While microfinance research used to be weak in this regard (Mersland, 2009a), we can now observe researchers making use of time series data and experimental methods including advanced structural methods commonly applied in banking research. Fourth, and finally, the book covers a broad range of topics, all related to MFI performance. This illustrates the multidimensionality of MFI performance and how important it is not to limit our understanding of microfinance performance. In what follows, we briefly present the papers included in the book.

Following this introductory chapter, we have written a chapter on measures of financial sustainability, outreach, and costs that are commonly used in microfinance, illustrating the various measures with descriptive statistics. We consider this important because such an overview is missing from the literature and because this may guide future research. The descriptive statistics reveal that financial sustainability is still precarious, even though it appears that MFIs have found a model for 'banking the unbankable' that is working. The growth rates in the industry have been phenomenal since the start of the new millennium. At the same time, the average loan size has not increased, indicating persistence in serving the poor. However, the average loan size is not ideal in distinguishing outreach to the poor, as we discuss later in this introduction. We also find that some defining elements of microfinance, such as group lending and a preference for lending to women, tend to increase the MFI's costs. This could be a harbinger of changes to come in the microfinance sector but also point towards new and interesting research areas.

In the chapter 'What does MFIs' cash flow analysis reveal?', Gautier Dumont and Mathias Schmit introduce the use of cash flow statements as an alternative to balance sheets and income statements when analysing the performance of MFIs. This is a novel paper that really propels MFI performance research forward. In traditional banking performance analysis, researchers typically use market values to proxy banks' financial performance. However, since very few MFIs are listed on stock exchanges, there is little data available. Thus, so far, researchers, including ourselves, have used numbers from balance sheets and income statements to estimate the financial performance of MFIs. Manos and Yaron (2009) and several others have long claimed that accounting earnings are invalid for measuring the financial performance of an MFI because subsidies and provisions distort the numbers. Albeit, Beisland, and Mersland (2013) demonstrate that the quality of earnings numbers reported by MFIs are as good (or as bad) as those of ordinary firms, it is a fact that analysing an MFI's financial statement should be done with great care and in-depth knowledge of the microfinance business model. It is therefore a great pleasure to be able to present, in this book, the first paper (to our knowledge) in which cash flow statements are used to assess the performance of MFIs. After all, it is cash that pays bills and salaries and, most importantly, repays depositors. Thus, bank managers should be more concerned about their cash situation than their reported earnings. In this regard, the results presented by Dumont and Schmit are interesting. They show that most MFIs depend on the intake of external cash (equity, loans, and deposits) to finance their operations and growth. For example, on the one hand, they show that well-known institutions such as Grameen Bank in Bangladesh and Equity Bank in Kenya face a major liquidity risk as cash flows from their operations finance less than 50 per cent of the cash needed for their business models. On the other hand, media-controversial institutions such as Compartamos in Mexico and SKS in India have a healthy cash situation, as operational cash flows finance most of the cash needed. Of course, it can be argued that the level of portfolio growth and interest rates to a large extent decide the amount of external cash needed to operate an MFI. Nevertheless, this does not eliminate the fact that, ceteris paribus, MFIs with a greater need for external cash are financially more vulnerable and thus represent a higher risk for depositors and investors.

Tsytrinbaum and Manos also take a novel approach when, in their chapter 'Determinants of performance in the microfinance industry:

The role of culture', they analyse how local culture may influence the performance of MFIs. While performance research has so far focused mostly on factors within the MFI that may influence its performance, Tsytrinbaum and Manos look outside the institution. Obviously, MFIs are influenced by macroeconomic and macropolitical factors that, to a large extent, influence their performance. Tsytrinbaum and Manos apply Hofstede's (1980) cultural dimensions when discussing how the local culture may affect an MFI's social and financial performance. Using a large panel dataset covering 800 MFIs in 30 countries, Tsytrinbaum and Manos find that MFIs' financial and social performance are indeed affected by local culture. Depending on the national culture, MFIs will place a greater focus on social or financial performance. Stakeholders in MFIs, including investors and donors, should therefore keep in mind that MFIs are embedded in their national cultures, and that these cultures play a significant role in explaining an MFI's financial and social performance.

Also, Forkusam's chapter, 'Does financial globalization affect microfinance mission drift? Empirical evidence from Sub-Saharan Africa', falls into the new stream of research where contextual factors enter as explanatory variables for MFI performance. Her starting point is that MFIs operate in markets with various levels of foreign direct investment. Such investment is assumed to be driven by profit maximization motives. With this background, Forkusam investigates whether a country's level of foreign direct investment influences an MFI's financial and social performance. In line with theoretical predictions, Forkusam reports that MFIs operating in countries with higher levels of foreign direct investment tend to experience mission drift to a larger extent. However, since mission drift is measured as average loan size, it could also be that countries with better access to foreign investment are less capital-constrained, allowing MFIs in those countries to serve their clients with larger loans that are better suited to their needs and repayment capacity.

Mission drift is also the topic in the chapter by Sarath Abeysekera, Umut Oguzoglu, and Thanh Tam Le: 'Sustainability and mission drift: Do microfinance institutions in Vietnam reach the poor?' The topic of mission drift is one of the most studied microfinance questions, so what news do Abeysekera et al. present? Well, first and maybe most important, is that they are able to study mission drift on a larger set of MFIs in a single country – Vietnam. By doing so, they avoid considerable statistical 'noise' from cross-country economic and political circumstances. Second, their unit of analysis is People Credit Funds which, while receiving support from Development International Desjardins in

Canada in their initial stages 20 years ago, today are little influenced by international partners and the recent international mission drift debate. People's Credit Funds are strongly embedded in the Vietnamese culture and political reality, where self-reliance and self-management are important principles. It is therefore interesting to study whether MFIs gradually drift away from their original missions when they are not under much international surveillance. In Mersland, Randøy, and Strøm (2011), for example, we find that MFIs that are under more international influence are more socially oriented than MFIs operating with fewer international contacts. The findings in the Abeysekera et al. paper indicate some evidence of mission drift in Vietnamese MFIs. However, caution is required in interpreting mission drift when using the average loan as the proxy variable. If the average loan does not increase over time, it is not necessarily the result of an MFI staying true to its mission. It can also be due to the MFI restricting loan sizes because of capital constraints or because the clients do not experience improvements, impeding them from requesting larger loans over time. Abeysekera et al. find evidence in favour of the capital constraint hypothesis, as MFIs with more assets provide larger loans to their clients.

In 'The impact of the 2010 Andhra Pradesh crisis on the operational efficiency of Indian microfinance institutions', Trishit Bandyopadhyay and Savita Shankar bring us back to the Indian province of Andhra Pradesh, where allegedly some borrowers committed suicide because they could not repay their loans. The main question they seek to answer is how the crisis affected the operational efficiency of the MFIs in the Indian region. They use a data envelopment analysis (DEA) methodological approach in their analyses. This allows them to include both social and financial objectives when studying the operational efficiency of the MFIs. Not surprisingly, they find that the crisis had a negative immediate effect on MFIs' efficiency. Two years after the crisis, the MFIs, on average, have recovered, but there are large differences at the individual MFI level. This is a nice illustration of basic economic theory. Crises make management and owners reconsider their strategies and improve their organizations, but improvement is not universal. Management counts! The Bandyopadhyay and Shankar chapter is also a reminder of how public regulation disables or enables market-based organizations. According to them, the bill introduced by the government in October 2010 aimed at fixing the crisis actually worsened it. Later, based on recommendations from the Malegam committee, new public measures were installed that, to a large extent, reduced the uncertainty faced by the MFIs and allowed them to continue their operations.

Khalily, Khaleque, and Badruddoza's chapter, 'Impact of regulation on the cost efficiency of microfinance institutions in Bangladesh', is interesting for several reasons. First, they present an excellent overview of the microfinance sector in Bangladesh, host to 750 regulated MFIs, including flagship MFIs such as BRAC, ASA, and Grameen Bank. Second, they look at how regulation impacts MFI performance. While the literature on MFI performance is growing, as illustrated by this book, there are few studies that actually look at how regulation influences MFI performance. Thus, in this regard, Khalily et al.'s contribution is important. Third, Khalily et al.'s chapter is of high quality because it uses a structural approach, in this case a stochastic frontier approach. Fourth, and to us most important, their data enable a live experiment to be conducted. Mandatory regulation was introduced in Bangladesh in 2006 on all MFIs. Thus, with data spanning 2005 to 2011, Khalily et al. are able to observe the efficiency of Bangladeshi MFIs before and after regulation was enforced on them. Several of Khalily et al.'s findings are interesting. For example, they report that the effective interest rate was reduced from around 36 to 27 per cent thanks to the ceiling imposed by regulation. Moreover, productivity shows important improvements over the period while at the same time dependence on subsidies diminishes. Altogether, regulation has improved the efficiency and thereby the performance of Bangladeshi MFIs.

In 'The social function of asset classes in microfinance: Enhancing performance through donations, private equity, and debt', Hummels and Millone assess how microfinance investors, depending on the asset class they offer, will impact the financial and social performance of the MFI. Thus, their research falls into a small but increasing stream of research looking at how international actors, in this case investors, influence and shape the microfinance industry (Mersland et al., 2011). Their research is qualitative in design and is based on interviews with key informants within the international microfinance investment landscape. They illustrate how investors providing debt to the MFI have a 'passive role in enhancing social performance' but 'a disciplinary effect on MFIs when it comes to financial performance'. They confirm the theory (Wood and Hoff, 2007) that equity is 'useful for funding new initiatives' while debt helps the MFIs to grow, and that debt is a contract while equity is a relationship – as expressed by one of the interviewees. Not surprisingly, they conclude that the financing of microfinance is no different to the financing of other industries.

Repayment performance is the focus in Postelnicu, Hermes, and Szafarz's chapter entitled 'Defining social collateral in microfinance group lending'. The literature on microfinance group lending is extensive and often focuses on how group collateral can enhance customers' repayment performance. Nevertheless, Postelnicu et al. are able to add to this literature. While researchers so far have often focused on how internal ties between the group members will influence their repayment behaviour, Postelnicu et al., with the help of a theoretical model, show the importance of also including group members' linkages to non-members from their community. By doing so, they are able to demonstrate *why* group lending often seems to work better in rural areas than in urban settings. Since Postelnicu et al.'s chapter contains a comprehensive theoretical model, it has the potential to guide future empirical research. This illustrates the importance of well-motivated, purely theoretical research.

The title of Kar and Swain's chapter, 'Competition in microfinance: Does it affect performance, portfolio quality, and capitalization?' is self-explanatory. This is an important paper because the effects of competition in banking markets are not as straightforward as in most other industries. According to theory, with increased competition impatient borrowers get the chance to take multiple loans, resulting in a situation of over-indebtedness, and at the same time MFIs become less able to cross-subsidize borrowers (McIntosh and Wydick, 2005). Kar and Swain apply generalized method of moments (GMM) regressions on panel data from the MIX market to test this theory. Contrary to the theory, they find that increased competition, measured with the traditional Herfindahl-Hirschman Index, does not impact an MFI's outreach to poor customers or its financial sustainability. They also find that increased competition enhances the repayment of loans. This might be a signal of customers using loans from other banks to repay their loans or of MFIs in more competitive markets either applying more hard-handed collection methods or installing collection strategies that are better thought-through. Personally, we believe mostly in this last explanation. Our personal experience is that competition enhances professionalism, which includes improved collection strategies.

Now follows two chapters using data from Ethiopia, one of the largest African countries and one that has so far to a large extent avoided coming under the international microfinance microscope. First, we have Gessesse and Ambaye, with their paper 'Efficiency of microfinance institutions in Ethiopia: A DEA approach'. While most MFI efficiency research applies different regression models, searching for a central tendency in the data, the DEA approach compares the efficiency of each MFI to the most efficient MFI in the dataset. The DEA methodology is particularly relevant for single-country studies since it identifies a benchmark MFI with which the rest of the MFIs can be compared. The main result in the Gessesse and Ambaye chapter is also interesting. It shows that MFIs are generally more financially efficient than outreach efficient. This means that MFIs, in this case in Ethiopia, are better at assuring profitability than at increasing their outreach to more customers.

Likewise, Abate, Borzaga, and Getnet, in 'Financial sustainability and outreach of microfinance institutions in Ethiopia: Does ownership form matter?' use data from Ethiopia to study how the MFI's ownership type influences its social and financial performance. The Abate et al. study is a follow-up of our first joint publication, 'Performance and trade-offs in microfinance organizations – Does ownership matter?' (Mersland and Strøm, 2008). Aside from appreciating it when other researchers pick up our work and take it forward, we have included Abate et al.'s paper because we consider ownership issues to be of particular relevance when trying to understand MFI performance. In their paper, Abate et al. investigate whether large regulated shareholder-owned MFIs perform better than small unregulated member-based savings and credit cooperatives. Their findings indicate, once again, that the old cooperative model does have its advantages in keeping costs low and in reaching rural clients. However, cooperatives care more about their existing members than new members. Their breadth of outreach is limited compared to shareholder MFIs.

We end the book with a chapter by Mersland and his two colleagues Beisland and Randøy. In 'Microbank regulation and earnings quality: A global survey' they study whether earnings quality differ between regulated and unregulated MFIs. Earnings quality is a well-established research area where the focus is to study whether firms' financial reporting is useful, relevant, and trustworthy. Since most MFI performance research is using data from financial statements, we consider it important to study the quality of reported financial numbers. Former research by Beisland and Mersland indicate that numbers reported by MFIs are as good (or as bad) as those reported by Western firms (Beisland and Mersland, 2013). In this new paper, where also Randøy has joined as a co-author, they report that the presence of regulation reduces opportunistic reporting of earnings numbers. In addition to answering the call for more research on the association between governance and earnings quality, the study adds to the scarce existing research on the consequences (including spill-over effects) of microfinance regulations.

Note

1. Several of the trends we mention here are inspired by Labie and Mersland (2011).

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2

Measuring Microfinance Performance

Roy Mersland and R. Øystein Strøm

Controversies have been a hallmark of microfinance in the years following the initial euphoria due to the awarding of the 2006 Nobel Peace Prize to Grameen Bank and Mohammad Yunus. MFIs have been accused of making people credit-dependent. How, though, do we measure their success or lack of it? This paper aims to discuss various ways of measuring MFI performance.

MFIs are measured according to two dimensions (Murdoch, 1999). One is their *outreach* to poor people, that is, their ability to provide poor families access to financial services. This is the MFIs' *social mission*. The other dimension is their *financial sustainability*, that is, their ability to pay their employees, lenders, and other suppliers, in short, their ability to produce a profit from their operations.[1] The 'microfinance promise' (Murdock, 1999) is that the MFI is able to reach out to low-income people and at the same time be profitable. This means that MFI performance has three aspects: outreach, financial sustainability, and the relation between the two. In this chapter, we look into these three aspects, starting with financial sustainability, which offers the easiest approach to the subject. We add numbers along the way in order to illustrate the magnitudes of the various measures.

The data sample for this chapter is drawn from the 'Mersland data' that we have used in a number of articles and book chapters. The data are collected by rating agencies and most of the reports are publicly available on the agencies' websites or other websites such as www.ratingfund2.org. The rating agency representative visits the MFI and collects financial and outreach data as well as data on ownership, regulation, the MFI's governance, its number of clients, financial products, and other data. We underline that the MFIs do not self-report their data. The data sample does not include the largest MFIs, which are rated by big international rating agencies, and most of the smallest savings and credit cooperatives (SACCOs) and similar self-organizing schemes are also omitted. On each visit, the representative usually collects data for the previous four years. In our data set, a number of MFIs have been rated more than once, giving us a series of data stretching up to eight years in all. Thus, we have an unbalanced panel data set stretching from 1998 to 2010 with most of the data belonging to the period from 2001 to 2007. Since MFIs neither drop out of the sample nor enter it in any systematic way, we are able to perform panel data analyzes in a regular manner (Greene, 2010). Beisland and Mersland (2013) perform tests on the reliability of the accounting data and conclude that the MFI data are as reliable as we can find among Western firms. Both the data collection methods *a priori* and the *a posteriori* tests of reliability can be taken by researchers to imply that the data are well-suited for the purpose at hand.

1 Financial sustainability

The main accounting figures for the average MFI are set out in Table 2.1.

Table 2.1 The main variables in the net income statement of an average MFI (amounts in nominal US dollars)

	Mean	**Std. Dev.**	**p25**	**p50**	**p75**	**Obs**	**% of revenue**
Total financial revenues	1427348	2137106	247616	694200	1835227	1406	100.0
Total financial expenses	243914	609941	14000	77958	263962	1406	17.1
Net loan loss provisions	95940	199190	5656	30886	102876	1400	6.7
Financial margin	1090627	1729175	180459	537800	1419363	1404	76.4
Operational expenses	864002	1142467	191544	482605	1101607	1455	60.5
Wages	458184	631007	95142	257840	601000	1337	32.1
Administrative costs	358446	537780	81084	191053	453213	1339	25.1
Operational margin	207685	543114	–9766	61785	284781	1454	14.6
Total assets	6009042	9699353	1126000	2731999	7389822	1462	421.0
Total loan portfolio	4340811	6124968	784483	2033094	5296950	1472	304.1

The total financial revenues form the point of departure, but notice that the numbers do not add up perfectly, since we have different subsamples for each variable. Subtracting the total financial expenses and loan loss provisions, we arrive at the financial margin. In percentage terms, this margin is 76.4 per cent of total financial revenues. Subtracting operational costs from the financial margin gives us the net operational income, which is 14.6 per cent of revenues. Operational expenses consist of wages, administrative expenses, and expenses for housing. The wage bill is the largest cost item for the MFI. This means that microfinance is a labour-intensive business. Labour is required to credit screen loan applicants and to collect payments from clients. Notice that wages and administrative costs do not add up to the amount of total operating expenses because the sample sizes differ. We also include total assets and the total loan portfolio, since these appear in many measures. With these figures, we are ready to demonstrate the measures most commonly used in microfinance.

An often used measure is the return on assets (ROA), defined as the net operating income of the MFI divided by its assets. This is an important measure because it enables analysts to compare the MFI's performance to that of other MFIs and firms in general. It tells an investor what return to expect from an investment in the MFI. A return should cover the risk-free rate together with a markup covering the systematic risk of the MFI (Berk and DeMarzo, 2014). Such a risk-adjusted return is hard to calculate for the MFI as only a few are listed. Indirect ways of calculating the required risk-adjusted rate of return exist, but require much country-specific information and will take us too far from the purpose of this paper.

Armendáriz and Murdoch (2010, p. 244) report the operational self-sufficiency (OSS) measure. This measure shows us whether the MFI is able to cover its expenses. For an MFI that aims to break even on its operations, this is potentially a very relevant way to check its financial sustainability. We measure this using two variants, OSS1 and OSS2.

$$OSS1 = \frac{\textit{Operating revenue}}{\textit{Expenses on } (\textit{funding} + \textit{loan loss provision} + \textit{operations})}$$

Operating revenue includes interest and commissions earned on loans. These items are the two dominating income categories for the MFI specializing in lending. Expenses on funding consist of the interest paid to depositors, and the interest and fees on loans from funds or other financial institutions, as well as bond holders. Loan loss provisions are what the MFI needs to set aside to cover the costs of defaults, that is, losses amassed from customers that do not repay their loans, in whole or in part.

The interpretation of the OSS1 measure is simple. If $OSS1 > 1.0$ or 100%, the MFI is able to pay its expenses.

The second OSS measure is even simpler than the first:

$$OSS2 = \frac{Operating\ revenue}{Operating\ expense}$$

Compared to OSS1, this new measure does not include expenses associated with funding. This is a relevant measure in microfinance since funding structures can differ a lot across MFIs depending on their access to donors and lenders, which in turn depends on the country in which the MFI operates. Managers of MFIs are, therefore, in the foremost position to influence the operating costs.

A major input in microfinance operations is the institution's own capital, the equity. Should we insert an expense for the use of equity into the overall expense measure? After all, the capital used in the MFI has alternative uses that would pay interest. Such an expense should be adjusted for the risk inherent in investing in an MFI. If the cost of using equity is not included, we implicitly allow a subsidy into the MFI. The conventional procedure has been not to include such a capital cost for the pragmatic reason that it is difficult to measure the cost of equity, especially the risk adjustment. A risk adjustment is meaningful in developed countries with deep financial markets, but it is difficult to assess in low-income countries with few assets that have a market value. We follow the convention here of not including a cost for the use of the institution's own funds, as this is also related to subsidies in microfinance, to which we return below.

Christen et al. (1995) introduced the *financial self-sufficiency* (FSS) measure with the intention of restating financial results in terms of market values. The FSS can be written as follows:

$$FSS = \frac{Adjusted\ operating\ revenue}{Adjusted\ expenses\ on\ (funding + loan\ loss\ provision + operations)}$$

We can recognize all the major elements from the OSS1 measure here, but now the terms are adjusted. Christen et al. suggest two major adjustments, that is, one for the inflation in each country, and the second for implicit and explicit subsidies. The adjustments for subsidies account for three types of subsidies: concessionary borrowings, cash donations, and in-kind subsidies.

Let us look at these terms in turn. Should we adjust for inflation? This is necessary when inflation rates are high and different between countries. However, the mechanics of the conversion from local rates to the amounts set out in Table 2.1 take care of most of the trouble with inflation. The amounts are converted into US dollars for each year. Moreover, many MFIs keep their local banking in US dollars. Therefore, the only inflation adjustment we would need to undertake would be that for US inflation, and, in any case, the decision makers probably watch the nominal terms closer than some inflation-adjusted numbers. However, in econometric work, inflation adjustment is necessary.

Subsidies are more difficult to handle. First, there is the subsidized debt. MFIs receive funding at reduced rates relative to the market. In our sample, two-thirds of the MFIs receive subsidized debt. The amount of subsidized debt relative to the total debt of the MFI is about 47 per cent among those MFIs that receive subsidized borrowing. Instead of the recorded total financial expenses in Table 2.1, we should have computed the expenses that would result if the subsidies were removed. We can see that this would affect 17.1 per cent of the expenses in Table 2.1. Furthermore, we would have to compute the market rate of borrowing in each country, that is, the yearly advantage of subsidized debt (the market rate of borrowing less the subsidized rate) times the amount of borrowing. The difficulty is to find both the subsidized rate and the market rate. The market rate should be adjusted for the systematic risk in each MFI. This is hard to measure because we need both the market rates of return for the MFI over a longer period and the rate of return for a market portfolio. These are uncertain terms in the countries we are looking at and require a detailed analysis for each MFI. Such an investigation is beyond the possibilities of this chapter. Because the subsidies only affect the total *financial* expenses, our approach of not applying adjustments does not result in a very large inaccuracy.

Direct donations should only affect the analysis here to a limited degree as they mostly enter the income statement as a funding element for assets. We calculate measures relative to assets or portfolios and avoid the problem of how they are funded. Thus, we do not use the financial sustainability measure (FSS) in this chapter.

We have calculated the ROA and two OSS measures, together with the financial margin percentage and the net income as a percentage of revenues, and displayed them in Table 2.2. Note that the numbers are in percentages.

Table 2.2 Main financial sustainability measures distributed by year. The recorded numbers are medians

Year	Financial margin %	Net income % of revenues	ROA	OSS1	OSS2
1998	77.7	27.1	7.1	137.7	254.1
1999	80.1	14.6	3.5	117.1	208.2
2000	75.2	3.2	0.5	103.3	143.8
2001	76.1	4.8	1.5	105.1	147.6
2002	82.8	10.3	2.4	111.5	143.8
2003	81.2	12.4	3.1	114.2	150.3
2004	81.7	13.5	3.3	115.6	149.5
2005	80.4	8.7	2.0	109.6	149.5
2006	79.7	12.8	3.2	114.3	151.1
2007	77.6	9.6	2.3	110.6	148.5
2008	78.7	14.2	3.6	116.6	169.0
2009	77.1	12.0	5.4	113.7	169.5
Pooled	79.9	11.0	2.5	112.3	150.4
Obs.	1400	1397	1397	1397	1403

We report the figures for all years. However, the first and last years contain only a few observations. Their values may be distorted by random occurrences in the year. The ROA measure shows that the return on investments in MFIs is very low, at the median.[2] A median return of 2.5 is hardly above the risk-free rate in most countries in the sample. Moreover, notice that ROA measures are unadjusted for subsidies. A second noteworthy feature is that ROA does not show a specific upward or downward trend over time. On the contrary, other than in the randomly influenced first two and last two years, the median value of ROA1 stays within a rather narrow band of 1.5 to 3.3 per cent.

The median is not the result of a widely dispersed distribution of values around the centre. Figure 2.1 illustrates.

The figure shows some outliers at the low and high ends of the distribution, but most of the MFIs' ROAs clustering around zero. In fact, one-third of the MFIs have an ROA less than zero. Thus, microfinance lending is not a lucrative business proposal, except for a few very profitable MFIs.

2 Outreach

The MFI's goal, or mission, is to give low-income people in developing countries, in particular, access to financial services, especially loans.

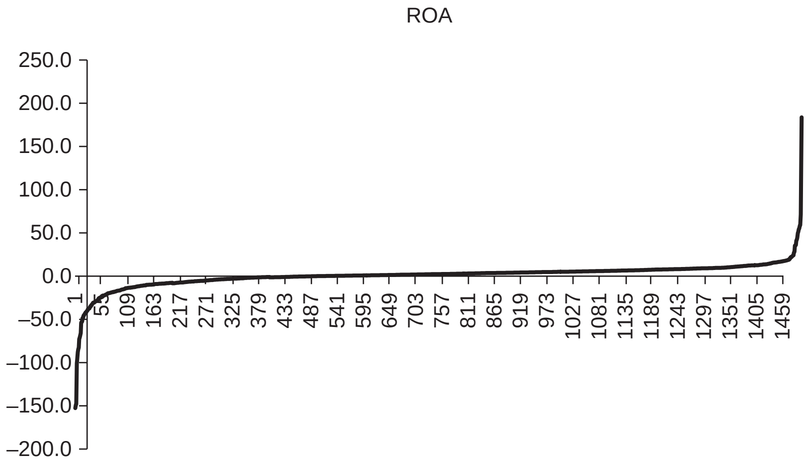

Figure 2.1 The ROA measure sorted from lowest to highest value

This is termed the MFI's *outreach* for short. Microfinance's great achievement is to provide banking for the so-called unbankable in the conventional banking system. We emphasize two main dimensions of outreach (Schreiner, 2002), its *breadth* and *depth*. The breadth dimension refers to the number of clients to which the MFI is able to reach out while the depth dimension refers to the clients' poverty level. Outreach increases with greater breadth and greater depth. The MFI may increase its outreach by increasing the number of clients it has at the same income level or by moving into lower income levels. In the microfinance literature, there has been a concern that MFIs undertake a mission drift into higher income levels. However, if competition is increasing among MFIs, as well as from the entry of ordinary banks, an equally likely path is for MFIs to drift into lower income levels where their comparative advantages are greater.

Indeed, competition in microfinance is increasing, particularly in countries such as Bangladesh, Peru, and Bolivia. Microcredit Summit reports that MFIs now serve around 200 million clients with loans (www.microcreditsummit.org). Nevertheless, most people in developing countries remain without banking provision. According to the World Bank, 75 per cent of adults living on less than 2 US dollars per day do not have a bank account, and in Sub-Saharan countries borrowing from friends and families is ten times as common as borrowing from a bank or an MFI (the Global Findex database, www.worldbank.org).

How do we measure outreach, in particular the breadth and depth dimensions? Yaron (1992) suggests a composite index, 'the Outreach Index', of measures such as the average loan, the number of clients reached, etc. Recently, new attempts have been made to grasp the multidimensionality of outreach, and in particular to make the measurement of social performance as transparent and standardized as that of financial performance (Copestake, 2007). One such attempt is the Social Performance Task Force (SPTF) that has worked to set common standards of social performance for the microfinance sector since 2005. It has agreed on four main dimensions, namely, sustainably serving increasing numbers of poor and excluded people, improving the quality and appropriateness of financial services, improving the economic and social conditions of clients, and ensuring social responsibility to clients, employees, and the community served (Hashemi, 2007). The French Comité d'Echanges, de Réflexion et d'Information sur les Systèmes d'Epargne-crédit (CERISE) has created the social performance indicators (SPI) index. The index encompasses four dimensions, each containing three sub-aspects: targeting and outreach (geographic and individual targeting, pro-poor methodology), products and services (range of traditional services, their quality, and innovativeness), benefits to clients (economic, client participation, social capital/client empowerment), and social responsibility (to employees, consumers, and the community and the environment). In this chapter, we choose to focus on the single measures themselves and thereby avoid the difficult weighting considerations that go into a composite index. Furthermore, composite measures are often hard to understand (Greene, 2012). Another worry is that there seems to have been an increase, recently, in the number of indicators of social responsibility. Only the largest MFIs are able to assimilate, update, and report on the full range of measures.

We start with the *breadth* measures. These have perhaps been somewhat neglected in the academic literature, but are actually important, showing the extent to which low-income households can gain access to financial products. The accumulated effects of access can be transformational in a community, as households can plan ahead and escape the limitations of the local market. The breadth measures encompass the number of clients the MFI serves as well as the size of its portfolio. The larger these measures are, the more outreach the MFI produces. We are also interested in the growth in these numbers, as in Randøy et al. (2014). Specifically, we investigate the loan portfolio, the extent of savings, the number of credit clients, and the number of savings clients, as well as their growth rates.

We construct a table with the loan portfolio, the number of credit clients, and the relation between them, namely the average loan, as well as similar relations for savings (see Table 2.3).

The average MFI has a loan portfolio of about US$ 4.3 million (nominal amounts) and the largest has a loan portfolio close to US$ 60 million. The growth in the portfolio and the number of credit clients is set out in Table 2.4.

We have portfolio growth rates for 1069 MFIs and credit client growth rates for 1060 MFIs. For the whole period, the growth rates are astounding: 61.2 per cent on average per year (median 36.4 per cent) for the loan portfolio and 40.4 per cent on average (median 23.3 per cent) for the number of credit clients. Furthermore, the yearly averages are very high, although fluctuating somewhat. The individual banks have growth rates that vary considerably, as is evident from the very high standard deviations and the low minimum and high maximum growth rates. Thus, the overall outreach to low-income credit clients is increasing considerably, but with a wide dispersion in growth rates among MFIs, as would be expected in any industry, and especially in a new and growing industry.

As expected, the growth rates in the loan portfolio and number of credit clients are closely related. Running a fixed effects panel regression with portfolio growth as the dependent, the Human Development Index (HDI) as a country control, and year indicator variables reveals that the credit client growth coefficient is 0.85 and is significant at the 1.0 per cent level.

The *depth* measures are less straightforward. We use the measures proposed in Mersland and Strøm (2010). These include the average loan, lending to rural households, and lending to women. We use both the nominal average loan in US dollars and the average loan divided by the gross domestic product (GDP) per person. This last measure makes

Table 2.3 Aspects of the breadth dimension of outreach: loan and voluntary savings portfolios

	Average	**St. dev.**	**Min**	**Max**	**Obs.**
Loan portfolio	4337102	6126381	8512	59700000	1472
Credit clients	12735	26316	20	394462	1461
Average loan	676	825	10	6946	1456
Savings	1205229	5699261	0	110487895	1433
Savers	4974	23767	0	413095	1202

Note: The amounts are in nominal US dollars, converted from local currency at the exchange rate appropriate for each year.

Table 2.4 Growth in portfolio (Panel A) and number of credit clients by year

Year	Average	Median	St. dev.	Min	Max	Obs.
Panel A: Portfolio growth						
1999	0.348	0.277	0.298	0.010	0.744	6
2000	0.423	0.411	0.356	–0.298	1.182	22
2001	0.652	0.492	0.692	–0.342	3.388	61
2002	0.447	0.337	0.429	–0.382	1.806	113
2003	0.523	0.336	1.164	–0.522	12.405	160
2004	0.456	0.343	0.568	–0.574	3.210	186
2005	0.546	0.349	0.879	–0.915	6.625	189
2006	0.985	0.408	2.575	–0.748	21.392	173
2007	0.796	0.450	1.691	–0.531	12.616	112
2008	0.673	0.313	2.390	–0.879	13.164	30
2009	0.047	–0.016	0.215	–0.247	0.626	17
Total	0.612	0.364	1.416	–0.915	21.392	1069
Panel B: Credit clients growth						
1999	0.505	0.543	0.336	0.031	1.005	6
2000	0.526	0.358	0.595	–0.247	2.256	22
2001	0.503	0.299	0.651	–0.275	3.784	58
2002	0.368	0.298	0.361	–0.397	1.486	113
2003	0.272	0.199	0.365	–0.583	2.168	159
2004	0.317	0.187	0.551	–0.672	4.737	184
2005	0.427	0.223	0.659	–0.482	5.111	186
2006	0.494	0.240	1.086	–0.334	9.615	173
2007	0.553	0.226	1.829	–0.482	17.850	112
2008	0.330	0.202	0.400	–0.324	1.343	30
2009	0.294	0.092	0.900	–0.227	3.735	17
Total	0.404	0.233	0.872	–0.672	17.850	1060

Table 2.5 Depth dimension aspects

	Average	St. dev.	Min	Max	Obs.
Average loan	676	825	10	6946	1456
Avg. loan/GDP per person	0.551	0.820	0.009	8.247	1456
Female borrowers	0.462	0.499	0.000	1.000	1421
Rural borrowers	0.675	0.469	0.000	1.000	1427

comparisons across countries easier and also shows how the MFI follows the income trend in the country in which it resides. The average loan is perhaps the most often used proxy for the depth dimension. The lower is the average loan from an MFI, the higher is its depth outreach. Depth outreach also increases with a priority for lending to rural households and to women.

We have already seen the size of the average loan in Table 2.3, and we will comment more on this measure below. Female borrowers and rural borrowers are both indicator variables: 45.8 per cent of the MFIs have a particular focus on serving female clients, and 67.7 per cent of the MFIs either serve only rural areas or rural areas alongside urban areas. Thus, 32.3 per cent of the MFIs serve urban settings only. The rationale for measuring female and rural focus is that these measures largely overlap with low-income households. Women usually have a disproportionately large share of the responsibility for their families. A loan to a woman is a loan to the family to a larger extent than when a loan is made to a man. However, the measure is not without problems. First, if the wife receives the loan, the husband may feel less obliged to contribute to the household or the husband and wife may have colluded to obtain a loan for the husband, but applied for by the wife. In MFIs with a conscious gender policy, she will obtain a loan more easily than her husband. Second, it turns out that men establish more businesses and larger businesses than women when gaining access to credit. For instance, Bruhn and Love (2009) utilize the natural experiment setting of the Azteca Bank in Mexico, which started out as an MFI by opening 800 branches simultaneously in 2002. They find that men started more informal businesses, but that more women joined the labour force as wage earners after the establishments of the branches. Thus, the development effects may well be larger in the case of loans to men. Moreover, D'Espallier et al. (2013) demonstrate that the long claimed performance effect for MFIs focusing on women is not true because men contribute as much as women to MFIs' financial sustainability.

The income level is generally lower in rural areas than in cities. Furthermore, with the rapid urbanization taking place, agriculture requires moderniszation through investment. These are good reasons for serving rural clients. Salim (2013) studies the location pattern of Grameen Bank and BRAC, and finds that both deviate from pure profit maximizing behaviour when choosing locations for branches in Bangladesh. Thus, the targeting of rural clients is a deliberate choice aimed at the rural poor.

The average loan is defined as the loan portfolio divided by the number of credit clients. This appears to be a natural measure for outreach; the smaller the average loan of the MFI, the more likely it is to give priority to those most in need, the lower end of the low-income households. Therefore, the MFI may put a cap on the maximum amount it is willing to give to one borrower, so as to allow as many borrowers as possible to gain access to credit. As the MFI ages, however, it is likely that many of its clients will want larger loans, simply because their economic situation has improved. If the cap is still in force, the maximum loan amount policy may induce cross-borrowing, that is, the practice of taking loans from other credit institutions. For instance, this may happen if the borrower wants to invest in a house or in some productive equipment. The end result may be that the MFI loses its knowledge of the client's credit position. If this is precarious, then even the small loan it is willing to make could be in danger of default. Another motivation behind this measure may lie in the MFI's appeal to international donors and investors. These groups may be willing to fund the MFI out of a concern for social responsibility and use the average loan as a yardstick of how well the MFI reaches out to low-income households. Mersland et al. (2011) use four different measures of internationalization to find that international organizations give greater support to MFIs with a more pronounced social mission. These two aspects of the average loan, the practice of cross-borrowing and the international donor and investor community's influence upon the lending policies of the MFI, are under-researched areas.

One conclusion is that we should expect and welcome a larger average loan with time, as the community the MFI serves becomes economically more viable. Copestake (2007) notes that the average loan may increase for a number of reasons, including the accumulation of loan arrears, a shift towards relatively richer clients, and the effects of dollar exchange rates and inflation. A shift towards including richer clients can be a deliberate strategy taken to achieve better diversification in the client base, as well as to cross-subsidize the poorest clients. Mersland (2011) calls this *mission expansion*. Is the average loan really increasing over time for MFIs? Figure 2.2 gives an overview of the average loan in our sample of MFIs by MFI age. The reason for distributing by MFI age is that the argument for mission drift is that the MFI offers larger loans as it matures. We report both the nominal US dollar average loan and the average loan adjusted for GDP per person, as in Ahlin et al. (2011).

The figure shows, first of all, that the median average loan fluctuates around the long-term median value, whether measured in nominal US dollars or adjusted for the GDP per person in the country. The average loan has no discernable trend during the lifetime of the MFI. This is consistent with the finding of a lack of mission drift in Mersland and Strøm (2010), based on a subset of the present data sample. The result is further confirmed if we run a simple dynamic regression (not reported)

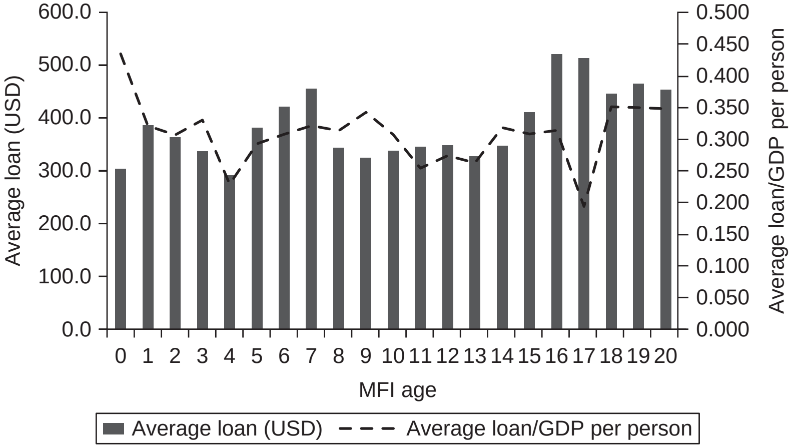

Figure 2.2 The medians of nominal average loan in US dollars and the average loan per GDP per person, distributed by MFI age

with the one-period-lagged average loan as the independent variable together with the (natural logarithm) of the HDI of the UN, in the manner of Arellano-Bond/Blundell-Bover (Greene, 2012). The persistence parameter on the lagged average loan is in the region of 0.50 to 0.75, which means that the average loan has a downward trend.

Let us look at the yearly development in the average loan as well, shown in Figure 2.3. To this end, we construct relative series of the two average loan measures by first choosing the median average loan from 1999 to 2008 from Table 2.6, setting the value in 1999 to 100 per cent and then measuring the yearly median values relative to the 1999 value. We do the same for the GDP-adjusted average loan and also for the portfolio yield.

The figure shows that, in fact, the average loan per GDP/capita falls over the period relative to the average loan. The lack of mission drift is even more pronounced in the GDP-adjusted average loan than in the original series. We have also included the portfolio yield in Figure 2.3. This is calculated as the total financial revenue divided by the total loan portfolio (see Table 2.1). The portfolio yield is a good yardstick of the average lending rate that the MFI is charging. This rate has a decreasing trend as well, almost parallel to the average loan per GDP/capita. The portfolio yield can also be taken as an outreach measure; thus, when a MFI has a lower portfolio yield, more poor households are able to obtain loans from the MFI and benefit from it.

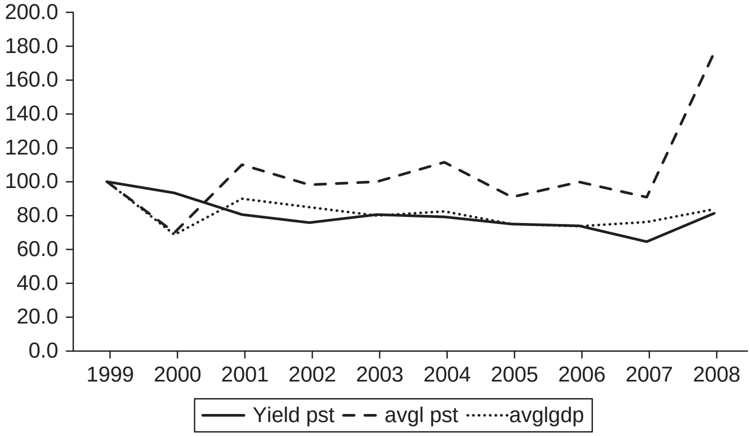

Figure 2.3 The relative development in the portfolio yield (yield pst), average loan (avgl pst), and average loan per GDP per capita (avglgdp)

Table 2.6 Operational costs of the portfolio distributed by year

Year	Average	St.dev.	p25	p50	p75	Obs.
1998	0.223	0.107	0.129	0.256	0.136	6
1999	0.307	0.113	0.164	0.331	0.449	22
2000	0.334	0.123	0.199	0.334	0.420	63
2001	0.278	0.129	0.186	0.228	0.371	127
2002	0.273	0.141	0.209	0.198	0.341	182
2003	0.286	0.148	0.199	0.228	0.363	231
2004	0.303	0.141	0.212	0.386	0.354	241
2005	0.292	0.139	0.208	0.376	0.325	236
2006	0.270	0.129	0.197	0.247	0.340	199
2007	0.259	0.111	0.184	0.263	0.289	118
2008	0.274	0.121	0.215	0.239	0.317	30
2009	0.447	0.168	0.245	0.528	0.408	17
Total	0.287	0.135	0.201	0.299	0.345	1472

3 Costs

Costs are important for the MFI both from a financial sustainability and an outreach point of view. With lower costs, the financial sustainability is more assured and the better able the MFI is to reach out to low-income households that are relatively more costly to service than higher income households (Mersland and Strøm, 2010). Thus, both adherents to the

Table 2.7 Potential cost drivers for the operational costs of the MFI's loan portfolio

	Average	St.dev.	p25	p50	p75	Obs	Diff	t-value
Not shareholder-owned	0.278	0.264	0.132	0.198	0.348	987	–0.027	–0.944
Shareholder-owned MFI	0.305	0.359	0.149	0.207	0.341	485		
Not regulated	0.302	0.296	0.138	0.212	0.375	1034	0.049	1.937
Regulated	0.252	0.305	0.133	0.189	0.272	410		
Locally initiated	0.257	0.273	0.121	0.181	0.305	888	–0.080	–3.158
Internationally initiated	0.336	0.331	0.165	0.244	0.406	574		
Individual and group loan	0.269	0.288	0.134	0.192	0.317	1221	–0.109	–2.967
Group loan	0.378	0.335	0.170	0.308	0.484	249		
Urban borrowers	0.291	0.300	0.140	0.206	0.352	1200	0.019	0.611
Rural borrowers	0.271	0.292	0.118	0.190	0.325	270		
Diverse financial institution	0.292	0.291	0.123	0.209	0.354	245	0.005	0.157
Pure financial institution	0.286	0.302	0.138	0.199	0.342	1216		
No gender bias	0.266	0.330	0.127	0.188	0.303	778	–0.042	–1.731
Gender bias	0.309	0.258	0.147	0.229	0.391	656		
Unsubsidized debt	0.330	0.417	0.137	0.210	0.389	444	0.070	2.234
Subsidized debt	0.260	0.215	0.134	0.195	0.318	953		
No performance pay	0.264	0.270	0.126	0.194	0.330	574	–0.039	–1.642
Performance pay	0.303	0.318	0.141	0.206	0.368	858		

view that MFIs should seek profit maximization, and adherents to the social mission view will agree that lowering operational costs is important. A fair prediction is that low cost MFIs are more likely to survive against stronger competition in future, another is that low cost MFIs are able to reach out to more low-income households.

Table 2.1 showed that the operational costs are overwhelmingly the most important of the main cost items for the MFI, constituting 60.5 per cent of the total financial revenue. Therefore, it is imperative for the MFI to pay close attention to the operational costs. This is further underlined by the fact that these costs are at least partly controllable by the MFI, in contrast to funding costs that are market determined to a larger extent.

A common procedure is to construct the operational costs relative to the portfolio. Table 2.7 below shows how this measure develops over the years in our sample.

Again, the time series is fluctuating. We cannot find any clear trend over time. This means that the average MFI has not been able to improve its cost position during the period, despite the very rapid rise in the loan portfolio seen in Table 2.4. One would expect to see a lower fraction of operational costs over time as MFIs gain large-scale advantages. An inspection of the median value of operational costs distributed by MFI age (not reported) shows that the fraction hovers around 20 per cent during an MFI's lifetime. The persistently high operational costs constitute the main cost problem for MFIs, as they have gained control of the repayment problem which originally was the main MFI challenge.

An interesting research area is the investigation of the cost drivers for MFIs. Some work has commenced in this area. For instance, Hartarska et al. (2013) find scale economies in a sample of MFIs similar to ours when estimating a system of cost function and cost share equations. Likewise, Delgado et al. (forthcoming) find evidence that most MFIs also enjoy economies of scope. That is, the MFI's efficiency improves when it offers savings alongside loans. In a study of the founder CEO, Randøy et al. (forthcoming) find that the founder is better able to contain costs than later hires. Mersland and Strøm (2014) use a stochastic frontier approach to investigate whether the MFI's choice of lending method, either individual or group, has consequences for cost efficiency. They find that the group loan is more costly.

Even though these studies are interesting and valuable, we are still lacking a thorough understanding of the MFI's cost drivers. This is of academic as well as practical interest. For academics, it would be interesting to study a number of questions that have only barely been touched upon. For instance, how do costs develop with changes in the MFI's business model? Can the MFI's governance influence its cost efficiency? Do costs vary with ownership structure, regulation, and competition? For practitioners, it is important to be aware of cost trends and cost drivers.

When operational costs are 60.5 per cent of total financial revenue, it is important to know what factors drive the costs. In Table 2.7, we collect some binary MFI characteristics and look at whether the operational costs of the portfolio vary with each characteristic.

'Diff.' is the difference between the two averages in each category (e.g., not shareholder-owned versus shareholder-owned). The t-value is calculated by dividing the difference between the average values by a standard error extracted from a regression of operational costs on every indicator variable using clustered standard errors, as in Villalonga and Amit (2006).

We choose the lowest significance level to be 10 per cent, which corresponds to a t-value of about ±1.64, and comment only on the significant differences in Table 2.7. It turns out that the operational costs of the portfolio are higher for the non-regulated MFIs, the internationally initiated, for group loans, for MFIs with a female bias in their lending policy, for MFIs without subsidized debt, and for MFIs that reward their loan officers with performance-related pay. For the loan type, the cost difference between individual and group loans is even more pronounced if we compare MFIs that only offer group loans with MFIs that only offer individual loans, and leave out the category of MFIs offering both types of loans. We must expect that the MFIs with highest costs are at least able to produce satisfactory financial sustainability numbers. Thus, with increasing competition, we expect that more MFIs will be regulated, more will turn to individual lending, and more will drop their female-biased lending policies. Whether fewer MFIs will use performance-related pay is doubtful since such salary incentives are normally attached to the repayment of loans. Thus, higher operational costs might be balanced by lower default costs. It is perhaps surprising that MFIs that are granted subsidized debt have the lowest operational costs. These MFIs should have the least need for subsidies. One explanation could be that the donors want to support the most viable MFIs. Naturally, these results are only partial, and only the starting point for more serious testing. Still, the large differences in some of these variables point towards fruitful and interesting research possibilities.

4 Conclusion

We have set out the main measures for MFIs' financial sustainability, their outreach in terms of offering financial services to low-income households, and some cost aspects. We have confirmed earlier findings that profitability is rather weak in microfinance and that operational costs constitute a large part of the total costs. Microfinance is growing quickly in terms of households reached and portfolio growth, while, at the same time, the average loan per client is tending to remain about the same. The cost analysis reveals that high costs are associated with group lending and a preference for lending to women. These hallmark features of microfinance are thus in danger of eradication as competition hardens in the sector.

Many researchers have concentrated their efforts on the trade-off between the MFI's social mission and its financial sustainability, fearing a mission drift from the serving of social goals to the serving of profit goals. From the simple analysis in this chapter, it seems that more effort should be put into revealing the ways that MFIs can improve their financial sustainability by containing their operational costs.

Notes

1. Zeller and Meyer (2003) argue that microfinance should be measured according to three dimensions: financial sustainability, outreach, and impact. In this book, we do not include impact as a performance dimension since this would change the unit of analysis from the MFI to the customer. Moreover, the impact for customers is, to a large extent, dependent on market conditions and entrepreneurial efforts, and to a lesser degree on the MFI.
2. While we use end of year assets rating agencies use average annual assets in the denominator when calculating ROA. Because of the industry's growth median ROA as reported by the rating agencies is therefore 2.7 percent in our dataset.

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3

What Does MFIs' Cash Flow Analysis Reveal?

Gautier Dumont and Mathias Schmit

1 Introduction

Analyzing cash flow statements helps users of financial statements obtain the relevant information concerning cash movements in and out of the company in a given financial period. They enable financial analysts to understand the financial sustainability of an MFI as a going concern and the way the cash generated by operations is split between dividend distribution and investment activities on one hand and the way the MFI is financed on the other.

Furthermore, with regard to liquidity analysis – a major concern for investors and governments over the past five years due to the financial crisis – information from the cash flow statement is more reliable in comparison to information from either balance sheets or income statements.

Actually, income statements are based on accrual accounting principles and do not indicate the amount of cash an MFI has generated, as they include non-cash entries (e.g., depreciation and provisions), do not record some changes in assets and liabilities such as fixed assets or loan disbursements, or the cash increase/decrease linked to debt financing. There are multiple reasons why cash variation and profit are not the same amount over a period.

The purpose of this paper is to analyze for the first time the operating performance and dividend policy, investment policy, and funding policy of the 30 largest MFIs that presented audited cash flow statements through the Microfinance Information Exchange (MIX) between 2006 and 2010. Based on the understanding of the operating, investment, financing, and dividend policies, we finally analyze the extent to which specific cash-generation patterns affect MFIs' financial vulnerability in terms of liquidity risk.

This paper helps to fill the lack of cash flow analysis in microfinance research. Until now, when analyzing the financial performance of MFIs, researchers have used traditional accounting ratios based on income statements, such as return on equity (ROE), ROA, OSS, and profit margin.

In the next section, we review current literature on the use of cash flow information by financial institutions and the assessment of financial performance in microfinance. Secondly, we discuss the methodology used to analyze MFIs' cash flow statements in accordance with International Accounting Standard 7 (IAS 7) on the Statement of Cash Flows. We then present our sample group and data, which were collected from the MIX and companies' annual reports. The analysis is divided into several parts: MFIs' operating performance and dividend policy, investment policy, and funding policy. Finally, we provide a classification of MFIs into different liquidity risk profiles based on the financial vulnerability they pose to themselves and their depositors.

2 Literature overview

1.1 Using cash flow data to assess financial institutions' performance

Beaver (1966) was among the first to take cash flow information into account when assessing a company's financial performance and situation. Other authors such as Altman (1968), Deakin (1972), Blum (1974), and Norton & Smith (1979) have also demonstrated the significance of using cash flow indicators alongside traditional accounting ratios to forecast bankruptcy. Nevertheless, these studies were limited by the old accounting laws that did not require institutions to provide a cash flow statement in their annual report. However, authors such as Zavgren (1983), Jones (1987), Neill et al. (1991), and Watson (1996) express reservations about the relevance of cash flow analysis compared to traditional financial ratios.

Largey & Stickney (1980) used operations, investment, and financing cash flows to analyze the W.T. Grant Company's bankruptcy and determine the significance of cash flow analyzes, particularly cash flow from operations. A similar approach was used and confirmed by Lee (1982) shortly afterwards, while Casey & Bartczak (1984) went a little further by stating that operational cash flows gave better results than traditional ratios.

Carslaw & Mills (1991) suggested using ratios based on cash flow statements to assess a company's financial strength and profitability. The ratios used compare the dividend cash payment to cash flow from operations, the quality of sales and incomes, and capital expenditures. In 2010, following the financial crisis, the ECB released a paper criticizing the use of accounting ratios, particularly ROE, when analyzing banking performance.

However, anyone analyzing a cash flow statement for a financial institution encounters other issues related to the classification of cash items among operational, investment and financial cash flows. Klumpes et al. (2009) pointed out the lack of harmonization between financial institutions in the implementation of International Accounting Standard 7 (IAS 7) on the Statement of Cash Flows.

1.2 Measuring performance in microfinance

The financial performance indicators most often used in microfinance research literature are, without doubt, ROE and ROA. In their book, Ledgerwood & White (2006) use ROE and ROAs to define MFI profitability. Profitability is also one of the eight elements used to determine the Microfinance Information Exchange, Inc.'s annual ranking of the leading MFIs in Latin America. In this ranking, ROAs and ROE are used to assess profitability.

The operational and FSS ratios have also been used by many academics, in addition to the ROA and ROE ratios. For instance, Sinha (2007) uses the OSS ratio to study the efficiency of Indian MFIs. Cull et al. (2007) analyze MFIs' profitability and depth of outreach to the poor, using the FSS ratio, OSS ratio, and ROAs adjusted to assess profitability.

The above-mentioned indicators and others based on accounting have been used to investigate many different issues:

- For instance, Schreiner (1969) uses them to assess whether subsidies have a positive or negative impact on MFIs' financial performance. Following the suggestion of a trade-off between outreach and sustainability made by Rhyne (1998) and Morduch (2000) (later to become known as mission drift), many authors also used financial indicators to test for the existence of a trade-off and its consequences, along with other indicators for assessing social performance.
- Regarding governance in microfinance, Mersland & Strøm (2009) compare nonprofit and for profit organizations in terms of financial performance and outreach. More recently, Strøm, d'Espallier, & Mersland (2014) showed that female chief executive officers and chairmen of the board are positively related to MFI financial performance.

- Bogan et al. (2012) also use financial ratios in their article to demonstrate how the capital structure of MFIs could affect financial sustainability and efficiency.

It is also worth mentioning that other productivity ratios have been introduced to study mission drift, such as the client, supplier, and stakeholder surplus. These are used by Hudon, Perilleux, & Bloy (2012) to show that there are little differences between surplus distribution of nonprofit and for profit organizations.

In 2010, the MIX published a benchmark for the microfinance industry that presented the averages and medians of several MFI ratios taken from its database. The four ratios labelled as financial performance ratios were the ones already mentioned: ROAs, ROE, OSS and FSS. None of the ratios and indicators referred to cash flow.

On top of this, Beisland & Mersland (2013) mentioned through their literature review that financial information provided by MFIs is criticized for their lack of standardizations, making the comparison between MFIs difficult.

To sum up, contrary to the corporate finance literature, to our knowledge, cash flow-based analysis has never been used when it comes to microfinance while financial information coming from accounting measures is criticized. The cash flow statement reveals cash movements linked to operational, investment, and finance activities.

3 Methodology

In order to look at the way MFIs generate cash flows, we first have to set up cash flow statements in a standardized way. Accordingly, we classify the different cash flow items in a consistent manner, as described in the following section. We then explain the methodology used to assess operating performance and the dividend pay-out (for the dividend-paying MFIs), investment and funding policies of MFIs using cash flow information.

1.3 Reclassification methodology

There is a particularly noticeable lack of consistency in the classification of financial institutions' cash flows under IAS 7, especially regarding the classification of investment cash flows as described by Klumpes, Welch, and Reibel (2009) or Mechelli (2009). A survey of financial reporting by Italian banks further shows that '[...] in applying IAS 7 there are several points as to which entities can make different choices in reporting cash flows. These alternatives could stem either from options provided by IAS 7 or from the absence of a regulation concerning a specific issue that permits entities to choose among different solutions, none of which are expressly stated by IAS 7. When issuing cash flow statements, choices made about these points could create a high degree of heterogeneity that – as we previously said – could reduce comparability across entities' cash flow statements.'

Furthermore, PricewaterhouseCoopers (2009)[1] and KPMG (2011)[2] each presented an illustrative set of consolidated cash flow statements, prepared in accordance with International Financial Reporting Standards (IFRS), for fictional banking entities. They illustrate the heterogeneity in flow classifications when applied to financial institutions. For example, PWC records changes in investment securities in its operating cash flows, whereas KPMG does this in its investing cash flows[3]. Debt securities are another example: PWC records them as operating cash flows while KPMG records them as financing cash flows[4].

Therefore, in order to construct a comparable data set of cross-sectional data, we need to classify said data appropriately according to the generic categories found in MFIs' cash flow statements, using additional information provided in the annual reports. This breakdown is necessary to be able to reclassify some items in accordance with IAS 7.

Operating cash flows

IAS 7 states that 'cash flows from operating activities are primarily derived from the principal revenue-producing activities of the entity. Therefore, they generally result from the transactions and other events that enter into the determination of profit or loss'. For example, cash receipts from the sale of goods and the provision of services are included in operating cash flows.

Two further important items that can be found in MFIs' cash flow statements are the change in other current assets and other current liabilities. Many different accounts can be found in these sections. The main accounts for other current assets are advances, prepayments, accounts receivable, deferred tax assets, prepaid expenses and accrued interest receivable. Those for other current liabilities mainly comprise interest payable, bills and accounts payable, and deferred tax liabilities. Although the content of these items varies from MFI to MFI, we classify them as cash flow from operating activities, since they correct non-cash movements that occurred through the institution's operations and are not made from an investment or financial perspective.

Investment cash flows

According to IAS 7, '[investing] cash flows represent the extent to which expenditures have been made for resources intended to generate future income and cash flows'.[5] Therefore, fixed assets as well as changes in financial instruments, loans, and held-to-maturity investments are classified as investing activities of financial institutions. Both loan and financial investments meet the definition of investing cash flows under IAS 7: a loan (i.e., the expenditure) is granted with the intent to generate future interest income (i.e., future income and cash flows), the latter being recorded as an operating cash flow.

Changes in held-to-maturity investments have been similarly reclassified, since they have also been contracted with the aim of generating future income and should therefore be considered as an investing cash flow.

Financing cash flows

As required by IAS 7, a separate disclosure of cash flows arising from financing activities should be set up because this helps in predicting claims on future cash flows by providers of capital to the entity. IASB gives examples of cash flows arising from financing activities, including cash proceeds from issuing debentures, loans, notes, bonds, mortgages and other short or long-term borrowings, and cash repayments of amounts borrowed. In this respect, changes in bank borrowings and deposits should be included in the financing cash flow.

In addition, IAS 7 states in relation to financial cash flow: 'The separate disclosure of cash flows arising from financing activities is important because it is useful in predicting claims on future cash flows by providers of capital to the entity'. Depositors should be able to get their cash back, thus creating cash outflow for the MFI. Collecting deposits is currently a financing activity for many MFIs and is the primary source of financing for some.

1.4 Assessing operating performance and dividend policy, investment, and funding policies

Operating performance and dividend policy

A traditional way to analyze a company's dividend policy is to look at its dividend pay-out ratio, which is the dividend paid divided by the company's profit for a given period. Profit may be subject to deferred payments, meaning that profit is possible even with a negative cash flow. To give us a more pertinent ratio, we used the dividend cash-out ratio as the dividend paid over the operating cash flow as described for instance in Carslaw & Mills (1991). We then observed which part of the operational cash flow remained within the MFI and could support the investment and loan cash outflow made during the period.

Investment policy

We needed to understand the relationship between investment cash flow and operational cash flow. All companies need to make investments to be able to generate future cash flow through their operations. We used the following fundamental cash flow statement breakdown (note that the financial cash flow does not include dividend payment, as it is considered separately).

$$CF_{Op} + CF_{Inv} + CF_{Fin} = \Delta\ Cash + Div \tag{1}$$

Where for a given period:

$\Delta\ Cash$ = change in cash and cash equivalents
CF_{Op} = operating cash flows
CF_{Fin} = investment cash flows
CF_{Inv} = financing cash flows
Div = dividends paid

We then divided it by the cash flow from operations to create standardized ratios between MFIs that are free of currency interference. Hence:

$$1 = -\frac{CF_{Inv}}{CF_{Op}} + \frac{div}{CF_{Op}} - \frac{CF_{Fin}}{CF_{Op}} + \frac{\Delta Cash}{CF_{Op}} \tag{2}$$

Thus, the amount of cash flow from investments needed to generate one unit of currency of operational cash flow is the ratio of CF_{Inv} over CF_{Op}. If this is below –1, it means that the free cash flow (sum of operating and investing cash flows) is negative and that the company requires additional external cash from its financing activities. However, having negative investment cash flow does not imply that the MFI grants more loans to its customers. The proportion of new loans granted to investing cash flow has to be investigated. If an MFI choses to invest in other activities instead of lending to its customers, it may limit its outreach as it could potentially reach more customers with the same amount of funds.

Funding policy

We also needed to know what proportion of the cash required for investments, which in the case of MFIs are mainly loans, is provided by operational and financing cash flow. Therefore, we first subtracted the dividend paid from the positive operational cash flow. The remaining part of the operational cash flow can be used for investing activities. The financial cash flow was then used for the part of the investment cash outflow that cannot be financed through operating cash flow and for the change in cash and cash equivalents over a given period. We then calculated the proportion for one unit of capital expenditure or CAPEX (which is equivalent to – CF_{Inv}) coming from operations (generated internally) and from financing cash flow (generated externally). Starting with equation (1), we obtained:

$$\frac{CF_{Op} - div}{CAPEX} + \frac{CF_{Fin}}{CAPEX} = 1 + \frac{\Delta Cash}{CAPEX} \tag{3}$$

If we set $CF_{Fin} = CF_{Fin}$ *to CAPEX* + CE_{Fin} *to* $\Delta Cash$, we get:

$$\underbrace{\frac{CF_{Op} - div}{CAPEX} + \frac{CF_{Fin} toCAPEX}{CAPEX} + \frac{CF_{Fin} to\Delta Cash}{CAPEX}}_{=1} = 1 + \frac{\Delta Cash}{CAPEX} \tag{4}$$

Finally, we checked that $CF_{Fin} to\Delta Cash = \Delta\ Cash$.

Cash flow from financing activities can come from various sources, such as new capital issues, debt issuance, and deposits collection. To distinguish how the MFIs generate their external financial cash flow, we also analyzed the distribution per unit of CAPEX.

4 Data

Cash flow statements, income statements, and balance sheets were collected from the audited annual reports of the 30 largest MFIs in terms of active borrowers that voluntarily publish their accounts publicly on MixMarket.com. The number of active borrowers is an easily comparable and objective criterion for assessing an institution's microcredit activity. Another ranking may be based on the total assets or portfolio size of institutions from different countries if these amounts are expressed in terms of purchasing power parity. However, by choosing the number of active borrowers to determine our sample, we avoided possible interference from the exchange rate and the purchasing power parity index. It also enabled us to focus on activity and outreach rather than on accounting amounts.

As noted by Cull et al. (2009) and Bogan et al. (2012), MIX market provides high quality data but is not representative of the whole industry. Particularly regrettable is the absence of the Vietnam Bank for Social Policies and the Association of Asian Confederation of Credit Unions in Thailand, which served 8,166,287 and 7,660,720 customers respectively in 2010, according to the Microcredit Summit (2010). The following table shows the MFIs included in the sample; their annual reports were collected from 2006 to 2010. The MFIs in the sample served over 50 million customers.

Table 3.1 Sample MFIs

MFI	Type	Country	Year of foundation	Active borrowers	Total assets in USD	Available reports
Grameen Bank	Bank	Bangladesh	1983	8,340,623	1,698,487,761	2006–2010
SKS	NBFI	India	1997	6,242,266	952,929,294	2006–2010
BRAC	NGO	Bangladesh	1972	5,452,195	1,004,781,306	2006–2010
ASA	NGO	Bangladesh	1978	4,467,497	699,305,587	2006–2010
Spandana	NBFI	India	1998	4,188,655	698,807,350	2006–2010
Bandhan	NBFI	India	2001	3,254,913	614,408,607	2006–2010
SHARE	NBFI	India	1992	2,840,122	553,165,144	2006–2010
CAPITEC Bank	Bank	South Africa	2001	2,829,000	2,074,643,247	2006–2010
Compartamos Banco	Bank	Mexico	1990	1,961,995	910,940,032	2006–2010
BASIX	NBFI	India	1996	1,526,150	352,404,225	2006–2010
Financiera Independencia	NBFI	Mexico	1993	1,399,978	703,342,463	2006–2010
AML	NBFI	India	2002	1,341,524	321,858,864	2006–2010
Equitas	NBFI	India	2007	1,303,339	216,301,099	2007–2010
Ujjivan	NBFI	India	2004	847,671	159,013,480	2006–2010
BURO Bangladesh	NGO	Bangladesh	1990	821,826	89,477,973	2006–2010
ACSI	NBFI	Ethiopia	1995	659,635	185,115,431*	2006–2009
Crediscotia	NBFI	Peru	1994	628,814	936,726,690	2006–2010
BCSC	Bank	Columbia	1991	619,119	4,187,549,869	2007–2010
CARD NGO	NGO	Philippines	1986	606,488	87,873,452	2006–2010
Equity Bank	Bank	Kenya	1984	524,902	1,659,107,807	2006–2010
Cashpor MC	NGO	India	1997	431,463	63,839,729	2008–2010
KWFT	NBFI	Kenya	1982	413,040	234,924,337	2007–2010
MiBanco	Bank	Peru	1992	401,988	1,568,838,434	2006–2010
BISWA	NGO	India	1995	384,242	77,373,370	2006–2009
FMM Popayán	NGO	Columbia	1989	352,592	287,404,734	2006–2010
Bancamía	Bank	Columbia	2008	341,100	376,295,561	2008–2010
NRSP	NGO	Pakistan	1991	326,143	100,128,733	2006–2010
Khushhali Bank	Bank	Pakistan	2000	325,523	84,563,930	2006–2010
ESAF	NGO	India	1992	322,590	51,656,663	2008–2010
GFSPL	NBFI	India	1999	321,161	65,038,363	2006–2010

* ACSI assets in 2009.

5 Results

1.5 Differences in cash flow statements between MFIs

The cash flow statements of the 30 sample MFIs over the period 2006–2010 differ significantly from one MFI to another. Indeed, the classification of many items, such as loans, deposits, dividends received, and financial products, vary widely between MFIs. Table 3.2 shows the different accounting methods for microfinance loans and client deposits applied by the 30 sample MFIs. Microfinance loans are usually the largest asset accounts, and deposits can be very large for MFIs that allow them. Twenty-two of our sample MFIs include loans and client deposits (or just loans for non-deposit institutions) in their operational cash flow, whereas only three institutions follow the classification described in the methodology.

The current disparity in cash flow classification is probably due to the different accounting practices of the countries where the sample MFIs are located. When analyzing an MFI's cash flow, which can be very valuable in understanding its development, investors should go further and take a closer look at which accounts make up the operational, investing and financial cash flow. As regards deposits, for example, most of the sample MFIs (11 out of 18 MFIs taking deposits) consider the movement of their customers' deposits to be an operational cash flow that is not important from a financial analysis point of view. Indeed, changes in deposits are not in line with the informative function of operating cash flows, as defined by IAS 7: 'The amount of cash flows arising from operating activities is a key indicator of the extent to which the operations of the entity have generated sufficient cash flows to repay loans, maintain the operating capability of the entity, pay dividends, and make new investments without recourse to external sources of financing'[6].

Tables 3.3 and 3.4 show the difference between what MFIs present in their cash flow statement and what was obtained using the reclassification method we have described.

Table 3.3 demonstrates that less than half of the sample MFIs report positive operational cash flow every year, whereas our reclassification of cash flow shows it is actually positive in most cases. The total operational cash flow for the period was positive for all but one of the sample MFIs. This means that MFIs are able to generate positive cash flows thanks to their investments.

Table 3.4 shows that the total recalculated free cash flows were negative for all of the sample MFIs, although five (Compartamos Banco, Crediscotia, MiBanco, Grameen Bank, and CAPITEC) reported positive

Table 3.2 MFIs' current accounting methods

MFIs' CF accounting methods for loans and deposits	**MFIs**
Loans in CF_{Op} and no deposit:	11
Loans in CF_{Inv} and no deposit:	**1**
Loans and deposits in CF_{Op}:	11
Loans in CF_{Op} and deposits in CF_{Fin}:	3
Loans in CF_{Inv} and deposits in CF_{Fin}:	**2**
Loans in CF_{Fin} and deposits in CF_{Fin}:	2

Table 3.3 CF_{Op} as shown by MFIs and recalculated, 2006–2010

	2006	**2007**	**2008**	**2009**	**2010**	**2006–2010 period**
Positive CF_{Op} as shown by MFIs	12	9	13	12	12	**10**
Positive recalculated CF_{Op}	18	24	24	28	25	**29**

Table 3.4 Free cash flow as shown by MFIs and recalculated, 2006–2010

	2006	**2007**	**2008**	**2009**	**2010**	**2006–2010 period**
Positive FCF as shown by MFIs	7	4	11	10	8	**5**
Positive recalculated FCF	2	1	5	3	3	**0**

free cash flow in their cash flow statement. Negative free cash flows mean that MFIs do not generate enough cash flow from the use of their resources for distribution among all securities holders and depositors. Indeed, the investments in fixed assets and loans disbursements (CAPEX) are higher than the operating cash flows.

1.6 Cash flow analysis of MFIs

In this section we discuss our results regarding (i) operating performance and dividend policy, (ii) investment policy and (iii) funding policy, as well as the risk assessment for MFIs and their depositors.

MFI operating performance and dividend policy

Out of the 30 sample MFIs, 13 paid dividends at least once between 2006 and 2010. We used the total amount of MFI dividend and operational cash flow between 2006 and 2010.

Table 3.5 Dividend pay-out and cash-out ratios, 2006–2010

	Years of dividend payment	**Div / NI**	**Div / CF_{Op}**	**CF_{Op} available for CAPEX**
AML	2006, 2007, 2008, 2009, 2010	6.4%	13.0%	87.0%
BASIX	2007, 2008, 2009, 2010	12.4%	3.4%	96.6%
BCSC	2007, 2008, 2010	39.0%	11.6%	88.4%
CAPITEC	2006, 2007, 2008, 2009, 2010	33.2%	17.4%	82.6%
Compartamos	2006, 2008, 2009, 2010	17.4%	14.3%	85.7%
Crediscotia	2006	26.4%	2.2%	97.8%
Equity bank	2006, 2007, 2008, 2009, 2010	19.1%	16.1%	83.9%
Financiera Ind.	2006, 2007, 2008, 2010	69.3%	30.5%	69.5%
Grameen	2009, 2010	7.4%	5.3%	94.7%
MiBanco	2006, 2007, 2008, 2009, 2010	37.9%	12.9%	87.1%
SHARE	2006, 2010	1.7%	1.0%	99.0%
Spandana	2006	0.0%	0.01%	100.0%
Ujjivan	2010	5.1%	3.1%	96.9%
Average		21.2%	10.1%	89.9%
Median		17.4%	11.6%	88.4%

Analyzing the dividends paid by these MFIs over the period in question shows that the average dividend pay-out ratio is 21.2 per cent. For our sample, this ratio is half the average dividend cash-out ratio (10.1 per cent). This means that, on average, almost 90 per cent of the cash flow generated is kept within the for profit MFI to foster its development and finance the loans disbursed during that period. From 2006 to 2010, these MFIs did not always pay dividends every year (e.g., Spandana and Crediscotia only paid dividends in 2006). Positive net incomes and positive operating cash flows should be a requirement if an MFI wishes to distribute dividends among its shareholders. The positive ratios in the table show that both profits and operating cash flow were positive over the five-year period.

MFI investment policy

The next table shows the cash movements of the sample MFIs when one unit of currency of operational cash flow is generated for every sample MFI as described in the methodology with equation (2).

As shown by the table, all of the MFIs except one (Bancamia) had positive total operational cash flows, which is the first step towards self-sustainability. However, the investment cash flow is below –1 for every MFI in the sample. This means that to generate one unit of cash

Table 3.6 MFI cash flow movement for one unit of local CF_{Op} currency

	MFIs cash flow				
MFI	**CF_{op}**	**CF_{inv}**	**CF_{fin}**	**Dividend**	**Cash difference**
ACSI	1.00	–3.53	3.59	0.00	1.06
AML	1.00	–21.27	22.03	0.13	1.63
ASA	1.00	–1.37	0.68		0.31
Bancamia	–1.00	–17559.85	17501.87	0.00	–58.97
Bandhan	1.00	–5.28	6.61	0.00	2.33
BASIX	1.00	–6.30	6.27	0.03	0.94
BCSC	1.00	–2.58	1.90	0.12	0.20
BISWA	1.00	–6.41	5.41	0.00	0.00
BRAC	1.00	–2.37	1.49	0.00	0.13
Buro Bangladesh	1.00	–7.56	6.80	0.00	0.24
CAPITEC	1.00	–3.46	3.29	0.17	0.65
CARD NGO	1.00	–2.97	2.21	0.00	0.25
CASHPOR MC	1.00	–2.83	5.11	0.00	3.27
Compartamos	1.00	–1.22	0.45	0.14	0.09
Crediscotia	1.00	–1.96	1.13	0.02	0.15
Equitas	1.00	–3.35	3.13	0.00	0.79
Equity bank	1.00	–5.31	4.78	0.16	0.31
ESAF	1.00	–38.38	40.51	0.00	3.12
Financiera Ind.	1.00	–1.53	0.94	0.31	0.11
FMM Popayan	1.00	–2.01	1.06	0.00	0.05
GFSPL	1.00	–17.62	19.79	0.00	3.17
Grameen	1.00	–14.18	13.30	0.15	0.06
Khushhali	1.00	–3.94	1.00	0.00	–1.94
KWFT	1.00	–3.95	4.78	0.00	1.83
MiBanco	1.00	–3.15	2.79	0.13	0.50
NRSP	1.00	–1.96	1.44	0.00	0.48
SHARE	1.00	–6.87	6.51	0.01	0.63
SKS	1.00	–4.56	4.00	0.00	0.44
Spandana	1.00	–3.70	2.90	0.00	0.20
Ujjivan	1.00	–23.90	25.99	0.03	3.05

from their operations, all of the MFIs invested more than one unit of local currency. In the case of 17 MFIs (not including Bancamia), cash invested is five times greater than cash collected through operations. This is equivalent to having negative free cash flow, implying that MFIs are then dependent on external financing.

Required financial cash flows vary widely between MFIs but are always positive. Consequently, some MFIs may be highly dependent on external financing, meaning that they face major liquidity risks. The cash difference is also positive for almost all the MFIs in our sample. However, this is not due to positive free cash flow but to the excess of financial cash flow over the free cash flow.

Table 3.7 shows the proportion of investment cash flow used to increase the loan portfolio over the 2006–2010 period. If the investment cash flow is smaller (owing to divestment, for instance) than the cash used for new loans, we will consider that the new loans represent 100 per cent of the investment cash flow[7].

The results show that more than half of the investing cash flow was used for the loan portfolio, as might be expected, and six MFIs used less than 75 per cent. However, the Grameen Bank used just 51 per cent of the invested cash to grant loans to customers, surprisingly ranking last in the list of 30 sample MFIs. The Grameen Bank invested most of the remaining 49 per cent in regular commercial banks in Bangladesh.

MFI funding policy

The next table shows that only five MFIs (Compartamos Banco, Crediscotia, ASA, FMM Popayan, and NRSP) have at least 50 per cent of the cash flow needed for CAPEX coming from operations; 11 MFIs have between 25 per cent and 50 per cent; and 14 have below 25 per cent. On average for the 30 sample MFIs, outflow to finance investment activities is 25 per cent covered by operational cash flow. The need for external financing is essential for all of the MFIs in our sample.

Financial cash flow is also divided between its three sources.

Table 3.7 New loans over investment cash flow, 2006–2010

Bandhan	100%	Compartamos	93%
Ujjivan	100%	KWFT	92%
AML	100%	Equitas	91%
CASHPOR MC	100%	Buro Bangladesh	90%
GFSPL	100%	CAPITEC	86%
Spandana	99%	NRSP	84%
ACSI	99%	CARD NGO	82%
Crediscotia	98%	ASA	81%
Bancamia	97%	Financiera Ind.	81%
SHARE	97%	BRAC	71%
FMM Popayan	96%	BISWA	71%
ESAF	96%	Khushhali	65%
MiBanco	95%	Equity bank	61%
SKS	94%	BCSC	59%
BASIX	94%	Grameen	51%

Table 3.8 Cash movement for one unit of CAPEX

		Cash flow from operations per unit of CAPEX			Cash flow from financial activities per unit of CAPEX				
MFI	**CAPEX**	**CF_{op}**	**CF_{op} to div**	**CF_{op} to CF_{inv}**	**CF_{fin} to CF_{inv}**	**Capital issue**	**Long-term debt**	**Deposits**	**Cash difference**
ACSI	1.00	0.28	0.00	**0.28**	**0.72**	0.10	0.31	0.61	0.30
AML	1.00	0.05	0.01	**0.04**	**0.96**	0.08	0.95	0.00	0.08
ASA	1.00	0.73	0.00	**0.73**	**0.27**	0.00	0.18	0.32	0.23
Bancamia	1.00	0.00	0.00	**0.00**	**1.00**	0.25	0.70	0.05	0.00
Bandhan	1.00	0.19	0.00	**0.19**	**0.81**	0.04	1.00	0.21	0.44
BASIX	1.00	0.16	0.01	**0.15**	**0.85**	0.10	0.87	0.02	0.15
BCSC	1.00	0.39	0.04	**0.34**	**0.66**	0.00	0.06	0.67	0.08
BISWA	1.00	0.16	0.00	**0.16**	**0.84**	0.00	0.84	0.0002	0.00
BRAC	1.00	0.42	0.00	**0.42**	**0.58**	0.00	0.37	0.26	0.05
Buro Bangladesh	1.00	0.13	0.00	**0.13**	**0.87**	0.00	0.62	0.28	0.03
CAPITEC	1.00	0.29	0.05	**0.24**	**0.76**	0.13	0.00	0.82	0.19
CARD NGO	1.00	0.34	0.00	**0.34**	**0.66**	0.00	0.49	0.26	0.08
CASHPOR MC	1.00	0.35	0.00	**0.35**	**0.65**	0.00	1.80	0.00	1.16
Compartamos	1.00	0.82	0.12	**0.70**	**0.30**	0.00	0.37	0.00	0.07
Crediscotia	1.00	0.51	0.01	**0.50**	**0.50**	0.04	0.35	0.18	0.07
Equitas	1.00	0.30	0.00	**0.30**	**0.70**	0.28	0.66	0.00	0.23
Equity bank	1.00	0.19	0.03	**0.16**	**0.84**	0.09	0.06	0.74	0.06
ESAF	1.00	0.03	0.00	**0.03**	**0.97**	0.36	0.70	0.00	0.08
Financiera Ind.	1.00	0.66	0.20	**0.46**	**0.54**	0.18	0.44	0.00	0.07
FMM Popayan	1.00	0.50	0.00	**0.50**	**0.50**	0.00	0.53	0.00	0.02
GFSPL	1.00	0.06	0.00	**0.06**	**0.94**	0.14	0.98	0.00	0.18
Grameen	1.00	0.07	0.01	**0.06**	**0.94**	–0.011	0.00	0.95	0.00
Khushhali	1.00	0.25	0.00	**0.25**	**0.75**	0.11	–0.15	0.29	–0.49
KWFT	1.00	0.25	0.00	**0.25**	**0.75**	0.00	0.77	0.44	0.46
MiBanco	1.00	0.32	0.04	**0.28**	**0.72**	0.00	0.18	0.71	0.16
NRSP	1.00	0.51	0.00	**0.51**	**0.49**	0.00	0.74	0.00	0.25
SHARE	1.00	0.15	0.0014	**0.14**	**0.86**	0.04	0.91	0.00	0.09
SKS	1.00	0.22	0.00000	**0.22**	**0.78**	0.35	0.52	0.00	0.10
Spandana	1.00	0.27	0.00003	**0.27**	**0.73**	0.05	0.73	0.00	0.05
Ujjivan	1.00	0.04	0.001	**0.04**	**0.96**	0.16	0.76	0.17	0.13

Examining the different sources of financial cash flow confirms that issuing new shares is a minor source of cash and is not the main generator of cash flow for any of the sample MFIs. The issue of share capital represents more than 25 per cent of the total financial cash flow collected between 2006 and 2010 for only six MFIs (Khushhali, SKS, Financiera Independencia, Equitas, Bancamia, and ESAF). Long-term debts were the main provider of cash for 22 MFIs and deposits were the main source of external cash between 2006 and 2010 for eight MFIs (ASA, CAPITEC, Equity Bank, Grameen Bank, Khushhali, ACSI, MiBanco, and BCSC).

Financial vulnerability of MFIs and their depositors

In order to assess the MFIs' financial vulnerability, we estimated the liquidity risk for them and their depositors based on two indicators: (1) the ratio of capital expenditure over cash flow from operations and (2) the proportion of financial cash flow from new deposits. We considered three intervals for both indicators and we then divided the MFIs subject to liquidity risk into nine categories.

Regarding the first indicator, we identified MFIs with a ratio of capital expenditure over cash flow from operations of less than two, meaning that over half of the cash needed for investment comes from operations; those with a ratio between two and five; and those with a ratio above five, meaning that they are heavily dependent on external sources of cash.

For the second indicator, we also distinguished three groups of MFIs, namely those that do not take deposits, those for whom deposits generate less than 50 per cent of their financial cash flow, and those for whom deposits generate more than 50 per cent of their financial cash flow. A 3x3 matrix was then created.

Table 3.9 Liquidity risk assessment

		Deposits / Financial CF		
		Low 0%	**Medium** < 50%	**High** > 50%
CAPEX / CF_{op}	High > 5	ESAF, AML, GFSPL, SHARE, BISWA	Ujjivan, BASIX, Bandhan, Buro Bangladesh	Grameen, Equity Bank, Bancamia
	Medium 2–5	SKS, Spandana, Equitas, CASHPOR MC, FMM Popayan	KWFT, CARD NGO, BRAC	Khushhali, ACSI, CAPITEC, MiBanco, BCSC
	Low < 2	NRSP, Financiera Ind., Compartamos	Crediscotia	ASA

The nine groups displayed by the matrix can be divided into three categories:

(i) The MFIs in the darker boxes face a major liquidity risk as they have an aggressive investment policy that requires a large amount of external cash, as the operational cash flow represents less than 50 per cent of the cash needed and a significant part of the financial cash flow comes from deposits. The investments made are sizeable in proportion to the cash flow from operations and rely on deposits from customers, which increases the MFIs' leverage and the risk faced by depositors. The Grameen Bank is among these MFIs.
(ii) Conversely, the white boxes contain the MFIs that display a healthier cash situation than the others. They have a reasonable level of leverage to finance the surplus of investment cash flow over operational cash flow. Compartamos Banco and SKS fall into this category.
(iii) The three other boxes contain MFIs that either score poorly in one of the two ratios and well in the other or have an intermediate value for both of them. Such MFIs must carefully monitor their investment and funding policy since they could easily fall into the darker box category, entailing increased risks.

Finally, by way of illustration, Table 3.10 details two MFIs (Compartamos Banco and the Grameen Bank) that are in completely different positions

Table 3.10 Total cash flow of Compartamos Banco and Grameen Bank from 2006 to 2010

	Compartamos Banco	**Grameen Bank**
As shown in annual reports	*In millions of USD (12/31/2010)*	
Operating cash flow	205	574
Investment cash flow	–39	–547
Financial cash flow (including dividend payment)	–112	–22
After the reclassification of cash movement		
Operating cash flow	591	78
Investment cash flow	–721	–1,107
Financial cash flow (including dividend payment)	184	1,034
Net cash difference	54	5
Dividend paid	84	4
Variation in deposits	0	1,056
Variation of Deposits / Financial Cash flow	**0%**	**101.8%**
CAPEX / Operating cash flow	**1.22**	**14.18**

in terms of liquidity and thus financial vulnerability. From 2006 to 2010, Compartamos generated MXN 7,293 million of operating cash flow and used MXN 8,902 million for investing cash flow; indeed, most of the cash needed for investments came from its operations. In contrast, the Grameen Bank would need 14.18 times its operating cash flow to cover the cash used for investing activities. The required extra cash provided by the financial cash flow is generated by financial debts at Compartamos, whereas at Grameen Bank it comes almost entirely from deposits. Consequently, we believe that Compartamos faces a much lower liquidity risk than the Grameen Bank, especially as the latter is also predominantly financed using money from depositors.

6 Conclusion

No study to date has focused on a cash flow statement analysis that provides a clear view of the flow of cash within an institution. Accounting measurements of financial performance have been used in microfinance studies for a number of years but are not sufficient to assess the financial health of an institution. Against this backdrop, the understanding and comparability of MFI cash flow statements are the primary objectives of this work.

Using our IAS 7-compliant methodology, we found that almost all of the MFIs in our sample had cumulative positive operational cash flows, which is an encouraging sign for the microfinance industry. This shows that profit can be associated with the generation of cash, which is not always the case with EU banks, for instance (see Schmit and Denuit (2013)). When MFIs pay dividends, they are small in comparison with the operational cash flow.

However, the total free cash flow was always negative for the whole period considered implying MFIs are partly financing their growth with dependent on external resources (positive financial cash flow). The dependency on external resources differs widely across institutions.

In this respect, our results are also somewhat different from the widely acknowledged view. For example, institutions like Compartamos are able to finance the majority of their growth using cash generated by their daily business, while some institutions like Grameen Bank potentially put their poor depositors at risk. Indeed, Grameen's growth loan portfolio is almost entirely financed by depositors (and thus not through funds generated by the core business).

The aim of our subsequent research is to combine the analysis of cash flow statements advocated in this paper with double bottom line performance, thereby enlarging the scope of the research while supplementing the study with a consideration of the mission drift debate.

Notes

1. PricewaterhouseCoopers (2009), "Illustrative IFRS consolidated financial statements: Banks".
2. KPMG (2011), "IFRS: Illustrative financial statements: Banks".
3. PricewaterhouseCoopers (2009), pp. 14–15 and KPMG (2011), pp. 17–19.
4. *Ibid.*
5. European Commission (version dated 24 March 2010), "International Accounting Standard 7: Statement of cash flows", p. 3.
6. European Commission (version as of 24 March 2010), "International Accounting Standard 7: Statement of cash flows", p. 2.
7. Therefore 100 per cent is the maximum value.

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4

Determinants of Performance in the Microfinance Industry: The Role of Culture

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1 Introduction

The trade-off between financial and social performance has dominated the microfinance literature in recent years (Cull, Demirguc-Kunt, and Morduch, 2007, 2011; Mersland, Randøy and Strøm, 2011; Mersland and Strøm, 2009).

The debate is not unique to the microfinance industry. Periodically, the broadening of the organizational objective to include more than the financial goals of providers of finance has been gaining increased attention. Specifically, societal and social objectives tend to gain in importance following economic downturns (Sundaram and Inkpen, 2004). Within the microfinance industry, however, given the essence of the industry and its focus on social missions, the non-financial aspects of performance are particularly relevant. It is therefore the case that, typically, performance assessment in the microfinance industry spans both financial and social aspects.

Studies that explore microfinance performance usually focus on possible determinants of performance and on factors that have the potential to influence the balancing between social and financial objectives. Examples include product design and delivery methods (Ahlin and Townsend, 2007); managerial strategy (Bogan, 2012); ownership and governance structures (Mersland and Strøm, 2009); or the institutional context (Cull et al., 2011).

Not ignoring the role of these factors in determining microfinance institutions' financial and social performance, in this study we focus on another dimension, namely national culture (Hofstede, 1980; House et al., 2004; Schwartz, 1994). Indeed, in the general fields of economics and finance, culture is increasingly being investigated as a possible determinant of organizational performance and individual behaviour (Fidrmuc and Marcus, 2010; Gleason, Mathur and Mathur, 2000; Guiso, Sapienza and Zingales, 2006; Kwok and Tadesse, 2006; Melo, 2012; Ramirez and Tadesse, 2009). In the microfinance literature, however, the role of national culture in understanding institutional performance is still understudied. This is quite surprising given the international nature of the industry.

The aim of this study is to explore the relationship between national culture and the performance of microfinance institutions. National culture is a set of values and beliefs that pass from generation to generation (Guiso et al., 2006). There have been various attempts to measure culture, the major of which include Hofstede (1980), House et al. (2004), and Schwartz (1994). In this study, we use a survey of over 60 societies that was conducted by House et al. (2004) as part of a research project entitled ‘Global Leadership and Organisational Behavior Effectiveness’, more commonly referred to as GLOBE. The reasons for this choice is explained later, but a major motivation is the unique feature of GLOBE, which measures culture using a set of values and a separate set of practices.

The sample is a panel dataset of over 4,000 observations spanning the period 2000 to 2010 and including over 800 microfinance institutions from 30 countries. A two-stage panel data regression procedure is applied to this sample in order to test a set of hypotheses. The findings indicate that the financial and social performance of microfinance institutions and the balance between these two aspects of performance are affected by cultural practices. The key findings can be summarized in three points.

First, relative to other microfinance institutions, those that operate in cultures characterized by high uncertainty avoidance and future orientation underperform in terms of financial performance and over perform in terms of social performance. Second, relative to other microfinance institutions, those that operate in cultures characterized by high power distance levels, tend to outperform in terms of outreach to women. In contrast, microfinance institutions that operate in cultures characterized by high gender egalitarianism, tend to focus less than other institutions on outreach to women. Third, relative to other microfinance institutions, those that operate in cultures characterized by high assertiveness and performance orientation over perform in terms of financial performance.

The main implication of the analysis and findings is that microfinance institutions are embedded in the cultures in which they operate. This, in turn, influences the way organizational focus is shared between social and financial performance. The main contribution of the study is to demonstrate the role that national culture plays in explaining financial sustainability and social outreach in the microfinance industry.

The rest of the chapter is structured as follows. Section 2 reviews the literature while Section 3 presents the model and hypotheses. Data and methodology are discussed in Section 4, results in Section 5, and conclusions are offered in Section 6.

2 Literature review

2.1 Microfinance and performance

Microfinance, the idea of alleviating poverty by the provision of financial services to the economically active poor and to those otherwise excluded from access to financial services has been described as revolutionary (Robinson, 2001). The sheer growth of this relatively young industry may be taken as indication of the success of the revolution. Indeed, in 2010 there were over 200 million microfinance clients served worldwide by nearly 4,000 microfinance institutions, and the expectations were for further growth (Reed, 2011).

The sheer growth of the microfinance industry also raises questions relating to the performance of microfinance institutions in terms of outreach to micro clients, financial sustainability, and trade-offs thereof. Cull et al. (2007) investigate possible trade-offs between outreach to the poor and the profitability of microfinance institutions, but they find no conclusive evidence in support of trade-off effects. Hartarska (2005) finds evidence of trade-offs between outreach and sustainability depending on stakeholders' representation on the board of microfinance institutions. Hermes and Lensink (2011) provide a comprehensive review of studies that investigate possible trade-offs between outreach and sustainability. They conclude that while a trade-off exists, its magnitude is not fully understood.

A related question is over mission drift, the situation whereby microfinance institutions switch from serving the very poor to offering bigger loans to clients that are more affluent (Armendáriz and Szafarz, 2011; Dichter and Harper, 2007; Serrano-Cinca and Gutierrez-Nieto, 2014). Mission drift is investigated by various studies. Christen (2001), Cull et al. (2007) and Mersland and Strøm (2010) find no empirical evidence of a mission drift. Armendáriz and Szafarz (2011) study the conditions under which mission drift may emerge. The study points to the difficulty of distinguishing between mission drift and cross-subsidization, whereby wealthier clients are sought in order to subsidize financial services to the very poor. Serrano-Cinca and Gutiérrez -Nieto (2014) develop and test a model that predicts which microfinance institution is likely to focus on its social objectives and which is likely to drift away.

Other studies seek to identify factors that influence social (outreach) and financial performance. For example, Ahlin, Lin, and Maio (2011) study the effects of institutional and macroeconomic features on performance. The study concludes that the country context is an important determinant of the success of microfinance institutions. In particular, the findings indicate the existence of complementarity between the performance of microfinance institutions and the broader economy. Thus, microfinance institutions that operate in countries with stronger economic growth are more likely to cover costs. In contrast, countries with emphasis on manufacturing and workforce participation are associated with relatively slower growth in outreach by microfinance institutions.

Ahlin et al. (2011) stress the importance of including national-level institutional factors such as GDP growth and workforce participation in future microfinance research. Fogel, Lee, and McCumber (2011) extend this view to include national culture as a possible determinant of the performance of microfinance institutions.

2.2 National culture and organizational performance

According to Guiso et al. (2006), national culture is the customary beliefs and values that ethnic, religious, and social groups transmit and pass from generation to generation without many changes taking place in the process. Proliferation of academic interest in the influences of national culture on economic systems and behaviour is evident. Grinblatt and Keloharju (2001), for example, study the influence of culture on trading decisions while Seigel, Licht, and Schwartz (2011) investigate its effects on international investment flows. Kwok and Tadesse (2006) explore the role of culture in determining a country's financial system and find that countries characterized by high uncertainty avoidance are likely to have a bank-based system. Many studies focus on the role of culture in explaining corporate decisions. Examples include Chang and Noorbakhshb (2009); Dimitratos et al. (2011); Fidrmuc and Marcus (2010); Gleason et al. (2000); Ramirez and Tadesse (2009); Richards and Yang (2007); Shao, Kwok and Guedhami (2010), and Zheng, et al. (2011).

However, while the existing body of research often emphasizes the role of culture in explaining corporate financial performance, its effect on social performance has remained relatively uncharted. Two exceptions to this observation include Fogel et al. (2011) and Melo (2012). Specifically, Fogel et al. (2011) show that individualistic orientation positively affects social outreach by microfinance institutions.

Moreover, a major obstacle in studying national culture relates to measurement issues. For example, distinguishing cultural factors from other macro-level influences can be difficult (Soares, Farhangmehr, and Shoham, 2007). A popular approach to dealing with this difficulty is by identifying value systems (Sojka and Tansuhaj, 1995). Contributors to the development of such systems include Allport, Vernon, and Lindzey (1960); Hofstede (1980); Kluckhohn and Strodtbeck (1961); Morris (1956); Rokeach (1973) and Schwartz (1994). The 'Global Leadership and Organizational Behavior Effectiveness', or GLOBE research program (House et al., 2004), defines nine dimensions of cultural values and beliefs.

Thus, although culture is an important factor, which was shown to influence institutional decisions, there is an ongoing debate on how it should be measured. Furthermore, national culture remains understudied in the context of microfinance performance. As the microfinance industry is highly international and culturally diverse, culture is likely to play a significant role in determining performance. This prediction is constructed into coherent hypotheses in the following section.

3 Hypotheses and model

The aim of this research is to explore the role of national culture in determining social and financial performance within the microfinance industry. Our model for national culture is based on a research project entitled 'Global Leadership and Organisational Behavior Effectiveness', and referred to as GLOBE (House et al., 2004).

The GLOBE is a survey of over 60 societies, which identifies nine cultural dimensions as follows: Assertiveness; Institutional collectivism; In-group collectivism; Future orientation; Gender egalitarianism; Humane orientation; Performance orientation; Power distance; and Uncertainty avoidance. These dimensions are measured in terms of both values and practice. Indeed, it is argued that cultural practices directly affect actual societal and business conduct while cultural values are only loosely related to actual business and societal outcomes (Fischer, 2006; House et al., 2004; Shteynberg, Gelfand, and Kim, 2009; and Stephan and Uhlaner, 2010).

Our choice of GLOBE over other cultural systems is motivated by three factors. First, GLOBE is unique in the sense that it distinguishes cultural values from practices, which is an important and relevant distinction. Indeed, Javidan et al. (2006) note that the correlations between cultural values and practices range from the expected positive to the counter-intuitive negative. Second, GLOBE research is relatively recent. To the extent that national culture may gradually evolve over time, the use of the most up-to-date data is preferable (Chui and Kwok, 2009). Third, Chui and Kwok (2009) note the additional variety in cultural dimensions of the GLOBE programme versus other measures and the research possibilities that this facilitates.

In developing our hypotheses, we use GLOBE's nine cultural dimensions measured in terms of practice not values. Specifically, the hypotheses are organized by grouping the nine dimensions into four theoretically related dimensional sets (e.g., Shao et al., 2010).

2.3 Future orientation and uncertainty avoidance

Uncertainty avoidance is 'the extent to which a society, organisation, or group relies on social norms, rules, and procedures to alleviate the unpredictability of future events' (House et al., 2004: 30). Future orientation is 'the degree to which a collectivity encourages and rewards future-oriented behaviours such as planning and delaying gratification' (House et al., 2004: 282). Organizations operating in high future orientation cultures tend to be flexible and adaptive (House et al., 2004). Banks in such cultures dominate the financial systems, as they tend to enjoy high demand from a wide variety of potential clients (Kwok and Tadesse, 2006).

In line with Kwok and Tadesse (2006), bank penetration rates should be high in cultures with high uncertainty avoidance scores. Cull, Demirguc-Kunt, and Morduch (2009) argue that high bank penetration rates increase the competition between banks and microfinance institutions and push the latter towards poorer markets. This implies that fierce competition from banks should enhance the social performance of microfinance institutions. In contrast, financial performance of microfinance institutions that face fierce competition from banks should deteriorate as the banks reach preferred clients, leaving microfinance institutions to serve the less desired, poorer clients.

Armstrong and Collopy (1996) argue that intense competition with the banking sector squeezes the profit margins of microfinance institutions. Kwok and Tadesse (2006) find that cultures high on uncertainty avoidance tend to adopt a bank centred financial system. Thus, assuming that microfinance institutions in cultures high on uncertainty avoidance are exposed to greater competition (Armstrong and Collopy, 1996; Cull et al., 2009), we hypothesize the following:

> **Hypothesis 1a**. Microfinance institutions operating in cultures high on uncertainty avoidance, tend to achieve high social performance and low financial performance vis-à-vis microfinance institutions operating in other cultures.

As uncertainty avoidance and future orientation are close cultural measures, we make similar prediction for the link between future orientation and the performance of microfinance institutions:

> **Hypothesis 1b.** Microfinance institutions operating in cultures high on future orientation, tend to achieve high social performance and low financial performance vis-à-vis microfinance institutions operating in other cultures.

2.4 Gender egalitarianism and power distance

Gender egalitarianism is 'the degree to which a collective minimizes gender inequality' (House et al., 2004: 30). Power distance is 'the extent to which a community accepts and endorses authority, power differences, and status privileges' (House et al., 2004: 513).

In the microfinance industry, it is common to use the number of women borrowers as a fraction of total borrowers as an outreach measure (Cull et al., 2007, 2009, 2011; Mersland et al., 2011). The underlying rationale is that outreach would benefit from lending to women. For example, relative to men, women tend to be more concerned with children's health and education. Lending to women can also circumvent possible oppression by men, contribute to female economic development, and eliminate gender biases (D'Espallier, Guérin, and Mersland, 2011).

However, in societies where gender inequality is not substantial, measuring outreach in terms of access to female is arguably less relevant. Specifically, if women are not biased against, microfinance institutions are less likely to focus on reaching women as a prime tool to increasing social outreach. Consequently, in cultures high on gender egalitarianism, the percentage of women micro-borrowers would be lower vis-à-vis the situation for microfinance institutions operating in less gender-egalitarian cultures. This gives rise to the following hypothesis:

> **Hypothesis 2a.** Microfinance institutions operating in cultures high on gender egalitarianism, tend to have lower percentage of women borrowers vis-à-vis microfinance institutions operating in other cultures.

In contrast, microfinance institutions operating in high power distance cultures that are characterized by inequality between societal classes, would target women borrowers as a tool to reducing the culturally-related financial disadvantages of weaker social groups. Hence, power distance would have a positive effect on outreach to women, and we hypothesize the following:

> **Hypothesis 2b.** Microfinance institutions operating in cultures high on power distance, tend to have higher percentage of women borrowers vis-à-vis microfinance institutions operating in other cultures.

2.5 Assertiveness and performance orientation

Assertiveness is defined as 'the degree to which individuals are assertive, confrontational, and aggressive in their relationships with others' (House et al., 2004: 30). Performance orientation reflects 'the extent to which a community encourages and rewards innovation, high standards, excellence, and performance improvement' (House et al., 2004: 30, 239).

The behavioural traits that characterize societies high on assertiveness and performance orientation would lead to enhanced financial performance. This argument rests on a theoretical relationship between financial performance and a view that deems important values of competition, initiative, success, and materialism. In contrast, given a trade-off between financial and social performance (Cull et al., 2007; Hermes and Lensink, 2011), social performance would be lower in cultures that are high on assertiveness and performance orientation. We predict the following:

> **Hypothesis 3a.** Microfinance institutions operating in cultures high on assertiveness, tend to achieve low social performance and high financial performance vis-à-vis microfinance institutions operating in other cultures.
>
> **Hypothesis 3b.** Microfinance institutions operating in cultures high on performance orientation, tend to achieve low social performance and high financial performance vis-à-vis microfinance institutions operating in other cultures.

2.6 Humane orientation, institutional collectivism, and in-group collectivism

Humane orientation is 'the degree to which an organisation or society encourages and rewards individuals for being fair, altruistic, friendly, generous, caring, and kind to others' (House et al., 2004: 569). Institutional collectivism is 'the degree to which organisational and societal institutional practices encourage and reward collective distribution of resources and collective action' (House et al., 2004: 30). In-group collectivism is 'the degree to which individuals express pride, loyalty, and cohesiveness in their organisations or families' (House et al., 2004: 30).

Individuals in societies that are socially oriented tend to display responsibility towards their society and others within it. Consequently, individuals in these societies are likely to honour obligations and pay debts. From the viewpoint of microfinance institutions, lower default rates would lead to better financial performance. Moreover, in societies with high scores on humane orientation, institutional collectivism, and in-group collectivism, the internal social networks operate such that the needs of individuals are catered for by society, family, community, and other individuals. Accordingly, microfinance institutions share the responsibility towards weaker segments in society with the general members of the culture in which they operate. We hypothesize the following:

> **Hypothesis 4a.** Microfinance institutions operating in cultures high on humane orientation, tend to achieve low social performance and high financial performance vis-à-vis microfinance institutions operating in other cultures.
>
> **Hypothesis 4b.** Microfinance institutions operating in cultures high on institutional collectivism, tend to achieve low social performance and high financial performance vis-à-vis microfinance institutions operating in other cultures.
>
> **Hypothesis 4c.** Microfinance institutions operating in cultures high on in-group collectivism, tend to achieve low social performance and high financial performance vis-à-vis microfinance institutions operating in other cultures.

2.7 Model

The general model to test the above hypotheses is as follows:

(1) $\textit{MFI Performance}_{it} = \alpha + \beta_c \textit{Culture}_i + \beta_x X_{it} + \beta_z Z_i + a_i + \varepsilon_{it}$ here *MFI Performance*$_{it}$ s a performance outcome of microfinance institution *i* at year *t*; *Culture*$_i$ is a set of time-invariant national cultural dimensions for microfinance institution *i*; X_{it} s a set of institution-specific control variables; and Z_i is a set of national control variables. a_i s the unobserved effect of each microfinance institution, and ε_{it} s the error term.

MFI Performance$_{it}$ s the dependent variable. It measures either the financial performance or the social performance of institution *i* in year *t*. As a proxy for financial performance, we use the operational self-sufficiency (OSS) index, *operational self-sufficiency*$_{it}$. This index measures the ability of an institution to cover administrative costs with client revenues. It is defined as total operating revenues divided by total administrative and financial expenses. If the OSS index is greater than 1, the organization under evaluation is considered to be operationally self-sufficient.

Two proxies for social performance are used. The first is *average loan balance*$_{it}$, which measures the depth of outreach. Specifically, *average loan balance*$_{it}$ is calculated by dividing an institution's outstanding loan balance by the number of active borrowers on its books. A high value implies that the institution is serving more affluent clients with bigger loans. A low value implies that the microfinance institution is serving poorer clients with smaller loans, which is consistent with extending outreach. The second proxy for social performance is the p*er cent of women borrowers*$_{it}$. Higher values obtained on this measure mean stronger emphasis on women, traditionally considered to have lower access to financial services vis-à-vis men.

Turning to the explanatory variables, the main variable of interest in this study is represented by *Culture*$_i$ n equation (1). Culture is measured in terms of GLOBE's nine cultural dimensions. It is hypothesized that each of these dimensions is important in explaining the performance of microfinance institutions. All dimensions are measured on a continuous scale of 1 to 7, 1 being the lowest score and 7 being the highest. As previously presented, each dimension is measured with relation to practice and values. In accordance with the derived hypotheses and the theoretical and conceptual considerations presented earlier, only practice related scores are utilized in this paper, representing societal cultural practices as opposed to cultural values.

In line with Cull et al. (2009), the statistical model of *equation (1)* is alternatively represented in Figure 4.1, which facilitates the discussion relating to the control variables:

There are six institutional control variable X_{it} () the first of which is *Age*$_{it}$ measuring the age of the microfinance institution. Specifically, *Age*$_{it}$ equals one if the institution is new (0–4 years); two if the institution is young (5–8 years); and three if it is matured (over 8 years). *Age*$_{it}$ is expected to enter the model with a positively signed estimated coefficient. This is to reflect experience, due to which older institutions will achieve better financial and social performance compared with younger institutions with less experience.

The second institutional control variable is *Regulated*$_i$, which is a dummy variable that equals one if the microfinance institution is

$$\text{MFI } \mathit{performance}_{it} =$$

$$\left.\alpha + \beta_c \text{Culture}_i\right\}$$

Culture

$$+ \beta_{10} \mathit{Age}_{it} + \beta_{11} \text{Regulated}_i$$

General controls: institution specific

$$\left.+ \beta_{12} \mathit{Profit\ status}_i + \beta_{13} \text{Debt to capital}_{it}\right\}$$

Financial controls: institution specific

$$\left.\begin{aligned} &+ \beta_{14} \mathit{Portfolio\ at\ risk}_{it} \\ &+ \beta_{15} \mathit{Total\ expenses\ to\ assets}_{it} \end{aligned}\right\}$$

Efficiency controls: institution specific

$$\left.\begin{aligned} &+ \beta_{16} \ln(\text{GDP } \mathit{per\ capita})_{it} + \beta_{17} \text{GDP Growth}_{it} \\ &+ \beta_{18} \text{ Rural population share}_{it} \\ &+ \beta_{19} \text{ Regulatory quality}_{it} \end{aligned}\right\}$$

Control variables: country specific

$$\left.+ \beta_{20} \text{ Complementary Performance}_{it}\right\}$$

Trade-off control: institution specific

$$+ a_i + \varepsilon_{it}$$

Figure 4.1 Description of statistical model

regulated and zero otherwise. In line with results from Mersland and Strøm (2009) and Cull et al. (2011), compliance with regulations should not affect financial performance. However, regulated institutions may choose to reduce their outreach in order to lower operational expenses, which tend to be high due to the need to comply with regulations. Thus, the expectation is that *Regulated*$_i$ will enter the social performance model with a negatively signed estimated coefficient.

The third institutional control variable is *Profit status*$_i$, which is a dummy equal to one if the microfinance institution is a for profit organization, and zero otherwise. *Profit status*$_i$ is expected to enter the financial performance model with a positively signed estimated coefficient to reflect the notion that for profit institutions will emphasize financial performance, perhaps even at the expense of social outreach to the poor.

In turn, *Profit status*$_i$ is expected to enter the social performance model with a negatively signed estimated coefficient (Mersland, 2009).

The fourth institutional control variable is *Debt to capital*$_{it}$, the ratio of debt to debt plus equity. Bogan (2012) finds that higher financial leverage leads microfinance institutions to post lower financial results. No effect is found with respect to social performance. Accordingly, *Debt to capital*$_{it}$ is expected to negatively affect financial performance and not to be related with social performance.

Portfolio at risk$_{it}$ is the fifth institutional control variable measured as the percentage of total loans outstanding with one or more principal repayments that are late by at least 30 days, divided by the gross loan portfolio. Higher values for this variable indicate inefficient management or a high tolerance strategy (Mersland, D'Espallier, and Supphellen, 2012). Thus, *Portfolio at risk*$_{it}$ is expected to enter with a negative coefficient in the financial performance model and with a positive coefficient in the social performance models.

The last institutional control variable is *Total expenses to assets*$_{it}$, the ratio of financial expenses to assets, which, like *Portfolio at risk*$_{it}$, is also an indication of managerial efficiency. Specifically, high expense ratios lead to lower profit margins and may negatively influence financial performance. However, high rates may also indicate enhanced efforts to reach the poorest. Hence, *Total expenses to assets*$_{it}$ is expected to enter the financial performance model with a negatively signed estimated coefficient and the social performance models with a positively signed estimated coefficient.

As established in Ahlin et al. (2011), country-level variables are important in determining performance, and four such variables Z_i (are included in model (1)).

First is the natural log of GDP per capita ln(*GDP per capita*)$_{it}$, proxy for a country's stage of development and wealth (Ahlin et al., 2011). It is expected to enter the financial and social performance models with a positively signed estimated coefficient. High GDP per capita implies a wealthier client base, facilitating higher profits. It is also likely that microfinance institutions face stiffer competition from the banking sector in more developed countries (Montiel and Reinhart, 1999), leading them to actively seek clients in poorer segments of the population (Ahlin et al., 2011).

Second is the annual percentage growth rate in GDP per capita, *GDP Growth*$_{it}$. It is expected to enter the financial performance model with a positively signed estimated coefficient. High growth rate implies higher demand for financial services which should enhance institutional financial performance.

Third, is the percentage of the population that lives in rural areas *Rural population share*$_{it}$, it is expected to enter the financial performance model with a positively signed estimated coefficient because rural areas often lack access to commercial banking services.

Fourth and last is *Regulatory quality*$_{it}$, which is a World Bank regulatory quality index that ranges from –2.5 to 2.5. It is expected to enter the financial and social performance models with a positively signed estimated coefficient because it is more difficult for microfinance institutions to operate in poorly governed environments.

Finally, seeking evidence regarding a trade-off between social outreach and financial sustainability, we include complementary performance measures (see Figure 4.1). Specifically, in the social performance models we control for financial performance with the variables *Operational self-sufficiency*$_{it}$ and *Return on Assets*$_{it}$. ROAs is a common measure of profitability, but we do not use it as a dependent variable. The reason for that is that the microfinance industry is often supported by grants and subsidies, which the ratio of ROAs ignores.

Similarly, two social performance variables (*average loan balance*$_{it}$ and *per cent of women borrowers*$_{it}$) are included as control variables in the financial performance model. In addition, the *number of active borrowers*$_{it}$ is also included in the financial performance model as an indicator of breadth of outreach. This variable is a common measure of outreach in the microfinance industry although in other industries/contexts it is often a measure of size. Hence, we do not include this variable as a dependent variable, yet include it as a control variable in testing the trade-off between financial and social performance[2]. Recent evidence (e.g. Hermes, Lensink, and Meesters, 2011) supports the existence of a trade-off between financial and social performance. Consequently, we expect the complementary performance measures to enter the relevant models with negatively signed estimated coefficients. All variables are defined and summarized in Table 4.1. A summary of the predictions is provided in Table 4.2.

4 Data and method

Data is collected from four sources. Data on microfinance institutions were collected from the *MIX market*, a dedicated database that holds information on the microfinance industry[3]. National cultural scores relating to cultural practices are based on the *GLOBE research project* (House et al., 2004) and include nine dimensions as discussed earlier. Data on macroeconomic indicators were gathered from World

Table 4.1 Definitions of variables

Variable type	Variable name	Definition / explanation
Performance variables	Operational self-sufficiency	Revenue from operations / Financial expense + Loan loss expense + Operating expense
	Average loan balance (% of GNI)	Average loan balance per borrower / GNI per capita
	Percept of women borrowers	Percept of women borrowers from total active borrowers
	Return on assets	Net operation income / average annual assets
	Log number of active borrowers	Log number of active borrowers
Cultural dimensions	Performance orientation	Reflects the extent to which a community encourages innovation, high standards, excellence, and performance improvement (1 to 7)
	Future orientation	Degree to which a collective encourages and rewards future-oriented behaviours such as planning and delaying gratification (1 to 7)
	Uncertainty avoidance	Extent to which a society relies on social norms, rules, and procedures to alleviate the unpredictability of future events (1 to 7)
	Power distance	Extent to which a community accepts and endorses authority, power differences, and status privileges (1 to 7)
	Institutional collectivism	Degree to which institutional practices encourage and reward collective distribution of resources and collective action (1 to 7)
	Humane orientation	Degree to which a society encourages individuals to be fair, altruistic, friendly, generous, caring, and kind to others (1 to 7)
	In-group collectivism	Degree to which individuals express pride, loyalty, and cohesiveness in their organizations or families (1 to 7)
	Gender egalitarianism	Degree to which a collective minimizes gender inequality (1 to 7)
	Assertiveness	Degree to which individuals are assertive, confrontational, and aggressive in their relationships with others 1 to 7)

Institutional Control variables	Age	Institutional age. Equals to one if new (0–4 years), two if young (5–8 years), and three if mature (over 8 years)
	Regulated	Dummy variable equal to one if the microfinance institution is regulated and zero if it is non-regulated
	Profit status	Dummy variable equal to one if the microfinance institution is for profit and zero if it is a non for profit organization
	Debt to capital ratio	Debt / (Debt + Equity)
	Portfolio at risk (30 days) (%)	The value of total loans outstanding with one or more repayments of principal past due more than 30 days / Gross loan portfolio
	Total expenses / assets	Financial Expense/ average annual assets
National control variables	Ln(GDP per capita)	Natural log of gross domestic product divided by midyear population (i.e., GDP per capita). Raw data are in current US dollars
	GDP per capita growth	Annual percentage growth rate of GDP per capita based on constant local currency
	Rural population share	Percept of people living in rural areas. It is calculated as the difference between total population and urban population
	Regulatory quality	A World Bank Index, the Worldwide Governance Indicator (WGI), which measures regulatory quality on a scale of –2.5 to 2.5

Table 4.2 Summary of hypotheses and predictions

		Financial performance	***Social performance***	
Variable type	**Variable name**	**Operational self-sufficiency**	**Average loan balance (% of GNI)**	**Percent of women borrowers**
Cultural dimensions	Performance orientation	+	+	–
	Future orientation	–	–	+
	Uncertainty avoidance	–	–	+
	Power distance	None	none	+
	Institutional collectivism	+	+	–
	Humane orientation	+	+	–
	In-group collectivism	+	+	–
	Gender egalitarianism	None	none	–
	Assertiveness	+	+	–
Institutional Control variables	Age	+	-	+
	Regulated	None	+	–
	Profit status	+	+	–
	Debt to capital ratio	–	none	none
	Portfolio at risk (30 days) (%)	–	+	–
	Total expenses / assets	–	–	+
National control variables	GDP per capita growth	+	none	none
	Log GDP per capita	+/–	–	+
	Rural population share	+	none	none
	Regulatory quality	+	–	+
Performance variables	Return on assets	None	+	–
	Operational self-sufficiency	None	+	–
	Average loan balance (% of GNI)	–	none	none
	Number of borrowers	–	none	none
	Percept of women borrowers	–	none	none

Notes: Variables are defined in Table 4.1.

Bank databases including the *World Development Indicators* and *World Governance Indicators*.

After removing 29 extreme outliers, the final unbalanced panel dataset includes 4,543 yearly observations on 852 microfinance institutions from 30 countries over the period 2000 to 2010. The number of observations included in each regression varies in line with availability of the relevant variables.

The results of the *Hausman Test* indicate that the fixed effects model is more appropriate than the random effects model. However, to address the problem that the fixed effects model cannot be used with time-invariant variables (*Culture*$_i$, *Regulated*$_i$ and *Profit status*$_i$) we carried out a two-stage regression procedure. In the first stage, a fixed effect model is estimated excluding the time-invariant variables in order to obtain the institutional unobserved effect a_i). In the second stage, a regression of the time-invariant variables on the institutional unobserved effect a_i()s run using the robust ordinary least squares regression method. We test and address problems concerning heteroskedasticity, multicollinearity, and autocorrelation.

Thus, for example, to test for possible multicollinearity among the explanatory variables, we obtained the Variance Inflation Factor (VIF) for each explanatory variable. The mean VIF for the time-invariant variables is 3.62, with a maximum value of 7. The mean VIF for the explanatory variables in the financial performance model is 1.38, with a maximum value of 1.38. The mean VIF for the explanatory variables in the social performance model is 1.34 with a maximum value of 2.15. The VIFs are well below 10, which is generally considered the threshold above which multicolllinearity is likely to be present. These results indicate that our estimation procedures are unlikely to generate unstable coefficients.

5 Results

Table 4.3 provides descriptive statistics for the dependant variables, namely the social and financial performance indicators. Most of the microfinance institutions in the sample are operationally self-sufficient, as reflected by the mean and median values for the OSS index which are larger than 1 (1.141 and 1.110 respectively). The average loan balance as a per cent of GNI per capita (43.3%) is more than twice as high as the median level (17.4%). This indicates that the sample comprised mostly of institutions that provide relatively small loans, and a small number of institutions that provide larger loans. It appears that most microfinance institutions in the sample target women as their primary clients. This is reflected by the observation that, on average, 68.2% of loans are extended to women.

Table 4.4 presents descriptive statistics for the control variables. The microfinance institutions in the sample are mostly mature (operating for over eight years), as reflected by a mean of 2.448 for the categorical

Table 4.3 Descriptive statistics: dependant variables

Variable	Obs.	Mean	Median	Std. Dev.	Min	Max
Operational self-sufficiency	3982	1.141	1.110	0.471	–0.684	8.339
Average loan balance (% of GNI)	3936	43.3%	17.4%	89.1%	0%	1,934.2%
Per cent of women borrowers	3411	68.2%	69.4%	26.5%	0%	100%
Additional performance measures used as control variables:						
Return on assets	3359	0.006	0.019	0.141	–2.137	0.830
Log number of active borrowers	4085	8.690	8.727	2.118	0.000	15.647

Notes: Variables are defined in Table 4.1.

Table 4.4 Descriptive statistics: control variables

Variable type	Variable	Obs.	Mean	Median	Std. Dev.	Min	Max
Institutional Control variables	Age	4264	2.448	3.000	0.770	1.000	3.000
	Regulated	4323	0.445	0.000	0.497	0.000	1.000
	Profit status	4314	0.390	0.000	0.488	0.000	1.000
	Debt to capital ratio	4248	0.670	0.764	0.287	–2.608	2.570
	Portfolio at risk (30 days) (%)	3608	6.7%	3.3%	10.9%	0%	100%
	Total expenses / assets	3369	0.281	0.230	0.208	0.000	3.693
National control variables	GDP per capita growth	3304	3.110	4.059	4.205	–17.473	29.104
	Log GDP per capita	4155	8.715	8.939	0.919	5.851	10.813
	Rural population share	4327	42.9%	47.4%	20.2%	6%	74.6%
	Regulatory quality	4381	–0.236	–0.212	0.450	–2.395	1.224

Notes: Variables are defined in Table 4.1.

variable that proxy for age (*Age*). In addition, only 44.5% are regulated, and even less (39%) are profit oriented.

Table 4.5 and Table 4.6 present the results of the two-stage regression procedures. Table 4.5 reports the results for the financial performance model while Table 4.6 presents the results for the social performance models. Estimated coefficients for all time-variant variables are obtained in the first stage regressions. Coefficient estimates for the time-invariant variables are obtained in the second stage regressions where the dependent variable is the unobserved effect generated in the first stage.

Results for most control variables are in line with expectations and with results from previous research. For example, *GDP per capita*

Table 4.5 Regression results: financial performance

Regression Stage	**Variable**	**Operational self-sufficiency**
Stage I (Fixed Effects, Panel Regression)	Age – Young	–0.0244
	Age – Mature	–0.0531
	Debt to capital ratio	–0.280***
	Portfolio at risk (30 days)	–0.285***
	Total expenses / assets	–0.899***
	GDP per capita growth (annual %)	0.00405**
	Log GDP per capita (current US$)	0.154***
	Rural population share (% of total population)	0.00968
	Regulatory quality	0.0979
	Average loan balance (% of GNI)	–0.0384
	Woman borrowers (%)	–0.0147
	Log number of active borrowers	0.0539***
	Observations	2036
	R^2	0.655
	Adjusted R^2	0.521
Stage II (Robust, OLS)	Uncertainty avoidance	–0.382***
	Future orientation	–0.714***
	Power distance	0.0162
	Institutional collectivism	0.152
	Humane orientation	0.794***
	Performance orientation	0.471***
	In-group collectivism	–0.862***
	Gender egalitarianism	–0.045
	Assertiveness	0.502***
	Regulated	–0.031
	Profit status	0.0778
	Observations (Number of institutions)	553
	R^2	0.365
	Adjusted R^2	0.352

*Notes: Variables are defined in Table 4.1. *, **, and *** represent statistical significance at the 10%, 5%, and 1% level respectively. Variance Inflation Factors (VIF) were calculated for all explanatory variables. The VIF tests for possible multincollinearity, and a value greater than 10 is generally considered problematic. All VIFs are well below 10. Results are not reported here but are available from the authors upon request.*

growth positively and significantly affects financial performance. This is consistent with Ahlin et al. (2011) and demonstrates the importance of country-level controls. As expected, *portfolio at risk (30 days)* and t*otal expenses by assets* negatively influence financial performance although they are not always significant. Likewise, a higher *rural population percentage* is associated with higher values for *per cent of women borrowers*, which is consistent with Cull et al. (2009).

In order to account for a possible trade-offs between financial sustainability and social outreach, financial performance indicators were included as explanatory variables in the social performance models (and vice versa). No conclusive evidence is found to support a trade-off. On the contrary, all significant coefficients suggest a positive relationship between social and financial performance.

As hypothesized, significant relationship is found between most cultural dimensions and performance. Specifically, microfinance institutions that operate in cultures characterized by high uncertainty avoidance or future orientation achieve significantly lower financial performance vis-à-vis other institutions. These microfinance institutions tend to achieve higher social performance, although the results are only weakly significant when social performance is measured in terms of the *per cent of women borrowers*. Thus, hypothesis 1a and hypothesis 1b are confirmed with relation to financial performance but only partially so with relation to social performance.

Cultural tendency for equality as reflected by gender egalitarianism and power distance is also found to be important in explaining institutional performance. In particular, microfinance institutions that operate in cultures with high power distance tend to focus on women borrowers. In contrast, higher gender egalitarianism values are associated with lower outreach to women. These results are in line with hypothesis 2a and 2b.

The results presented in Table 4.5 and Table 4.6 also indicate that the financial performance of microfinance institutions that operate in result-driven and task-oriented environments (high assertiveness and profit orientation values), is significantly better than that of others microfinance institutions. Nonetheless, this may come at the expense of social performance. Indeed, as shown in Table 4.6, microfinance institutions that operate in high profit oriented cultures have lower *per cent of women borrowers* (10% significance level). In contrast, *average loan size* is negatively related to profit orientation, indicating that institutions operating in high profit oriented societies achieve greater depth of social outreach. Moreover, the results for the cultural value of assertiveness show that this

Table 4.6 Regression results: social performance

Regression Stage	Variable	Average loan balance	Woman borrowers (%)
Stage I (Fixed Effects, Panel Regression)	Age – Young	0.00106	–0.00555
	Age – Mature	0.0238	0.00836
	Debt to capital ratio	–0.0235	–0.0664***
	Portfolio at risk (30 days)	–0.0791	–0.0626**
	Total expenses / assets	–0.476***	0.0885***
	GDP per capita growth (annual %)	0.00384	–0.00104*
	Log GDP per capita (current US$)	–0.0383	0.0360***
	Rural population share (% of total population)	–0.00386	0.00622**
	Regulatory quality	0.0864	–0.0601***
	Return on assets	–0.0441	0.00479
	Operational self-sufficiency	–0.201	–0.00947
	Observations	2199	2105
	R^2	0.91	0.917
	Adjusted R^2	0.877	0.886
Stage II (Robust, OLS)	Uncertainty avoidance	0.157	0.114*
	Future orientation	0.317	–0.0115
	Power distance	–0.732***	0.245***
	Institutional collectivism	–0.458**	0.151***
	Humane orientation	0.580***	0.0148
	Performance orientation	–1.160***	–0.132*
	In-group collectivism	0.137	–0.0893*
	Gender egalitarianism	0.331	–0.124**
	Assertiveness	0.265	–0.0702
	Regulated	0.229***	–0.0388*
	Profit status	0.0703	–0.0701***
	Observations (Number of institutions)	574	556
	R^2	0.131	0.189
	Adjusted R^2	0.114	0.173

*Notes: Variables are defined in Table 4.1. *, **, and *** represent statistical significance at the 10%, 5%, and 1% level respectively. VIF were calculated for all explanatory variables. The VIF tests for possible multincollinearity, and a value greater than 10 is generally considered problematic. All VIFs are well below 10. Results are not reported here but are available from the authors upon request.*

variable is not significantly correlated with social performance. Thus, hypothesis 3a and hypothesis 3b are confirmed in relation to financial performance but only partly so in relation to social performance.

The results for the cultural dimensions of humane orientation, institutional and in-group collectivism are mixed. In particular, humane orientation is significantly (on a 1% level) and positively correlated with financial performance and negatively related to social performance when the latter is measured in terms of *average loan balance*. However, the results also indicate that in-group collectivism negatively and significantly affects financial performance while also having a negative correlation with the *per cent of women borrowers*. Results for institutional collectivism are also inconclusive. Specifically, despite an insignificant influence on *Operational self-sufficiency*, higher values of institutional collectivism lead to greater depth of outreach (*average loan size*) and higher women outreach (*per cent of women borrowers*). To conclude, Hypothesis 4a is confirmed only in the context of financial performance. Hypothesis 4b and hypothesis 4c could not be confirmed.

Overall, the results are mostly significant but do not always provide conclusive interpretation. One or more seemingly similar cultural dimensions appear to have different effects on various financial and SPI. The next section attempts to explain and summarize these results.

6 Discussion and conclusion

This study attempts to analyze the effect of national culture on the financial and social performance of microfinance institutions using the nine cultural dimensions from the GLOBE project (House et al. 2004). It provides novel insights on the ties between national cultural traits and institutional success in the microfinance sector. The significance of the findings lies within the sheer recognition of culture as a considerable influence on microfinance institutions' decisions and outcomes.

The strongest results indicate that microfinance institutions operating in cultures where planning for the future and avoiding uncertainty are important values, tend to experience lower financial performance. It is further shown that high gender equality tends to result in lower outreach to women while inequality between social classes leads to the opposite. Moreover, microfinance institutions that operate in aggressive cultures tend to have better financial performance relative to other microfinance institutions. The results of this study may also be linked to the ongoing debate regarding the existence of a mission drift and a trade-off between social outreach and financial sustainability. In particular, the findings suggest that mission drift and trade-off effects vary with culture – some cultural dimensions may increase these effects while others act as moderating factors.

The findings illustrate the strong effect of culture on financial performance, although evidence to support hypotheses regarding the impact of culture on social performance is weaker. Mersland et al. (2011) find that internationalization of microfinance institutions affects their social but not financial performance. It could be the case that for international institutions, local culture is important in determining financial results, but is less important in determining social performance. This is one possible avenue for future research.

Notes

1. In alphabetical order
2. The issue of multicollinearity is dealt with in the next section.
3. http://www.mixmarket.org.

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5

Does Financial Globalization Affect Microfinance Mission Drift?

Empirical evidence from Sub-Saharan Africa

Akem Noela Forkusam

1 Introduction

Due to globalization and liberalization of financial markets, it is now easy for capital, especially foreign direct investment (FDI), to flow between countries. Figure 5.1 indicates that FDI to Sub-Saharan Africa (SSA) has steadily increased in the last decade. While some authors (Yunus, 2007; Ryhne and Otero, 2006) see these flows as good news for the poor and the microfinance industry, opponents have raised concerns as to the occurrence of mission drift arguing that financial globalization is propelled by the capitalist ideology of profit making (Roy, 2010: 31).

Microfinance institutions (MFIs), unlike classical financial institutions, face the challenge of providing financial services to the poor (social performance) while covering their operational costs in order to avoid bankruptcy (financial performance) (Mersland and Strøm, 2010: 28). Some MFIs successfully achieve this balance between their social and financial objectives, yet many face difficulties (Simanowitz, 2007: 62). This is because lending to poor clients is generally more costly than serving richer clients; hence the social and financial goals may be conflicting (Hermes et al., 2011: 938).

MFIs in SSA were initially financed by public funders who for the most part did not seek a financial gain or profit. Yet, in recent years, these funds are unable to meet the demands of an ever growing customer base. The World Bank (2013) states that, 48.5 per cent of the world's 1.4 billion poor people are found in SSA, making it the poorest region. Additionally, the region has the lowest share of banked households (i.e., 12 per cent) (CGAP and World Bank 2010: 4). Many MFIs are therefore moving away from donor-driven institutions and exploring more commercial sources of funding.

Recently, FDI flows represents an important source of private external finance for domestic firms, since it continues to be the most stable and largest component of capital flows in SSA (Ferreira et al., 2013: 5). For instance, between 2010 and 2012, FDI flows to SSA accounted for over 50 per cent of total capital flows to the region. In addition, one out of every four countries in the region has an average FDI to GDP of ten per cent or higher in 2010 and 2011; in Chad and Liberia this share was over 20 per cent (Ferreira et al., 2013: 5). Consequently, it has increasingly become a significant alternative in the development finance process (Global Development Finance 2005). Recent studies in Africa show that FDI flow can lead to the development of both domestic banking system and domestic stock market (Agbloyor et al. 2013). So the question is to what extent does financial globalization as measured by FDI as a share of GDP affects microfinance mission drift in SSA?

The impact of globalization on microfinance mission drift has been studied in different dimensions by Martins and Winkler (2013), Mersland and Urgeghe (2013), and Mersland et al. (2011). However, no study has considered FDI to GDP, which is the most stable and largest component of capital flows to SSA. This paper constitutes the first step of a research work whose purpose is to verify the impact of FDI as an important determinant of capital structure on microfinance mission drift and performance. Moreover, it uses MFI data from 36 SSA countries, which is the poorest region. Additionally, the region has the lowest share of banked households in the world. The study also tests the assertion by Krauss and Walter (2009) that MFIs are not correlated with global market movements but are significantly correlated with the domestic macro economy.

The rest of the paper is organized as follows: Section 2 gives a literature review on financial globalization, microfinance performance, and mission drift. Section 3 discusses the methodology, theories backing the model, and the hypotheses to be tested. Section 4 contains a description of the data and variables used in the analysis. Section 5 sheds light on the results of the analysis while Section 6 presents a discussion and conclusion.

2 Foreign direct investment (FDI) to SSA: Literature review

Figure 1 shows FDI has continuously increased in SSA (from less than US $ 10 billion in the year 2000 to about US $ 40 billion in 2010) as

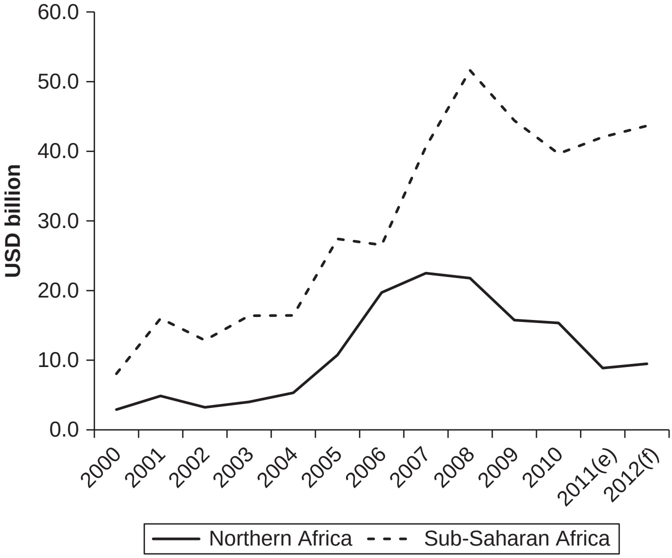

Figure 5.1 FDI inflows to Northern Africa versus Sub-Saharan Africa
Source: UNCTAD World investment indicators (2013), IMF WEO for 2011 estimates and forecasts.

compared to Northern Africa (UNCTAD 2013). Between 2006 and 2008, FDI flow to SSA grew by about 118 per cent, reaching its highest value of about US $ 50 billion. In 2009 and 2010, FDI flows declined due to global economic and financial crisis, yet recovered in 2011 to meet the 2008 pre-crisis level. It is worth noting that, flows vary mostly with respect to a country's natural resources. For example, in 2010 and 2011, four out of the top five recipients of FDI were oil producing countries led by Nigeria, Ghana, Congo Republic, and Algeria as shown in Figure 5.2. Nonetheless, the non-resources sector is also attracting increased flows, particularly in service subsectors such as finance, telecommunications, retail, real estate and transport (Ferreira et al., 2013: 5).

Although the majority of these flows are channelled to non-financial multinational enterprises (MNEs), Morales-Nieto (2008) argued that these flows could have more traditional benefits for MFIs such as access to more funding sources and increases in outreach and sustainability. Moreover, CGAP (2011) points out that international funding can be used to improve the immature microfinance sector in SSA. Aykut and Kose (2013) also emphasized that FDI embodies other advantages for

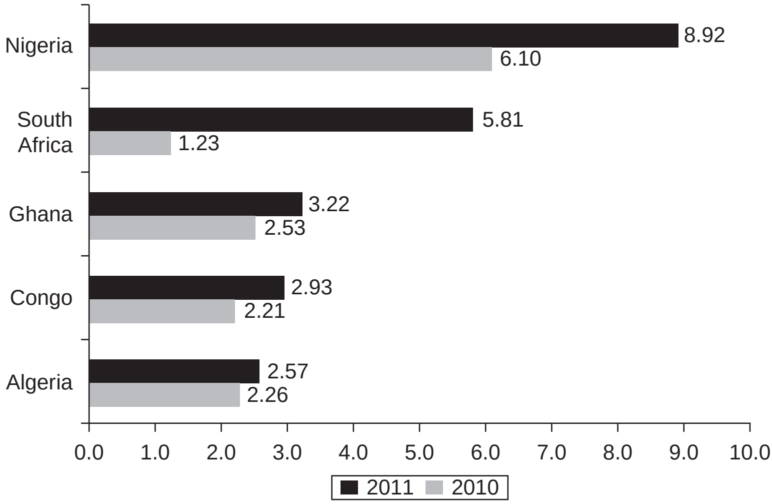

Figure 5.2 Top five host countries of FDI flows, 2010–2011 (US$ billions)
Source: UNCTAD World investment report (2012: 39).

domestic firms namely; technology transfers, knowledge spillovers, enhancement of managerial skills, and the development of international production networks. Despite these benefits, critics fear that access to foreign commercial funding will cause MFIs to become more focused on making profits at the expense of outreach to poorer customers (Armendáriz and Morduch, 2010: 19). Since financial globalization is most often being driven by the profit maximization standards, there is an ongoing debate on whether MFIs can increase both outreach to poor and profitability in a globalized world (Roy, 2010: 5).

While several studies have examined the different determinants of microfinance performance and mission drift, analysis on the role of internationalization or globalization on the microfinance performance and mission drift is scant. The most recent is by Martins and Winkler (2013), which used a dataset of 84 institutions in 15 Latin American countries for the year 2009. Their results show that foreign-owned MFIs (i.e., MFIs with more than 50 per cent foreign equity holdings) were not more operationally sustainable as compared to domestic-owned MFIs. Their findings also indicate that foreign-owned MFIs tend to serve a larger number of clients, implying reverse mission drift.

Mersland and Urgeghe (2013) examine the main drivers of international funding to MFIs. Their dataset consist of 319 MFIs in 68 developing countries over a five-year period. Their findings show that commercial international funding goes to MFIs with solid financial performance (high ROA, low operating costs, and low portfolio at risk) and professionalism. On the contrary, subsidized international funding is channelled more to institutions focusing on women without prioritizing the level of financial performance.

Mersland et al. (2011) also come close to analysing the effect of foreign involvement on microfinance performance. By exploring a dataset of 379 rated MFIs for seven years (2001–2008) in 73 developing countries, they examine international influence on MFIs performance by using five dummies derived from the following questions:

- Was the MFI initiated by an international institution?
- Is the MFI member of an international network or affiliate of a foreign corporation?
- Does the MFI have international board members on its management board?
- Does the MFI have access to subsidized foreign debt?
- Does the MFI have access to commercial foreign debt?

They found that an MFI that was internationally initiated was positively related to social performance (i.e., increase outreach to female clients). Their findings also indicate that having international commercial and subsidized debt does not enhance financial performance as measured by three variables: financial self-sufficiency (FSS), ROA ratio, and OSS.

This paper goes beyond the previous literature in several ways. First, the paper analyzes the impact of FDI flows in combination to capital structure on microfinance mission drift and performance. Moreover, it uses MFI data from 36 SSA countries, which is the poorest region and also the region with the lowest share of banked households. Lastly, the study tests the assertion by Krauss and Walter (2009) that MFIs are not correlated with global capital market movements.

3 Methodology and theory

The continuous integration and liberalization of financial markets and countries offers greater financial flexibility to MFIs. However, all this depends on the MFIs ability to monitor international exchanges (Mersland et al., 2011: 165). Moreover, this is also dependent on the extent of financial globalization of these economies. Implying that, the presence of FDI may cause many MFIs to face difficulties in attaining their dual objective, thus favouring mission drift.

Theoretically, mission drift is assumed to have occurred when an MFI concentrates more on its financial than social performance. Empirically, mission drift is believed to have occurred when average loan size increases. This is based on the assumption that it is only when average loan size is very small that the MFI touches the really poor (Luzzi and Weber, 2007: 154). Put differently, the smaller the loan size, the poorer the client since everything being equal poorer clients will demand smaller loan amounts than richer clients (Cull et al., 2007; Mersland and Strøm, 2009). Although the average loan is commonly used to measure mission drift, empirical research by Christen (2001) shows that average loans may increase over time due to other reasons. That is, existing loan clients reach higher credit ceilings (progressive lending), the entrance of MFIs into new markets including targeting small businesses, and the continued expansion of outreach are all factors that lead to increases in average loan size.

In order to measure the financial performance of MFIs, classical financial ratios are used, that is ROA and OSS. The social objective proxies include average loan size and number of borrowers.

In the past, MFIs have relied heavily on donations, grants, and soft loans as their initial source of funding to serve poorer clients. Yet recently, these funds are unable to meet the ever increasing demand of their clients. Many MFIs have therefore redefined their source of finance and are now turning to more commercial sources. Hence, different MFIs will have different performances based on the differences in their capital structure, MFI specific characteristics, also to which extent their respective economies are financially globalized. An important determinant of capital structure is FDI, which comes with various rights for its shareholders. For this reason, the regression analysis starts from the following equation:

$$MFIP_{ict} = \beta_1 G_{ict} + \beta_2 C_{ict} + \beta_3 X_{ict} + \beta_4 M_{ict} + \alpha_i + \tau_t + \varepsilon_{ict} \qquad 3.1$$

Where the outcome variable is the performance P_{ict} of an MFI *i* in year *t* located in country *c*, with $i = 1 \ldots N$, $t = 1 \ldots T$; *G* represents a financial globalization indicator, *C* represents capital structure variable, *X* represents microfinance specific variables, *M* represents country-level characteristics. The error term α_i is the unobservable MFI specific effect, which may capture such issues as managerial skills (Baltagi, 2008: 13), τ_t are the unobservable time effects, which capture effects that vary over time but are constant over individual and ε_{ict} is the idiosyncratic error.

Given that the MFI profitability function is different from the conventional banking profit function in that an MFI aims to maximize both financial performance as well as social performance in order to avoid mission drift, equation 3.1 is extended to four different equations to capture these scenarios:

$$ROA_{ict} = \beta_1 G_{ict} + \beta_2 C_{ict} + \beta_3 X_{ict} + \beta_4 M_{ict} + \alpha_i + \tau_t + \varepsilon_{ict} \quad 3.2$$

$$OSS_{ict} = \beta_1 G_{ict} + \beta_2 C_{ict} + \beta_3 X_{ict} + \beta_4 M_{ict} + \alpha_i + \tau_t + \varepsilon_{ict} \quad 3.3$$

Where the outcome variable is return on assets (ROA_{ict}) and operational self-sufficiency (OSS_{ict}) measures the financial performance of MFIs.

$$Avgloan_{ict} = \beta_1 G_{ict} + \beta_2 C_{ict} + \beta_3 X_{ict} + \beta_4 M_{ict} + \alpha_i + \tau_t + \varepsilon_{ict} \quad 3.4$$

$$\#borrowers_{ict} = \beta_1 G_{ict} + \beta_2 C_{ict} + \beta_3 X_{ict} + \beta_4 M_{ict} + \alpha_i + \tau_t + \varepsilon_{ict} \quad 3.5$$

Where average loan ($Avgloan_{ict}$) and number of borrowers (*#borrowers*) represents the outreach or social performance variable of an MFI.

The research builds its arguments on two theories: capital structure and internalization theories. Firstly, the capital structure irrelevance theory assumes that, in a perfect world (no transaction costs, perfect capital market, and homogenous expectations), the value of a firm is unaffected by the way it is financed (Modigliani and Miller, 1958). Empirical research, however, shows that capital structure significantly affects the value of a firm. A number of studies showing that different sectors used different capital mixes for their operation include: international joint venture (Boateng, 2004), manufacturing sector (Long and Malitz, 1985; Titman and Wessels, 1988), electricity and utility companies (Miller and Modigliani, 1966), and agricultural firms (Jensen and Langemeier, 1996). Building on the above evidence, the capital structure (equity, debt, and donations) employed by an MFI could theoretically promote or prevent the MFI from drifting from its mission. The access to different forms of capital for MFIs now depends on the extent of globalization of a country's financial market.

Secondly, the internalization theory was initially introduced by Coase (1937) in a national context and later extended to an international context by Hymer in 1976. He argue that FDI occurs as a result of comparative advantages of the investing firms over local firms through various factors, that is cheaper sources of funding, brand name, patent technology, managerial skills, and other firms' specific advantages. Firms tend to save costs when they internalize certain markets for intermediate inputs since these markets are highly imperfect and inefficient. Hymer and followers (such as the literature with Dunning's OLI paradigm) purported that FDI is a firm-level strategy decision rather than a purely capital market oriented decision. They further state that FDI will take place only if the benefits of exploiting firm-specific advantages outweigh the costs of operating abroad. Given that FDI is largely motivated by investor's long-term prospects for making profits in production activities that they directly control, it is assumed that FDI only flows to countries where the expected return is higher than the expected costs incurred, hence suppressing the social objective of MFIs.

Based on the above discussion, the research tests the following main hypotheses. MFIs found in SSA countries with more liberalized financial markets are more likely to experience mission drift than those MFIs which are found in countries with less financial liberalized financial and capital markets. Following previous research by Kose et al. (2009), financial globalization is measured by FDI to GDP based on the following hypotheses.

Hypothesis 1a: FDI is positively related to financial performance and 1b: FDI is negatively related to social performance

Capital structure is represented by capital asset ratio (CAR) or equity asset ratio which is commonly used as a standard inverse measure of leverage in both banking (Berger and Bonaccorsi di Patti 2006) and microfinance research (Kar 2012, Bogan 2012). A higher ratio of equity capital to gross total assets (CAR) represents lower financing risk. Insofar as it implies financial constraint in terms of a lower potential for leverage, it would normally imply lower profitability and also a lower risk of mission drift.

Hypothesis 2a: Higher capital to asset ratio is positively related to financial performance and 2b: Higher capital to asset ratio is positively related to social performance

The study includes four control variables that is- efficiency, size, risk, and age that are typically used in research on microfinance performance such as Christen (2001), Hartarska and Nadolnyak (2007), Cull et al. (2007), Mersland and Strøm (2009), Tchakoute-Tchuigoua (2010), Mersland et al. (2011), and Hartarska et al. (2013). In addition, given the high variation in the economic development of SSA countries, the research uses country control variable of GDP per capita adjusted for purchasing power parity and inflation similar to those used by Hartarska and Nadolnyak (2007), Mersland et al. (2011), and Martins and Winkler (2013).

4 Data

This study uses a data sample of 315 MFIs from 36 SSA countries for an eight-year period (2003–2010). MFI specific data is collected from the Microfinance Information Exchange (MIX market) while country-specific data from World Development indicators (WDI). The panel is unbalanced since not all MFIs have information for the eight-year period.

Table 5.1 presents the definition of the dependent and independent variables used in the analysis and information on the sources of the data for all variables. The financial performance of MFIs measures are ROA and OSS while the social performance measures are average loan and number of active borrowers. Financial globalization is represented by FDI as a percentage of GDP. Capital structure is represented by capital assets ratio. In addition to these dependent variables, four MFI specific control variables are included in the regressions. These variables are: efficiency is measured by the MFI operating expense over assets ratio, size which is represented by the logarithm (log) of assets, risk which is measured by the portfolio at risk of 30 days and more, and lastly age which is calculated by the log of years since it started operations. GDP per capita adjusted for purchasing power parity effects is included to control for differences in economic development and also inflation.

Table 5.2 provides descriptive statistics for the variables used in the regressions. The negative ROA (–0.03) shows that on average MFIs in SSA are not making profits after taxes and donations have been accounted for. However, the positive average OSS at 1.06 suggests that MFIs can cover operational costs. The standard deviation of 16.0 per cent nevertheless shows a large variability in financial returns with negative 1.23 as minimum and positive 0.83 as a maximum. A median balance of US$ 247 and a very high standard deviation of US$ 744 shows that average loan distribution is heavily tilted to the low end and with a long tail at the high-end of large loans. FDI to GDP shows also a large variability as it ranges from a minimum of negative –4.62 and maximum of 45.79. Capital to asset ratio shows that about 36 per cent of MFIs fund their assets with equity.

Table 5.1 Definition and source of variables used in the analysis

	Code	Variable	Explanation	Source
Dependent variables		*Financial performance*		
	ROA	Return on assets	Net operating income – taxes/ average total assets	MIX market
	OSS	Operational self-sufficiency	Net operating income before taxes/ average total assets	MIX market
		Social performance		
	#borrowers	Number of borrowers	Natural logarithm of number of borrowers with loans outstanding	MIX market
	Avgloan	Average loan	Adjusted gross loan portfolio/ Adjusted total assets	MIX market
Financial globalization	FdI_gdp	Foreign direct investment	Net inflows of investment to acquire a lasting management interest (10 per cent or more of voting stock)/ GDP	World Development Indicators
MFI specific variables	CAR	Capital to assets ratio	Total equity/ Total assets	MIX market
	Op_Expense	Efficiency	Operating expense/ Total assets	MIX market
	Ln_assets	Size	Natural logarithm of assets	MIX market
	Par30	Risk (Portfolio at risk_30days)	Outstanding balance, portfolio overdue > 30 days + renegotiated portfolio/ Gross loan portfolio	MIX market
	Ln_age	Age	Natural logarithm of the number of years since existence	MIX market
Macroeconomic variables	Ln_gdp	Gross domestic product	Natural logarithm of GDP per capita	World Development Indicators
	Infl	Inflation	The percentage change of GDP deflator	World Development Indicators

Source: Author's compilation

Table 5.2 Descriptive statistics

	Mean	SD	Median	Min	Max	Obs
ROA	–0.03	0.16	0.01	–1.23	0.83	1030
OSS	1.06	0.73	1.04	–0.29	19.38	1030
Avgloan	496.73	744.22	247.00	2.00	7949.00	1012
#borrowers	8.91	1.71	9.09	2.20	13.48	1013
FdI_gdp*	3.62	3.86	2.35	–4.62	45.79	1030
CAR	0.36	0.44	0.29	–4.08	11.27	1030
Op_Expense	0.24	0.19	0.18	0.00	1.64	1030
Ln_assets	14.99	1.89	14.98	7.73	21.23	1030
Par30	0.09	0.13	0.05	0.00	1.79	1030
Ln_age	1.99	0.79	2.08	0.00	3.81	1030
Ln_gdp*	7.04	0.56	7.06	5.52	9.52	1030
Infl*	9.79	11.85	7.56	–20.63	80.75	1030

Note: *The data for these variables are available at country level

Source: Author´s compilation

Table 5.3 shows correlations among dependent and independent variables. The primary concern is to check whether multicollinearity is present such that it is problematic to simultaneously include explanatory variables in the regressions. Kennedy (2008) and Baltagi (2008) state that correlations need to be above 0.70 to detect multicollinearity, which is not the case with the variables. With the exception of the correlation between ROA and operating expense to assets ratio (which is negative 0.66) all correlation coefficients are less than 0.52. The low correlations among the predictor variables imply that they could be included in all regressions.

5 Results

Based on results from the Hausman test (1978), the fixed effects (FE) model is chosen over the random effect (RE) model. The FE model controls for unobserved MFIs heterogeneity such that its estimated coefficients cannot be biased because of omitted time-invariant features (such as country and culture). Using the FE model, estimation results for the financial and social performance regressions are shown in Tables 5.4 and 5.5. The results can be summarized as follows:

Financial performance: Table 5.4 reports the findings of financial performance models measured by return on assets (ROA) and operational self-sufficiency (OSS). The results show that financial globalization measured by FDI to GDP does not significantly affect financial performance either in terms of ROA or OSS. This result rejects *hypothesis 1a* which suggests that

Table 5.3 Correlation coefficients among variables

	ROA	OSS	Avgloan	Ln_borrowers	FdI_gdp	CAR	Op_Expense	Ln_assets	Par30	Ln_age	Ln_gdp	Infl
ROA	1											
OSS	**0.4947**	1										
	0.0000											
Avgloan	***0.0692***	0.0400	1									
	0.0136	–0.1539										
Ln_borrowers	**0.1910**	0.0848	**–0.1574**	1								
	0.0000	***0.0025***	0.0000									
FdI_gdp	–0.0036	–0.0355	–0.0443	–0.0397	1							
	0.8966	0.2065	0.1144	0.1576								
CAR	**0.1075**	***0.0561***	**–0.1535**	–0.0175	0.0114	1						
	0.0001	0.0454	0.0000	0.5329	0.6856							
Op_Expense	**0.6622**	**–0.2823**	**–0.1892**	**–0.0998**	***0.0859***	***0.0641***	1					
	0.0000	0.0000	0.0000	0.0004	0.0022	0.0222						
Ln_assets	**0.2440**	**0.0961**	**0.2945**	**0.5028**	–0.0400	***0.1795***	***–0.2717***	1				
	0.0000	0.0006	0.0000	0.0000	***0.1539***	0.0000	0.0000					
Par30	**–0.1140**	**–0.0989**	0.0437	**–0.1934**	0.0019	***–0.1163***	–0.0528	***–0.1017***	1			
	0.0000	0.0004	0.1193	0.0000	***–0.9458***	0.0000	0.0598	0.0003				
Ln_age	**0.2103**	0.0453	**0.1332**	**0.4035**	0.0158	***–0.1439***	**–0.2446**	**0.4845**	0.0409	1		
	0.0000	–0.1068	0.0000	0.0000	–0.5731	0.0000	0.0000	0.0000	0.1449			
Ln_gdp	***–0.0616***	0.0227	0.1443	–0.0262	***0.2148***	***–0.1056***	***0.0682***	0.0760	0.0504	0.0067	1	
	0.0282	0.4187	0.0000	0.3511	0.0000	0.0002	0.0150	***0.0067***	0.0726	0.8125		
Infl	0.0438	0.0214	***–0.085***	–0.0228	***0.0763***	0.0495	***0.0612***	***–0.0716***	0.0364	–0.0361	***–0.0741***	1
	0.1182	0.4461	0.0024	0.4166	0.0065	0.0779	0.0293	0.0107	0.1950	0.1989	0.0082	

Notes: Figures in bold represents correlation significant at 0.01 level.
Figures in bold and italic represents correlation significant at 0.05 level.

Table 5.4 FDI and financial performance (ROA and OSS)

	(1)	(2)	(3)	(4)	(5)	(6)
	ROA	**ROA**	**ROA**	**OSS**	**OSS**	**OSS**
FdI_gdp	–0.000736		–0.00155	0.00235		0.00150
	(0.00172)		(0.00133)	(0.00503)		(0.00459)
CAR		0.0353**	0.0358**		0.0706**	0.0713**
		(0.0152)	(0.0150)		(0.0344)	(0.0341)
Op_Expense		–0.812***	–0.810***		–1.065***	–1.062***
		(0.0579)	(0.0571)		(0.165)	(0.166)
Ln_assets		–0.00178	–0.000884		0.0389	0.0400
		(0.00986)	(0.00976)		(0.0267)	(0.0267)
Par30		–0.0976*	–0.0938		–0.300***	–0.289***
		(0.0585)	(0.0577)		(0.114)	(0.109)
Ln_age		0.0349**	0.0320**		0.0621	0.0528
		(0.0144)	(0.0147)		(0.0575)	(0.0588)
Ln_gdp			0.137*			0.352
			(0.0730)			(0.289)
Infl			–0.00000335			0.000861
			(0.000242)			(0.000800)
Cons	–0.00537	0.106	–0.886	1.055***	0.526	–2.013
	(0.0118)	(0.154)	(0.547)	(0.0553)	(0.442)	(2.149)
N	1030	1030	1030	1030	1030	1030
R-sq	0.02	0.53	0.53	0.01	0.11	0.11
adj. R-sq	0.01	0.52	0.52	0.00	0.09	0.09
Time effects	Yes	yes	yes	Yes	yes	yes

Note: Standard errors in parentheses *p<0.10 **p<0.05 ***<0.01

FDI to GDP is positively related to financial performance. With respect to ROA and OSS regression models, the results are similar for two significant control variables (i.e., CAR and Op_expense). CAR is positively related to both ROA and OSS thereby supporting *hypothesis 2a* and also previous research which found that better capitalized MFIs show a better performance (Hartarska and Nadolnyak, 2007; Kar, 2012). Efficiency (operating expense ratio) is negatively and statistically related to profitability. This shows that operating costs tend to have a strong influence on MFI´s financial performance in SSA. Credit risk as measured by Par30 is negatively and significantly related to OSS; however, it is insignificantly related to ROA. Age is positive and significantly affecting ROA, implying that older MFIs tend to perform better financially. The macroeconomic development variable of GDP per capita is positive and statistically significant to ROA. This result affirms previous results by Martins and Winkler (2013), who found that MFIs operating in countries with higher GDP are associated with MFIs with higher degree of financial sustainability.

Social performance: Table 5.5 shows the regression results for the social performance variables: 'average loan' and 'number of active borrowers'. The result indicates that FDI to GDP is positive and significantly affects average loan size. Implying that, average loan increases approximately by 15 per cent with a one standard deviation increase in FDI inflows. FDI is negatively affecting number of borrowers indicating that the number of borrowers drops with increases in FDI inflows. These two findings confirms *hypothesis 1b* which states that FDI is negatively related to social performance. The results further show that CAR is negatively associated with average loan size. This signifies that when equity increases, MFIs target poor clients by granting smaller loan sizes. Moreover, capital assets ratio is positive and significantly relating to the number of borrowers. The above two findings confirms *hypothesis 2b*, which is higher capital to asset ratio positively affects social performance. Two MFI specific control variables (operating expense and age) tend to negatively significant average loan size. With respect to the number of borrowers, three

Table 5.5 FDI and social performance (Avgloan and #borrowers)

	(1)	(2)	(3)	(4)	(5)	(6)
	Avgloan	**Avgloan**	**Avgloan**	**#borrowers**	**#borrowers**	**#borrowers**
FdI_gdp	13.57**		14.95**	–0.00729		–0.0175**
	(6.663)		(7.234)	(0.00943)		(0.00792)
CAR		–96.79*	–97.78*		0.258***	0.259***
		(49.97)	(51.10)		(0.0608)	(0.0608)
Op_Expense		–196.9**	–200.9**		0.416**	0.421**
		(96.12)	(94.82)		(0.208)	(0.210)
Ln_assets		48.40	45.02		0.724***	0.728***
		(56.02)	(57.72)		(0.0563)	(0.0565)
Par30		–89.27	–87.26		–0.388**	–0.393**
		(158.0)	(151.2)		(0.169)	(0.167)
Ln_age		–196.7*	–203.1*		0.383***	0.393***
		(105.4)	(111.8)		(0.0960)	(0.0955)
Ln_gdp			4.120			–0.116
			(512.0)			(0.391)
Infl			1.543			–0.00238*
			(1.063)			(0.00128)
Cons	656.0***	499.3	480.2	9.423***	–3.118***	–2.292
	(48.86)	(782.7)	(4153.1)	(0.0783)	(0.892)	(3.059)
N	1012	1012	1012	1012	1012	1012
R-sq	0.06	0.08	0.08	0.26	0.56	0.56
adj. R-sq	0.06	0.07	0.07	0.26	0.55	0.55
Time effects	Yes	Yes	yes	Yes	Yes	yes

Note: Standard errors in parentheses *p<0.10 **p<0.05 ***<0.01

variables (i.e., operating expense, size (log of assets), and age (log of age)) are positively related to the number of borrowers. Credit risk and inflation are both negative and significant with respect the number of borrowers. The inflation results is in line with recent results by Martins and Winkler (2013), which found that inflation negatively and significantly affects number of borrowers.

Given that FDI to GDP net inflows tends to vary across countries with respect to their natural resource extraction (UNCTAD, 2010: 33), sensitivity analyses are carried out to see if these bring any changes to the results. Regressions are run excluding Nigeria, Ghana, South Africa, and Congo Republic, which are the top four recipients of FDI in 2010 and 2011. The results on Table 5.6 show very similar results to the previous analysis. Nevertheless, FDI to GDP is now negative and significantly related to ROA.

Table 5.6 Regression excluding Nigeria, South Africa, Ghana, and Congo Republic Dependent variables: ROA and Avgloan

	(1)	**(2)**
	ROA	**Avgloan**
FdI_gdp	–0.00139*	11.03*
	(0.000840)	(6.555)
CAR	0.0344**	–95.51*
	(0.0135)	(51.64)
Op_Expense	–0.863***	–227.8**
	(0.0487)	(100.9)
Ln_assets	–0.00142	83.39
	(0.00957)	(62.33)
Par30	–0.131**	–96.40
	(0.0618)	(158.6)
Ln_age	0.0372***	–223.2*
	(0.0138)	(121.3)
Ln_gdp	0.0908*	270.3
	(0.0512)	(337.6)
Infl	–0.000728	–0.153
	(0.000536)	(2.441)
Cons	–0.488	–1905.9
	(0.378)	(2831.6)
N	975	957
R-sq	0.62	0.09
Adj. R-sq	0.62	0.07
Time effects	Yes	yes

Note: Standard errors in parentheses *p<0.10 **p<0.05 ***<0.01

6 Discussion and conclusion

This study is pioneering in analyzing to what extent financial globalization in combination with capital structure influences microfinance performance and mission drift in SSA, which is the poorest region. The main finding is that financial globalization, measured by FDI net flows as a percentage to GDP and capital structure to some degree affect MFI performance and mission drift.

Based on data from 315 MFIs in 36 SSA countries, the study finds that FDI to GDP positively influences average loan, implying that the more financial globalization a country or an MFI is the more its average loan (i.e., mission drift). Alternatively, according to Christen (2001), this increase in average loan size could be that MFIs now have access to more funding to grant bigger loans to its existing clients (progressive lending). However, the fact that an increase in FDI to GDP leads to a fall in the number of borrowers implies that MFIs found in more liberalized markets tend to move away from hard-information clients who are more costly to serve. This findings comes to support previous research in the banking sector by Brownbridge and Harvey (1998) and Clark et al. (2005) which found that foreign banks in developing countries lend predominantly to high-end customers (i.e., multinational corporations, large domestic firms, and the government) who are generally safer and more transparent and less to Small and Medium-size Enterprises (SME) firms.

Intuitively it makes sense to expect that FDI to GDP should increase the financial performance of MFIs, as research in other sectors such as the banking sector (Demirguc-Kunt and Huizinga, 1999) have shown. This is, however, not the case since FDI to GDP does not affect the financial performance (ROA and OSS) of MFIs in the base regressions. In the robustness checks, where four main resource-rich countries (i.e., Nigeria, Ghana, South Africa, and Congo Republic) are excluded, FDI to GDP leads to a fall in ROA. This implies that FDI flows to other sectors other than natural resources might indirectly encourage competition among MFIs such that interest margins are profitability becomes lower. This result is consistent with foreign bank studies by Claessens et al. (2001).

Overall, the finding suggests that as SSA countries continuously liberalize their markets and encourage FDI and capital flows, these inflows might have more impact on the performance of other sectors (banking, primary, and manufacturing sectors) to which a majority of these flows are being channelled to. However, the spill-over effects of these flows to other sectors such as the MFIs should not be underestimated.

The analysis finds evidence that capital to asset ratio tends to positively influence both social and financial performance, thus enhancing reverse mission drift or mission enhancement. As MFIs in SSA continuously explore other sources of funding to meet the demands of its large poor population, domestic and foreign equity, if well managed, could lead to better socially and financially performing MFIs. In addition, private investors in the MFI industry could be sure to earn an average market returns as well as serve poor clients.

Another interesting finding is that MFIs found in countries with higher macroeconomic development tend to perform better financially. Besides, higher inflationary conditions lead to a fall in the number of people seeking loans. This means that the microfinance industry is to some extent significantly correlated with the corresponding national economy.

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6

Sustainability and Mission Drift: Do Microfinance Institutions in Vietnam Reach the Poor?

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1 Introduction

Microfinance has long been considered a tool for economic development and poverty reduction (Ledgerwood, 1999; Morduch and Haley, 2002; and Khandker, 2003). Although there are several different perspectives of microfinance (Rhyne, 1998; and Robinson, 2001), it is commonly agreed that the central issue is how to provide financial services to the poor and low-income households on a sustainable basis (Rhyne, 1998; Robinson, 2001; and Gonzalez-Vega, 2003).

There is often a trade-off between social goals of microfinance and financial goals of the microfinance institutions (MFI) (Kanathigoda and Steinwand, 2003; Charitonenko and Rahman, 2002; Gonzalez-Vega, 1998; and Schreiner 1996). Financial goals may force MFIs to deviate, over time, from their original mission of providing loans to the very poor in favour of providing loans to 'less poor' clientele (Woller et al., 1999; and Woller, 2002). This *mission drift*, towards financial sustainability (Ghosh and Van Tassel, 2008) and away from outreach to very poor, is contrary to the primary goal of microfinance (Frank and Lynch, 2008; Schreiner 2002).

Mission drift has been an active research area for some time. (e.g., Cull et al., 2007; Mersland and Strøm, 2008; Mersland and Strøm, 2010; Hermes et al., 2011; Armendariz and Szafarz, 2009; Schreiner 2002, among others). However, empirical identification of mission drift is complicated due to lack of suitable data and the complexity of international bureaucracy under which the microfinance industry often operate.

For instance, the conclusions of a rigorous study such as Mersland and Strøm (2010) could be somewhat misleading due to the omitted variable problem in their model estimation.

In this study, we revisit the mission drift discussion by analyzing firm-level panel data from Vietnam. Our data includes detailed information on 149 People's Credit Funds (PCFs) observed between 2004 and 2009. We offer several contributions to the extant literature. First, by using rich longitudinal information from a single country, we avoid potential noise that may affect most empirical work on mission drift that uses cross-country data (Cull et al., 2007; Nawaz, 2010; Hermes et al., 2011; Chahine and Tannir, 2010; Mersland and Strøm, 2008; and Mersland and Strøm, 2010). Second, recent empirical literature such as Mersland et al. (2011) demonstrate important associations between international influence on MFIs and its degree of social orientation. By focusing on PCFs that are market oriented, cooperative credit unions regulated by the state, we are able to analyze mission drift in a rare environment where MFIs operate with minimal international influences. Third, by using dynamic panel data modelling (a first for this literature), we are able to control for persistence in lending behaviour, endogeneity, and time varying omitted variable bias problem.

The remainder of the paper is organized as follows: Section 2 discusses the current literature on mission drift, Section 3 provides some brief background information on the PCFs in Vietnam, Section 4 introduces the model of mission drift and outlines our methodology, Section 5 presents the results, and Section 6 concludes.

2 Recent literature on mission drift

2.1 Alternative views of mission drift

Before we present our analysis of mission drift in Vietnam, it is worthwhile here to note that there are several views in the literature that contrast with the interpretation of mission drift that we adopt in this study.

The first view considers mission drift to be a natural occurrence for up-scaling MFIs because clients who are financially better off crowd out poorer clients in any credit scheme (Christen and Drake, 2002; Hishigsuren, 2007). MFIs could deviate from their mission due to the cost differentials between the poor and the unbanked wealthier clients as well as other, region-specific heterogeneity in their clientele (Armendàriz and Szafarz, 2009).

The second view is that mission drift is simply a misinterpretation of cross-subsidization or commercialization process. MFIs may reach out to less poor borrowers who want larger loans in order to cross-subsidize loans for very poor clients. Recently, Mersland (2011) coins the term 'mission expansion' to explain this phenomenon by drawing from similarities between savings bank in the late eighteenth century Europe and MFIs of today. Including the middle class without excluding the poor made the savings bank more sustainable without abandoning their original objective of serving the poor. Moreover, while a commercialized microfinance industry may be more efficient in reaching the poorest customers (Rhyne, 1998; Christen and Drake, 2002), portfolio maturity, a natural outcome of commercialization process, may be misinterpreted as mission drift (Christen, 2000).

A final view is that mission drift is in fact a corporate governance problem. Arena (2008) argues that mission drift does not have to take place as a consequence of the trade-off between FSS and outreach. Good governance[1], enables MFIs to manage the trade-offs between outreach and FSS, to the detriment of neither. Labie and Mersland (2011) strongly argue for identifying a general framework of governance that can be adapted to different situations and different types of MFIs.

Empirically distinguishing between mission drift and all of its alternative interpretations may be very difficult (Aubert et al., 2009; Aremendàriz and Szafarz, 2009). We provide a non-exhaustive review of the empirical literature on mission drift and on the link between FSS and outreach in the next section.

2.2 Empirical literature

There is an ongoing debate over whether the scaling up of MFIs leads to a drift away from their original poverty alleviation mission. Hishigsuren (2007) identifies three key dimensions of this 'mission drift': depth (the poverty level of clients), quality (the quality of service and level of personal attention provided to clients), and breath (the number of financial and non-financial services provided by the MFI).[2]

There is no strong consensus among empirical studies that examine mission drift. This may be attributed to a variety of research methodologies and metrics to quantify magnitude of mission drift. In order to analyze mission drift, one requires measures of social benefit to MFIs' customers that is very difficult to measure (Zeller et al., 2003; Beisland et al., 2014).

The most commonly used measure of depth of outreach is the average loan size. However, microfinance literature employs a wide variety of measures to determine how well MFIs serve the intended clientele. These measures include lending methodologies, number of borrowers, focus on rural versus urban clients, proportions of women served, interest rate, size of loan portfolio, financial self-sufficiency (FSS), and average loan size. As mentioned in the previous section, empirical studies to date have found evidence both for and against mission drift which could indicate that differences in methodologies and proxy variables for mission drift influence the results.

In a study of commercialized and transformed MFIs in Latin America, Christen (2001) concludes that mission drift has not taken place. Littlefield et al. (2003) find that programs that target very poor clients perform better than others in terms of cost per borrower. Using archival survey and interview data from stakeholders of an MFI in Bangladesh, Hishigsuren (2007) concludes that the MFI showed no statistically significant evidence of mission drift. Similarly, Nawaz (2010) reports the age of an MFI is not a significant factor in determining outreach, refuting the hypothesis of mission drift.

Cull et al. (2007) used a sample of 124 MFIs in 49 countries and found that MFIs are able to stick to their mission even when they aggressively pursue financial goals. However, those that have managed to achieve profitability while still maintaining notable social goals have been more the exception than the rule. Using cross-country panel data from 1998 to 2008, Mersland and Strøm (2010) focus on average loan size, lending methodologies, main market served, and gender bias. They concluded that higher cost MFIs will seek to find more individual borrowers, focus more in urban areas, and will tend to focus less on female borrowers. The reverse is also true. If MFIs can keep costs down, they will focus on group lending, rural areas, and female borrowers. They conclude mission drift occurs if an MFI seeks higher financial returns, but this effect could be neutralized if the MFI is cost efficient. Hermes et al. (2011) also find that there is a trade-off between efficiency and outreach. The more efficient MFIs have higher average loan sizes and less women borrowers.

Chahine and Tannier (2010) examine the social and financial performance of a cross-country sample of NGOs that have transformed into microfinance institutions (TMFIs). They show that TMFIs are able to increase the number of borrowers, increasing the breadth of outreach while also increasing average loan size, which supports mission drift.

The interest rates may be another important measure to study mission drift (Nawaz, 2010; Tedeschi, 2006; Aremendàriz and Szafarz, 2009). However, empirical studies that focus on interest rates are rare. Higher interest rates may be an indication of monopoly power. Monopolistic interest rates paired with low average loan size may be an indication of mission drift (Armendàriz and Szafarz, 2009). Nawaz (2010) shows a negative association between interest rates and the age of the MFI, which may be an indication of mission drift due to MFIs deviating from riskier (hence poorer) customers.

Our study contributes to the mission drift literature by incorporating various definitions of outreach in a dynamic panel data model that address several econometric problems that may be present in aforementioned empirical studies.

3 Microfinance in Vietnam

Vietnam, with a population of 87 million, is one of the fastest growing economies in the region (average of 8% GDP growth rate in period 2000–2007 and 6.5% in 2008). Nominal GDP per capita of Vietnam was USD 1,060 in 2009. Also, 72% of the Vietnam population lives in rural areas where 94% of the nation's poor also lives. Agriculture accounts for 54% of the national workforce is the economic mainstay. (ADB, 2010)

One major component of Vietnamese government's national poverty reduction program is increasing employment opportunities through geographically dispersed industrialization and SME promotion. Microfinance sector is a major player in this arena.

According to the Asian Development Bank, the results of Vietnam's economic development policies have been remarkable, with population living in poverty reduced from 58% in 1993 to 12.3% in 2009. Vietnam is poised to meet its Millennium Goal of eradicating extreme poverty by 2015. However, poverty distribution remains skewed with 45% of the poor accounted for by ethnic minorities in remote areas, while they comprise only 14% of the population. Among the major constraints in achieving program objectives was the lack of responsive and adequate financial services in the rural areas which has a mere 17% share of the total bank credit and where less than 20% of the population has access to any kind of institutional finance services (ADB, 2010).

The provision of agricultural and rural financial services has always been a major component of poverty reduction measures of government from the onset of transition in 1986. The microfinance providers in Vietnam consist of three main segments: formal (registered) credit institutions, semi-formal sector, and informal sector.

The formal sector consists of six types of credit institutions:

- Few commercial banks downscale their operation in microfinance market, especially Vietnam Bank for Agriculture and Rural Development (VBARD),

- Vietnam Bank for Social Policies (VBSP) – wholly government-owned and provided with subsidized credits to the poor, funds mainly from the state budget,
- People's Credit Funds (PCFs) system with Central People's Credit Fund (CCF) as the apex institution – applying the cooperative model,
- Vietnam Postal Savings Company (VPSC): Providing savings mobilization services only,
- And TYM – the first newly formalized NGO Microfinance Institution that has just been registered in August 2010.

VBARD serves 26% of the total microfinance clients with outstanding loan amounts to 41.1% of the total loans in microfinance industry in Vietnam (Khoa, 2013). The Vietnam Bank for the Poor (VBP), which was established to deliver subsidized credit for poverty alleviation, was reformed as the VBSP in 2003. VBSP serves 61.4% of the total microfinance industry in Vietnam. The third largest player in microfinance industry in Vietnam, is PCF, which was serving 7.7% of the total client by 2009 (BWTP, 2005). NGO-sponsored microfinance programs (NMPs) such as Vietnam Plus, Village Bank, and Solidarity Group Model serve 4.9% of the total clients in Vietnam (Nghiem and Laurenceson, 2005; Khoa, 2013).

Informal credit providers include private money lenders, relatives, credit association, and other individuals. The semi-formal institutions on the other hand are the Bank for the Poor, credit cooperative, poverty alleviation program, job creation program, and other programs. A sample of 6,002 households in the Vietnam Living Standard Survey (VLSS) demonstrate that formal and informal sector makes up about 37 per cent and 49 per cent of the total lending respectively and semi-formal credit consists of only about ten per cent of the total loan volume (Pham and Lensink, 2008).

The savings capacity of these microfinance providers is much less than demands for credit. Only PCFs/CCF system and the VBARD operate as commercialized institutions, with main funds of lending raised from savings mobilization using market rates. Three of the biggest microfinance market players are VBARD, VBSP, and CCF/PCFs system. This study focuses on PCFs located in Ha Tay and Thai Binh provinces.

3.1 People's Credit Funds

After the collapse of an earlier cooperative system the PCFs were established in 1993 as savings and credit cooperatives (SACCOs) modelled on the 'Caisses Populaires' credit union system in Quebec, Canada, with support from Development International Desjardins (DID). The network of PCFs is cooperative credit institutions with legal status regulated and supervised by the State Bank of Vietnam (SBV). There were approximately 900 PCFs in operation as of November 2004, reaching just under 1,000,000 members (BWTP, n.d.).

The SBV promoted setting up the PCFs, to provide commune level financial services. The CCF was also established in 1993 to act as the PCFs apex institution and provide support to the PCFs. The network evolved in three major phases:

- The establishment and initial growth phase, 1993–1998, during which nearly 1000 PCFs as well as the CCF and the Regional Credit Funds (RCFs) were established.
- A consolidation phase, 1999–2002, in which an evaluation was carried out: nearly 100 non-performing PCFs were closed, and the RCFs were integrated into CCF.
- The phase of cautious growth since 2003, reaching a total of 1005 PCFs as of June 2008, with a membership of 1.2 million and total assets of $888 million.

The PCFs have always been and continue to be market oriented. They are based on the principles of self-help, self-reliance, self-management, and democracy. In more concrete terms, they are formed and developed through the initiative of their local members; they are self-financed through shares, deposits, and retained earnings; they are professionally managed by a team of qualified employees under the control of a board; and the board is democratically elected by the members, all with equal voting rights. Members may be individuals, heads of households, cooperatives, local enterprises, and social organizations. Lending outreach is restricted to the commune where the PCF is located; depositor outreach may extend to neighbouring communes, but it should not exceed 40% of total deposits.

4 Data and methodology

4.1 Data

This study focuses on 149 communes of PCF in Ha Tay and Thai Binh provinces, and the data were collected for the period from 2004 to 2009. With a combined population over 4 million people living in rural areas, Thai Binh and Ha Tay provinces are good representatives of PCF customers in Vietnam. In Ha Tay, some PCFs serve SMEs and better off households with non-farm employment. In Thai Binh, most of members are purely farmers, and the average size of PCFs is small.

Tables 6.1a, 6.1b, and 6.1c describe the variables used in the study and provide summary statistics.

Table 6.1a Description of variables

		Mean
Average Loan size	Total Loans outstanding ÷ Number of borrowers	16.09
Number of Borrowers		736.0
Interest Earned	Interest cost to customers (VND million)	861.4
Profit	Total profits of PCF after taxes (VND million) ÷ Number of borrowers	89.40
Cost	Total expenses of PCF (VND million) ÷ Number of borrowers	830.7
Risk	Non-performing loan ratio (%)	0.273
Age	Number of years the PCF has been in existence	11.76
Size	Total assets of PCF at year-end (2004 VND million)	7842.0
yd1-yd6	Year dummies	
d1	Dummy variable for Ha Tay province	

Table 6.1b Additional summary statistics

	Median	Std. Dev.	Min	Max
Average Loan Size	11.52883	14.0946	1.952686	127.2809
Number of Borrowers	672.5	530.0931	128	13119
Interest Earned	635.897	783.9355	40.02965	10471.88
Profit	52.44699	100.7941	0.683527	1330.729
Cost	583.6432	876.6013	0	9717.188
Risk	0.048272	0.457403	0	4.650028
Age	12	2.751494	1	17
Size	8649	14930.77	1684.737	176661

Table 6.1c Correlation among continuous variables

	Av. Loan Size	Interest Earned	No. Borrowers	Age	Profit	Cost	Risk
Av. Loan Size	1						
Interest Earned	0.7714	1					
No. Borrowers	–0.2344	0.3237	1				
Age	0.2345	0.4385	0.2718	1			
Profit	0.6858	0.7685	0.155	0.1896	1		
Cost	0.6049	0.7698	0.2665	0.3726	0.5517	1	
Risk	–0.0068	–0.0054	–0.0197	–0.0841	0.1107	–0.0948	1

Note: All variables except age and risk are in logarithms. Logarithm of cost is calculated as LogCost= log(cost +1) due to some PCF reporting zero cost.

4.2 Testing for mission drift

The focus in this study is on the depth of outreach as measured by average loan size, as it is an indicator for the degree of outreach of MFIs towards low-income clients.[3] For example, increasing depth of outreach could mean that the MFI reaches more clients in remote areas who represent poorest segments of society. Mission drift occurs when the average loan size of an MFI increases over time suggesting either the clientele has become financially better off resulting in a demand for larger loans or the MFI has moved into a new client segment that is less poor and have the ability to demand relatively larger loans. We also employ two alternative measures to analyze mission drift: interest cost to customers and number of borrowers. Figures 6.1 to 6.3 plot relationship between outreach measures and age of MFIs in our sample.

Casual inspection of Figure 6.1, plot of average loan size against the age of MFIs, shows that average loan size increases with increase in age, only over the latter part of the study period. The overall relationship appears mixed at best, and a discernible pattern indicating possible mission drift cannot be observed. This finding is consistent with Mersland and Strøm (2010) where they find no evidence of mission drift in terms of depth analyzing the multi-country MFIs panel data of 11 years span. In Figure 6.2, we plot the number of borrowers against the age of MFI, and it does not show a clear pattern of declining number of borrowers over time to suggest a mission drift. In general, the two figures indicate

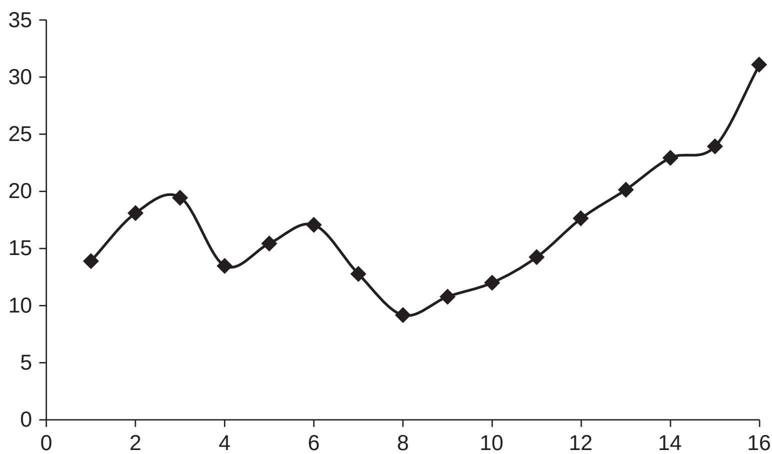

Figure 6.1 Average loan size (in million VND) by Age of PCF (in years)

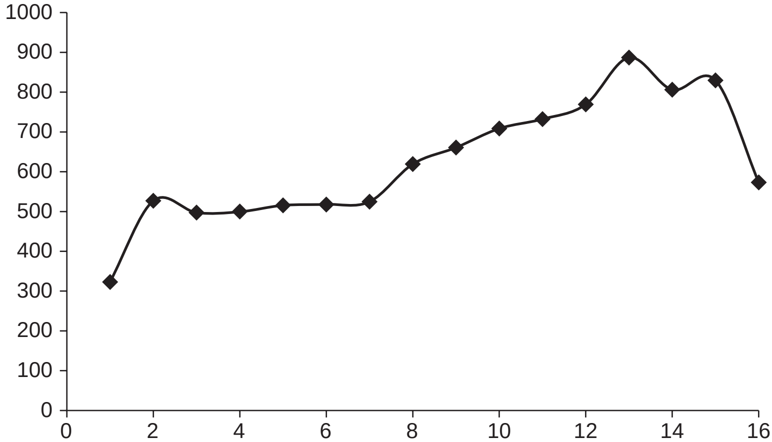

Figure 6.2 Number of borrowers by age of MFI (in years)

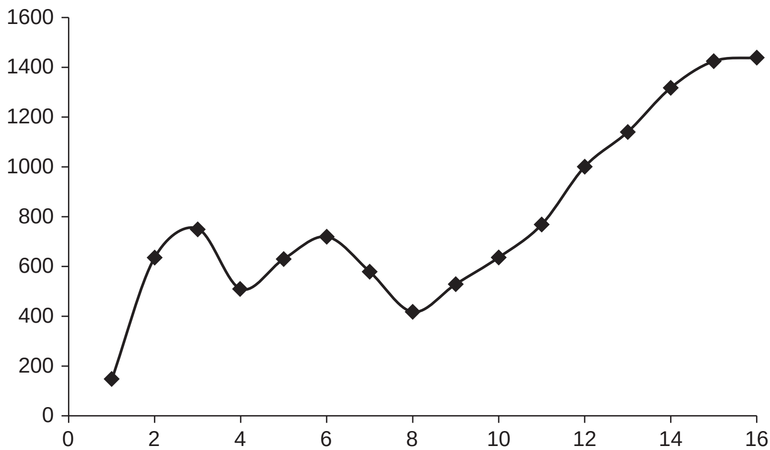

Figure 6.3 Interest earned by age of MFI (in years)

that the oldest MFIs tend to have larger average loan size and have a declining number of clients. Figure 6.3 describes the association of the interest earned by and age of MFI. For relatively 'young' MFIs there is no conclusive evidence of mission drift. However, for MFI older than eight years, the interest cost to customer is steeply increasing. As no clear pattern of mission drift emerges form the plots, a more careful study is required to understand the dynamics and the behaviour of these variables.

4.3 Methodology

We employ a panel data analysis to investigate whether the phenomenon of mission drift exists in our data. We use two specifications. The first model is a static model of outreach similar to Mersland and Strøm (2008) and Mersland and Strøm (2010). Following Mersland and Strøm (2008) and Schreiner (2002), we employ alternative definitions of outreach in addition to average loan size. The model for a MFI *i* at time *t* can be summarized as follows:

$$Outreach_{it} = Profit_{it} + \beta_2 Cost_{it} + \beta_3 Risk_{it} + \beta_4 Size_{it} + \alpha_i + \lambda_t + u_{it} \tag{1}$$

where $Outreach_{it}$ is one of the following measures of outreach: average loan size, cost to clients (measured by the interest revenue of MFI), or breadth of outreach (measured by number of borrowers). The model regressors consist of average profit per client, average cost per client, Risk (non-performing loan ratio), age, and size of MFI. All variables, except age and risk, are deflated using the national Consumer Price Index.[4] In the raw form, the loan, profit, and cost are measured per credit client and expressed in 2004 Dong.[5] The variable size stands for total asset size in 2004 Dong. We express all continuous variables except age in natural logarithm in the estimations in order to avoid linearity bias.

The time-invariant MFI specific characteristic (e.g., initial level of average loan size, micro-regional differences, etc.) may have significant impact on how loan size evolves over the age of MFI. Panel data models allow us to model this type of heterogeneity (e.g., unobserved time-invariant MFI specific heterogeneity) in the form of an individual specific intercepts, α_i.

Depending on the assumption on the correlation between α_i and other observable characteristics in the model (i.e., size, profit, cost, and age), we employ two estimation methodologies. Random effects (RE) estimation assumes that α_i is uncorrelated with other variables in the model. Fixed effects (FE) estimation relaxes this assumption to let $E(\alpha_i, X_{it}) \neq 0$ We also control for time varying shocks that are common to all MFIs in the form of yearly dummy variables, λ_t[6]. Finally u_{it} is the random error disturbance and is assumed to follow a normal distribution with mean of zero and variance σ^2.

Our second model is a dynamic model of outreach that can be summarized as follows:

$$Outreach_{it} = \gamma Outreach_{it-1} + \beta_1 Profit_{it} + \beta_2 Cost_{it} + \beta_3 Risk_{it} + \beta_4 Size_{it} + \alpha_i + \lambda_t + u_{it} \quad (2)$$

Our main purpose of estimating model (2) is to circumvent limited information we are able to include in our model. Omission of relevant variables may mask the true effect of key variables. Although some relevant information might be missing from the model it is safe to assume that the impact of these missing factors are – albeit partially – embedded in the lagged dependent variable. Therefore, by including previous realization of the *outreach* variable as an additional regressor, we can control in large the omitted variable bias. A positive lagged dependent variable coefficient that is smaller than one implies that any exogenous shock that alters outreach will return back to its long run trend, not necessarily declining over time. The speed of 'recovery' depends on the magnitude of the parameter; larger lagged dependent coefficient is associated with slower recovery.[7]

The key variable associated with mission drift in the models is the age of MFI (age). When average loan size is the dependent variable a positive coefficient for age is evidence in support of mission drift since it would indicate that as MFIs age they drift towards 'less poor' clients. Similarly, a positive coefficient for age when cost to client is the dependent variable can be interpreted as evidence of mission drift in the sense that maturing MFIs limit access to funds by increasing the cost of borrowing. Finally, a negative coefficient of age when number of clients is used as the dependent variable is an indication of decreasing outreach as MFIs ages.

Model (1) and model (2) are estimated by allowing risk, profit and cost to be endogenous. The estimation methodology for the static model follows the 2-Step GLS strategy suggested by Balestra and Varadharajan-Krishnakumar (1987). The dynamic model is estimated using 2-Step System GMM approach suggested by Blundell and Bond (1998). The instrument set consists of exogenous variables in the model and the lagged values of the endogenous variables.

System GMM methodology combines the differenced equation with the levels equation in a stacked form in order to estimate the parameters of the model. The performance of System GMM estimator depends largely on the validity of instruments used. In our results section, we provide Sargan test for over identifying restriction (e.g., J-test) and the test for second-degree serial correlation for the errors.[8]

5 Results

Results of estimating the static models (model 1) using the random effects specification are summarized in Table 6.2. The age of MFI is insignificant for all choices of outreach. Thus, the static model with random effects suggests no evidence of mission drift. The impact of cost is significant and positive for the average loan size and interest earned models while profit is only significant at 10% for the interest earned model. Risk variable is not significant in any of the models. Insignificance of risk variable is consistent with the findings of Mersland and Strøm (2010) where they claim that the loan size and risk are not related. Size variable is positively related to average loan size and interest earned but only highly significant for the average loan size model. A positive association between size and average loan suggest that the larger well-established

Table 6.2 Static models of outreach: random effect results

	Average Loan Size	**Interest Earned**	**Number of Borrowers**
Profit	0.0848	0.418*	0.377
	(0.122)	(0.241)	(1.010)
Cost	0.140**	0.147**	–0.119
	(0.0633)	(0.0663)	(0.213)
Risk	–0.193	–0.321	–1.035
	(0.469)	(1.024)	(4.289)
Age	–0.0135	–0.00156	0.00211
	(0.0106)	(0.0165)	(0.0663)
Size	0.262***	0.223*	0.216
	(0.0907)	(0.132)	(0.525)
d1	0.527***	0.0512	–0.545***
	(0.0655)	(0.0527)	(0.138)
yd2	–0.243***	–0.333***	0.118
	(0.0899)	(0.0924)	(0.324)
yd3	–0.191**	–0.234***	0.206
	(0.0769)	(0.0793)	(0.279)
yd4	–0.0993*	–0.170**	0.0281
	(0.0579)	(0.0753)	(0.292)
yd5	–0.135***	0.0191	0.0435
	(0.0335)	(0.0244)	(0.0640)
_cons	–1.010*	2.060**	4.125
	(0.602)	(0.865)	(3.378)
N	692	692	692

Note: Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. All continuous variables except age and risk are in logarithms. Logarithm of cost is calculated as LogCost= log(cost +1) due to some PCFs reporting zero cost.

MFIs tend to provide larger loans. Almost all annual dummies, except ones from the number of borrowers model, are statistically significant indicating shifts in economic environment from year to year.

The results from the static models using the fixed effect specification are presented in Table 6.3[9]. Estimation of fixed effects (FE) models provides no support for mission drift hypothesis for the models that use average loan size and number of borrowers; as the age variable used in these models is not significant. The result from the interest earned model supports mission drift, as the age coefficient is highly significant and positive. This implies that interest cost to its customers increase with the age of the MFI.

A general lack of significance in our static model result leads to the implication that unobserved specific factors of the MFIs are the main drivers of MFIs' lending process. One strong candidate for these unobserved factors is the initial level of average loan size that is unobserved for most of the MFIs in our sample. In order to control for the effect of the initial conditions and other time varying factors that cannot

Table 6.3 static models of outreach: fixed effect results

	Average Loan Size	**Interest Earned**	**Number of Borrowers**
Profit	–0.435*	0.333***	0.299
	(0.236)	(0.100)	(0.219)
Cost	0.835*	0.307*	–0.518
	(0.429)	(0.182)	(0.397)
Risk	–0.0109	0.0120	0.257
	(0.369)	(0.157)	(0.342)
Age	–0.0171	0.0938***	0.0259
	(0.0493)	(0.0209)	(0.0457)
Size	–0.0111	0.0988	0.510**
	(0.223)	(0.0946)	(0.206)
yd3	0.0104	–0.0219	–0.0335
	(0.0445)	(0.0189)	(0.0413)
yd4	0.0469	0.00988	0.00762
	(0.0331)	(0.0140)	(0.0306)
yd5	–0.185***	0.0774***	0.0670
	(0.0671)	(0.0285)	(0.0622)
_cons	–0.690*	1.139***	3.564***
	(0.410)	(0.174)	(0.380)
N	692	692	692

Note: Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. All continuous variables except age and risk are in logarithms. Logarithm of cost is calculated as LogCost= log(cost +1) due to some PCFs reporting zero cost.

be controlled by the static model, we employed a dynamic panel data model.

The dynamic panel data estimation results are reported in Table 6.4. Overall, the models seem to fit the data better than the static models. Lagged dependent variables in all models are highly significant, indicating a strong persistence in how MFI operate. This implies that our dynamic strategy is more appropriate to model mission drift. The positive and significant age coefficient in the model with average loan size

Table 6.4 Dynamic models of outreach

	Average Loan Size	**Interest Earned**	**Number of Borrowers**
Lagged Dependent Var.	0.592***	0.240***	0.472***
	(0.0384)	(0.0317)	(0.0461)
Size	0.361***	0.175***	0.196***
	(0.0469)	(0.0268)	(0.0372)
Profit	0.0299	0.294***	–0.0569**
	(0.0338)	(0.0295)	(0.0240)
Cost	0.0363	0.00863	–0.0983***
	(0.0377)	(0.00591)	(0.0130)
Risk	0.0139	–0.0859***	–0.139***
	(0.0217)	(0.0216)	(0.0195)
Age	0.0194*	–0.00441	–0.0583***
	(0.0101)	(0.00516)	(0.00963)
yd3	–0.0397*	0.0922***	0.0831***
	(0.0208)	(0.0119)	(0.0172)
yd4	–0.0440	0.199***	0.103***
	(0.0334)	(0.0201)	(0.0321)
yd5	–0.252***	0.378***	0.121***
	(0.0523)	(0.0296)	(0.0458)
yd6	–0.167**	0.342***	0.167***
	(0.0678)	(0.0396)	(0.0611)
_cons	–2.697***	2.049***	3.195***
	(0.310)	(0.229)	(0.422)
N	692	692	692
#Instruments	56	50	56
Tests			
Sargan	55.34	60.31	52.02
AR(2)	–1.531	–0.919	–0.320

Note: Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. All continuous variables except age and risk are in logarithms. Logarithm of cost is calculated as LogCost= log(cost +1) due to some PCFs reporting zero cost. The models were estimated via System GMM estimator.

as the dependent variable implies that mission drift may be present in our sample. When the number of borrowers is the dependent variable, after controlling for the dynamic nature of the lending behaviour, we find strong evidence that the age and number of borrowers are inversely related thus indicating mission drift. The effects of age on interest earned (interest cost to clients) has the *wrong* sign and is insignificant, which is in contrast to the finding from the static FE model. This suggests that static models may be misspecified and the evidence of mission drift in the static model may be due to omitted variable bias (which is partly controlled for in the dynamic model).

Furthermore, in the dynamic model estimation, the cost and profit are not related, to average loan size but are negatively related to number of borrowers. Unlike the results from the static model where there is no relation, in the dynamic model, risk has a negative relationship with interest cost and number of borrowers. As the risk, measured by the proportion of non-performing loans, increases the interest earned and the number of borrowers are expected to decline. The negative relationship between interest earned and risk is an indication that MFIs are lending to a less risky clientele, thus, implying mission drift. Similarly, the negative relationship between interest earned and age is an indication that MFIs are lending to a smaller client base implying mission drift. Additionally, the model of outreach with number of borrowers indicates similar results suggesting the presence of mission drift.

Inverse relationship between cost, operating costs per borrower, could be due to economies of scale. This, taken together with the inverse relation between the number of borrowers and profit, implies that the revenue per client also has a negative relationship with the number of borrowers. As decline in revenues to the MFIs could be beneficial to their clients, the situation could be consistent with no mission drift. A positive relationship between the number of borrowers and size is consistent with no mission drift as larger size results in larger clientele or outreach. However, risk is inversely related to the number of borrowers implying that MFI are moving towards a lower risk clientele over time suggesting mission drift.

Overall, during the study period, MFIs appear to be drifting away from clients with smaller loans towards having fewer and less risky clients with larger loans resulting in a fewer number of clients.

6 Summary and conclusion

While well recognized trade-off between financial sustainability and outreach of MFIs exacerbating the debate on the existence of mission drift, this study attempted to bring forward some statistical evidence to this debate demonstrating that mission drift could, after all, be the reality in microfinance industry.

This study offers several contributions to the empirical literature on mission drift. First, we avoid potential noise from the cross-country data by focusing on a rich set of information drawn from two rural regions of Vietnam. Second, our sample consists of 149 PCF, small market base credit unions only minimally affected by international influences. Third, in addition to the static models common in the literature, we use dynamic panel data modelling to control for persistence in lending behaviour, endogeneity, and time varying omitted factors.

Our findings from the static model are largely consistent with earlier findings such as Mersland and Strøm (2010), Rhyne (1998), and Christen and Drake (2002), and find no evidence for mission drift. However, when we use a dynamic panel data model, most of our findings are in support of mission drift. When persistency in lending behaviour is controlled for the age of an MFI appears to have a positive impact on average loan size, interest cost to clients, and has a negative effect of number of borrowers. So using dynamic panel data model in the analysis of mission drift is the solid contribution of this study.

It goes without saying that there is much room to improve in current studies, including ours. Given the limitations posed by lack of data to precisely measure the attributes that we wish to model in this context, one has to be mindful of the following caveats when interpreting our results: Although the majority of the clients of PCF are considered to be poor, initially, PCFs are not formed to serve the lowest segment of the income distribution. Therefore, evidence found here is not applicable for the entire microfinance system in Vietnam. Moreover, any analysis of outreach remains incomplete without detailed information on borrowers at the individual level. Therefore, microfinance literature can greatly benefit from incorporating demographic and financial information on borrowers with detailed data on MFIs such as the one used in this study.

Notes

1. Some of the important tools that can be used to implement good corporate governance are creating better management information systems, properly tailor products to the client needs, efficiently targeting clients, and properly constructing staff and client incentives.
2. See Hishigsuren (2004) and (2007) for more details.
3. Ideally, the average size of the first loans is an indicator of the poverty level of clients. Due to non-availability of data on first loans, we use average of all loans outstanding.

4. Using GDP per capita to standardize did not change the results. Also, removing outliers did not change the results significantly.
5. We use annual CPI to deflate the nominal values. The results were not affected when GDP per capita was the deflator. We also tested the robustness of the result to mission of outliers in the data.
6. We re-estimated models by removing the time dummies. The results were qualitatively similar. Here, we only report models with time dummies. We argue that since our data span multiple years, not controlling for year effects weakens our identification of mission drift. Moreover, time dummies are the only purely exogenous instruments in our model. Without them, Sargan test of over-identification often rejected the validity of instrument for our dynamic specifications.
7. For example, 0.6, implies that PCF with one unit larger average loan in the previous period is expected to have 0.6 unit larger average loan in the current period than a PCF with one unit less average loan in the previous period.
8. Both tests confirm validity of the instrument set used during the estimation.
9. We conducted the Hausman test to choose between random effect and fixed effect models; the test results were inconclusive. For the dynamic model we only ran a fixed effect model.

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7
The Impact of the 2010 Andhra Pradesh Crisis on the Operational Efficiency of Indian Microfinance Institutions

Trishit Bandyopadhyay and Savita Shankar

1 Introduction

MFIs provide financial services such as deposits, loans, money transfers, and insurance to poor and low-income households and their microenterprizes. The provision of microcredit has, however, dominated the microfinance sector. Mersland and Strøm (2012) provide an overview of the history, characteristics, and recent developments of the microfinance field. India has a large microfinance sector, with two main models: the state-promoted self-help-group bank model and the private-sector-driven MFI model. The total value of loans outstanding under the two models in 2012 was Rs. 572 billion (around US$ 9.4 billion) (Puhazhendi, 2012). Indian MFIs are reported to compare favourably on efficiency parameters with MFIs in other parts of Asia (George, 2008). In the second half of 2010, the Indian microfinance sector witnessed a series of challenges that was eventually termed a ‘crisis’. The epicentre of the crisis was in the state of Andhra Pradesh (AP), where media reports highlighting suicides by MFI members resulted in the state government imposing severe restrictions on MFI activities. These restrictions resulted in loan recovery rates in the state dropping from 99 per cent prior to the crisis to 10 per cent soon afterwards (Srinivasan, 2011).

The crisis highlighted the existence of multiple lending by MFIs in the state. As both state-provided and private microfinance programs have considerable outreach in AP, the existence of multiple lending in this state is not surprising (Shankar and Asher 2011). AP has consistently been reported as having the highest penetration of microfinance in the country since 2008 when the statistic was first computed for the annual microfinance state of the sector reports (Srinivasan, 2008, 2009, and 2010). By 2009, microfinance penetration in AP was estimated to be higher than in most other microfinance markets in the world, a notable exception being Bangladesh (Batemen, 2011). By March 2010, the average number of microfinance accounts per poor household in AP was more than ten (Srinivasan, 2011).

As multiple lending practices put pressure on borrowers' repayment abilities, they led to some delays in repayments. As a result, MFIs are alleged to have used coercive collection practices, said to have driven some MFI borrowers to suicide.

What began as a localized problem in some districts of AP soon developed into a crisis, as the AP government responded by introducing a bill in October 2010, which was enacted in January 2011 (AP Microfinance Institutions Bill, 2010), to regulate MFIs in AP. The act had a number of restrictive conditions, such as the requirement to register each branch of an MFI, allowing only monthly repayments of loans, requiring that MFI meetings be held only in prominent government facilities, and, finally, insisting that MFIs obtain prior approval from the registering authorities before granting a loan to a borrower who is a member of the state-promoted self-help-group program. This radical change in the government's policy towards the microfinance sector was not warranted by the evidence (Banerjee and Duflo, 2011).

Since many large MFIs in the country had (and still have) outstanding loans in AP, this led to concerns from investors and lenders about their credit-worthiness. Some of them reviewed their exposure to the sector, particularly motivated by concerns that the crisis might spill over into other states. There were concerns that the MFI sector would witness mass exits, forcing low-income groups back to dependence on money lenders.

In order to address the situation, the country's central bank, the Reserve Bank of India, appointed a committee to review issues and concerns in the MFI sector (referred to as the Malegam Committee after its chairman, Y.H. Malegam). In February 2011, the Malegam Committee submitted its recommendations, which were accepted by the Reserve Bank of India in May 2011. An important recommendation of the committee was that MFIs registered as non-bank financial institutions should be exempt from the provisions of state government acts relating to the curbing of money lending activities. As it was through an act of this type that the AP government had taken action against MFIs, this recommendation reduced the latter's uncertainty and consequently the impact of the crisis. According to the state of the sector report on microfinance in 2012, there had been a mild recovery in some parameters. Table 7.1 shows the total loans outstanding and the number of borrowers of the two major channels for microfinance delivery, the self-help-group bank model and the MFIs, from 2009–2010 to 2011–2012. In 2011–2012, there was a small increase in the total combined loan portfolio of both models compared to the previous year though the number of borrowers had reduced (Puhazhendhi, 2012). For the MFIs, both the loan portfolio and the number of borrowers have shown a decline. The main reason for this fall is that the crisis led to a severe reduction in MFI operations in AP as the measures taken by the state government had a lingering impact on credit discipline in the state.

The purpose of this study is to employ data envelopment analysis (DEA) to examine the effect of the crisis on the operational efficiency of Indian MFIs. A comparison of the efficiencies in 2009 and 2011 will indicate whether the crisis and the resulting regulation led to a change and the nature of the change, if any. This is an interesting question because there are two distinct opinions about the crisis (Nair, 2011). One view is that the crisis was actually good for the microfinance sector as it put a much-needed check on the aggressiveness of MFIs; the other is that it had a negative effect on MFIs. While this debate cannot be entirely resolved by comparing the efficiencies of MFIs before and after the crisis, it can be assessed whether the crisis left MFIs better or worse off from the efficiency point of view.

Even though this paper studies the change in efficiency over a short period of time, from one year before the crisis to one year after it, it may

Table 7.1 Indian microfinance sector: outreach and loan portfolios: 2009–2010 to 2011–2012

	2009–2010	**2010–2011**	**2011–2012**
Self-help-group bank model outreach	59.6	62.5	56.6
MFI client outreach	26.7	31.8	26.8
Total client outreach in millions (after adjusting for overlap)	71	76.7	68.2
Self-help-group bank model loan portfolio	272.7	306.2	363.4
MFI loan portfolio	183.4	215.6	209.1
Total loan portfolio (in Rs.billions)	456.1	521.8	572.5

(Based on Puhazhendhi 2012)

be noted that, as explained above, the crisis was at its peak in 2010–2011 and hence its effects should be seen in full then. Besides examining the effect of the crisis on the entire MFI dataset, the paper separately examines the effects on three different categories of MFIs, small, medium, and large, to assess whether there were differential impacts. Further analysis to assess the determinants of MFI efficiencies is also carried out.

2 Review of the literature

MFIs are often evaluated on a double bottom line basis as they are expected to achieve the social objective of poverty alleviation while remaining financially sustainable (Morduch, 1999). Often they face challenges in balancing their commercial and social objectives (Mersland and Strøm, 2010).

Increasing efficiency (i.e., producing greater outputs with the same inputs) can enable MFIs to progress with respect to both goals. While it is clear that efficiency will have a favourable impact on financial sustainability, it can also improve social performance as the MFI may then be in a position to increase its outreach. Efficiency is therefore an important goal for an MFI and changes in efficiency as a result of the crisis will indicate whether the net effect of the crisis on Indian MFIs has been positive or negative.

The efficiency of MFIs has been studied using techniques such as ratio analysis (Farrington, 2000; Mersland and Strøm, 2013), stochastic frontier analysis (Hassan and Tufte, 2011; Hartarska and Mersland, 2012), and traditional regression analysis (Mersland and Strøm, 2009), as well as other parameter-based econometric approaches (Hartarska, Shen, and Mersland, 2013) and DEA (Marakkath and Ramanan, 2011; Bassem, 2008; Guitierrez-Nieto, 2007; Ngheim et al., 2006; Qayyum and Ahmed, 2006; Sufian, 2006). DEA is a data-oriented approach that can be used to evaluate the performance of a set of entities which convert multiple inputs into multiple outputs. The advantage of DEA over stochastic frontier analysis is that it is a non-parametric approach that does not require the mathematical form of the production function to be specified.

DEA has previously been used to evaluate the performance of Indian MFIs by Marakkath and Ramanan (2011), who used it to identify a set of efficient and sustainable Indian MFIs. The focus of the current paper is the effect of the crisis on the efficiencies of Indian MFIs. DEA has also been used previously to assess the impact of a crisis on financial institutions by Sufian (2010), who studied the impact of the Asian financial crisis on bank efficiency in Malaysia and Thailand. An important contribution of the current paper is that it applies DEA to assess MFIs' adaptation following a crisis.

3 Methodology and data

3.1 Sample data and specification of inputs and outputs for the DEA model

Data on Indian MFIs from the Microfinance Information Exchange (MIX) database were used for this study. The dataset consisted of 57 MFIs for which data for the period 2009 to 2011 were available.

Before the inputs and outputs for a DEA model can be specified, the approach to be adopted must be decided upon. Berger and Humphrey (1997) point out that, when carrying out an efficiency analysis of financial institutions, two alternative approaches may be adopted. The first is the production approach, which views the financial institution as a producer of deposits and loans. The second is the intermediation approach, in which the financial institution is viewed as a transformer of deposits into loans. Cingi and Tarim (2000), Guitierrez-Nieto et al. (2007), and Marakkath and Ramanan (2011) do not view these approaches as alternatives, and instead use a mixture of both methods. This paper adopts a similar approach. As most Indian MFIs do not raise deposits due to regulatory restrictions, deposits are not considered as an input; however, loans are considered as an output with both aspects of loans, gross loan portfolio and outreach being included as outputs. A unique feature of MFIs is that they pursue both social and financial goals, aiming to expand financial services outreach to excluded households but in a financially sustainable manner. Hence, in specifying the inputs and outputs of the model, both goals are considered. The approach is similar to that of Marakkath and Ramanan (2011).

Input-oriented DEA was employed with both the major variants, namely, variable returns to scale and constant returns to scale, to measure the efficiencies of the Indian MFIs during the period in question. The two major strengths of DEA are that it does not require

(i) the specification of any a priori relationships between inputs and outputs, nor
(ii) any imposition of weights to form aggregate inputs and outputs when there are multiple inputs and outputs (of the MFIs in our case).

The algebraic description of the method of determining efficiency using input-oriented DEA is as follows:

$$Min\ \theta_k$$
$$Subject\ to\ \sum_{i\,\varepsilon(1,N)'} y_{ir} * \lambda_i >= y_{kr} \qquad for\ i = 1..N\ \&\ r = 1..R$$
$$\sum_{i,\varepsilon(1,N)'} X_{is} * \lambda_i <= \theta_k * X_{ks} \qquad for\ i = 1..N\ \&\ s = 1..S$$
$$\lambda_i >= 0 \quad for\ all\ i = 1..N$$

where *k* is the decision-making unit or MFI for which the efficiency (θ_k) is being calculated; *k* takes integer values varying from 1 to *N* where *N* is the number of decision-making units or MFIs in the study; *r* is the index of the output and *R* is the number of outputs considered for each MFI; *s* is the index of the input and *S* is the number of inputs being considered for each MFI; y_{kr} and x_{ks} are output *r* and input *s* of MFI *k*.

The solution to the above mathematical programming problem gives the value of the constant returns to scale efficiency [or technical efficiency] for MFI *k*. By solving the above problem along with the constraint

$$\Sigma_{i=1\ to\ N} \qquad \lambda_i = 1$$

the variable returns to scale efficiency [or pure technical efficiency] for MFI k is obtained. Pure technical efficiency is supposed to reflect managerial performance. The scale efficiency of an MFI is the ratio of technical efficiency to pure technical efficiency and gives an indication of the efficiency that emanates from the scale of operations. All three types of efficiency lie between 0 and 1.

The present study analyzes the results under both the assumptions (constant and variable returns to scale). Similar approaches were adopted by Marakkath and Ramanan (2011), Ahmad (2011), Bassem (2008), and Haq et al. (2009). If the inferences under the two assumptions had differed considerably, then further tests would have had to be conducted to decide between the two, as in Simar and Wilson (2002). However, as this was not the case, further tests were not required.

3.2 Multivariate regression analysis

The determinants of the efficiencies are explained by regressing the efficiencies against explanatory variables. As the efficiencies lie between 0 and 1, the ordinary least squares technique would have been inadequate for estimating the parameters; instead, truncated Tobit regression was employed, as in Sufian (2010).

In order to explain the change in efficiency of the MFIs between the two periods, multiple regression models were employed, with the percentage changes in the efficiencies between two years as the dependent variables, and the percentage changes in several explanatory variables during the period under study as the independent variables. Since the dependent variables in these cases were not of the limited dependent variable type, the ordinary least squares method of estimation was employed.

3.3 Hypothesis testing

Several hypotheses were tested regarding the similarities or differences in efficiencies among multiple categories, such as large, medium, and small MFIs, at various points of time over the crisis period. Non-parametric tests were employed so that it was not necessary to assume normality of the data.

The non-parametric tests were as follows: the Kruskal-Wallis test of several groups coming from the same population / different populations, and the Mann-Whitney [Wilcoxon rank sum] test for two groups having the same efficiency statistic / different efficiency statistics.

3.4 Inputs, outputs, and data on MFIs

The choice of inputs and outputs has a direct bearing on the efficiencies calculated. We looked at the inputs and outputs considered in past DEA efficiency studies relating to financial institutions. In many of them, assets, number of employees, and operating costs were included as inputs, and gross loan amount and number of borrowers were included as outputs (Marakkath and Ramanan, 2011; Sedzro and Keita, 2009; Ahmad, 2011; Qayyum and Ahmad, 2008; Gebremichael and Rani, 2012; Bassem, 2008; Haq et al., 2009).

While the number of borrowers and the gross loan amount indicate the level of operational output of an MFI, and should be considered, the quality of the loans, and more specifically the portfolio risk, also needs to be incorporated when calculating efficiency. This aspect has not been emphasized much in the literature on MFI efficiency. In this study, the proxy used for portfolio quality is portfolio at risk (greater than 30 days); it is included as an input as a certain level of risk is inevitable in the case of financial institutions but it needs to be minimized. The other inputs are total assets, number of personnel in the MFI and operating expenses. The inputs were chosen on the basis of being necessary for the

Table 7.2 Descriptive statistics for inputs and outputs

	X1 (Assets)	X2 (Personnel)	X3 (Operating Expense)	X4 (Risky Loans > 30 days)	Y1 (Gross Loan Portfolio)	Y2 (Number of active borrowers)
MIN	350718.00	19.00	50748.89	0.00	237010.00	1673.00
MEAN	74168620.82	1284.86	5735087.42	11527072.64	65366242.35	376565.33
MAX	833779632.00	11697.00	49405679.65	371910155.69	787304262.00	4188655.00
SD	144192291.2	2127.63927	9650282.485	46767108.53	135595181.7	730509.3085

Source: http://www.mixmarket.org/

achievement of the outputs, namely, gross loan portfolio and number of active borrowers.

The descriptive statistics of the inputs and outputs are shown in Table 7.2. Data on the MFIs was obtained from the MIX database [www.mixmarket.org]. Only MFIs for which data were available on the inputs and outputs mentioned above for the years 2009, 2010, and 2011 were included, which resulted in a dataset consisting of 57 MFIs.

The independent variables included to explain the efficiencies (technical efficiency, TE; pure technical efficiency, PTE; scale efficiency, SE) were borrowers per loan officer (BPLO), number of offices of the MFI (NOFF), operational self-sufficiency (OSS), yield on gross portfolio (real) (YOGPR), and average loan balance per borrower (ALBPB).

The basic model description is given below:

$$TE = \alpha + \beta_1\ BPLO + \beta_2 \cdot NOFF + \beta_3 \cdot OSS + \beta_4 \cdot YOGPR + \beta_5 \cdot ALBPB$$

$$PTE = \alpha + \beta_1\ BPLO + \beta_2 \cdot NOFF + \beta_3 \cdot OSS + \beta_4 \cdot YOGPR + \beta_5 \cdot ALBPB$$

$$SE = \alpha + \beta_1\ BPLO + \beta_2 \cdot NOFF + \beta_3 \cdot OSS + \beta_4 \cdot YOGPR + \beta_5 \cdot ALBPB$$

where α is a constant and the βs are the coefficients of the independent variables and the dependent variables (TE, PTE, SE) lie between 0 and 1.

A truncated Tobit regression was used to estimate the parameters of the regression model.

The independent variables included to explain the percentage changes in efficiencies between two time periods (percentage change in TE, PCHTE; percentage change in pure technical efficiency PCHPTE; percentage change in scale efficiency, PCHSE) were the percentage change in assets (PCHASSETS), the percentage change in the number of personnel (PCHPERS), the percentage change in portfolio at risk >

Table 7.3 Description of variables used in regression models

Variable	**Description**	**Hypothesized relationship with efficiency and percentage change in efficiency**
	Dependent variables	
TE	**Technical efficiency**	
PTE	**Pure technical efficiency**	
SE	**Scale efficiency**	
	Independent variables	
BPLO	Borrowers per loan officer	Positive
NOFF	Number of offices	Positive
OSS	Operational self-sufficiency	Positive
YOGPR	Yield on gross portfolio (real)	positive / negative
ALBPB	Average loan balance per borrower	Positive
	Dependent variables	
PCHTE	**Percentage change in technical efficiency**	
PCHPTE	**Percentage change in pure technical efficiency**	
PCHSE	**Percentage change in scale efficiency**	
	Independent variables	
PCHASSETS	Percentage change in assets	Positive
PCHPERS	Percentage change in number of personnel	Positive
PCHRISK	Percentage change in portfolio at risk > 30 days	positive / negative
PCHOPEX	Percentage change in operating expense	Negative

30 days (PCHRISK), and the percentage change in operating expenses (PCHOPEX).

Ordinary least squares was used to estimate the parameters of the above multiple regression model.

The descriptions of the dependent and independent variables used in the OLS regressions are given in Table 7.3.

4 Results and discussion

In this section, we first report the estimates of mean technical efficiency (TE), pure technical efficiency, and SE for the 57 MFIs in the dataset during the pre-crisis, crisis, and post-crisis periods (2009, 2010, and 2011 respectively), a total of 171 (57 * 3) observations or decision-making units. Next, the effects of the crisis on different sizes of MFIs are described. We then further analyse MFIs that show a nominal increase or decrease in efficiency after the crisis. Finally, we describe the results of the tests used to analyse the determinants of MFI efficiency.

4.1 Effect of the crisis on the mean efficiency of MFIs

The mean values of the three different kinds of efficiency explained earlier are presented in Table 7.4a.

A dip in mean TE and pure TE can be observed in the crisis year (2010), followed by a recovery. The differing relative dips in mean technical efficiency and mean pure technical efficiency resulted in an increase in mean SE over the crisis period. Statistical tests of the differences in efficiencies, however, reveal that they are not significant. Both the Kruskal-Wallis and Mann-Whitney (Wilcoxon rank sum) tests (Table 7.4b) show

Table 7.4a Year-wise average efficiency

Year	MFI (N)[a]	Technical Efficiency(TE)	Pure Technical Efficiency (PTE)	Scale Efficiency (SE)
2009	**57**	0.7838	0.8301	0.9484
2010	**57**	0.7751	0.8107	0.9604
2011	**57**	0.7811	0.8260	0.9504

[a] The number of MFIs in each year is 57

Table 7.4b Univariate analysis of change in efficiency between two years

	Technical Efficiency (TE)		Pure Technical Efficiency (PTE)		Scale Efficiency (SE)	
Comparison between years	**K-W Test[a] χ^2value**	**M-W Test[b] z value**	**K-W Test[a] χ^2value**	**M-W Test[b] z value**	**K-W Test[a] χ^2 value**	**M-W Test[b] z value**
2009 & 2010	0.128[A]	0.358[A]	0.923[D]	0.961[D]	0.279[G]	0.528[G]
2010 & 2011	0.015[B]	–0.122[B]	0.155[E]	–0.393[E]	0.318[H]	0.564[H]
2011 & 2009	0.138[C]	0.372[C]	0.288[F]	0.536[F]	1.049[K]	1.024[K]

[a] Kruskal-Wallis test of equality of populations
[b] Mann-Whitney (Wilcoxon rank sum) test
[A] P-value 0.7207 (not significant) [D] P-value 0.3366 (not significant) [G] P-value 0.5977 (not significant)
[B] P-value 0.9030 (not significant) [E] P-value 0.6940 (not significant) [H] P-value 0.5727(not significant)
[C] P-value 0.7102 (not significant) [F] P-value 0.5917 (not significant) [K] P-value 0.3058 (not significant)

These tests were performed to test the null hypothesis that there was no significant difference in the efficiency between the two years.

that the null hypotheses of the efficiencies coming from the same populations and the efficiency ranks being the same over the three years cannot be rejected at the ten per cent level of significance. The crisis thus does not appear to have had a major overall effect on the efficiencies of MFIs

4.2 Effect of the crisis on different sizes of MFIs

The MIX database categorizes MFIs according to the size of their gross loan portfolios. MFIs having a gross loan portfolio lower than USD 2 million are placed in the 'small' category, those whose gross loan portfolios lie between USD 2 and 8 million fall into the 'medium' category, and those for which it is in excess of USD 8 million are categorized as 'large'.

Average efficiencies by MFI size in the pre- and post-crisis years are shown in Table 7.5a. Tests were carried out to assess the effect of the crisis on the efficiency of each category of MFIs. The results show that, for the 'medium' category of MFIs, the difference in efficiency between 2009 (pre-crisis) and 2011 (post-crisis) is statistically significant at the ten per cent level (Table 7.5b). Both the Kruskal-Wallis and the Mann-Whitney (Wilcoxon rank sum) tests indicate a p-value of .072 for TE and a p-value of .071 for pure technical efficiency (Table 7.5b). This implies that, for medium-sized MFIs, there was a post-crisis reduction in both the technical and pure technical efficiencies compared to the pre-crisis levels. No statistically significant change is found with respect to SE (Table 7.5b). In the case of the 'large' and 'small' categories of MFIs, there is no significant difference in any of the three kinds of efficiency (Table 7.5b).

The Kruskal-Wallis test of equality of populations shows statistically significant differences in efficiency, size-wise, for SE (at a p-value

Table 7.5a **Average efficiencies by size in pre-crisis (2009) and post-crisis (2011) years**

	Technical Efficiency (TE)		Pure Technical Efficiency (PTE)		Scale Efficiency (SE)	
SIZE	Yr – 2009	Yr – 2011	Yr – 2009	Yr – 2011	Yr – 2009	Yr – 2011
Large[a]	0.7762	0.8036	0.8117	0.8331	0.9609	0.9685
Medium[b]	0.8482	0.761	0.8653	0.7848	0.9801	0.9708
Small[c]	0.6935	0.6894	0.8544	0.8786	0.821	0.7913

[a] The number of large MFIs in the pre-crisis and post-crisis periods are 36 and 37 respectively.

[b] The number of medium-sized MFIs is 14 in both the pre-crisis and post-crisis periods.

[c] The number of small MFIs in the pre-crisis and post-crisis periods are 7 and 6 respectively.

Table 7.5b Univariate analysis of size-wise efficiency change between pre-crisis and post-crisis years

	Technical Efficiency (TE)		Pure Technical Efficiency (PTE)		Scale Efficiency (SE)	
SIZE	**K-W Test[1] χ^2 value**	**M-W Test[2] Z value**	**K-W Test[1] χ^2 value**	**M-W Test[2] Z value**	**K-W Test[1] χ^2 value**	**M-W Test[2] Z value**
Large	0.242[x]	–0.492[x]	0.106[x]	–0.325[x]	0.871[x]	0.934[x]
Medium	3.2290[3]	1.7970[3]	3.2610[4]	1.8060[4]	1.435[x]	1.198[x]
Small	0[x]	0[x]	0.083[x]	–0.287[x]	0.327[x]	0.571[x]

[1] Kruskal-Wallis test of equality of populations

[2] Mann-Whitney (Wilcoxon rank sum) test

[3] P-value of 0.0724 – i.e., 10% level of significance

[4] P-value of 0.0709 – i.e., 10% level of significance

[x] Not significant (P-values greater than .1)

These tests were performed to test the null hypothesis that there was no significant difference in efficiency between the pre- and post-crisis years for all sizes of MFI.

of .0007) but not for TE or pure technical efficiency, in the post-crisis period (2011). Also, in the same period, the 'small' category shows a statistically lower level of SE than those of both the 'medium' (at a p-value of .0007) and 'large' (at a p-value of .0006) categories, according to the Kruskal-Wallis and Mann-Whitney (Wilcoxon rank sum) tests on the null hypothesis of equality of populations and rank sum.

4.3 Analysis of MFIs showing a nominal decrease or increase in efficiency after the crisis

For each type of efficiency, the MFIs are segmented into two groups. One group includes those MFIs whose post-crisis (2011) efficiency is lower than their pre-crisis (2009) efficiency; the other group includes MFIs whose post-crisis efficiency is greater than or equal to their pre-crisis efficiency. The average efficiencies of these groups are shown in Table 7.6a. It can be observed that those MFIs whose efficiencies decreased nominally between the pre-crisis (2009) and post-crisis (2011) periods had statistically significantly higher efficiency levels than the other MFIs in the pre-crisis period (2009), and also showed statistically significantly lower efficiency levels than the other MFIs in the post-crisis period (2011). In other words, the ranking of the MFIs based on efficiency reversed after the crisis.

Table 7.6a Average year-wise efficiency of MFI groups that had decreased or increased in efficiency between the pre- and post-crisis years

Technical Efficiency (TE)					**Pure Technial Efficiency (PTE)**					**Scale Efficiency (SE)**				
Group[a]	**MFI(N)**	**2009**	**2010**	**2011**	**Group[b]**	**MFI (N)**	**2009**	**2010**	**2011**	**Group[c]**	**MFI (N)**	**2009**	**2010**	**2011**
TE-DECR	31	.858	.7839	.7365	PTE-DECR	28	.881	.8112	.7705	SE-DECR	31	.9695	.9503	.9283
TE-INCR	26	.6953	.7647	.8342	PTE-INCR 29	.7809	.8102	.8796	SE-INCR	26	.9232	.9726	.9767	

[a] TE-DECR (TE-INCR) is a group of 31 (26) MFIs that decreased (increased or remained same) in TE between 2009 and 2011

[b] PTE-DECR (PTE-INCR) is a group of 28 (29) MFIs that decreased (increased or remained same) in PTE between 2009 and 2011

[c] SE-DECR (SE-INCR) is a group of 31 (26) MFIs that decreased (increased or remained same) in SE between 2009 and 2011

Both the Kruskal-Wallis and the Mann-Whitney (Wilcoxon rank sum) tests show p-values of .0002 (for 2009) and .0035 (for 2011) in the tests of TE (Table 7.6b). When the efficiency type is changed to pure technical efficiency, the results are similar, with p-values of .0319 for 2009 and .0005 for 2011 (Table 7.6b). The results for technical and pure technical efficiency are similar, as noted in Section 4.2.

For SE, MFIs whose efficiencies decreased nominally after the crisis had statistically significantly (at the 1 per cent level) higher efficiency levels in the pre-crisis period (2009) (as with the technical and pure TE cases stated above), but statistically significantly lower efficiency levels in *both* the crisis (2010) and post-crisis (2011) periods (unlike the technical and pure technical efficiency cases), than those MFIs whose efficiencies remained the same or increased nominally after the crisis. Both the Kruskal-Wallis and Mann-Whitney (Wilcoxon rank sum) tests indicate p-values of .0026 (2009), .0169 (2010) and .0068 (2011), as shown in Table 7.6b.

4.4 Determinants of MFIs' efficiencies

Truncated Tobit regression was carried out with the three types of efficiencies as dependent variables and with a selected set of independent variables – borrowers per loan officer (BPLO), number of offices, OSS,

Table 7.6b Univariate analysis of year-wise efficiency difference between decreasing (DECR) and non-decreasing (INCR) groups of MFIs

	Technical Efficiency (TE)			**Pure Technical Efficiency (PTE)**			**Scale Efficiency (SE)**		
Test Type	**2009**	**2010**	**2011**	**2009**	**2010**	**2011**	**2009**	**2010**	**2011**
K-W Test[1] : χ^2***-value***	13.558[A]	0.247[B]	8.506[C]	4.605[D]	0.017[E]	12.03[F]	9.041[G]	5.703[H]	7.334[K]
M-W Test[2] : Z value	3.682[A]	0.497[B]	–2.9060[C]	2.146[D]	–0.128[E]	–3.468[F]	3.007[G]	–2.388[H]	–2.708[K]

[1]Kruskal-Wallis test of equality of populations

[2]Mann-Whitney (Wilcoxon rank sum) test

These tests were performed to test the null hypothesis that there was no significant difference inefficiency between the two groups of MFIs, namely DECR and INCR.

[A] P-value of .0002 (1% significance) [D] P-value of .0319 (5% significance)
[G] P-value .0026 (1% significance)

[B] P-value of .6193 (not significant) [E] P-value of .8978 (not significant)
[H] P-value .0169 (5% significance)

[C] P-value of .0035 (1% significance) [F] P-value of .0005 (1 % significance)
[K] P-value .0068 (1% significance)

yield on gross portfolio (real), and average loan balance per borrower. The objective was to explore whether a significant relationship existed between these variables and efficiency. The results are shown in Table 7.7.

The results indicate that the coefficients of OSS and yield on gross portfolio (real) are significant, at better than 1 per cent for technical and pure technical efficiency and at 5 per cent for SE. The sign of the coefficient of the former is significantly positive and that of the latter significantly negative. The former result confirms the expectation that OSS goes hand in hand with efficiency. The latter result is more surprising in that the higher is the yield, the lower is the efficiency. A possible explanation for this lies in the fact that the DEA model used in the study considered portfolio quality by including portfolio at risk as an

Table 7.7 Efficiency determinants

	Truncated Tobit Regression Results		
	TE **Coeff (p-value)**	**PTE** **Coeff (p-value)**	**SE** **Coeff (p-value)**
CONSTANT	.6883508*** (0.000)	.699758*** (0.000)	.9309631*** (0.000)
BPLO	.0000196** (0.026)	.0000179* (0.096)	.0000178** (0.026)
NOFF	.0000528 (0.152)	.0003435*** (0.000)	−.0000719*** (0.001)
OSS	.1613443*** (0.000)	.1578671*** (0.000)	.0494031** (0.035)
YOGPR	−.922918*** (0.000)	−.7702494*** (0.005)	−.2554397** (0.036)
ALBPB	.0000276 (0.525)	.0000456 (0.413)	.0000119 (0.639)
Log likelihood	60.056194	4.0926076	154.15775
Number of Observations	170	170	170
LR chi2 (5)	43.04	48.36	30.03
Prob > chi2	0.0000	0.0000	0.0000

$TE_j = \alpha + \beta_1$ BPLO + $\beta_2 \cdot$ NOFF + $\beta_3 \cdot$ OSS + $\beta_4 \cdot$ YOGPR + $\beta_5 \cdot$ ALBPB

$PTE_j = \alpha + \beta_1$ BPLO + $\beta_2 \cdot$ NOFF + $\beta_3 \cdot$ OSS + $\beta_4 \cdot$ YOGPR + $\beta_5 \cdot$ ALBPB

$SE_j = \alpha + \beta_1$ BPLO + $\beta_2 \cdot$ NOFF + $\beta_3 \cdot$ OSS + $\beta_4 \cdot$ YOGPR + $\beta_5 \cdot$ ALBPB

where α is a constant and the βs are the coefficients of the independent variables

The dependent variables are the three types of efficiency scores derived from the DEA, namely technical efficiency (TE), pure technical efficiency (PTE), and scale efficiency (SE). BPLO is the average number of borrowers per loan officer. NOFF is the number of offices that an MFI has. OSS is operational self-sufficiency. YOGPR is the yield on the gross portfolio (real). ALBPB is the average loan balance per borrower. Values in parentheses are p-values and ***, **, and * indicate significance at the 1, 5, and 10% levels. There are 57 MFIs and each is considered for three years. There was one observation with missing values that was dropped. This left 170 (= 3*57 – 1) observations.

input. This could have tempered the positive effect on efficiency that high interest rates are usually expected to have.

The independent variable BPLO has, as expected, a positive and significant coefficient at better than the 10 per cent level for all efficiency types, showing that the more borrowers a loan officer can process the better will be the MFI's efficiency. The ALBPB has an as expected positive effect; however, the coefficient is not significant, with p-values of .53, .41 and .64 for technical, pure technical and SE respectively. Pure technical efficiency increases as the number of offices increases, as is shown by the positive coefficient at the 1 per cent level of significance. A larger network of branches appears to contribute positively to efficiency. The sign of the coefficient of number of offices in the SE regression shows that it is significantly negative (at the 1 per cent level). This is explained by SE's relationship with pure TE. When the number of offices increases, the pure technical efficiency increases in a statistically significant manner (as described above), resulting in a decrease in the value of the SE. Number of offices has the expected positive coefficient in the technical efficiency regression; however, the coefficient is significant only at the 15 per cent level.

Next, an ordinary least squares regression was run, between the percentage changes in the three types of MFI efficiency between consecutive years as the dependent variable, and several independent variables for the corresponding MFIs and years (percentage change in assets, percentage change in personnel, percentage change in operational expenses, and percentage change in portfolio at risk > 30 days). The results (see Table 7.8) show that the coefficients of the first three independent variables have the expected signs, although only the percentage change in assets shows statistical significance (technical and scale efficiencies at the 1 per cent level; pure technical efficiency at the 8 per cent level). In essence, the result can be stated as follows: the greater is the change in assets, the greater is the change in efficiency in the same direction. This is consistent with the findings of Hartarska, Shen, and Mersland (2013). The sign of the coefficient of 'percentage change in risky portfolio > 30 days' is significant (at the 1 per cent level) and negative for technical and pure technical efficiency, signifying that the change in efficiency is in the opposite direction to the percentage change in the risky portfolio. This indicates that, as the risk exposure is lowered, the change in efficiency takes a turn for the better. The coefficient for SE is not statistically significant (p-value .531). This could be because riskier portfolios require greater monitoring.

Table 7.8 Determinants of the percentage change in efficiency

	Ordinary Least Squares Regression Results		
	PCHTE Coeff (p-value)	**PCHPTE Coeff (p-value)**	**PCHSE Coeff (p-value)**
CONSTANT	.0603311*** (0.002)	.0396804** (0.013)	–.0044351 (0.537)
PCHASSETS	.1989772*** (0.000)	.0571917* (0.078)	.0866464*** (0.000)
PCHPERS	.029384 (0.197)	.0049097 (0.795)	.0034019 (0.693)
PCHOPEX	–.0412566 (0.282) –.0722546** (0.025)	–.0124653 (0.392)	
PCHRISK	–1.79e-09 (0.004)	–2.17e-09 (0.000)	–1.47e-10 (0.531)
F-statistic	11.13*** (0.0000)	5.39*** (0.0005)	15.81*** (0.0000)
Number of observations	114	114	114
R^2	0.2900	0.1652	0.3672
Adj. R^2	0.2639	0.1345	0.3440
Root mean square error	0.18502	0.15369	0.07027

$PCHTE_j = \alpha + \beta_1$ PCHASSETS + $\beta_2\cdot$ PCHPERS + $\beta_3\cdot$ PCHOPEX + $\beta_4\cdot$ PCHRISK

$PCHPTE_j = \alpha + \beta_1$ PCHASSETS + $\beta_2\cdot$ PCHPERS + $\beta_3\cdot$ PCHOPEX + $\beta_4\cdot$ PCHRISK

$PCHSE_j = \alpha + \beta_1$ PCHASSETS + $\beta_2\cdot$ PCHPERS + $\beta_3\cdot$ PCHOPEX + $\beta_4\cdot$ PCHRISK

where α is a constant and the βs are the coefficients of the independent variables.

The dependent variables are the percentage changes in the three types of efficiency scores derived from the DEA over two consecutive years (between 2009 and 2010, and between 2010 and 2011), namely the percentage change in technical efficiency (PCHTE), the percentage change in pure technical efficiency (PCHPTE), and the percentage change in SE (PCHSE). PCHASSETS is the percentage change in assets over two consecutive years. PCHPERS is the percentage change in the number of personnel over two consecutive years. PCHOPEX is the percentage change in operational expenses over two consecutive years, and PCHRISK is the percentage change in portfolio at risk > 30 days over two consecutive years. Values in parentheses are p-values and ***, **, and * indicate significance at the 1, 5, and 10% levels. There are 57 MFIs with each having two observations of percentage changes, one between 2009 and 2010 and the other between 2010 and 2011. This gives 114 (= 57 * 2) observations.

5 Concluding remarks

This study investigates the effect of the 2010 crisis on the efficiency of Indian MFIs. DEA is used to assess the efficiency before, during, and after the crisis. The DEA model incorporates both the social and financial objectives of MFIs. The quality of the loan portfolio is also incorporated, by including portfolio at risk as an input. A truncated Tobit model is used to examine the relationship between the efficiency scores derived from the DEA and a set of explanatory variables.

It is found that, while the overall mean efficiency of the MFIs dipped during the crisis, it had recovered to the pre-crisis level by 2011. This shows that, although the crisis had an effect on MFI efficiency, the effect was temporary. Interestingly, one of the findings is that the ranking of the MFIs on the basis of efficiency reversed: MFIs that had higher relative efficiency prior to the crisis were found to have lower relative efficiency after the crisis. This indicates that the MFIs in the dataset appeared to have reconsidered their strategies after the crisis. Many of the MFIs whose relative efficiency had fallen were found to have increased their number of employees and consequently their operating costs, which could be due to increased monitoring activities. Many of the MFIs that improved their relative efficiencies were found to have consolidated their presence by reducing their number of offices and consequently their operating expenses. In addition, it was found that MFIs belonging to the 'small' category had significantly lower SE than the larger MFIs in 2011.

The results of the regression showed that TE was positively associated with the OSS of the MFIs and the number of borrowers per loan officer (BPLO) but negatively associated with yield (which in turn is a function of the interest rate charged). The latter result is surprising as, generally, MFIs justify high interest rates on the basis of viability, which often implies efficiency. The result, however, indicates that pursuing social and financial objectives may not pose much of a conflict for MFIs – as charging very high interest rates may be counterproductive to both objectives. This study's findings show that further research is required on the linkage between the interest rates charged by MFIs and their efficiencies.

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8

Impact of Regulation on the Cost Efficiency of Microfinance Institutions in Bangladesh

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1 Introduction

The increasing recognition of microfinance as an instrument of poverty alleviation has created numerous microfinance institutions (henceforth, MFIs) in Bangladesh. Albeit, the top five MFIs control around 60 per cent of the microcredit market, both horizontal and vertical growth over the past two decades ended up at more than 750 MFIs with a network of over 17 thousand branches (CDF and InM 2011). These institutions emerged as self-regulated non-government social organizations. Nevertheless, self-regulation appeared to be inadequate to protect interest of member savings and lenders with growing number of evidences of unscrupulous behaviour of the management and/or indiscernible exit of some of these institutions from the credit market.

Khalily and Imam (2001) showed MFIs with access to subsidized funds had higher expense behaviour implying inefficient use of resources. In contrast, Khandker (1996) argued for higher subsidization of the institutions to save them from potential 'mission drift'. Other studies showed that most of the MFIs had negative economic profit, but financial performance was positively correlated with size (Khandker, 1966; Khalily et. al., 2000; Microcredit Regulatory Authority (MRA), 2010; Quayes and Khalily, 2013). In a report, MRA showed that around 14 per cent of the licensed MFIs incurred financial loss in 2010 due to high staff salary and poor fund management, among other factors. Nonetheless, most of the microfinance institutions continued to operate introducing innovative financial services. However, throughout the path of escalation, MFIs were self-regulated and the overall sector was unguarded. The spontaneous and exponential growth of microfinance sector over the past three decades increasingly required a regulatory framework to bring the heterogeneous systems and practices under a single umbrella so that transparency and accountability of MFIs are ensured.

Studies well documented the need for regulation of financial institutions (see Smith and Warner, 1979; Stiglitz and Weiss, 1981; Diamond and Dybvig, 1983; Chavez and Gonzalez-Vega, 1994; Khalily and Imam, 2001; Cull et al., 2011). Regulation plays a crucial role to protect member savings, ensure sustainability of lenders, improve efficiency of microcredit markets, reduce expense preference behaviour of subsidized MFIs, and most importantly, to safeguard the stability of financial systems. It is 'more warranted' when MFIs are expected to be transformed into full-fledged financial intermediaries through regulation (Chavez and Gonzalez-Vega, 1994).

Despite empirical evidences for regulation, MFIs in Bangladesh were less interested in formal regulatory framework as they perceived self-regulation as effective mechanism and apprehended that a formal regulation will limit their independence, make them less cost effective, and might affect their ultimate goal of poverty alleviation and sustainability. Nonetheless, a formal regulatory framework became effective in Bangladesh with establishment of Microcredit Regulatory Authority (henceforth, MRA) in 2006. The MRA has enacted many rules and regulations during the past six years since its inception.

The critical question is, how regulation affects performance and efficiency of MFIs in Bangladesh. In this paper, we address the question of impact of regulation on cost efficiency of MFIs in Bangladesh using the financial information of some 182 licensed MFIs covering both pre- and post-licensing period.

2 Regulatory framework for microfinance in Bangladesh

Bangladesh, even as a pioneering country in microfinance, lagged behind many countries in enacting regulatory framework for microfinance institutions. The global experience of regulatory framework for microfinance institutions shows evidence of several approaches (Rahman and Rashid, 2011). In most of the countries, the central bank regulates microfinance under the existing laws for bank and non-bank financial institutions or through extension of previous act or law (e.g., Nigeria and Ethiopia). Some other countries (such as Bolivia, Peru, and Nepal) introduced separate act for MFIs executed and implemented by the central bank.

The government of Bangladesh has pursued a different approach – creating an independent regulatory authority with a formal link to the central bank. It established MRA under the Microcredit Regulatory Act 2006. Before the act, it had a separate governing body with the Governor of the Central Bank (Bangladesh Bank) as its chair. While this makes MRA independent, it helps the central bank to establish linkage between formal credit market and microcredit market and thereby to ensure the effectiveness of monetary policy.

The necessity of MRA was mainly two-fold: (1) formalizing the microfinance industry and (2) regulating and monitoring the MFIs. With the licensing system under MRA, MFIs in Bangladesh have emerged as specialized formal financial institutions. As per the MRA Act of 2006, the requirements for getting a MRA licence were minimum four million taka (USD$ 50000) of loan outstanding plus 1,000 borrowers. MRA revised the requirements in December 2009 and reduced minimum loan outstanding to three million taka (USD$ 37500) and the number of active borrowers to 800.

Prior to the second half of 2010, licensed MFIs underwent off-site and on-site monitoring. The off-site monitoring mechanism was more limited to analysis of half-yearly and yearly financial statements and outreach information and MRA used to provide MFIs with necessary operational directions to correct certain situations. The on-site monitoring by MRA staffs was for validation of information provided, and structuring or restructuring of financial system, and monitoring mechanism.

On 10 November 2010, the MRA introduced uniform financial rules for the licensed MFIs with the circular five. It set a ceiling on loan application fee, membership fees, passbook charge non-judicial stamp fee for loan contract, increased the grace period to a maximum of 15 days, and set the number of weekly instalments to 46. Most importantly, it set a floor interest rate of six per cent on member savings, prohibited all forms of deductions from the principal loan amount, and set a ceiling on lending interest rates of maximum 27 per cent per annum under declining balance method. Finally, the circular requires all MFIs to maintain a definite salary structure accessible to MRA. Although MRA recommended MFIs to comply with these rules from 10 November 2010, the deadline of full implementation of circular five was 30 June 2011. Hence, with off-site and on-site monitoring and uniformity in financial rules, we expect both direct and indirect changes in the operations and performance of the licensed MFIs.

Another significant set of rules is compacted in 'Microcredit Authority Rules 2010' on 19 December 2010. It defines the licensing procedure, condition for licence, temporary suspension or withdrawal of approval, and cancellation of licence and licensing charges. In improving the efficiency of MFIs and protecting interest of members (savers), the rules of 2010 require all licensed MFIs to maintain cash liquidity at 15 per cent of total net deposits. It also allows MFIs to mobilize voluntary deposits under certain conditions like a minimum five years of experience in microcredit operations, continuous profitable operations, and high loan recovery rate of over 90 per cent.

Aforementioned rules and regulations as well as suggestive guideline have direct bearing on efficiency. On the one hand, reducing the lending interest rate and charging interest on a declining balance method will have a negative impact on revenue from lending. The increasing deposit interest rate will make it costly for the MFIs but the approval of public deposits mobilization in some cases will reduce dependency on borrowed funds. The prohibition of all forms of deductions from principal loan will reduce the loanable fund for the MFIs. Given all these rules, the only major way the licensed MFIs can be on the path of sustainability will be through becoming cost efficient.

3 Literature review

3.1 Efficiency of MFIs in Bangladesh

Efficiency is not a novel concept in the microcredit industry. However, studies evaluating efficiency of MFIs in Bangladesh are very rare to find. Sinha (2011) analyzed performances of the largest ten MFIs and found that active borrowers, portfolio size, and average loan balance have increased steadily over time and their contribution to financial inclusion is substantial. The cost per borrower is one of the lowest worldwide, operational efficiency is high, and the yield has been stable in recent years.

In the early stage of micro finance, the MFIs were largely subsidized. Therefore, sustainability of the MFIs in the absence of subsidy was a concern. Khandker et al. (1995) showed that Grameen Bank was profitable and it had enjoyed built-in subsidy in the form of low cost funds. Khalily et al. (2000) showed a lower dependency of Grameen Bank on subsidized fund. The Bank can now fully finance its loan portfolio with deposits mobilized from the members and public.

Hudon and Traca (2011) show that in the long run, subsidy-independent MFIs are more efficient than their counterfactual and this is mostly explained by the existence of expense preference behaviour. On a global dataset, Hartarska et. al. (2013) found that larger MFIs were more efficient than smaller ones. Quayes and Khalily (2013) confirmed the finding on Bangladeshi data.

Khalily et al. (2000) developed the Efficiency and Subsidy Intensity Index (ESII) to examine the sustainability and efficiency of the two MFIs: Grameen Bank and ASA. They found that ASA was more cost effective and sustainable than Grameen Bank. This occurs due to low salary base and high lending interest rate of ASA. If ASA had to operate with the average salary of Grameen, given the present level of operation, it would be very worse off. In contrary, Grameen Bank would be much better off at a low salary base of ASA.

Hermes et al. (2011) used stochastic frontier analysis to examine the trade-off between outreach and efficiency of MFIs. Using data of 1300 MFIs across the world, they find strong evidence that outreach negatively relates to efficiency. Quayes and Khalily (2013) also found a trade-off between depth of outreach (inverse of average loan size per borrower) and cost efficiency in Bangladesh. Larger MFIs are more efficient than smaller ones (Hartarska et al., 2013).

The review of selected studies shows that subsidy, interest rate, MFI size, and salary structure of employees mainly determine efficiency of a microfinance institution. But there are only few studies that have addressed the question of extent of impact of regulation on efficiency of MFIs. We shall focus on them in the next section.

3.2 Studies on regulatory impact on MFIs

There are a handful studies on impact of regulation on the performance, in particular on cost efficiency and the findings of these studies are mixed.

Hartarska and Nadolnyak (2007) analyzed that regulatory involvement does not directly affect performance either in terms of OSS or outreach, but it could have indirect benefits. Barry and Tacneng (2011) found that regulation and audit does not necessarily enhance portfolio quality, albeit it might lead to better efficiency and productivity. Mersland and Strøm (2009) included bank regulation in their study on the relationship between governance and performance though they could not find that MFIs being regulated by national banking authorities had different performance than unregulated MFIs. What they did find was that performance is improving when MFIs have local directors on their boards, internal auditors reporting to their boards and are managed by female executive officers (CEOs) (Mersland and Strøm, 2009). In a recent paper, Strøm et. al. (2014), found that that not only are female CEOs having a positive impact on MFI performance, also female board president and, to some degree, female board members contribute to improved MFI performance. This result is similar to Welbourne (1999) and Smith et al. (2006) that women in management have a positive impact on firm performance.

Compliance with regulation can raise cost per se. Cull et al. (2011) argued that an MFI under strict and regular supervision was not 'less profitable', but it tended to have larger average loan size and less lending to costly borrowers. A contemporary study by Randøy et al. (forthcoming) also shows that regulated MFIs have significantly larger loan amounts compared to non-regulated MFIs, for either regulatory costs or their better access to funds. Hartarska and Mersland (2012) constructed an index of regulatory environment and found weak evidence that MFIs in countries with mature regulatory environments could benefit from being regulated. Most of these studies, however, broadly adopted dummy variables to capture regulation, and used conventional ratios as a measure of performance and/or efficiency.

4 Methodology

4.1 Concept and measurement of cost efficiency

In general, the concept of efficiency relates to quantities and costs of inputs and outputs. A firm is efficient if it is able to maximize the quantity of an output for given quantity of inputs, or in other words, it can operate at the least cost of inputs for a given quantity of output.

Researchers estimate the efficiency using various approaches – parametric approach like stochastic frontier analysis (SFA) and non-parametric approach like data envelopment analysis (DEA). Some papers have compared parametric and non-parametric approach to efficiency analysis such as Bjurek et al. (1990), Ferrier and Lovell (1990), Giokas (1991), Resti (1997), Jacob (2000), and Cooper and Tone (1997). SFA has at least two advantages over non-parametric approaches. First, non-parametric methods assume that the variations in firm performance are all attributed to inefficiency. This assumption is problematic as it ignores the measurement errors, omitted variables, and exogenous shocks in the measurement. Second, one can test related hypotheses for the estimated parameters. Major disadvantage of using parametric methods is its restrictions on the observed datasets through the imposition of functional form (Masood and Ahmad, 2008). Additionally, efficiency measurement is also highly dependent on whether the functional form reflects the reality or not.

4.2 Specification of the cost frontier

We want to look at efficiency of Bangladeshi MFIs before and after regulation of MRA. For this, we use the SFA model that Battese and Coelli (1995) specified for panel data:

$$\ln C_{it} = c(x_{it}; \beta) + v_{it} + u_{it} \tag{1}$$

where C_{it}, total operating cost of i^{th} MFI (i=1, 2,…, N) at time t (t=1, 2,…,T) and $c(\beta \ln x_{it})$ is the cost frontier. x_{it} is the $(1\times k)$ vector of logarithm of input prices and product quantities of MFI i at time t. β is the $(k\times 1)$ vector of unknown parameters to be estimated. The term v_{it} is a random variable, and it is assumed that $v_{it} \sim iidN(0,\sigma_v^2)$, while u_{it} is a non-negative random variable that shows technical inefficiency in cost with $u_{it} \sim N^+(z_{it}\alpha,\sigma_u^2)$.

The exact structure of the aforementioned cost function is unknown to us. Hence, we use Transcendental Logarithmic (translog) cost function to allow flexibility (Benston et al., 1982: Murray and White, 1983: Gilligan and Smirlock, 1984; and Gilligan et al., 1984). It is specified as follows:

$$\begin{aligned}\ln C_{it} &= \alpha_0 + \sum_i^n \alpha_i \ln Y_{it} + \sum_j^m \beta_j \ln P_{jit} + \frac{1}{2}\sum_i^n\sum_k^n \sigma_{ik} \ln Y_{it} \ln Y_{kit} \\ &\quad + \frac{1}{2}\sum_j^m\sum_h^m \gamma_{jh} \ln P_{jit} \ln P_{hit} + \sum_i^n\sum_j^m \delta_{ji} \ln Y_{it} \ln P_{jit} + u_{it} + v_{it}\end{aligned} \tag{2}$$

Where C refers to total operating costs, Y_i is the quantity of i^{th} output, and P_j is unit price of j^{th} factor input at time t. Generally, a MFI provides its clients with two types of service: saving and lending. However, we consider 'loan', not member savings, as end output since MFIs do not mobilize public deposits in Bangladesh. They collect only member savings, which is tied to loans to a great extent. They largely finance themselves by institutional borrowings. Further, we include three variables as input prices: labour wages (w), interest rate on institutional borrowing (rb), and interest rate on members' savings (rs). As a regularity condition, the translog cost model should be linearly homogenous in all input prices. Therefore, symmetry condition was imposed.

Cost must equal the input expenses (some combination of labour and capital with *w*, *rb,* and *rs*), to produce a certain amount of output (*y*). If the cost is more than the expenses, *u* and *v* will be greater than zero, that is, some unobserved factors that are contributing to its cost more than they do for an average MFI. Of these unobserved factors (*u*+*v*), we define that *u* is the part that can be eliminated if the MFI could be efficient. On the other hand, *v* is the part that is truly unobserved and is idiosyncratic to that institution.

4.3 Specification of stochastic cost inefficiency models

The unobserved factors (*u*+*v*), as noted above, is the difference between actual cost and predicted cost, derived from the cost stochastic frontier model. To separate out u and v, we regress the predicted value (*u*+*v*) on various factors that can contribute to the inefficiency of MFI. This enables us to predict the inefficiency scores (*u*). An MFI is perfectly efficient if the inefficiency score is zero, and it will be positive otherwise.

Now we define the stochastic inefficiency term as

$$U_{it} = z_{it}\alpha + \varepsilon_{it}\text{(Inefficiency Model)}$$

Where z_{it} is a $(1\times m)$ vector of exogenous variables that affect technical inefficiency of MFI, including regulation variable. In addition α, is the $(m\times 1)$ vector of unknown parameters to be estimated. ε_{it} is a random variable and $\varepsilon_{it} \geq -z_{it}\alpha$ because we set earlier that $u_{it} \geq 0$ and this makes $\varepsilon_{it} \sim N^{+}(z_{it}\alpha,\sigma_u^2)$.

To understand factors of cost inefficiency, we consider the number of years the MFI is under the regulation (REG). As licensing has a cost, regulation may add to cost escalation, but the licensed MFIs are expected to respond to such a cost increase by being more efficient over time. To control the effect of time and to capture the process of ‘learning by doing’, we include age of microfinance institution (AGE).

Among the other variables, we include a dummy that represents the gender of the executive director of the MFI (MED: Male=1, 0 female) following Mersland and Strøm (2009). The variable ‘number of borrowers per staff’ (BPS) measures productivity of MFI employees. An increase in the productivity of employees implies an improvement in cost efficiency, *ceteris paribus*. So the relation between ‘number of BPS’ and ‘cost inefficiency’ is expected to be negative. With direct income subsidy (DIS), MFIs are likely to be more inefficient. Edwards (1977) showed that an expense preference theoretical framework better explains the behaviour of regulated firms than does a profit maximization framework. We also control for MFI size (MFSIZE), as larger MFIs enjoy economies of scale and tend to be more efficient than the smaller ones.

MFIs with greater share of member savings in loans financing are more prudent in investment decision because of assumed deposit liability. Therefore, we expect the relationship between savings-loans outstanding ratio (SAVLOR) and inefficiency to be negative. On the contrary, cost inefficiency might be increasing in investment to asset ratio (INVASSR) as MFIs can only invest in long-term deposits (with lower returns) due to restriction on commercial investment. In the microfinance sector of Bangladesh, PKSF has an important role in various aspects of the industry because of non-prudential regulations of its partner microfinance organizations. To control for the effect of PKSF on the level of inefficiency of microfinance sector, we have incorporated a variable (PKS) that identifies whether an MFI is a PKSF partner.

On the basis of the discussion above, the model is specified as follows:

$$u_{it} = \gamma_0 + \gamma_1 REG_{it} + \gamma_2 AGE_{it} + \gamma_3 MED_{it} + \gamma_4 BPS_{it} + \gamma_5 DIS_{it} + \gamma_6 MFZ_{it} + \gamma_7 SAVLOR_{it} + \gamma_8 INVASSR_{it} + \gamma_9 PKS_{it} + \varepsilon_{2it} \tag{3}$$

In the model, we put emphasis on the change in inefficiency level due to changes in institutional characteristics and the years under regulation.

The MRA regulation might work in two ways. The ‘direct effect’ of regulation will be through setting social and administrative atmosphere in favour of MFIs for their operation and acceptance (Latif et al., 2013). The ‘indirect effect’ of regulation will be through factor productivity. A floor saving interest rate and a ceiling on lending interest rate, set by MRA, have worked as a ‘spread cut’ for the MFIs. This reduction in revenue forces them to revisit their expenses for survival. Nevertheless, existing cost structure of a firm is usually rigid and difficult to tighten. Therefore, the only possible option for MFIs is to improve their productivity, such as productivity of staff, through new production technology under regulatory regime. As staff productivity is endogenous, we specify a productivity equation:

$$BPS_{it} = \mu_0 + \mu_1 REG_{it} + \mu_2 AGE_{it} + \mu_3 MED_{it} + \mu_4 MFZ_{it} + \mu_5 PKS_{it} + \mu_6 TRNEXP_{it} + \varepsilon_{3it} \tag{4}$$

That is, staff productivity is also some function of number of years under regulation (REG), age of MFI (AGE), gender of the CEO of the institute

(MED), share of members in the industry (MFZ), years of partnership with PKSF (PKS), and the log of training expenses per staff (TRNEXP). Substituting the parameter for staff productivity of borrowers in equation (3) by equation (4), we get the following reduced form equation:

$$\begin{aligned} u_{it} = {} & \vartheta_0 + \vartheta_1 REG_{it} + \vartheta_2 AGE_{it} + \vartheta_3 MED_{it} + \vartheta_4 DIS_{it} + \vartheta_5 MFZ_{it} \\ & + \vartheta_6 SAVLOR_{it} + \vartheta_7 INVASSR_{it} + \vartheta_8 PKS_{it} + \varepsilon_{4it} \end{aligned} \tag{5}$$

Where ϑ_1 estimates the effect of years under regulation on inefficiency, and the term can be decomposed into two parts: $\vartheta_1 = \gamma_1 + \mu_1\gamma_1$. The first part ($\gamma_{11}$) shows the 'direct effect', where the second part ($\mu_1\gamma_{14}$) shows the 'indirect effect' of regulation.

4.4 Sources of data

Researchers have generally used self-reported MIX market data (for instance, see Hermes et al., 2008; Huq et al., 2009; Cull et al., 2011). Mersland and Strøm (2009), on the other hand, used rating data which, they argue, is better than self-reported data as it may reduce bias and increase transparency.

We use financial information and outreach related data of 182 Bangladeshi MFIs including balanced panel of 96 MFIs for the period 2005–2011 collected from MRA and Palli Karma-Sahayak Foundation. We primarily focus on balanced panel data set, and we complement the findings with the analysis of unbalanced panel data set as a part of testing robustness of our findings.

5 Results and discussions

5.1 Descriptive statistics

Table 8.1 shows the summary statistics of key variables for the pre-licensing year and 2011 of the MFIs licensed between 2007 and 2010. This allows us to compare the 'ex ante' and 'ex-post' scenario of regulation. One of the important regulatory interventions has been on interest rate. Prior to regulation, lending interest rate was 20 per cent charged on flat method[1] (approximately 36 per cent under declining balance method, and it has been reduced to maximum 27 per cent to be charged on declining balance method). This means that there has been a decline in effective lending interest rate of around nine percentages point. As Table 8.1 shows MFIs that got licences from the MRA in 2007 or 2008 were relatively large MFIs, and the smallest were the

Table 8.1 Summary statistics (Monetary figures are in Million Taka. Figures indicate MFI averages. Year ending on 30 June)

	Licensed in 2007 N=32		**Licensed in 2008 N=98**		**Licensed in 2009 N=29**		**Licensed in 2010 N=23**	
	Pre-licence year–2006	**2011**	**Pre-licence year–2007**	**2011**	**Pre-licence year–2008**	**2011**	**Pre-licence year– 2009**	**2011**
Members	238,671	331,483	45,239	62,001	15,904	18,281	1,460	4,229
Borrowers	204,014	240,450	40,404	50,307	13,886	14,436	1,254	2,894
Staff	1,764	1,082	314	353	104	92	23	23
Borrowers per staff	116	222	128	142	134	157	55	126
Outstanding loans	137.00	619.00	190.28	411.91	70.28	110.33	11.98	16.99
Member savings	415.96	931.88	67.71	142.67	27.11	44.10	4.75	7.36
Total asset	1538.78	3600.63	267.81	519.61	73.5	137.53	15.5	21.03
Operating cost	27.5	96.00	42.61	81.46	12.58	17.60	2.08	4.37
Institutional borrowing	471.40	1002.09	100.62	243.60	41.8	54.25	6.03	6.28
% of MFIs receiving direct income subsidy	30	20	18	15	6	11	19	4
Operating cost per 100Tk loans outstanding	20	15	23	20	18	16	17	26
Outstanding loans per staff	0.51	2.11	0.61	1.17	0.67	1.21	0.52	0.74
Average size of loan outstanding	4,427	9,506	4,709	8,187	5,061	7,642	9,553	5,870

Source: CDF and InM (2006–2011), MRA (2005–2011), PKSF (2011) ones that got licences in 2010 and later. Some significant achievements have taken place during the post-regulation period. The major outputs (loans outstanding, savings, and members) of all the licensed MFIs have increased from the pre-licensing period. However, the effect on efficiency is perhaps taking place through productivity. Substantial improvements in average loans per staff and average loan size have come about. Both member savings and institutional borrowing have increased probably because of higher confidence of both savers and lenders. Savings-outstanding ratio is higher for the older licensed MFIs in regulation regime than in pre-regulation regime.

To sum up, licensed MFIs have improved their performance. Nevertheless, due to the conditions of licensing, smaller and weaker MFIs got the chance later than the relatively better performing MFIs. Thus, it is only natural that they will not be able to reap the benefits of regulation like their predecessors.

5.2 Econometric findings

Stochastic frontier and cost efficiency

We first run the translog cost function model and generate the unobserved terms ($u+v$). Once the terms are estimated, we run the model (as specified in equation (3) to find out which part of the unobserved terms is due to MFI's inefficiency (u) compared to an average Bangladeshi MFI, and which part of them is actually the stochastic disturbance (v). To estimate the cost inefficiency score, we first estimate the stochastic cost frontier model. We present the results of stochastic frontier model using both balanced panel and unbalanced panel data in Table 8.2.

The coefficients have expected signs. Operating cost increases with increase in wage and interest rates on member savings and on institutional borrowings at a decreasing rate. We find that the MFIs' operating cost is increasing in output (loans outstanding) and, rather surprisingly, decreasing in salaries and wages. The standard deviations of the two error components – random (v) and inefficiency (u) – are respectively 0.75, and 0.34 in the unbalanced data while they are 0.2, and 0.5 in the balanced data.

The estimate of total error variance is 0.68 for unbalanced data, 0.29 for the balanced data. The estimate of the ratio of the standard deviation of the inefficiency component to the standard deviation of the idiosyncratic component is 0.45 and 2.45 for unbalanced and balanced data. We have tested if there is any inefficiency component in the model (H_0; $\sigma_u = 0$). The null hypothesis (H_0) is rejected as the calculated test

Table 8.2 Estimates of the stochastic frontier (cost) in 2006–2011 Dependent variable: log (operating cost)

	Balanced Panel		**Unbalanced Panel**	
Explanatory variables	**coef.**	**se.**	**coef.**	**se.**
Log of outstanding loan (loanout)	–0.013	0.242	0.018	0.242
Log of annual salary (salary)	–0.038	1.044	0.015	1.046
Log of interest rate on member savings (savrate)	1.831***	0.668	1.718***	0.666
Log of interest rate on borrowings (borrate)	1.584***	0.563	1.587***	0.562
Squared log (loanout)	0.031***	0.009	0.031***	0.009
Squared log (salary)	–0.037	0.085	–0.039	0.085
Squared log (savrate)	–0.079*	0.047	–0.079*	0.047
Squared log (borrate)	–0.039	0.036	–0.039	0.036
Log(loanout)*Log(salary)	0.082**	0.039	0.078**	0.039
Log(loanout)*Log(savrate)	0.007	0.042	0.008	0.042
Log(loanout)* Log(borrate)	–0.030	0.028	–0.029	0.028
Log(salary)* Log(savrate)	–0.238**	0.097	–0.222**	0.097
Log(salary)* Log(borrate)	–0.169**	0.084	–0.171**	0.084
Log(savrate) *Log(borrate)	–0.249**	0.100	–0.247**	0.100
Constant	4.678	6.825	4.188	6.836
σ_v.	20***	0.270	0.75***	0.03
σ_u.	50 ***	0.161	0.34***	0.060
$\lambda = \frac{\sigma_u}{\sigma_v}$.	45***	0.069	0.45***	0.124
Number of observation	576		923	
Number of MFIs	96		182	

Note: *** p<0.01, ** p<0.05, * p<0.1.

statistics exceeds the critical test statistics. The result suggests that the component of inefficiency does exist.

Determinants of cost inefficiency

Not all microfinance organizations entered the regulatory framework at the same time, so a dummy variable for regulation may not capture the effect. Therefore, we tried to find out the impact over the years under MRA regulation using both balanced and unbalanced panel data sets.

First, a simple graphic approach shows the relationship between the cost efficiency of microfinance institutions of Bangladesh and years under regulation (see Figure 8.1). In our sample, the MFIs that got licence in 2007 or 2008 – the first two years of MRA regulation – have the lowest level of inefficiency compared to the other MFIs licensed in 2011. The decline in inefficiency is evident from the very first year after licensing, and it continues to decline gradually over the regulation years. This may not fully reflect the impact of MRA regulation. As argued earlier, PKSF partner organizations (POs), even before regulation, had been under non-prudential monitoring that may make them more efficient. Figure 8.1 shows PKSF POs are more efficient than non-PKSF POs. Non-POs have also enjoyed declining inefficiency over the regulation years.

Scale of operations, defined in terms of number of borrowers, influences cost inefficiency of the MFIs (see Figure 8.2). Average inefficiency score for the small MFIs was around 43 per cent higher than the very large MFIs, and about 14 per cent higher than that of medium MFIs.

From the SFA, we generated technical inefficiency score that shows level of inefficiency of a particular MFI. The score is non-negative. We also observed the dynamics of cost inefficiency over the years, categorizing the MFIs by their years of licensing. One can see a consistent decrease in inefficiency (a consistent rise in efficiency) for MFIs under regulation for five years (Table 8.3). A clear downward trend in the cost inefficiency is very evident for each group of licensed MFIs, but the rate of decrease in inefficiency is higher for the early licensed ones.

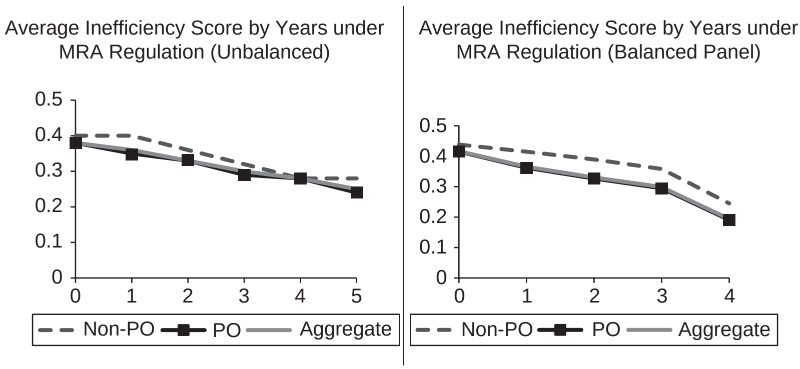

Figure 8.1 Inefficiency scores obtained in unbalanced and balanced panel models

Note: To construct the balanced panel, we kept MFIs that were licensed in 2008; and had information for the period of 2006 to 2011. This gave us a panel of 96 MFIs.

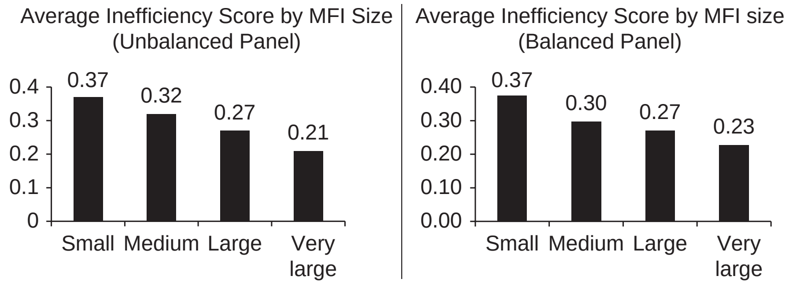

Figure 8.2 Graphical representation of inefficiency by MFI Size

Note: The MFI size is defined based on the total number of borrowers: small (up to .025 million), medium (between 0.025 and 0.1 million), large (between 0.1 and 0.5 million), and very large MFIs (> 0.5 million).

Table 8.3 Dynamics of cost inefficiency over the years under MRA regulation, 2006–2011

		Years under Regulation					**% Decline in inefficiency (pre-licence to 2011)**
Licence year	**Pre-licensing/ Unregulated**	**1st year**	**2nd year**	**3rd year**	**4th year**	**5th year**	
2007	0.38	0.36	0.34	0.30	0.28	0.25	34.21***
2008	0.37	0.33	0.30	0.29	0.28		24.32***
2009	0.38	0.38	0.37	0.34			10.53**
2010	0.45	0.44	0.39				13.33*
Overall	0.39		0.33				15.39***

Source: Cost Frontier Based Estimates

Note: Simple t-test has been used to test the differences in pre-regulation status and status in 2011. The single asterisk implies the difference is significant at 10 per cent, level, two asterisks suggests significance at 5 per cent level and three asterisks shows significance at 1 per cent level.

The reduction in cost inefficiency in ex-post compared to ex ante of regulation was statistically significant.

Both the figures and table exhibit that year under regulation matters in cost inefficiency of microfinance institutions. Following the empirical methodology, we have estimated the parameters of the controls and these estimated parameters are particularly important to assess the sources of inefficiency of microfinance sector and the role of regulation.

To find the consistency of estimates, we have estimated the parameters using both balanced and unbalanced panel data sets. In analyzing the balanced panel data, we have constricted the MFIs which have data for a given time interval (2006–2011). The second approach (unbalanced panel) deals with the entire data set, where MFIs have acquired licences at different time. Since regulation is a dynamic process, it will be logical to measure the impact using the balanced data set. The first approach, therefore, will be the principal approach, whereas the findings from the unbalanced data set will complement the results in the first approach if they are consistent.

As the data set is pooled cross-sectional panel in nature, we used the random effect model following the Hausman specification test. Table 8.4 presents the parameter estimates of equations (3, 4, 5) estimated using the balanced data set of 96 MFIs.

All the coefficients of the explanatory variables except years of microfinance operation of the microfinance, gender of the CEO, and investment-asset ratio in the random effect model have expected signs and are statistically significant. The result reveals that the MFIs receiving direct income grant are relatively more cost inefficient. Staff productivity and market share of members improve cost efficiency of the microfinance institutions. PKSF partner organizations (POs) are more cost efficient. The result conspicuously shows that the years under regulation improve cost efficiency of microfinance institutions. It reduces cost inefficiency by 2.5 per cent for each year of regulation holding other things, including the impact of PKSF, constant.

As PKSF partner MFIs might influence the overall impact of regulation, to check consistency of the findings, we dropped the variable 'PKSF PO', and re-estimated the model. We found that effect of regulation was higher and significant. The coefficient for regulation improved from 2.5 per cent to 3.6 per cent. The higher coefficient captures partly the influence of PKSF. Therefore, the real effect may be termed as total effect, is 2.5 per cent as reported in Table 8.4. The results unequivocally suggest that regulation does contribute to reducing inefficiency, and PKSF POs are more efficient than the non-POs. Large MFIs tend to be more efficient as evident from the coefficient of size variable. Subsidized MFIs appear to be more inefficient.

There are both direct and indirect effects of regulation. The coefficient of number of years under regulation (REG) in the inefficiency equation in Table 8.4 is the direct effect of regulation on cost inefficiency, and the coefficient of the regulation in the productivity equation shows the direct effect of regulation on staff productivity. Both regulation and productivity contributes to decrease inefficiency. Regulation reduces inefficiency by 2.50 per cent as shown in reduced form equation. Of the total effect, direct effect is 2.1 percentage points, as specified

Table 8.4 Parameter estimates of reduced form equation (balanced panel data) (N=96 MFIs; Number of observations: 576)

Explanatory variables	Inefficiency Equation (eq. 4)		Productivity Equation (eq. 5)		Reduced Form Equation (eq. 6)	
	coef.	**se.**	**coef.**	**se.**	**coef.**	**se.**
Years under regulation	–0.021***	0.007	0.055***	0.014	–0.025***	0.007
Log of borrower per staff	–0.065***	0.022				
Age of MFIs	0.004	0.003	0.028***	0.007	0.002	0.003
Gender of ED: Male=1	–0.041	0.046	–0.011	0.117	–0.044	0.046
Receive any income grant: yes=1	0.143***	0.029			0.138***	0.029
Log of share of members	–0.030***	0.011	–0.406***	0.017	–0.010	0.009
Member savings to outstanding ratio	0.004***	0.001			0.004***	0.001
Investment to asset ratio	0.151	0.120			0.163	0.121
Age of partnership with PKSF	–0.010***	0.004	0.031***	0.009	–0.012***	0.004
Log of training expenses			0.037***	0.008		
Constant	0.425***	0.139	0.828**	0.323	0.313**	0.135

Note: *** p<0.01, ** p<0.05, * p<0.1. Regional dummies are also included but not reported.

in inefficiency equation. The difference between these two estimates is the indirect effect of regulation on cost efficiency through productivity (0.4 per cent per annum). We can also derive it by multiplying the coefficient of number of years under regulation in productivity equation with the coefficient of productivity in 'inefficiency equation'. The results show that regulation contributes to efficiency directly (through improvement in regulatory environment) and indirectly through its effect on productivity. Training expenses as well as learning by doing, as reflected in age of MFIs, have positive impact on staff productivity.

5.3 Checking the robustness of findings

The balanced panel regression results show that effect of partnership of some MFIs with PKSF, an additional year under regulation reduces cost inefficiency significantly. Since it is difficult to maintain a balanced panel set from repeated cross-sectional observations due to various random and non-random causes, it will not be too problematic to go with the unbalanced data from the perspective of modelling (Baltagi 2008). We can test robustness and stability of the estimates in several ways such as dropping or adding variables or changing form of equation or data. We test the validity of the estimates by using unbalanced data set and random effect model.

Table 8.5 Parameter estimates of reduced form equation (unbalanced panel) (N=182 MFIs; Number of observations: 923)

	Inefficiency Equation		Productivity Equation		Reduced Form Equation	
Explanatory variables	**coef.**	**se.**	**coef.**	**se.**	**coef.**	**se.**
Years under regulation	–0.020***	0.008	0.034**	0.014	–0.022***	0.008
Log of borrower per staff	–0.048***	0.018				
Age of MFIs	0.010***	0.003	0.034***	0.007	0.009***	0.003
Gender of ED: Male=1	–0.042	0.052	0.058	0.112	–0.046	0.053
Receive any income grant: yes=1	0.142***	0.032			0.137***	0.032
Log of share of members	–0.035***	0.010	–0.436***	0.012	–0.015**	0.007
Member savings to outstanding ratio	0.001	0.002			0.001	0.002
Investment to asset ratio	0.002	0.132			0.016	0.132
Age of partnership with PKSF	–0.009**	0.004	0.051***	0.008	–0.012***	0.004
Log of training expenses			0.019***	0.007		
Constant	0.226*	0.129	–0.202	0.273	0.226*	0.131

Note: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Results, as reported in Table 8.5, hardly show any change in the direction of the estimates of the parameters in terms of sign and significance. The results obtained from the unbalanced panel are analogous to that of balanced panel. The estimated coefficients are almost the same, and the results are similar. Regulation does contribute to reducing inefficiency of the licensed MFIs.

One of the arguments we made earlier that regulation affects cost efficiency partly through staff productivity. If this holds, we will find that the estimate of staff productivity in inefficiency equation will capture partly the effect of regulation if we drop the regulation from the inefficiency equation and re-estimate the model using balanced data. We would expect the coefficient to be higher. This is exactly what we found when we re-estimated equation (5). This also validates our argument that regulation influences cost efficiency through staff productivity. We report the results in Table 8.6. Coefficients of other parameters had expected signs and were significant as before. Therefore, we can conclude that our results and the specification are robust.

6 Conclusion and policy implications

In spite of being a pioneering country in microfinance, Bangladesh lagged behind in regulation until it established the MRA in 2006. During

Table 8.6 Parameter estimates of the model without controlling for regulation (N=96 MFIs; Number of observations: 576)

	Inefficiency Equation		**Reduced form Equation**	
Explanatory variables	**coef.**	**se.**	**coef.**	**se.**
Years under regulation			–0.025***	0.007
Log of borrower per staff	–0.078***	0.021		
Age of MFIs	0.002	0.003	0.002	0.003
Gender of ED: Male=1	–0.041	0.046	–0.044	0.046
Receive any income grant: yes=1	0.144***	0.029	0.138***	0.029
Log of share of members	–0.029***	0.011	–0.010	0.009
Member savings to outstanding ratio	0.004***	0.001	0.004***	0.001
Investment to asset ratio	0.155	0.121	0.163	0.121
Age of partnership with PKSF	–0.014***	0.003	–0.012***	0.004
Constant	0.544***	0.133	0.313**	0.135
Number of observations	570		570	

Note: *** p<0.01, ** p<0.05, * p<0.1.

the past six years, the MRA has introduced quite a number of prudential and non-prudential measures of regulations. Their measures are more likely to solve the problem of asymmetric information, improve behaviour of management, and in turn, reduce cost inefficiency of licensed MFIs.

We found that regulation reduces cost inefficiency, partly influenced negatively by non-prudential regulations of PKSF (wholesale lending agency) on its partner organizations (POs). The bifurcation of the impact, the direct impact through changing behaviour of the MFIs, and the indirect impact through increasing staff productivity showed that the direct impact attributed to around 80 per cent of the total effect of regulation. The remaining was through increasing productivity. All these results were robust.

The findings have implications for both regulator and regulatee. First, findings of this study firmly suggest that regulation of MFIs is warranted and justified. Second, regulations have changed the behaviour of the licensed MFIs and forced them to adopt some strategies to be more efficient. Efficient MFIs have relatively higher loan size indicating that licensed MFIs may trade-off between 'social objective' and 'commercial objective'. In some countries, regulation caused the MFIs to move towards commercialization. This is the so-called indirect cost of regulation (for example, see Cull et al., 2011). The regulatory agency in Bangladesh needs to decide in what role it wants to see the MFIs in future – commercial or social; that is, in 'profit maximizing behaviour' or 'profit satisficing behaviour'. However, the argument for 'satisficing level of profit' is justified from the broad perspective of 'social mission'.

Third, regulation should make micro credit market competitive. It is more likely that smaller MFIs will have lesser ability to cope with regulatory requirements. They appeared to be relatively less cost efficient. Some small MFIs might be able to grow but some others might falter. In such a situation, a merger of some small MFIs might take place. Fourth, as the microfinance sector is under regulation and training has positive impact on increasing productivity of staff, MFIs should stress more training of the staff.

All the aforementioned implications bring forth a critical policy debate. Bangladeshi microfinance market is dominated by top five largest MFIs. The rest is served by small and medium MFIs. Some of the smaller MFIs can neither access convenient finance, nor become cost efficient. Interestingly, many of these institutions have received licences. As abolishing them is not an option, they require special nurturing. There are two arguments for nurturing small MFIs: their comparative advantage in ameliorating the outreach to remote places and their efficiency in handling local clients and enterprises.

Researchers studied the impact of governance on performance, and cost efficiency of MFIs disjointedly, but did not establish any linkage between regulation and cost efficiency. This study is the pioneering one to measure the impact of 'regulation' on 'cost efficiency' of MFIs in Bangladesh. We showed that regulation matters in improving efficiency of MFIs in Bangladesh. One can consider this effect as short-run impacts of regulation. Long-run data set including both primary and secondary financial and non-financial information should be used to assess the long-run impact of regulation.

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Note

1. Under the Flat Method, interest is charged on the total amount of principal loan regardless of repayment of loan; and under declining balance method, a method followed in banking business, interest is due on the outstanding loan balance.

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9

The Social Function of Asset Classes in Microfinance

Enhancing performance through donations, private equity, and debt

Harry Hummels and Matteo Millone

1 Introduction and motivation

This chapter examines, within the specific context of microfinance, the proposition that different asset classes have different social functions. It considers the role of donations, debt, and equity in funding MFIs. These three groups of financing sources have their own specific characteristics, financial and social benefits, and effects, explored in the chapter. The goal is to examine whether and how asset classes shape the social and financial performance of MFIs.

The focus is on how the influence that an investor has on the performance of an MFI depends on his or her choice of asset class. The MFIs' capital structure is taken as given and the chapter abstains from examining how each MFI comes to the decision to raise debt rather than equity. The chapter therefore refers to asset classes and not to liabilities as it is centred on the decision of the lender/investor and not of the MFI.

Investors may choose between instruments from different asset classes to achieve their objectives; a desired (risk-adjusted) return for their portfolio. Professional investors usually include both debt and equity to achieve diversification, a key financial objective as established by Harry Markowitz (1952). Socially responsible investors not only care about the financial characteristics of their investment but are also interested in social performance. These investors will be active in sectors and firms that generate positive social and environmental impact.

Microfinance is an intrinsically hybrid industry where financial returns are not independent from the social performance. The social function of MFIs is to responsibly provide access to finance to the poor while being financially sustainable. Institutions with different social and financial profiles will attract different types of investors who, as major stakeholders, will have an interest and possibly an impact on the performance of the investee. Thus microfinance provides the ideal context in which we can analyze how the financial contribution of governments, donors, and investor can enhance, influence or limit the social and financial performance of MFIs.

The question is whether allocation to different asset classes also leads to different benefits not only for investors but also for society. Is it true, as Humphreys (2012) and Wood and Hoff (2007) suggest, that the social benefits/costs for society of debt investments are different from those of private equity investments? And if so, what would be the most beneficial allocation towards either asset class for society, and would there be a Pareto-optimum?[1]

We will concentrate on two major asset classes, namely debt and private equity investments. We will also consider donations, not a traditional asset class, but an important source of capital for MFIs. Our aim is to understand the function of microfinance private equity and microfinance debt, their risk profiles, and their social and financial returns to investors. What drives investors to allocate resources to this emerging investment category, and what makes them decide to invest in microfinance debt or equity – or in both? Can the external pressure of investors spur MFIs to improve their financial and social performance? Can it be a cause of mission drift? A number of recent empirical papers in the microfinance literature address this issue, albeit not directly. Mersland, Randøy, and Strøm (2011) show that MFIs that have access to international debt show higher social performance but no effect is found on financial performance. Looking at the difference between commercial and subsidized debt, Mersland and Urgeghe (2013) show that the former improves financial performance and outreach while the latter enhances the focus on women. Donors play an important role in microfinance, but their effect on performance is mixed: Hartarska (2005) found a positive effect on social performance, Mori and Mersland (2014) found a positive effect on both financial and social performance; however, Hartarska and Mersland (2012) found no effect. All of the empirical literature rests on the assumption of uniformity of each investor group. We relax this by developing a model where investors within each asset class might have different preferences with respect to social and financial performance.

In order to develop and test our model we initiated interviews with 13 investors in the field of microfinance.[2]

We come to a number of different conclusions. Firstly, we observe that while private equity has a positive effect on efficiency in the early life of an MFI, debt will guarantee growth in outreach but shift the focus on financial sustainability. Secondly, the success of engagement strategies in improving performance will depend on both the choice of asset class and market conditions. Finally, we believe that commercialization will be the driving force behind the growth of microfinance, but it can only be a positive force under conditions of appropriate regulation and involvement of long-term investors.

2 The function of debt and private equity

David Wood and Belinda Hoff (2007) argued for wider application of responsible investing principles across asset classes. Historically, most attention has been given to Environmental, Social, and Governance (ESG) principles in the domain of publicly listed equities. Investors in other asset classes, from cash to private equity and from fixed income to real estate investments, can also integrate ESG information into their investment policies and decision-making. However, ESG objectives do not have to be overtly formulated for investments to add value to society. Purely financially motivated investments in renewable energy, microfinance, or small and medium-sized enterprises in developing economies can still *ipso facto* generate benefits for society. Furthermore, investors can actively influence management through voting or filing shareholder proposals (Wood and Hoff, 2007). Particularly in collaboration with large institutional investors, they may be able to persuade management to improve the company's social or environmental performance (Hawley and Williams, 2000). If not, they may decide not to invest in – or to divest – companies that do not meet their investment criteria.

The question remains, however, as to whether the function of an asset class can be defined in isolation. Investment theory (Berger and Udell, 1998; Christofidis and Debande, 2001; Covas and Den Haan, 2006) links the development of a business with its ability to attract different types of capital. Further, along with the willingness of the investor to invest, the transaction also depends on the willingness of the investee to accept the type of capital on offer (Sousa-Shields and Frankiewicz, 2004). Thus, the type of funding the business ends up with is discussed and negotiated between investor and investee. As will be seen, this is particularly true of the transformation of MFIs from nonprofit to for profit organizations. As Sousa-Shields and Frankiewicz (2004) argue, boards of NGO-driven MFIs are usually not very interested in equity capital because it could change their structure and objectives.

This analysis is especially relevant as the literature on microfinance suggests (Christofidis and Debande, 2001; Armendariz and Morduch; 2012) that perceptions of the added value of debt versus private or public equity investments are changing. The Andhra Pradesh crisis in 2010 dimmed the attractiveness of an equity approach to microfinance. A debate is underway between what Hertz (2012) has called 'Co-op capitalism' and 'Gucci-capitalism'[3]. A proponent of the co-op model is Mohammad Yunus, while former ACCION-president Michael Chu defends a more competitive model that emphasizes the relevance of having access to international financial markets (Rosenberg, 2008).

3 The social function of microfinance

Responsible microfinance adds value to its clients and to society. The question is, however, what kind of value does it add? It was long thought that microfinance would contribute to the alleviation of poverty (Brau and Woller, 2004:4). Many MFIs today see it as their mission to alleviate poverty via women's empowerment, especially in rural communities (Armendáriz and Szafarz, 2011). Mohammed Yunus' original idea was that giving access to credit spurs entrepreneurship, leading to economic growth and development. Microfinance was – and often still is – thought to have the potential to lift people out of poverty. But based on currently available research, the positive impact of access to credit on poverty alleviation has become debatable. No direct and positive link between both variables can be proven (Collins, Murdoch, Rutherford, and Ruthven, 2009; Karlan, Goldberg, and Copestake, 2009; Bateman, 2010; Armendáriz and Morduch, 2012; Copestake and Williams, 2011). A recent study by Copestake and Williams (2011:21) concludes, 'Microcredit on its own cannot be relied upon to deliver sustained income growth and falling poverty rates.' In any event, the innovations in lending techniques brought by the creation of microfinance have made it possible to offer financial products to a large sector of the population that was previously unbanked (Mersland and Strøm, 2012). Even if microfinance did not generate growth, it gives the poor the option to borrow, save, and smooth consumption.

During our interviews, we asked what investors consider to be the main determinants of social performance. Three fundamental and interlinked aspects emerged. The first factor is the *ability and willingness to* *provide access to capital* to those truly in need. This means targeting those that can benefit from access to financial services and that are able to understand and deal with the consequences of taking a loan. This results in moving away from lending to the poorest of the poor. The second related factor is *responsible lending*. MFIs should not only target the right clients, but also help clients choose the adequate product. This implies offering financial literacy education or deposits rather than loans. The third factor is *sustainable lending*. MFIs need to be able to do all of the above while covering their costs, especially in the long run. Incentives schemes that encourage reckless lending and poor due diligence or an exclusive focus on the poorest clients might boost financial or social performance in the short run, but will increase risk and the dependence on subsidies and donations.

We can draw two interesting conclusions about the way investors in microfinance define and promote social performance. Firstly, social impact is not dependent on the ability of microfinance to reduce poverty across the board and generate economic growth. What seems to be more important is helping the poor deal with the consequences of poverty. Secondly, in the paradigm of responsible and sustainable lending the relationship between social and financial performance is not necessarily antithetical. In fact, even investors with a strong social orientation do not necessarily consider lending to wealthier borrowers as mission drift if this lending improves the sustainability of the institution.

4 The microfinance investment landscape

4.1 Evolution towards commercialization

In recent decades, the microfinance industry has evolved dynamically. In the eighties and nineties, the market was dominated by NGOs and development aid organizations. From 2004, the industry started growing at an unprecedented rate and microfinance institutions and funds proliferated rapidly (Chen, Rasmussen, and Reille, 2010). Both donors and investors began channelling large amounts of funding into MFIs worldwide. Microfinance debt, for instance, has reached US$ 21 billion in 2010 (Sapundzhieva, 2010:3).

The three main groups of investors in microfinance are: governments and Development Finance Institutions (DFIs); institutional investors, and NGOs and other retail investors. The last two groups are private investors, whereas the first is public. DFIs and multilateral organizations, like the World Bank, International Finance Corporation, and

European Bank for Reconstruction and Development (EBRD), provided over half of all foreign investments. Institutional investors have contributed significantly to the growth of microfinance in the past few years – particularly in the area of private equity investments (El-Zoghbi et al., 2011). The institutional investor group includes international banks, pension funds, and insurance companies.

As Mark de Sousa-Shields and Cheryl Frankiewicz (2004:7) put it, microfinance was in a ‘process of transformation from a sector dominated by a mission-driven ethos to one responding to the needs and interests of private capital’. Brau and Woller (2004) and Kraus and Walter (2009) argue that microfinance adds financial and social value to institutional investors, with attractive risk-adjusted returns and a low correlation with other asset classes. We caution, however, that the world has changed significantly since 2008 when Kraus and Walter published their data. In fact, during our interviews, it has emerged that as a result of the negative publicity surrounding the Andhra Pradesh and Bosnia Herzegovina crises investors are now increasingly mindful of the potential negative reputation effects of investing in microfinance.

4.2 The consequences of commercialization: the question of mission drift

The pivotal question is whether commercial microfinance is appropriate for providing access to finance for the poor. Studies around the topic of ‘mission drift’ argue that commercial MFIs focus on establishing ‘broad outreach’ instead of creating ‘outreach in depth’ to the poor and very poor (Armendáriz and Szafarz, 2011; Augsburg and Fouillet, 2010). Armendariz and Morduch (2012: 239) write that the move towards commercialization ‘has opened microfinance to serving customers who are not the poorest of the poor – nor even poor by standard measures – but who are nevertheless denied access to loans under traditional bank practices’. Armendáriz and Szafarz (2011) and Armendáriz, D’Espallier, Hudon, and Szafarz (2011) all find indications of positive correlations between the drive to commercialization and the crowding out of the poor and very poor. Mersland and Strøm (2010) look at the entire microfinance industry and show that overall there is little evidence of mission drift, they do nevertheless find that average loan size is correlated with higher profits. This is in line with the findings of Hermes, Lensink, and Meesters (2011), who show that MFIs that target the very poor are less cost efficient.

4.3 Beyond mission drift

Apart from the empirical question of whether mission drift takes place, it is relevant to ask whether it is something to be avoided. While microfinance was believed to be a tool for alleviating poverty, it can be seen as simply creating greater freedom for clients who were previously excluded from financial services (Roodman, 2012). This is particularly relevant if, as Banerjee et al. (2011) suggest, not every poor person is a born entrepreneur. Stripped of its purpose of poverty alleviation, the debate on mission drift suddenly loses much of its relevance, and the self-sufficiency of MFIs becomes more important. Couldn't it be the case that bringing in the wealthier segment of the market ultimately leads to more sustainable businesses? Looking at the history of savings banks, Mersland (2011) shows that expanding their mission to middle class borrowers allowed these institutions to keep on serving the poor while guaranteeing financial sustainability.

Secondly, research by Cull, Demirguc-Kunt, and Morduch (2009) compares three types of microfinance institutions: NGOs, Non-Bank Financial Institutions (NBFIs), and microfinance banks. The authors find that microfinance banks are not only the most profitable and sustainable, they also – by and large – charge the lowest interest rates. Armendariz and Morduch (2012:250) conclude that the highest fees are being charged 'by the institutions most focused on social missions, while the commercial microfinance institutions offer relatively cheap credit'. Commercial MFIs tend to be more efficient and therefore run their business at lower operational costs as monitoring costs are lower (Mersland, 2009). Further, Armendariz and Morduch argue that the commercialization trend correlates with regulation, and only regulated MFIs can offer much-needed savings products to the poor. Commercialization can also help fund expansion. This finding is supported by Frank (2008), who argues that a transformation from a NGO to a regulated MFI is motivated by the inherent logic of the development of MFIs. She found examples of transformations in Bosnia, the Philippines, and Pakistan, where this 'catalyses growth in MFI outreach and product offerings' (Frank, 2008:1).

Third, we should not forget that MFIs that particularly target the very poor do this with the support of outside donors and subsidization – usually by governments, multilateral organizations, and development aid organizations. Previous experiments with interest rates caps not only failed but also created disruptive effects in the existing microfinance sector. Research by Armendariz et al. (2011) demonstrates that uncertainty about receiving subsidies is both negatively correlated with outreach and positively correlated with rising interest rates. As El-Zoghbi et al. (2011) show, this is cause for concern as public donor money is drying up rapidly, endangering access for poor customers.

5 The funding of microfinance: asset classes

The structure of MFIs ranges from nonprofit NGOs to fully regulated for profit banks, with a number of variations in between. Different legal and nonprofit or for profit structures will also attract different forms of capital. Of the three main sources of microfinance capital, donations and subsidies cannot even properly be considered an asset class. However, since they are a material component in the funding of (nonprofit) MFIs, it is appropriate to look at them. The other two, private equity and debt, are traditional asset classes.

5.1 Donations and subsidies

Donations can be seen as a kind of equity with a zero – or even negative – financial return but a potentially high social return (Brau and Woller, 2004:7; Armendáriz and Szafarz, 2011). There are no residual claims attached to donations (Fama and Jensen, 1983). Positive cash flows of not-for-profit organizations are not normally distributed to donors but are reinvested in the execution of the MFI's mission. Donors do not, therefore, receive a monetary dividend but a 'dividend in kind' (Wedig, 1994), which is why Sousa-Shields and Frankiewicz (2004) call donors 'sweat investors'. With grants and guarantees totalling over US$ 3.5bn ultimo 2009 – some 16.5 per cent of total investments in microfinance – philanthropic interest in microfinance remains high (El-Zoghbi, et al., 2011).

5.2 Private equity

Private equity generally plays an important role in the early stages of a firm's financial growth cycle. Berger and Udell (1998) find angel finance, venture capital, and private equity necessary for firms to start and scale up their operations. Lerner and Schoar (2003) note distinctive features of private equity in the developing world. Additional players here include foreign aid organizations, government and quasi-government organizations, and multilateral financial institutions; uncommon deals including privatizations, infrastructure projects, and strategic alliances are more popular. Most importantly, exits are significantly more difficult; IPOs are not usually a viable option, making developing world private equity particularly illiquid.

Given that a microfinance private equity position is highly illiquid and not necessarily very profitable, why would investors be interested in such investments?[4] We find that there are three reasons. First, the risk-adjusted returns. The assumed low correlation between microfinance and mainstream asset classes yields diversification gains. Krauss and Walter (2009) have demonstrated that microfinance investment can significantly reduce portfolio volatility. Second, many MFIs want to become integrated into the regular financial system. Having a sizeable equity stake in an institution that is on its way to becoming a full-fledged bank can be an attractive proposition. Third, some PE investors see providing financial services to people previously excluded from financial markets as a bonus.

Private equity investors can play quite an active role, particularly when the investee aspires to comply with higher standards of governance, transparency, and social sustainability. This can go beyond direct representation on the board, extending to technical assistance and even to some involvement in management decisions. As one interviewee told us, investors are constantly working with the MFI to provide optimal support so that it achieves its mission, in the case of his MFI to serve as many (very) poor clients as possible. Summarizing the responsibility he felt towards the MFI, he said, 'Debt is a contract. Private equity is a relationship'.

5.3 Debt

Debt generally comes into play at a later stage in the financial growth cycle of a company. Providing a regular loan to a start-up firm is usually too risky, so in the early stages of its financial life a MFI will use private equity, non-commercial lending, and retained revenues to get going. Later, debt provides leverage and growth and is the cheapest way to increase scale without diluting equity. This is attractive for MFIs aiming to expand their outreach.

Debt represents more than half of investment in microfinance (El-Zoghbi, 2011; MIX market (www.mix.org)). Figure 9.1 above shows that microfinance as an industry relies on non-standardized debt contracts that are not traded on a secondary market; only 4 per cent of debt is in the form of bond issues. This means that financial intermediaries play an important role. They allow MFIs to access institutional and retail investors, for whom the intermediary provides screening and monitoring services.

Figure 9.2 shows the main lenders, with financial institutions leading the pack, followed by investment funds and DFIs.[5] Governments and

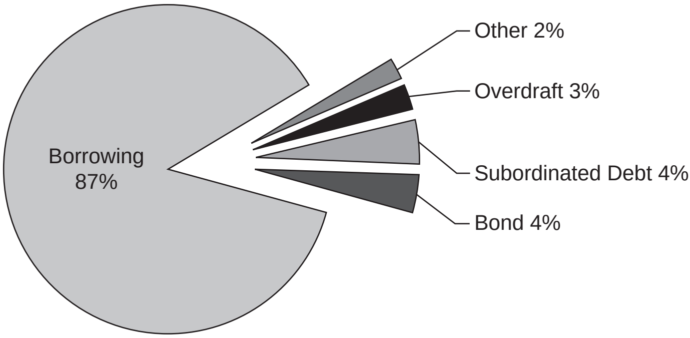

Figure 9.1 Typology of outstanding debt in percentages of the total market
Source: MIX (2011).

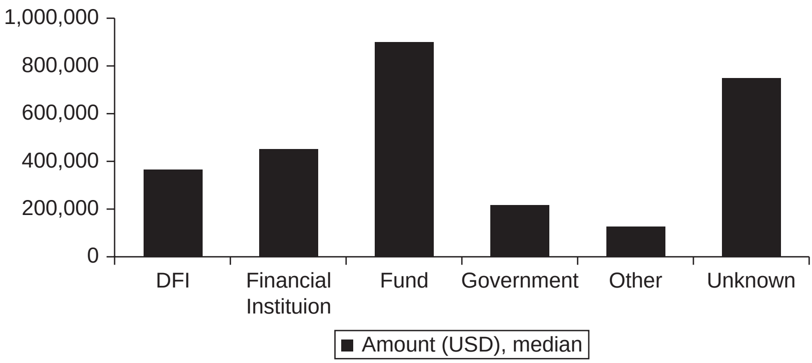

Figure 9.2 Microfinance lenders and their investments (in USD)
Source: MIX (2011).

others still play a significant role, representing one-fifth of all debt investments. This heterogeneous group likely has different financial and social performance objectives, as indicated on closer inspection of the price and the length of debt contracts as we can see in Figures 9.3a and 9.3b.

Figure 9.3 reports the average interest rate required by each type of lender (9.3a) and the average length of the debt contract (9.3b). For the four main lender types, we can see a negative relationship between the length of the contract and the interest rate, which interestingly implies a negative liquidity premium. We literally find evidence of 'patient' capital, as the least financially oriented lenders offer longer and cheaper

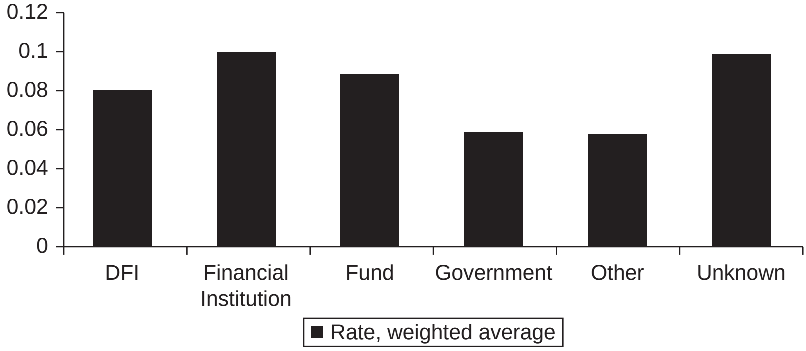

Figure 9.3a Price of debt contracts
Source: MIX (2011).

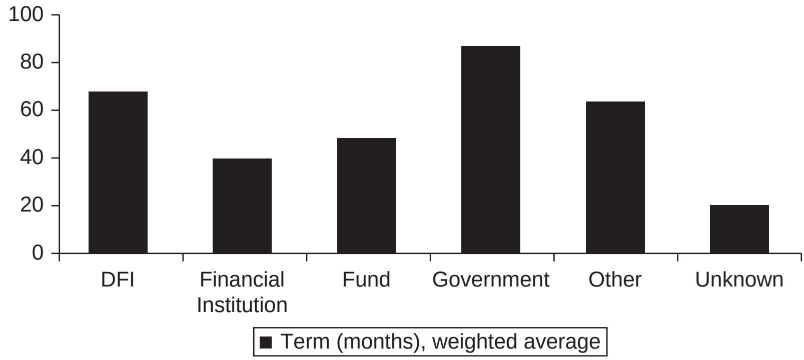

Figure 9.3b Average duration of debt contracts (in months)
Source: MIX (2011).

debt for the MFIs. Governments offer the cheapest and longest loans while financial institutions offer the shortest and more expensive loans. Funds offer loans below market rates, possibly because they are more efficient than financial institutions but more likely because they operate under a double bottom line and will trade financial returns for social performance.

Cheap government loans do carry a risk, however. Although they may be necessary in areas where commercial capital cannot or will not invest, Armendariz and Morduch (2012:35) argue that too much government subsidization may affect the microfinance market negatively by curtailing competition and driving out non-subsidized institutions. If marketing cheap finance drives out the competition, this will negatively impact outreach to both poor and non-poor clients of MFIs.

6 Enhancing the social function of microfinance: investment strategies

Microfinance is a particularly relevant context for analyzing the social function of asset classes because, historically speaking, the idea of a double bottom line targeting financial returns, and poverty alleviation is deeply ingrained in its business model (Yunus, 1999). Prahalad (2006) mentions microfinance as one of the most prominent examples of the Bottom of the Pyramid business model and has been linked with socially responsible and impact investing. We define impact investing as *the entire spectrum of investments deliberately aiming at the creation of shared value*.[6] Therefore impact investors care about both the financial sustainability and the impact creation of their investment (O'Donohoe, Leijonhufvud, and Saltuk, 2010). The investee generates impact through practices and/or products that add value to its customers but also by designing and implementing responsible business processes, for example offering fair remuneration to its loan officers.

The question is how the social preferences of the investors are conveyed, and what the role of the impact investor is in the *financial supply chain*. Do they initiate social impact by conveying their preferences to the final investee? Or do they simply provide a necessary input that allows investees to pursue their social goals? Wood and Hoff (2007) outline two main strategies that investors can follow to integrate non-financial performance in their investments. The first, mainly via public and private equity, is engagement or active ownership. The second, more diffused across asset classes, is screening on the non-financial characteristics of the investment.

A significant number of MIVs combine private equity and debt investment, complicating the process of engagement and screening. Our findings are mainly based on the interviews we conducted during our research.

6.1 The engagement strategy

In the engagement or active ownership model, investors have a strong interest in securing and monitoring the social impact of their investment, but given high transaction costs, inability to spread risk, and asymmetric information, they need to invest through a microfinance investment vehicle. MIV investors cannot directly control the behaviour of the MFIs and will therefore rely on engagement. They will require financial returns and proof of the accomplishment of the social mission from the MIV. Figure 9.4 represents an engagement/active ownership strategy.

Many impact investors endeavour social outcomes without having the means to directly influence MFIs. Instead, they communicate their social preferences to the MIV and indirectly to the MFI, who will take them into account in its operations. These investors (i.e., high net worth individuals, family offices, foundations) are strongly interested in the direct impact of their investment, as social returns are directly linked with the social performance of the MFI. They will be strongly interested in evidence of their impact in form of 'good stories' or social performance indicators (Beisland, Mersland, and Randøy, 2014). They will take action if the operations of the investee are not aligned with their preferences.

The MIVs select a portfolio of MFIs for the private equity or debt investment. They decide on the optimum asset mix for financial and social returns to satisfy the investor, monitor the investments, and engage with management to improve performance. Here, social impact depends on the investors. If they believe MFIs should increase their outreach, they will either select a MIV, which already has a strong commitment to this, or engage actively with it to further this course. Social performance will depend on whether investors care about it and how costly it is to engage. Communicating and enforcing social preferences is in fact a complex, expensive, and imperfect process. Theoretically, private equity investments should grant more control over the management of the MFI, nevertheless private equity positions are highly illiquid and information asymmetry is quite severe. Thus, forceful imposition of preferences will

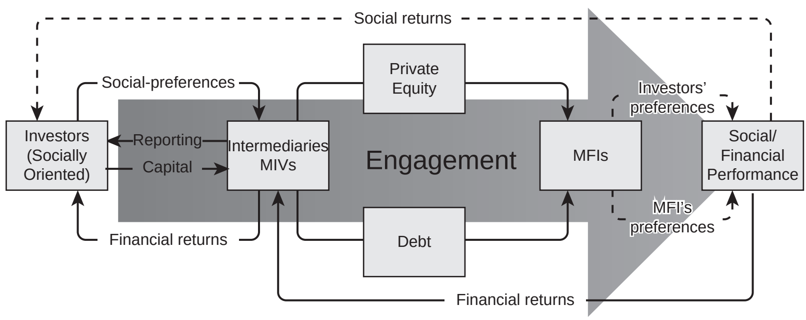

Figure 9.4 Engagement process

be confrontational and unsuccessful in most cases. In the case of debt, engagement will be limited to the stipulation of covenants in the debt contract and their successful enforcement.

6.2 The screening and intermediation strategy

In the intermediation model, MIVs, acting like market makers, play a key role. This strategy suits financially oriented investors who still want to include social performance. They are attracted to microfinance because it yields acceptable risk-adjusted returns and provides diversification. In this model, investors want to support firms that create social impact but without necessarily becoming involved in the engagement process. Figure 9.5 shows the intermediation process.

This strategy yields the best results when MFIs have clear financial and social goals. MIVs act as intermediaries, matching funding demand and supply. They screen suitable MFIs, determine what their financing needs are, and package these into investment products with attractive risk-adjusted returns and diversification benefits. MIVs market these products to a large audience of institutional and private investors, attracted by their risk-return characteristics and satisfied by the MIV's social screening – including reputation risk screening – and the potential social upside. Investors in this model are assumed not to be particularly interested in active ownership but simply in making sound investments in an emerging investment category. They are nevertheless interested in a transparent and standardized set social and financial performance measures to guide their screening process (Beisland, Mersland, and Randøy, 2014).

The implication is that more socially oriented businesses will be created in response to availability of capital, which seeks a mix of social and financial returns. The effectiveness of this mechanism in improving social or financial performance will depend on the reliance of MFIs on

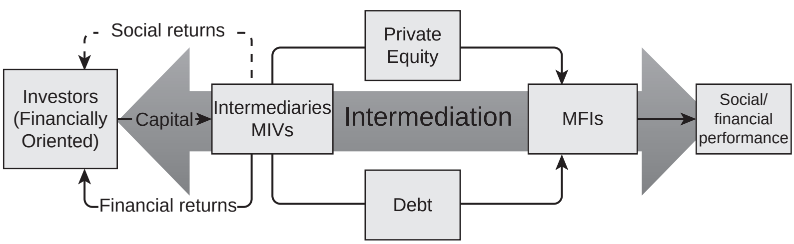

Figure 9.5 Intermediation

capital markets and on how effectively MIVs are able to package and sell investment products that satisfy the preferences of investors. In this framework, debt contracts are the preferred investment instrument as their relatively higher liquidity allows MIVs to rebalance their portfolio in favour of MFIs that offer a mix of social and financial performance that meets investors' demand. This could lead to MFIs gradually adapting to the preferences of the majority of investors.

6.3 The microfinance capital market

Both investment strategies co-exist in microfinance and the adoption of one or the other depend on the type of investor and MFI. Figure 9.6 is a graphical representation of the actual microfinance capital market as we see it, based on previous research (El-Zoghbi et al., 2011) and a set of interviews with investors, MIVs, and microfinance networks.

The three ellipses on the left represent the main sources of capital: public, private, and philanthropic investors. The first group accounts for almost two-thirds of the capital going into microfinance. 'Most public

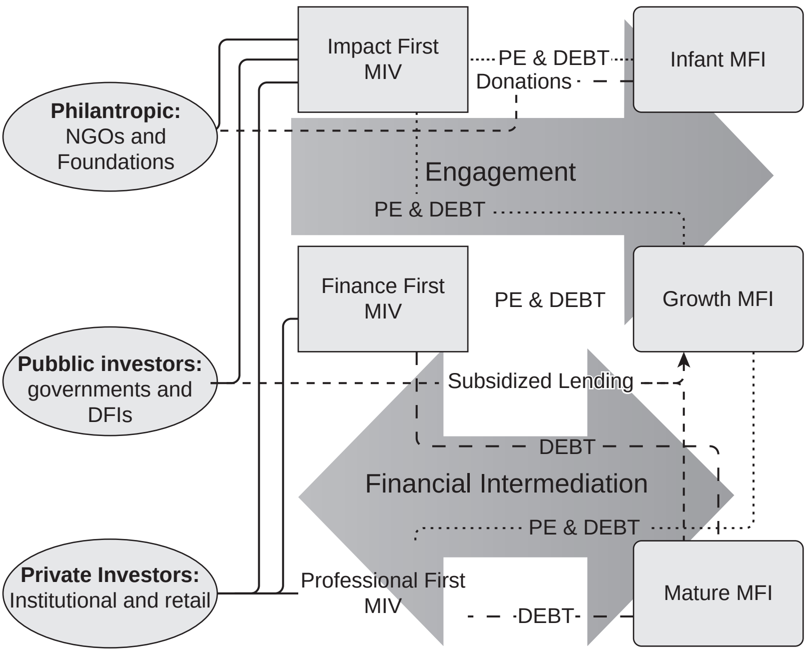

Figure 9.6 The microfinance market

funders use microfinance as a tool to achieve development goals, such as poverty reduction, economic, and social development, and financial inclusion' (El-Zoghbi et al., 2011: 1). Governments usually channel their investments through DFIs and multilateral organizations like the World Bank, IDB, EIB, EBRD, and AIB. The mandate of DFIs is to generate economic development through investments while producing near to market rates of return. They are government-owned and can raise capital on international capital markets with government backing. Their investments are subject to public scrutiny.

The size of the second group, private capital, has significantly increased in recent years (El-Zoghbi et al., 2011:10). Private investors are usually financially driven while accepting a social responsibility. They are attracted by microfinance as an alternative investment providing diversification and possibly a position in developing countries' financial markets.

Institutional private investors are, however, subject to a strong fiduciary duty and must achieve risk-adjusted market rates of return. They will only invest through MIVs that more or less can guarantee market rate return, ruling out most of the microfinance landscape. As one respondent remarked, 'It simply is too early for many institutional investors to enter the microfinance market', while another said, 'the sector is still quite young – if not too young. If you compare it with other private equity investments, microfinance fund management needs to become more professional.' Institutional investors have raised the bar for MIVs in order to be investable: for one, the minimum criteria include a fund investment of over 50mn Euros, first-time funds are excluded, and management must have a clear track record and invest its own money.

The last group, philanthropic organizations, includes NGOs and charitable foundations. These finance MFIs with both donations and investments in 'impact first' MIVs. Donations are usually targeted at project development for small MFIs. Foundations do not have to return a profit to their shareholders, but any retained earnings will allow them to increase in size and reinvest in more projects. Their main priority is usually generating long-term social impact. They do not consider a stake in microfinance as pure charity, many requiring some kind of positive return, but they will not sacrifice social impact to improve financial performance.

The rectangles in Figure 9.6 represent MIVs; these are commercial institutions whose mission is to attract capital to invest in MFIs. More than half of foreign investment in microfinance is channelled through MIVs (Lützenkirchen and Weistroffer, 2012). There is significant variation between MIVs on financial versus social impact. Most would define themselves as double bottom line organizations, but some are 'impact first' and others 'finance first' organizations depending on their main priority (Freireich and Fulton, 2009). We define the third kind of MIV as 'professional first' (Hummels, 2013) – driven by their function as financial intermediaries and believing in professionalism, commercialization, and integration of microfinance in the mainstream financial system.

Finally, the rounded rectangles on the right represent the MFIs. To classify this heterogeneous group, we divide MFIs into: start-ups, growth, and mature, allowing us to apply financial life cycle theory and simultaneously capture other features. Firstly, age reflects the way investors think about their investment as seed, venture, green field, growth, or replacement capital. Secondly, the legal status and size correlates: most start-ups are NGOs, which grow into NBFIs and finally mature into regulated banks. Thirdly, the focus on social and financial performance is correlated with age; generally, younger institutions are more concerned with their mission and social impact, but as they expand, mature and access commercial capital they will gradually shift their focus towards financial sustainability – although this does not necessarily entail a loss of social mission.

7 Asset classes and performance

After describing microfinance, its evolution and the motivations of the major players, we analyze how investors can help MFIs improving their social and financial performance through the use of different asset classes.

7.1 Subsidies

DFIs invest in MFIs either via subsidized lending or through impact first MIVs. In our interviews, we found no evidence of DFIs investing in finance first or commercial MIVs. Their involvement runs through the philanthropic or socially motivated channel. For DFIs with banking status, their high ratings enable them to raise money cheaply on international capital markets and provide subsidized lending to MFIs at below market interest rates. The loans are usually large, non-brokered, and focused on large and well-established MFIs. DFIs also invest in smaller, younger, and riskier MFIs, but they do so via MIVs.

Some of our interviewees were strongly critical of DFIs. They complained their subsidized lending floods the microfinance market with cheap capital, weakening financial constraints on MFIs, and slowing the consolidation process. It can also keep otherwise bankrupt MFIs in the market or drive MFIs to more aggressive lending, leading to portfolio quality erosion and client over-indebtedness. On the other hand, initiatives like the Microfinance Enhancement Facility and those of the International Finance Corporation and KfW guaranteed a stable flow of capital to the microfinance industry when private funding dried up in 2008.

Donations do have the potential to generate high social impact. They are able to withstand much higher levels of risk and fund projects that would never get the support of private capital. This allows institutions to start or expand operations in rural and remote areas (depth of outreach) or reduce costs by introducing mobile banking (cost of outreach). Such targeted support will create strong social benefits. However, if donations and subsidies are not targeted at the microfinance institutions that truly need them but at already commercially viable institutions, they could end up hurting microfinance clients and creating negative social impact. We do not claim that donations and subsidies are socially detrimental in general. In microfinance, however, they could cause distortion and an environment fostering undesirable lending behaviour and client over-indebtedness, crowding out commercial lending and sustaining inefficiencies. This would set back the industry's transition towards financial sustainability by making it too reliant on uncertain sources of non-commercial debt.

7.2 Private equity

The core function of private equity in microfinance is to help new MFIs build up their infrastructure and assets and allow them to access debt financing. In most cases, their development and survival would not be possible without private equity investors willing to take the extra risk. As we saw in Figure 9.6, investments can run through impact first, finance first, or commercial/agnostic MIVs.

A private equity investment via an impact first MIV will put the emphasis on depth of outreach and client protection while increasing efficiency, but it will have a limited effect on breadth of outreach. There could also be a problem with excessive depth of outreach as some clients may simply be too poor or lack the necessary opportunities to benefit from a microloan. As Armendariz and Morduch (2012) argue, potential clients should only be offered microfinance 'if (and only if) their expected returns are greater than the cost of capital.' Targeting the poorest of the poor will always be more expensive and riskier than serving richer clients. Impact first MIVs will be willing to take equity positions considered too risky by mainstream investors; they have a key role in helping institutions attain profitability and a wider range of financing options. Finance first MIVs have a similar role but focus on more established institutions that are about to or have already reached profitability. When finance first MIVs invest in private equity, they will prioritize financially and socially sustainable lending practices. This will likely result in less depth of outreach but will enhance long-term survival prospects for the MFI.

Finally, professional MIVs focus on reducing financing costs and allowing MFIs to access the largest possible number of investors, irrespective of their social preferences. These investors put high value on the fact that MFIs will be able to transition to fully regulated institutions and count on good regulation and transparency to limit the possible negative consequences of an excessive focus on short term profitability. If MFIs are able to make the transition to fully regulated banks, then they will become independent of social investing and will be able to fund themselves with traditional debt and equity instruments – as well as with local savings. Full access to capital markets will imply public scrutiny of lending practices and management, leading to increased efficiency and accountability. At this point, socially responsible investors will be able to step back, as their function of supporting the integration of microfinance in mainstream finance will be accomplished.

Because of its long-term structure and ability to provide assistance to the MFIs, we believe that private equity investment has the potential to improve both financial and social performance. The focus on one or the other dimension will then depend on the preferences and the successful interaction of investors, MIVs, and MFIs. Despite its potential, private equity still remains the most challenging, costly, and risky way to invest in microfinance and therefore will have an important but not exclusive role in the development of the industry.

7.3 Private debt

Debt allows microfinance institutions to leverage their equity and expand their operations, serving more clients and increasing social impact. Debt investors have a more limited risk appetite and they will only lend to an MFI once it has reached profitability. Improvements in social performance will then be conditional on financial sustainability. Like private equity, the impact of debt on social performance depends on the motivation of investors and investees, but its effectiveness may be thwarted by market conditions.

Table 9.1 Summary of findings

Asset class	Investor type	Social impact	Financial performance	Engagement tool	Limitation
Donations	Government / Philanthropic	Fundamental role in starting institutions	Null or negative	Monitoring, costly and mostly ineffective	Crowding out of commercial funding, distortion of competition
Private equity	Financially and socially oriented, high risk tolerance	Dependent on investors' preferences	Leads the institution to profitability	Active ownership	High agency costs due to low liquidity
Private debt	Finance first socially responsible investors	Increases breadth conditional on sustainability	Positive by encouraging profitability	Contracting, covenants	Effectiveness of covenants limited by contracting power

The main engagement tool for debt investments is contracting. By using covenants and milestones, investors can agree on the goals MFIs should achieve and the behaviours to be avoided. Contract clauses are more effective with a credible threat of sanctions, a bigger loan, and a lack of alternative sources of funding as well as the size of the MIV itself. When MIVs have to compete with other lenders on relatively small loans, they will have low contracting power and will not be able to impose restrictive covenants. On the other hand, MFIs without many funding options might be coerced into accepting covenants that would significantly modify their behaviour. Simply put, very demanding lenders might be stuck with the bad deals.

In summary, debt is the main tool for microfinance expansion, but debt investors have a much more passive role in enhancing social performance. They may simply restrict themselves to MFIs whose profile matches their interests. If more investors are interested in the impact of MIVs, then the cost of debt will go down, as it will encourage MFIs to improve their social performance. However, as more financially oriented investors enter the microfinance market, the opportunity for debt investment to target social impact will be progressively reduced. On the other hand, commercial debt has a disciplinary effect on MFIs when it comes to financial performance, as institutions have to achieve financial sustainability in other to access this source of financing.

8 Conclusion

We started this chapter with Wood and Hoff's (2007) contention that different asset classes have different social functions. Whereas private equity is particularly useful for funding new initiatives, debt seems more appropriate to finance growth of a company or institution. We have sought to test this assumption within the context of microfinance, which in our view provides an interesting context for analyzing the social function of debt and equity. Microfinance inherently raises issues around the social and financial performance of the microfinance activities themselves and the investments in microfinance bodies. As an industry, its exponential growth has given rise to both hype and demonization. Over 30 years after its modern incarnation, and after the Compartamos Banco IPO in 2007, and the Andhra Pradesh crisis in 2010, microfinance can still polarize the debate on the social value of providing access to finance to the poor and the role of commercialization. In this chapter, we have made a number of observations that will help raise better questions about the role that private equity and debt investments play in the evolution of microfinance.

Firstly, the function of private equity and debt in microfinance is really no different from other industries. Private equity providers are willing to take the extra risk of investing into new businesses in exchange for a share of the potential future profits. At a time in which money coming from public sources, such as governments or publicly funded NGOs, becomes increasingly scarce the relevance of private investments – in debt but certainly also in equity – accrues. Without private equity, most MFIs would be stuck in their embryonic state and unable to take the next step. The function of the private equity investor is to help an MFI institution to develop as an enterprise and reach or improve profitability. Once the MFI can prove that it can cover its costs, it will be able to guarantee loan repayment and gain access to commercial debt. Debt will become the main force behind its growth, and debt availability will guarantee self-sufficiency and financial sustainability. Equity and debt have different but complementary functions at different times in the life of an MFI. Nevertheless, it is equity investments and the accompanying striving for profit and efficiency that can ultimately help form a microfinance sector with the potential for substantial outreach to the masses of the poor. Profit-seeking investors might gradually steer MFIs away from serving the poorest of the poor. However, this might not necessarily be for the worse. Armendariz and Murdoch (2012), as well as Banerjee et al. (2011), comment that not everyone qualifies for obtaining a microcredit loan. While it may sound paradoxical that everyone should have access to finance, but not everyone will actually receive financial support, it means that loans go to those able to carry the burden of paying the interest rates and ultimately repaying the principal.

The second set of considerations concerns effective engagement through private equity or debt. One of our interviewees has defined debt as a contract but equity as a relationship – requiring a lot more time and energy. That means that equity investors have greater opportunities to focus on and enhance social performance. Debt holders may also be able to control management via covenants and conditions, but complex contracts prohibitively increase costs. Threat of covenant enforcement also has to be realistic, which depends on the market situation.

Third, the role of commercial investors in microfinance needs to be carefully assessed. Commercial investors are principally driven by risk and returns considerations. However, they value the social performance of microfinance for the potential upside of doing something good and as a risk management tool. Crucially, commercial investors will be the main actors in the transition of microfinance towards full integration in the regular financial system. From this perspective, non-commercial investment in microfinance such as donations or subsidized lending can create distortions in the market and slow down this development. Commercial investors do also value the opportunity for microfinance to become gradually and responsibly integrated into the regular financial system. This was what microfinance was all about in the end: providing access to capital for those who were excluded from regular banking services.

Fourth, as the recent scandals and crises in microfinance have showed, impact in microfinance is not just about product but also largely about process. It is not enough to invest blindly in microfinance to have social impact. To enhance value, both careful investors and good regulation is necessary. Not simply lending to the poor, but lending responsibly to the poor.

Notes

1. A Pareto optimum, or Pareto efficiency, is a state of allocation of resources in which it is impossible to make any one individual better off without making at least one individual worse off with the same amount.
2. Full list available upon request.
3. According to Hertz 'Co-op capitalism' stands for shared values, a focus on relationships and collaboration and the added value of the collective. The opposing Gucci-model of capitalism focuses on competition and individual success.

4. Returns have historically been in the low teens according to Oheri and Fausch (2008)
5. The group 'Other' represents individuals and peer to peer lenders
6. This creation of shared value refers to financial and non-financial value

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10
Defining Social Collateral in Microfinance Group Lending[1]

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1 Introduction

Microfinance institutions (MFIs) grant loans backed by social collateral to poor entrepreneurs whose incomes originate mostly from informal economic activities. As a consequence, MFIs are often committed to rely on soft information to assess borrowers' credit-worthiness. Group lending with joint liability is seen as an effective instrument to circumvent information asymmetries because it incentivizes group members to use their social ties to screen, monitor, and enforce loan repayment on their peers. The social ties embed social capital and facilitate the collective actions of group members, allowing them to coordinate their repayment decisions and cooperate for their mutual benefit.

This paper sheds light on the role of social capital in group lending contracts. We provide a new concept of social capital by including *internal ties* (ties between group members) as well as *external ties* (ties of group borrowers with other individuals living in the same community). We suggest looking at both types of ties in order to understand how group lending works. In particular, by using this approach, we can better understand how social capital may be used for screening, monitoring, and loan enforcement.

The microfinance literature on social capital focuses on the social ties between group members.[2] Different proxies for these *internal* ties are used to show that they help predict the repayment performance of group loans. Recent studies by Dufhues et al. (2012 and 2013) map the *external* ties of group borrowers to identify how their stock of social capital predicts access to credit and repayment performance. However, no study in the theoretical or the empirical literature has focused simultaneously on both internal ties and external ties. We argue that the combination of internal and external ties is instrumental in determining the amount of social capital pledged by individual borrowers as social collateral. A group borrower's internal and external ties may be compromised when she does not meet her peers' expected behaviour – for instance, when she fails to repay her loan.

The remainder of this paper is organized as follows. Section 2 reviews the evidence on social capital and group lending with joint liability. In Section 3, we explore the conceptual issues surrounding social capital in the context of microfinance group lending, and in Section 4 we present our new theoretical framework. Section 5 provides conclusions and suggestions for future research.

2 Social capital in microfinance: A brief review of the literature

The concept of social capital has been widely explored in the sociological and economic literature. Two of the socio-economic strands explain how social capital produces economic returns.[3] The first[4] views social capital as the pool of resources embedded in an individual's social network. In this line of thought, all ties have an identical role, regardless of the stock of social capital mobilized to achieve a certain outcome. The second strand[5] defines social capital in terms of actual use. According to this strand, economic returns are driven by the social capital embedded in the ties that are actually mobilized.

Social capital plays an important role in microfinance. MFIs use group lending with joint liability to reduce information asymmetries and increase repayment performance. The joint liability element is seen as an effective instrument to circumvent information asymmetries because it incentivizes group members to use their social ties embedding their social capital to screen, monitor, and enforce loan repayment on their peers. In particular, in joint liability lending programs, the members of a borrowing group act as guarantors for each other's loans. This encourages them to collect soft information from their social networks to screen and select each other. Once the group is formed, borrowers use this information to monitor each other and ensure that peers are using the loan for the promised income-generating purpose (i.e., to mitigate *ex ante* moral hazard problems), as well as to avoid strategic default (i.e., to mitigate *ex-post* moral hazard). To preserve their social capital, group members may curb their own moral hazard behaviour. Thus, by being jointly liable for the repayment of a group loan, borrowers pledge their social capital embedded in their ties with other borrowers, that is, they provide social collateral.

Although the success of microfinance relies at least partly on the use of social collateral, evidence on the role of social capital in a microfinance context is scarce. Defaulters' social ties can be compromised in two ways: directly, via the threat of losing social ties with co-borrowers and indirectly through a reputational effect transiting through the information channels embedded in the social network. Therefore, social sanctions for repayment misconduct can be heavy. In the context of group lending, the first strand of literature suggests a linkage between individual social capital and repayment performance, whereas the second strand suggests a linkage between internal ties only and repayment performance.

The available evidence on microfinance group lending confirms the theoretical prediction that internal ties among borrowers affect their screening, monitoring, and enforcement efforts, which in turn determines the repayment performance of group borrowers.[6] Several proxies have been used in empirical studies to gauge the intensity of social ties. They include factors such as the duration of relationship, geographic proximity, role relationship (i.e., whether group members are relatives, friends, or acquaintances), frequency of contact, and sharing between group members.

With respect to screening, it has been stressed that the group lending model allows in many cases for endogenous formation of groups. This self-selection allows borrowers to use their social ties to screen each other. Empirical evidence on the importance of self-selection and the role of social ties is scarce, however. One of the few studies investigating this is from Sharma and Zeller (1997), who find that self-selected groups lead to better repayment performance than do exogenously formed groups. Hermes et al. (2006) show that repayment problems decrease when the group leader knew the other group members before forming the group.

Empirical research on monitoring efforts and the role of social ties is relatively more abundant. Several papers argue that monitoring and information sharing are easier when group members live close by. Simtowe et al. (2006), Karlan (2007), Cassar et al. (2007), and Al-Azzam and Mimouni (2012) find that geographic proximity improves repayment performance. However, Wydick (1999) finds that the positive impact of proximity only holds in rural areas, perhaps because individuals in these areas form tightly knit networks. In contrast, in urban areas, the lack of information channels may render geographic proximity useless. Hermes et al. (2005) show that within-group moral hazard is lower when the group leader lives close to the group members, as well as when the group leader pays regular visits to her peers. As the result is specific to group leaders, this implies that they monitor and collect information more effectively than do the other group members.

Feigenberg et al. (2010) show that in India, more frequent group meetings are associated with fewer default occurrences. Frequent meetings allow group members not only to share information but also to strengthen the social capital embedded in their ties. More valuable ties translate into more credible threats of social sanctions. Strikingly, Van Bastelaer and Leathers (2006) find the opposite result based on data from Zambia, which, as they suggest, may be because the frequency of meetings is triggered by crisis conditions.

Evidence that the presence of relatives in the group can impact on repayment performance is mixed. On the one hand, Sharma and Zeller (1997) and Ahlin and Townsend (2007) find a positive impact in Bangladesh and Thailand, respectively. On the other hand, Al-Azzam et al. (2012) obtain the opposite result using data for Jordan. Apparently, in Jordan group members are more willing to threaten relatives with social sanctions. A second Jordan study shows that friendship between the group leader and other group members improves on-time repayment (Al-Azzam and Mimouni, 2012).

A number of studies measure internal ties through gender homogeneity. According to Wydick (1999), homogeneity facilitates intragroup insurance in rural areas of Guatemala, but not in urban ones. In urban areas, gender homogeneity significantly decreases repayment performance. Hermes et al. (2005) rationalize this outcome by showing that moral hazard is higher in same-sex groups. Based on a sample from Eritrea, the authors find that in gender-homogenous groups, the probability of moral hazard behaviour increases.[7] Gender homogeneity may make threats of social sanctions less credible.

Another proxy for internal ties is the intensity of resource-sharing among group members. Van Bastelaer and Leathers (2006), Gine and Karlan (2009), among others, calculate group-level sharing as the total number of types of goods/services/advice shared by the members of a group. Overall, sharing seems to improve the group repayment performance. However, Ahlin and Townsend (2007) show that sharing among non-relatives is bad for repayment, whereas sharing among relatives is positively related to repayment conduct.

The age of the group is another proxy used to measure the strength of internal ties. The relationship between group age and repayment performance may go both ways. On the one hand, older group members use their ties more efficiently to enhance repayment performance (Khandker, 2012). On the other hand, in older groups there may be a so-called *matching problem* (Paxton, 1996). With time, the credit needs of the group members may vary, possibly leading to tensions within the group. Moreover, if group members have known each other for a long time, they may be reluctant to check up on and sanction each other. The results of Godquin (2004), Ahlin and Townsend (2007), and Al-Azzam et al. (2012) confirm the negative correlation between group age and timely repayment. Simtowe et al. (2006) prove that the number of loan cycles is positively associated with moral hazard. However, even if moral hazard increases in older groups, this may be offset by social capital accumulation, which promotes trust and reciprocity. This may eventually result in higher loan recovery rates.

Dufhues et al. (2011a, 2011b) are the only scholars to define social capital in terms of a social network. For households in Thailand and Vietnam, where at least one member is a borrower, the authors map the social network of the household head. They identify four types of ties depending on both the strength of the tie and the social distance between individuals. To measure a tie's strength, they use the following proxies: role relationships (whether individuals are relatives, friends, or acquaintances), frequency of contact per month, duration of relationship, and closeness of relationship. Next, they use occupational prestige to build a proxy for the social distance between individuals. Their empirical results show that strong ties between individuals in the same position of authority improve repayment in Vietnam. In contrast, repayment in Thailand is enhanced by weak ties between individuals in different positions of authority.

In sum, the available empirical evidence on the role of social ties and the importance of information sharing is inconclusive in predicting repayment performance for group loans. Arguably, this inconclusiveness is linked to the lack of a consensual definition of social ties. Undeniably, however, social ties and information sharing shape the social collateral pledged by an individual group borrower. Social collateral determines the credibility of the threat of social sanctions. To avoid losing social collateral, group borrowers may deter each other's moral hazard behaviour. In order to measure social collateral, we need to restructure the concept of social capital by measuring both internal and external social ties. In the next section we illustrate the definitional issues that need to be overcome in order to conceptualize social collateral properly.

3 Social ties: definitions

The sociological literature provides numerous definitions of social capital,[8] mostly centred on the resources embedded in social networks. Social networks are patterns of social exchange and interaction that persist over time (Uphoff, 2000). The link between any two members of a social network is called a social tie. The resources embedded in social ties are both pecuniary and non-pecuniary. Non-pecuniary benefits include information sharing, moral support, advice, etc. The extent to which an individual can transform these resources into personal assets depends on her trust relationships. High trust relationships allow individuals to better harness social ties because they give access to more reliable soft information and better risk-hedging; they also facilitate collaboration.

Social ties embed expectations of reciprocity, which may be critical for people living in resource-scarce environments and coping with idiosyncratic shocks. Social ties are thus highly valuable to asset-poor individuals. Trust is embedded in the ties between individuals, and it shapes their stocks of individual social capital.

In the microfinance context, an internal social tie links two members of the same borrowing group. In contrast, an external tie relates one group borrower to another member of the local community. To formalize these concepts, let us consider a joint liability group B made up of two borrowers $B = \{a, b\}$.[9] The borrowers belong to a larger community. In order to illustrate the notions of internal and external ties, we use the network diagrams in Figures 10.1 to 10.8, where individuals are represented by nodes, and social ties by edges.

We focus on these distinct network configurations shown in the figures to illustrate the role of internal and external ties for information transfer, which is critical for screening, monitoring, and loan enforcement. In Figure 10.1, the two group borrowers, a and b, are linked by an internal tie only. This is a simplified model of reality, since it does not take into account any relevant ties with the rest of the community, made up of the $(n - 2)$ other members. Yet, this representation is commonly used in the microfinance literature on group lending. The group members are considered as being isolated from the rest of the community, meaning that the outcome of the joint liability loan will

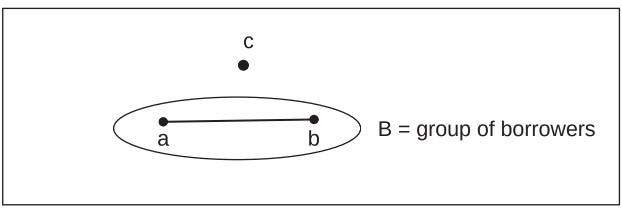

Figure 10.1 Internal tie only

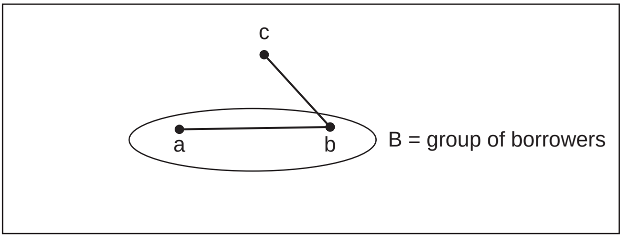

Figure 10.2 Internal and external ties

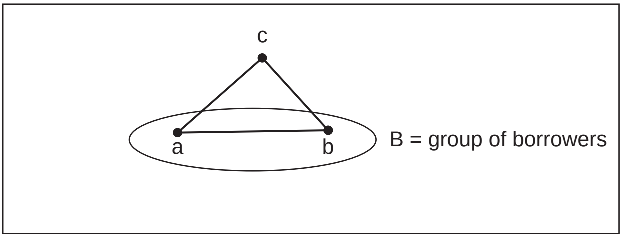

Figure 10.3 Direct information channel

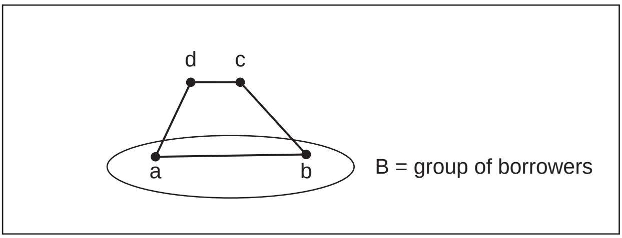

Figure 10.4 Indirect information channel

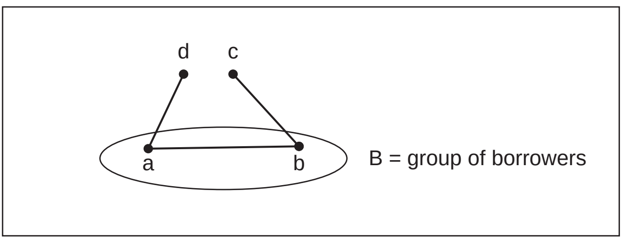

Figure 10.5 No information channel

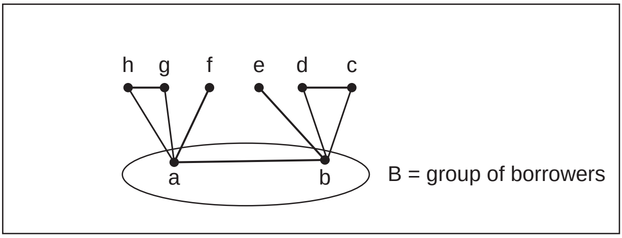

Figure 10.6 Complex network 1

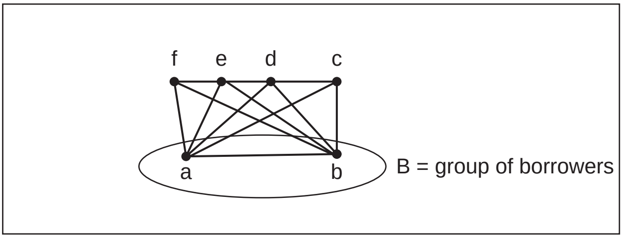

Figure 10.7 Complex network 2

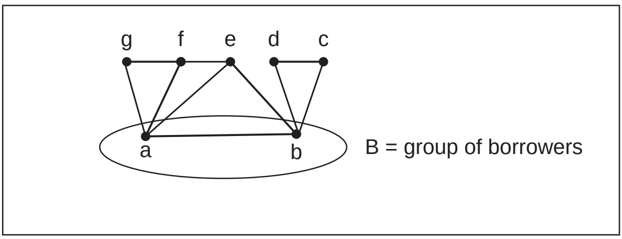

Figure 10.8 Complex network 3

not affect the relationships between group members and the external world. This assumption is restrictive given that a person's actions in the context of a joint liability loan may be communicated to external ties. This may affect her reputation within the community as a whole, and may also influence her interpersonal trust relations, fostering cooperation between individuals (Putnam, 1995). In turn, this may affect the individual's access to the resources embedded in external ties.

To enlarge the scope, we consider several situations including external ties. In Figure 10.2, borrower *b* has an external tie with individual *c*, who does not belong to *B*, the group of borrowers. Borrower *a* is not connected to *c*. Although in this situation we include a relationship with the rest of the community, there will be no transmission of information about the behaviour of the group members to individuals outside the group, because the members do not share common external ties.

In reality, borrowers may have numerous connections with other members of the community in which they live. The denser the social network, the higher is the probability that borrowers share common external nodes. In Figure 10.3, individual *c* is linked to both borrowers *a* and *b*. In such a situation, *a* and *b* may use their common tie with *c* as a channel not only to screen and monitor each other, but also to transfer information to *c* about the peer's behaviour. Therefore, we call *information channel* any path[10] going from one borrower to the other one. The *information channel* from *a* to *b* is said to be *direct* when it includes only one external node, and therefore two edges, such as in Figure 10.3. *Indirect information channels* consist of three or more edges, and two or more external nodes. Figure 10.4 illustrates an *indirect information channel*. Three edges connecting external nodes are needed to link *a* to *b*.

Some external ties do not belong to any information channels. Figure 10.2 features a simple example of an information-channel-free network, since individual *c* connects to *b*, but not to *a*, either directly or indirectly. Likewise, Figure 10.5 shows that the two borrowers may have unlinked external ties in a way that excludes information channels.

Figure 10.6, Figure 10.7, and Figure 10.8 highlight the differences in information channels. In the three figures, borrowers *a* and *b* have an equal number of external ties. Figure 10.6 excludes any direct or indirect information channel between *a* and *b*. Such a loose configuration is specific to urban areas, where people's networks are highly dispersed. Borrowers barely know the friends and relatives of their group members.

In contrast, Figure 10.7 shows a tightly knit network, capturing the typical configuration of rural social networks. This configuration facilitates information collection, and improves the effectiveness of borrowers' screening and monitoring. Information channels may also be used to transmit information to the wider network. Tightly knit external ties ease information propagation within the network and make social sanctions more credible. In particular, by using information channels group borrowers may inform the defaulter's social network about her behaviour. Failure to respect the group agreement may result in loss of trust and reputation from all the other members of the network.

In Figure 10.8, *a* and *b* have an identical number of social ties, but with different configurations. There is a single direct information channel (*a-e-b*) and two indirect ones (*a-f-e-b*) and (*a-g-f-e-b*). However, *b* has an informational advantage over *a*, because *b* can collect and disseminate information about *a* more easily than *a* can do about *b*. Indeed, *a* can rely on *e* only while *b* can also use the other members having ties with *a* via indirect information channels passing through *e*.

The above discussion has provided a broader conceptual framework of social ties in microfinance group lending by focusing on internal as well as external ties of group borrowers. In the next section, we elaborate on the consequences of bringing external ties into the discussion of how social ties may affect the behaviour of group lending borrowers and their repayment performance.

4 Social ties and group lending: a conceptual approach

The impact of external ties on repayment performance has so far been disregarded in the microfinance literature. This section proposes a new formaliszed framework to examine social capital by including both internal and external social ties. This approach is designed in a way that helps measure social collateral in group lending more rigorously than at present. It is based on the assumption that social collateral depends on internal ties, external ties, as well as the configuration of the whole social network. All these elements influence the credibility of the threat of social sanctions and affect the effectiveness of social capital as a disciplining device.

We start by looking at social interactions within and beyond the borrowing group and examining how credible threats of social sanctions may shape the behaviour of group borrowers. The theoretical model of Besley and Coate (1995) explains the effectiveness of social sanctions from the payoff perspective. The group lending methodology incentivizes borrowers to repay the loans of the peers that undertake unprofitable projects. However, moral hazard is mitigated by the threat of social sanctions. A shirking peer is socially sanctioned for imposing costs on her contributing peer. Social sanctions depend on the discomfort and the material loss inflicted by the non-contributing member on her contributing peer. The aim of our model is to conceptualize this loss.

For simplicity, we assume that defaults are strategic only. The social cost that can be inflicted on shirkers may add up to the value of their social collateral, which consists of the resources embedded in the borrower's internal and external ties. In case of default, the other borrowers may wish to inform the defaulter's social network about her breach of trust. Depending on the availability of information channels, this may result in a loss of trust relationships at the level of the network as a whole. In this way, the informed network members will reduce the defaulter's access to the resources embedded in their ties. Additionally, the defaulter's kin may also be affected (La Ferrara, 2003).

We argue that the social collateral pledged by a group borrower encompasses resources embedded in internal ties, as well as in a number of external ties. The extent to which external ties are pledged as collateral depends on the network configuration. Hence, the network configuration affects the credibility of the threats of social sanctions. We rationalize social sanctions through the loss of trust, which reduces the individual's access to the resources embedded in her social network. Drawing on the examples in Figures 10.1 to 10.8, we present a simple representation of social ties and social sanctions for strategic default.

Let us consider a joint liability group made up of two borrowers, $B = \{a, \ b\}$. These borrowers belong to a community comprising $(n + 2)$ persons: $C = \{1, \ldots, n, a, b\}$, i.e. the two borrowers and n other members. Initially, i.e. before any default decision is made, each member of community C benefits from several social ties. The ties are symmetric and represented by a square matrix of size $(n + 2)$ denoted $G = (g_{ij})$ where $g_{ij} \in \{0,1\}$ A social tie embeds information sharing and trust. When $g_{ij} = 0$ individual i has no direct contact with individual j. In contrast, when $g_{ij} = 1$ individual i will inform individual j if a borrower defaults. Since the relationship involves trust, individual j will then act on this information and cut her tie, if any, with the defaulter. In this way, social sanctions rely on two different channels: the information channel (i.e., learning about whom is defaulting), and the trust channel (i.e., cutting the tie with the defaulter). We assume that the two borrowers share an internal social tie, meaning that: $g_{ab} = 1$. Any tie linking a borrower to a non-borrower is referred to as an external tie.

A borrower's stock of social capital consists of the resources embedded in internal ties, as well as in the external ties that *directly* link her to other community members. In contrast, information is not limited to direct ties. It transits via any succession of ties. Stated differently, we assume that direct and indirect information channels share the same efficiency to reach community members in general, and borrowers' external ties in particular.

Ex ante each borrower benefits from a stock of individual social capital (*SCap*), which is given by the number of her dyadic ties:

$$SCap(a) = 1 + \sum_{j=1}^{n} g_{aj} \tag{1a}$$

$$SCap(b) = 1 + \sum_{j=1}^{n} g_{bj} \tag{1b}$$

where the first term on the right-hand side equals the social capital embedded in the internal tie (i.e., $g_{ab} = 1$) and the second counts the borrower's external ties.

Next, we look at the social interactions and information channels of group borrowers within and beyond the group. The defaulting borrower risks losing the resources embedded in the ties that she pledges as social collateral. The threat of losing social collateral affects the borrower's decision to strategically default or not.

We assume that the borrower who bears the responsibility of a default incurs a social sanction materialized by the loss of all the ties pledged as social collateral. That collateral is composed of all the social ties with community members who can be informed about the default. More precisely, if, say, borrower *a* causes a default, then she will lose the trust of all her dyadic ties who are informed directly or indirectly by borrower *b*. As a result, information channels cause losses of social capital. Financial misconduct implies a loss of trust and reputation from those who are informed. Let us first assume that the network includes internal social ties only. Hence, a group borrower's social collateral (*SColl*) is given by the resources embedded in her single internal tie:

$$SColl\ (a) = g_{ab} = 1 \tag{2a}$$

$$SColl\ (b) = g_{ba} = 1 \tag{2b}$$

Hence, $SColl\ (a) = SColl\ (b) = 1$. This simple situation corresponds to the standard assumption in the microfinance literature on social capital.

Next, we go beyond this standard approach and pay attention to external ties, which are the social relationships borrowers share with non-borrowing members of community *C*. Plausibly, external ties pledged as collateral play an important role in the success of group lending. However, the complete stocks of individual social capital represented in

Equations (1a) and (1b) may not be entirely collateralized. The extent to which external ties are pledged as social collateral depends on the information channels, and therefore on the network configuration including the ties between non-borrowers in set $\{1, \ldots, n\}$ who can act as information channels.

To model information channels, we introduce the concept of social path. *A social path of length* $(p + 1)$ is said to link community members i and j if there are p distinct individuals $k_1, k_2, \ldots, k_p \in \{1, \ldots, \mathrm{n}\}$ such that: $g_{ik_1} g_{k_1k_2} \ldots g_{k_pj} = 1$. All paths are finite and their lengths never exceed $(n+1)$ Likewise, we define the *informational distance* between individuals i and j, denoted $d(i,j)$, is the length of the shortest social path linking them. More precisely $d(i,j) = p+1$ if:

$$\forall(k_1,k_2,\ldots,k_{p-1}): g_{ik_1} g_{k_1k_2} \ldots g_{k_{p-1}j} = 0 \text{ and } \exists(k_1,k_2,\ldots,k_p): g_{ik_1} g_{k_1k_2} \ldots g_{k_pj} = 1 \quad (3)$$

Direct information channels correspond to paths of length equal to 2, which include one external node only. Thus, indirect information channels are described by paths of length greater than 2. Importantly, some individuals are not connected at all, because there is no social path between them. In this case, the *informational distance* is conventionally fixed to infinity: $d(i,j) = \infty$ *if:*

$$\forall p \in \mathbb{N}, \forall(k_1,k_2,\ldots,k_p): g_{ik_1} g_{k_1k_2} \ldots g_{k_pj} = 0 \quad (4)$$

Hence, the social collaterals (*SC*) pledged by the borrowers are:

$$Scoll(a) = 1 + \sum_{j=1}^{n} g_{aj} \mathbb{I}_{d(b,j) < 0} \quad (5a)$$

$$Scoll(b) = 1 + \sum_{j=1}^{n} g_{bj} \mathbb{I}_{d(\mathrm{a},j) < 0} \quad (5b)$$

Where $\mathbb{I}_{d(i,j) < \infty}$ is the binary variable taking value one if there is a social path between i and j, meaning that information can pass from i to j:

$$\mathbb{I}_{d(i,j)<\infty} = \begin{cases} 1 & \textit{if} \quad d(i,j) < \infty \\ 0 & \quad \textit{otherwise} \end{cases} \quad (6)$$

The social collateral of a borrower adds up the social capital embedded in the existing ties who can be informed about a default, if any. If a

defaults, then the co-borrower *b* is always informed, which justifies the first term on the right-hand side of Eq. (5a). Second, anyone linked to *b* by a social path will be informed ($\mathbb{I}_{d(b,j)<\infty} = 1$). Among the informed, only those having an existing tie with *a* ($g_{aj} = 1$) will be affected. This combination explains the second term on the right-hand side of equation (5a).

To illustrate the definitions, Table 10.1 gives the social capital in Equations (1a and b), and the social collateral in Equations (5a and b) for all the examples sketched in Figures 10.1 to 10.8. Without external ties (Figure 10.1), group borrowers pledge only their internal tie as social collateral. There are no external social sanctions in case of default.

In Figure 10.2, there is a single external tie linking *b* to *c* ($g_{ac} = 0$, $g_{ab} = 1$). With respect to Figure 10.1, *b*'s social capital increases by one, but her social collateral is the same. Due to the lack of external information channels, borrower *a* cannot inform *c* about *b*'s potential default. The threat of social sanctions is limited to losing the resources embedded in the dyadic tie between *a* and *b*. This example shows that equating social collateral to social capital can be misleading. Social capital is not always pledged as collateral entirely. The share of collateralized social capital depends on the network configuration.

In Figure 10.3, both *a* and *b* are linked to *c* via external ties. There is a direct information channel between the two borrowers (i.e., path *a-c-b*, or symmetrically *b-a-c*) that makes the threat of social sanctions more credible, since the social collateral increases to 2. In Figure 10.4, borrowers *a* and *b* share no external tie, but individuals *c* and *d* form an indirect information channel, allowing them to collect and transmit information on the borrowers. Hence, *a* can inform *c* about *b*'s default (channel *a-d-c*) while *b* can inform *d* about *a*'s default (channel *b-c-d*). Thus, both *a* and *b* pledge as collateral their entire stocks of social capital. In Figure 10.5, *a* and *b* have the same individual social capital as in Figure 10.4, but there is no information channel between *c* and *d*. Therefore, the borrowers pledge a lower amount of social collateral.

Figures 10.6, 10.7, and 10.8 display more complex network configurations. In Figure 10.6, both *a* and *b* have social capital made of four ties. However, due to the lack of information channels their social collateral is limited to their internal tie. That is, *a* and *b* in Figure 10.6 pledge a lower social collateral than in Figures 10.3 and 10.4, although they have higher social capital. Figure 10.6 can be viewed as representative of urban social networks, where members of a borrowing group share few social ties. In contrast, Figure 10.7 features a tightly knit network, specific to rural areas. In this case, borrowers *a* and *b* collateralize their

Table 10.1 Social capital and social collateral for Figures 10.1 to 10.8

	Social Capital		Social Collateral	
Figure	*SCap*(*a*)….	*SCap*(*b*)	*Scoll*(*a*)….	*Scoll*(*b*)
1	1	1	1	1
2	1	2	1	1
3	2	2	2	2
4	2	2	2	2
5	2	2	1	1
6	4	4	1	1
7	5	5	5	5
8	4	4	4	2

entire stocks of social capital. Moreover, the direct information channels are doubled up by indirect information channels[11], making the threat of losing the entire stock of social capital highly credible.

Last, Figure 10.8 shows that group borrowers living in the same environment may not pledge the same amount of social collateral. In this figure, borrowers *a* and *b* have the same stock of individual social capital (one internal tie and three external ties). However, they do not pledge the same amount of social collateral. While *a* pledges her entire stock of social capital, *b* pledges only the social capital embedded in her internal tie and one external tie (with *e*). As a result, *a* has a higher incentive to repay than *b*.

According to our approach, information channels increase the amount of social collateral involved and the threat of social sanctions in case of default. Information channels are especially dense in rural areas where tightly knit networks improve the capacity to collect and transmit information. Our model thus provides theoretical support for the empirical findings that group lending works better in rural areas than in urban ones (Wydick, 1999; Ahlin and Townsend, 2007). More generally, we point out the instrumental role of the network configuration on the effectiveness of social capital as a disciplining device in group lending.

5 Conclusions

This paper provides a novel theoretical framework to measure the social collateral pledged by microfinance joint liability borrowers. We use concepts from network theory and rely on an extended notion of social capital including both *internal ties* (between group borrowers) and *external ties* (between group borrowers and others). Our main message is that the threat of compromising a borrower's internal as well as external social ties may deter her moral hazard behaviour. If the information regarding the borrower's failure to respect the group agreement goes beyond the group, she may lose reputation within her network. Hence, her access to the resources embedded in her external ties may be reduced. Thus, we argue that the credibility of the threat of social sanctions depends on the size and importance both of internal and of external ties, which in turn influences the effectiveness of social capital as a disciplining device. One important feature of our approach is that the extent to which external ties are pledged as collateral depends on the network configuration.

This paper may have important policy implications for product design in microfinance (Labie et al., 2013). In particular, when implementing microcredit programs in certain social environments and/or contexts, MFIs need to consider the social collateral that their clients are able to pledge (Hudon and Sandberg, 2013). One policy message based on our analysis may be that using joint liability group lending may work better in rural areas than in urban ones. More generally, it may be important for loan officers in a microfinance program to be informed about the social embeddedness of group borrowers in the community in which they reside.

Our theoretical framework can be extended in several ways. First, any analysis of the consequences of using social collateral in group lending should also gauge the potential effects of that collateral, not only for the borrowers (as we have done in this paper), but also for the MFI. One potential consequence of using social collateral may be that borrowers collude against the MFI, something that has actually been shown in some studies (Ahlin and Townsend, 2007). The probability of such an outcome depends heavily on the strength of borrowers' internal social ties, but also on their ties with the loan officer in charge of monitoring the group. While the ties with loan officers lie beyond the scope of this paper, our methodology is easily adaptable to such an extension.

Second, depending on the network configuration, borrowers may not always be able to assess whether or not a default is strategic. In this case, the assumption that social sanctions are enforced with respect to strategic defaulters falls short. Credible threats of social sanctions can put unnecessary pressure, with potentially harmful consequences (Schicks, 2013). Additionally, losing social ties may result in a reduction of information channels for the whole community. Taking into account such externalities in a game-theoretic perspective of social sanctions is a promising avenue for further research.

Third, we have assumed that social ties are symmetric whereas in reality they are often asymmetric. Professional or familial hierarchic ties do not embed the same resources from both parties. For instance, weak ties do not give access to the same resources as strong ties, and their role is instrumental for soft information transmission within the social network (Granovetter, 1973 and 1983; Levin and Cross, 2004). If ties are indeed asymmetric the effectiveness of social capital as a disciplining device in group lending may be different for different group members. Obviously, this has consequences for the calculation and interpretation of the outcomes of our model. Any future extensions should therefore incorporate the possibility of having asymmetric ties between individuals.

Fourth, we have assumed that dyadic ties are binary (zero or one). However, relationships may have diverse intensities. Moreover, people might have enemies, meaning that social ties can even have negative values. Social ties are also dictated by social norms guiding interactions with others, including reciprocity (Cornée and Szafarz, 2013). Undeniably, all these characteristics will influence the nature of social capital. These factors should therefore be taken into account when determining the impact of social collateral on group behaviour, both theoretically and empirically.

Finally, we have implicitly assumed that information is accurately transmitted regardless of the length of the information channel. In reality, the longer the path, the poorer the quality of information transfer. While assuming that there is no loss of information in direct information channels seems quite reasonable, the assumption is more questionable regarding indirect information channels.

All of the above suggestions may be taken into account and can be incorporated into future elaborations of our model. This will enable us to further explore the role social capital plays in determining the screening, monitoring, and enforcement behaviour of group members and to what extent it has an impact on the repayment performance of borrowing groups. Another important and potentially fruitful future research avenue would be to empirically test the outcomes of our model. This involves collecting detailed information about the nature of social ties borrowers have with group members as well as with other members of the community in which they live.

Notes

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2. See Zeller (1998), Wydick (1999), Godquin (2004), Hermes et al. (2005, and 2006), Van Bastelaer and Leathers (2006), Karlan (2007), Cassar et al. (2007), Feigenberg et al. (2010).
3. See Lin (2008) for a detailed discussion on social capital theories from a network-based perspective.
4. See Bourdieu and Wacquant (1992), Belliveau et al. (1996), Woolcock (1998), Nahapiet and Ghoshal (1998).
5. See Coleman (1990), Fukuyama (1995), Putnam (1995), Thomas (1996).
6. See Ghatak and Guinnane (1999), Morduch (1999), and Hermes and Lensink (2007) for overviews of the theoretical literature of microfinance group lending.
7. Gender may also influence repayment performance through other channels (Guerin, 2011). Agier and Szafarz (2012) show that gender is a source of discrimination in loan granting. The gender gap in loan size is mainly attributable to loan officers (see also Labie et al., 2010). Servin Juarez (2012) shows that the loan officer's gender affects repayment performance.
8. See Adler and Kwon (2002) for an overview.
9. For expositional clarity, we restrict the number of participants to the borrowing group to two. In practice, however, the number of group members vary with the type of lending methodology. They can include up to six group members for the Grameen type lending or up to 35 in case of village banking.
10. A path refers to a sequence of nodes and edges.
11. This is the type of setting where 'everyone knows everyone'.

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Competition in Microfinance: Does It Affect Performance, Portfolio Quality, and Capitalization?

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1 Introduction

In a competitive set up, by definition, many firms contend for a limited market share. In the financial sector in particular, competition greatly affects consumers' wealth and financial soundness of banks (Bikker and Bos, 2005). Competition also affects the quality and diversity of products and productive efficiency of financial institutions (Claessens and Laeven, 2005). In the globalized microfinance industry, where competition has become increasingly severe, especially among the MFIs in Bangladesh, East Africa and Latin America, MFIs are struggling for FSS.

One would expect competition helps to increase clients' access to credit and lower interest rates. However, since MFIs fundamentally operate on a double bottom line principle[1], increased competition exacerbates the moral hazard and the information asymmetry problems in the industry. Two fairly opposing views shed light on how competition affects the stability of financial institutions. The traditional 'competition-fragility' view argues that increased competition in banks erodes market power, decreases profit margins and results in their reduced franchise value[2], which encourages them to take on more risks to increase returns. Empirically this implies that more competition is linked with a higher risk loan portfolio measured by non-performing loans. Contrary to this, the 'competition-stability' view suggests that increased market power in the loan market may result in higher bank risk due to the increased interest rates charged to the clients make loan repayment harder and exacerbate moral hazard incentives of borrowers. This may result in a shift towards risky borrowers due to adverse selection problems (Berger et al., 2009). Empirically, both views imply that increased competition among the financial service providers may deteriorate loan portfolio quality and reduce MFIs' financial performance. However, the overall effects of competition and market power on financial institutions' stability are not very straightforward, and their risk may not increase due to risks in loan portfolios. Financial institutions may protect themselves from higher loan risk, for instance, through more equity capital or other techniques that mitigate loan risks[3].

Theoretical literature suggests that the portfolio quality deteriorates due to asymmetric information in multi-lender markets (Broecker, 1990). Also, with more competitive pressures, less and less information on borrowers simply reduces lenders' screening capabilities (Marquez, 2002). These effects are intensified when information sharing mechanisms are reduced, which is very common in microfinance. McIntosh and Wydick (2005) theoretically show that competition reduces the ability of MFIs to cross-subsidize and increases asymmetric information on borrower quality. As a result, impatient borrowers become keen to acquire multiple loans, over-indebtedness increases, and repayment rates drop. The empirical evidence on the effects of competition in microfinance is relatively scant due to the lack of information about the market structure in this sector. In this chapter, we attempt to fill this research gap and investigate the impact of competition on MFIs' depth of outreach, financial performance, quality of loan portfolios, and capitalization. As a proxy for market power, we use the traditional measure of market concentration – Herfindahl-Hirschman Index (HHI) – to test the 'competition-fragility' and 'competition-stability' paradigms as mentioned above. We construct HHI for every year and country in the sample to capture both the cross-sectional and time dimensions. The analysis is based on an ingenious panel data set constructed from the Microfinance Information Exchange (MIX) database comprising 409 MFIs in 71 countries over the period of 2003–2008. Necessary adjustments have been made to guarantee consistency and comparability among the MFIs operating worldwide. Using instrumental variables (IV) techniques GMM estimations have been conducted to account for possible endogeneity issues. Results suggest that increased market power may not significantly impact MFIs' depth of outreach or financial self-sufficiency (FSS). However, more market power may improve loan repayments potentially due to repayments made through another loans or by aggressive collection mechanisms. The study also finds that increase in market power significantly improves MFIs' capitalization levels, which can be used as a risk mitigating tool.

The chapter is organized as follows. Section 2 surveys the research literature on competition and microfinance. Model specification and empirical issues have been presented in Section 3. Section 4 provides discussions on the data and variables. Discussions on the results are provided in Section 5. Finally, Section 6 concludes.

2 Competition among microfinance institutions

Increased competition among the MFIs impacts the microfinance clients and the industry in multiple ways (Hartarska and Mersland, 2012). First, competition may weaken the functioning of dynamic incentive mechanism and lead to increased loan default. Second, increased competition leads borrower quality to decline as better performing clients move to profit oriented MFIs. Third, with increased competition the interest rates charged by the MFIs drop, so their overall profitability and ability to cross-subsidize worsens.

Most MFIs use ‘dynamic incentives’ linking future access to credit with proper repayments of earlier loans to discipline their clients and ensure timely repayments. Increased number of MFIs competing for the same set of clients, however, results in greater asymmetric information on clients’ profiles and multiple loans or ‘double dipping’ by borrowers. The asymmetric information in the multi-lender market deteriorates the portfolio quality (Broecker, 1990; Marquez, 2002). Furthermore, the excessive total debt due to multiple loans, leads to a further deterioration in the total default rates of MFIs. This leads to a dysfunction of the dynamic incentives mechanism (Hoff and Stiglitz, 1998).

Setting up a theoretical model, McIntosh and Wydick (2005) argue that competition reduces the ability of MFIs to cross-subsidize and increases asymmetric information on borrower quality. As a result, impatient borrowers become keen to acquire multiple loans, over-indebtedness increases and repayment rates decrease. In initial monopolistic stage, MFIs make rents and it is profitable for them to serve both the more- and less profitable participants as they can ‘cross-subsidize’. However, with greater level of competition rents eliminated as loan prices are reduced due to Bertrand type competition[4] and client-maximizing behaviour. Under greater performance pressure, the MFIs’ focus shifts to the more profitable segment of the market away from the poorest clients. Due to decreased information sharing in a competitive market, the clients (especially the poorest) might slip into ‘double dipping’ and ultimately excessive debt, leading to loan(s) default.

With increased competition profit oriented MFIs that target wealthier clients and offer larger loans enter the market. This induces the profitable borrowers of the socially motivated MFIs to shift to the for profit MFIs that lend larger loans and have higher net returns. Such transfer of profitable and more productive clients worsens the portfolio quality of the socially motivated MFIs and negatively impacts their cross-subsidization possibilities (Navajas et al., 2003; McIntosh and Wydick, 2005); Vogelgesang, 2003).

Competition also has a negative impact on outreach (Hartarska and Nadolnyak, 2007; Hermes et al., 2011). Through its impact on the clients, increased competition in microfinance creates loan repayment problems coupled with information asymmetry, leading to risk of over-indebtedness and debt traps with increased sociological and psychological constraints (Schicks and Rosenberg, 2011). Increased competition may induce a decline in repayment performance and lower saving amounts deposited with the village bank (McIntosh et al., 2005). Baquero et al. (2012) find that for profit MFIs charge significantly lower loan rates and demonstrate better portfolio quality in less concentrated markets. Nonprofit MFIs, however, are comparatively insensitive to changes in concentration. The study also finds evidence consistent with dispersion of borrower-specific information among competing for profit MFIs.

Financial literature suggests that competition affects the consumers' wealth and the financial performance and soundness of service providers (Bikker and Bos, 2005). Competition affects product quality and diversity and the productive efficiency of financial institutions as well (Claessens and Laeven, 2005). Berger et al. (2009) explain the effects of competition and market power on stability in banking based on 'competition-fragility' and 'competition-stability' paradigms. The traditional 'competition-fragility' hypothesis states that increased bank competition decreases market power, reduces profit margins, and results in declined franchise value that encourages banks to take risk. Under the alternative 'competition-stability' view, more market power in the loan market may result in higher bank risk through higher interest rates charged to loan clients making it harder to repay loans and aggravating moral hazard and adverse selection problems. Consistent with the traditional 'competition-fragility' view, their study shows that banks with a higher degree of market power also have less overall risk exposure.

Assefa et al. (2013) argue that intense competition is negatively associated with MFI performance measured by outreach, profitability, efficiency, and loan repayment rates. Increased competition that leads more MFIs to enter the market expectedly increases the number of borrowers. In saturated markets, MFIs try to maintain their customer base and decrease their costs by lowering lending standards or decreasing screening efforts (Schicks and Rosenberg, 2011), thus leading to higher loan default rates due to the increase in risky borrowers. Furthermore, over-aggressive marketing (pressuring borrowers to take new loan after they have just paid off an old one) adds to the risk and may trigger the risk of over-indebtedness. 'Over-confidentiality bias' or a 'hyperbolic discounting', that is, discounting the future too strongly and putting too much weight on the present, can lead borrowers to make bad decisions like taking more debt (Kahnemann and Tversky, 1979). Schicks and Rosenberg (2011) suggest that the use of over-aggressive collection practices and inflexible loan products may cause borrower over-indebtedness. They argue that these problems are aggravated by bad practices by the staff that encourage over-lending, offers wrong products, obscures loan terms and uses abusive collection practices.

3 Model specification and estimation

Empirical analyzes in this exercise are based on a linear regression model in which we link the HHI (our measure of market power) and a set of explanatory variables to several indicators of MFIs' social and financial performance, loan portfolio quality (i.e., repayment status) and capitalization. We estimate the following model:

$$Y_{ijt} = \alpha' C_{ijt} + \beta' X_{it} + \delta' Z_{jt} + e_t + u_i + \varepsilon_{it} \quad i = 1,2,\dots,\mathrm{N};\ t = 1,2,\dots,\mathrm{T} \tag{1}$$

Where Y_{ijt} represents the proxies for financial performance, depth of outreach, loan portfolio quality and capitalization of MFI i at time t located in country j; C_{ijt} is a $(1 \times k)$ vector of time varying measure of market power that varies over individual MFIs, time and country; X_{it} is a $(1 \times k)$ vector of time varying observed MFI characteristics that vary only over individual MFIs and time; Z_{jt} is a $(1 \times k)$ vector of time varying macroeconomic and overall governance indicators that varies over both countries and time. All of these variables are assumed to influence outreach, performance, loan portfolio quality, and capitalization measures of individual MFIs. In the model, α is a $(k \times 1)$ vector of coefficients on C; β is a $(k \times 1)$ vector of coefficients on X and δ is a $(k \times 1)$ vector of coefficients on Z; e_t is the time-specific individual effect distributed independently across time with variance σ^2_e; u_i is the MFI specific individual effect and is assumed to be an unobserved time-invariant random variable, distributed independently across MFIs with variance σ^2_u; and

ε_{it} is the usual (idiosyncratic) error term, which is assumed to be uncorrelated with the vector columns (C, X, Z, u) and has a zero mean and constant variance σ^2_ε conditional on C_{ijt}, X_{it} and Z_{jt}. Together, $v_{it} = e_t + u_i + \varepsilon_{it}$ is sometimes referred to as a composite error term where e_t is the time varying unobservable time-specific effect, u_i is the time-invariant unobservable individual specific effect and ε_{it} is the remainder disturbance term.

Following Baltagi (2008), to check poolabilty, a joint F-test reveals that both individual and time effects are statistically significant at one per cent level in the panel dataset. This rejects the homogeneity assumption across MFIs and time and suggests that panel data estimations should be employed. However, a difficulty in estimating the model is that financial performance, depth of outreach, loan portfolio quality, and capitalization of the sampled MFIs can be simultaneously determined by managerial competence or aptitude that cannot always be measured or observed. Financial performance of MFIs is commonly measured by FSS ratios and ROA. These are determined by financial revenue which consists of interest rate and fees components. For instance, FSS is determined by the ratio of financial revenue and (financial expense + loan loss provision expense + operating expense). Portfolio yield – the proxy for interest rates – is also defined as a ratio of interest (and fees) on loan portfolio and gross loan portfolio. Thus, the relationship in (1) suffers from endogeneity due to omitted variable bias. The endogeneity comes from an uncontrolled confounding variable – interest and fees – as it is an extraneous variable which correlates with both the dependent and the independent variable. We also have the problems of likely endogeneity of measures of market power, the HHI, and MFI performance[5]. Again, for the relation between loan defaults and portfolio yield, reverse causality (another source of endogeneity) is at work, since it is unclear whether loan delinquency rates are affected by portfolio yield or vice versa.

Estimations are inconsistent and inefficient as empirical data are generally plagued with heteroskedasticity and we also have endogeneity problems, as discussed above. We therefore employ instrumental variables (IV) technique with a generaliszed method of moments (GMM) estimator introduced by Hansen (1982). One- and two-step GMM estimators (with heteroskedasticity- and autocorrelation-consistent standard errors) are usually robust to violations of homoscedasticity and normality. Since we have large N and small T panels, the GMM estimator allows for arbitrary heteroskedasticity and autocorrelation using the optimal weighting matrix (Wooldridge 2002). Also GMM estimators are more efficient than their 2SLS counterparts because it accounts for heteroskedasticity. Again, Baltagi (2008) and Hahn et al. (2004) suggest that IV estimations can take care of the potential problems associated with outliers with bad leverage and weak instruments in unbalanced panel data. The endogeneity bias is overcome finding a set of relevant instruments independent of the error term. We need at least as many instruments (L) as regressors (K). As suggested by Deaton (1995), instruments were constructed from the lagged explanatory variables since the independent variables are all simultaneous. Since L > K, we have a set of over identifying restrictions. The instruments' independence of the error term is then tested with Hansen's (1982) J-test which is distributed as chi^2 with (L – K) degrees of freedom. A high value of chi^2 (and very low p-value) indicates that some of the instruments are still correlated with the error term, and therefore, the endogeneity problem persists.

As the analysis in this paper uses MFI specific and country-level yearly data, MFI level fixed effects (FE) are most likely to capture the differences in individual data, and therefore, estimations through the FE models of (1) are quite justified. Consequently, we choose to report and discuss the FE results obtained through two-step GMM estimations only. Such estimates are presented in three specifications – estimations without macroeconomic and governance indicators, estimations with only the macroeconomic indicators, and then with the macroeconomic and governance indicators.

4 Data and variables

We use an original panel data set constructed from three different sources. MFI level financial, portfolio and outreach performance data are collected from the publicly available MIX (Microfinance Information Exchange) Market database. Country-level data on institutional governance quality and macroeconomic and financial development are collected respectively from the WGI (Worldwide Governance Indicators) and WDI (World Development Indicators) databases of the World Bank. Individual MFI profiles are mainly voluntarily reported to the MIX that uses 'diamonds' to rank data quality on a scale of 1 to 5, where 5-diamonds imply the best quality. Besides, many MFIs have quality data but the number of clients they serve is very small. So, in order to ensure significance and reliability of data the main selection criteria required all MFIs to have at least a level-3 diamond disclosure rating and at least 500 active borrowers in 2003. Combining data from three different sources results in loss of observations as information on several micro- and macro-variables were not available for all MFIs and countries.

Besides, due to missing values with variables we had to drop many MFIs from the initial dataset. Thus, the final sample contains a panel of 409 MFIs in 71 countries over the period of 2003–2008. The dataset is unbalanced; some MFIs report information for a minimum of two years while others report for three years or more. The sampling distribution of the selected MFIs are as follows: East Asia and the Pacific (EAP, 14 per cent), Eastern Europe and Central Asia (EECA, 18 per cent), Latin America and the Caribbean (LAC, the highest of 38 per cent), Middle East and North Africa (MENA, 6 per cent), South Asia (SA, 11 per cent), and SSA, 13 per cent)[6]. In effect, the dataset captures a diverse set of MFIs – nonprofit NGOs, NBFIs, Banks and Cooperatives/Credit Unions – at various stages of their life cycle with diversified loan methodologies. The dominant lending methodology in our sample is individual loan method (52 per cent). The number of MFIs operating solely either on solidarity or on village bank methods is relatively low, five per cent and ten per cent, respectively[7]. Variable definitions and data sources have been described in Table 11.1.

4.1 Outcome variables

Microfinance institutions basically aim to be financially sustainable while keeping their social mission intact (Mersland and Strøm, 2009; Randøy et al., forthcoming). We employed FSS ratio) and ROA as proxies for MFIs' financial performance and percentage of female borrowers and average loan size (per capita GNI adjusted) as the proxies for their social performance in this exercise. FSS measures MFIs' ability to generate sufficient financial revenues to cover costs. ROA, however, measures how well the MFI uses its total assets to generate returns. Besides, to measure MFIs' loan repayment performance, portfolios-at-risk past 30 days (PAR30) – the standard measure of MFIs' loan portfolio quality – is also used. Increases in PAR30 indicate increased loan risk, or lower repayment performance. We measured capitalization (equity ratio) as the ratio of equity to total assets, a higher value of which indicates lower MFI-risk.

4.2 Explanatory variables

In model 1, the HHI (C_{ijt} vector), is the main variable of interest indicating market power (or competition) and is thereby included in all regressions. We hypothesize that increased competition or a higher value of HHI would adversely affect MFIs' financial performance and depth of outreach. However, HHI is assumed to have positive effects on both PAR and capitalization. In model 1, the X_{it} vector includes MFI

Table 11.1 Variable descriptions

Variable name	Definition	Source
Average loan balance adjusted by GNI per capita	Average loan balance per borrower/GNI per capita	MIX Market
Women borrowers	Percentage of female borrowers	MIX Market
Financial self-sufficiency (FSS)	Financial revenue/(Financial expense + Loan loss provision expense + Operating expense)	MIX Market
Return on assets (adjusted) (ROA)	Adjusted net operating income after taxes/average total assets	MIX Market
Portfolio at risk past 30 days (PAR30)	Portfolio at risk past 30 days / Gross loan portfolio	MIX Market
Equity ratio	Total equity / Total Assets	MIX Market
Herfindahl-Hirschman Index (HHI)	Herfindahl-Hirschman Index, based on Gross Loan Portfolio in a given country	MIX Market
Real yield on gross loan portfolio	[Yield on gross portfolio (nominal) – Inflation rate] / (1 + Inflation rate)	MIX Market
MFI Age	Number of years in microfinance operation	MIX Market
MFI Size	The natural logarithm of total assets (Total net asset accounts) in US$	MIX Market
Loans to assets ratio	Gross loan portfolio / Total assets	MIX Market
Inflation	Rate of inflation, GDP deflator	WDI
GDP per capita	Real GDP per capita	WDI
Control of corruption	Aggregate governance indicator of ‘control of corruption’	WGI
Political stability	Aggregate governance indicator of ‘political stability’	WGI
Regulatory quality	Aggregate governance indicator of ‘regulatory quality’	WGI

characteristic variables: real portfolio yield, asset composition (proxied by loans to assets ratio), age (also including the squared term to check possible non-linear effects) and size. The nominal yield on the gross loan portfolio indicates the portfolio’s ability to generate cash financial revenues from interest, fees and commissions. Adjusted for inflation, the real yield variable provides a true picture of the portfolio quality in generating the financial revenues. A higher value of the asset composition variable indicates MFIs’ increased focus on lending in terms of available total assets. The observed MFI-history variables – age and size – explain the scaling up dimensions of the sampled MFIs. In line with Assefa et al. (2013) and Berger et al. (2009), we also include several macroeconomic and institutional quality variables, indicated by the Z_{jt} vector in model 1, to control for overall macroeconomic environment and governance quality of institutions. Included country-specific macroeconomic indicators are the rate of inflation and GDP per capita, whereas the governance indicators are control of corruption, political stability, and regulatory quality.

The descriptive statistics of the outcome and the explanatory variables are presented in Table 11.2. Mean values of many of the variables can be interpreted as the percentage of MFIs in the category. Most of the sampled MFIs are moderately leveraged as shown by the mean of 0.318 of equity ratio. The standard deviations alongside the minimum and maximum values of the major explanatory variables other than the regional dummies indicate that the microfinance industry is indeed disproportionately distributed. The mean values of only 0.028 for ROA

Table 11.2 Summary statistics

Variable	**N**	**Mean**	**SD**	**Min**	**Max**
Av. loan adj. by GNI p.c.	2001	0.659	1.325	0.020	33.926
Women borrowers (%)	1794	0.658	0.250	0.002	1
FSS (%)	2001	1.213	0.310	0	4.533
ROA (%)	2001	0.028	0.088	−1.848	0.308
PAR30(%)	1957	0.050	0.066	0	0.787
Equity ratio	2001	0.318	0.248	−1.426	1
Herfindahl-Hirschman Index	2001	0.372	0.267	0.054	1
Real yield (%)	2001	0.243	0.155	−0.296	1.735
MFI Age	1996	13.332	9.115	1	58
MFI Size	2001	16.303	1.700	10.919	21.563
Loans to assets ratio	2001	0.769	0.146	0.055	1.185
Inflation (%)	2001	0.082	0.067	−0.033	0.808
GDP per capita (in US $)	1983	1607.58	1392.632	124.13	9893.81
Control of corruption	2001	−0.554	0.415	−1.63	1.48
Political stability	2001	−0.746	0.634	−2.66	1.16
Regulatory quality	2001	−0.278	0.468	−1.75	1.59
EAP	2001	0.142	0.349	0	1
EECA	2001	0.176	0.381	0	1
LAC	2001	0.377	0.485	0	1
MENA	2001	0.058	0.235	0	1
SA	2001	0.113	0.317	0	1
SSA	2001	0.134	0.341	0	1

Source: Authors' calculations from different databases.

Table 11.3 Summary statistics of the value of the Herfindahl-Hirschman Index by developing regions

Region	N	Mean	SD	Min	Max
EAP	284	0.253	0.275	0.054	1
EECA	352	0.573	0.278	0.134	1
LAC	754	0.293	0.212	0.113	1
MENA	117	0.398	0.192	0.235	1
SA	226	0.242	0.180	0.080	1
SSA	268	0.554	0.220	0.236	1
Total	2001	0.372	0.267	0.054	1

Source: Authors' calculations.

point to the inadequate financial performance of the sampled MFIs. However, they are overall financially self-sufficient as shown by the average value of 1.213 of the FSS variable. Nevertheless, the standard deviation score of 0.088 and the spread of minimum and maximum values spanning from −1.848 to 0.308 of ROA suggest that a few MFIs only, and not the majority, are performing well. Therefore, arguably MFI performance is rather widely dispersed and the overall mean performance has been driven only by a handful of well-performing MFIs.

Table 11.3 provides information on the average value of the HHI for the whole sample of MFIs as well as for MFIs in different developing regions. The average HHI index is 0.372. This outcome suggests that MFIs in our dataset are confronted with modest levels of concentration. Table 11.3 also shows that competitive environments differ for MFIs in different developing regions of the world. For instance, for MFIs in the Eastern Europe and the Sub-Saharan Africa regions competition appears to be higher on average than for MFIs in South Asia (HHI being 0.573, 0.554 and 0.242, respectively).

5 Discussion on results

The main estimation results are presented in Tables 11.4–11.6 focusing on how market power (competition) is linked with outreach, financial performance, loan portfolio quality, and capitalization of the sampled MFIs. The estimations control for the overall country-level macroeconomic, financial, and institutional development indicators. We employ GMM while estimating our model and the statistics are robust to heteroskedasticity. We also run diagnostic tests for the validity of the instruments of the degree of market power (using the Hansen's J-test). High p-values of the J-tests confirm the econometric validity of the instruments used in the analysis. We use several dependent variables to proxy for the outcome variables. Results are presented in three sets. Model 11.1 includes both the macroeconomic and the institutional development variables, whereas model 11.2 excludes the institutional development indicators and model 3 excludes both the macroeconomic and the institutional development indicators.

In Table 11.4, we measure MFIs' depth of outreach with average loan size adjusted by GNI per capita and percentage of female borrowers. The coefficients of the HHI-loans variable in columns 1–3 of Table 11.4 are negative, but insignificant, which suggests that increased market

Table 11.4 The effect of market power (concentration) on depth of outreach (average loan size adjusted by GNI per capita and percentage of female borrowers) of MFIs

	Average loan size			**Percentage of female borrowers**		
	Model 1	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**
Log of HHI-loans	–0.550	–0.592	–0.553	0.354	0.382	0.395
	(0.470)	(0.412)	(0.412)	(0.209)	(0.202)	(0.210)
Real yield	–0.653**	–0.624*	–0.293	–0.087	–0.095	–0.161
	(0.240)	(0.245)	(0.202)	(0.081)	(0.085)	(0.083)
Age	–0.019	–0.007	–0.056	–0.009	–0.010	–0.009
	(0.045)	(0.048)	(0.031)	(0.017)	(0.018)	(0.013)
Age-squared	0.001	0.001	0.001	–0.000	–0.001	–0.001
	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
Size	0.179***	0.174***	0.173***	0.013	0.013	0.012
	(0.048)	(0.049)	(0.047)	(0.023)	(0.024)	(0.023)
Loans to assets ratio	0.357	0.395	0.414*	–0.001	–0.025	–0.023
	(0.235)	(0.213)	(0.196)	(0.068)	(0.070)	(0.068)
Inflation	–0.785	–0.798*		0.123	0.142	
	(0.421)	(0.406)		(0.153)	(0.147)	
Log of GDP per capita	–0.413	–0.577		–0.058	–0.036	
	(0.576)	(0.542)		(0.227)	(0.205)	
Control of corruption	–0.272			0.068		
	(0.150)			(0.056)		
Political stability	–0.161			0.094		
	(0.126)			(0.048)		
Regulatory quality	0.061			–0.071		
	(0.248)			(0.069)		
Hansen J-statistic	0.014	0.008	0.003	0.008	0.281	0.231
P-value	0.9068	0.9291	0.9549	0.9300	0.5960	0.6306
Observations (Groups)	596 (236)	596 (236)	600 (238)	550 (220)	550 (220)	554 (222)

Note: Time effects were not included. * p<0.05, ** p<0.01, *** p<0.001.

power does not have any significant impact on depth of outreach. This is contrary to expectation as according to the 'competition-fragility' hypothesis, owing to increased competitive pressure financial institutions' profit margins are eroded and to increase returns they might take excessive risk to provide loans to risky borrowers. This is supportive of the hypothesis that MFIs in this dataset are still able to maintain their lending operations to the relatively poor. Depth of outreach also increases with MFI size and focus on lending (or asset composition). However, competition (or market power), MFI size, MFI age, asset composition, inflation, and other variables do not seem to have any significant link with the other measure of depth of outreach, percentage of women borrowers.

Table 11.5 presents the results for the financial performance of MFIs in terms of FSS and ROA. Our results show that increased market power is incompatible with higher FSS as the positive insignificant coefficient of HHI-loans variable in model 1 of Table 11.5 confirms. One plausible explanation for this result might be the fact that competition among the MFIs in the sampled countries has not yet reached the level where with increased market power profit margins have declined enough to encourage MFIs to provide risky loans. This seems plausible as we see that as a result of increased market power MFIs are still able to maintain cautious lending operations through smaller loans. It may therefore be possible for them to earn some returns to become self-sufficient.

Table 11.6 presents the results of the links between market power, loan risk, and capitalization. In the analysis, we use non-performing loans to gross loan portfolio (PAR30) as the proxy for loan portfolio risk and equity ratio as the measure of capitalization. Regarding non-performing loans, quite unpredictably though, results in all three columns confirm that the coefficients of the HHI-loans variable are all negative and significant. This indicates that more market power is associated with less risky loan portfolios. To be exact, repayment status improves with increased market power of the selected MFIs. This may happen for several reasons. First, loan repayments may increase as borrowers can repay borrowing from other lenders. This creates a debt trap, which is a worrying issue in recent times. Second, MFIs in competitive environments become more professional and apply improved, comprehensive and thought-through collection strategies. Finally, commercial lenders are aggressive collectors who do not allow loan defaults especially in this dataset, which is dominated by commercial lenders from the Latin America region. Perhaps the situation would be different for MFIs from Asia, Africa, or East Europe which are more socially motivated. Also these results are clearly not in

Table 11.5 The effect of market power (concentration) on self-sustainability (FSS and ROA) of MFIs

	Financial self-sufficiency			**Return on assets**		
	Model 1	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**
Log of HHI-loans	0.381	0.448*	0.326	0.027	0.030	0.013
	(0.208)	(0.195)	(0.209)	(0.045)	(0.042)	(0.045)
Real yield	0.622***	0.585***	0.279*	0.351**	0.389***	0.160*
	(0.176)	(0.172)	(0.119)	(0.107)	(0.115)	(0.066)
Age	–0.050**	–0.043**	–0.039**	–0.015***	–0.013***	–0.011**
	(0.015)	(0.015)	(0.013)	(0.004)	(0.004)	(0.004)
Age-squared	–0.000	–0.000	–0.000	0.000	0.000	–0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	0.124***	0.122***	0.111***	0.040***	0.039***	0.031***
	(0.027)	(0.027)	(0.024)	(0.010)	(0.010)	(0.008)
Loans to assets ratio	0.142	0.130	0.120	0.082*	0.085*	0.057
	(0.099)	(0.099)	(0.101)	(0.041)	(0.042)	(0.038)
Inflation	0.633***	0.635***		0.319***	0.366***	
	(0.171)	(0.177)		(0.084)	(0.092)	
Log of GDP per capita	0.119	–0.016		0.025	–0.020	
	(0.202)	(0.177)		(0.045)	(0.045)	
Control of corruption	0.051			0.017		
	(0.061)			(0.015)		
Political stability	–0.016			0.002		
	(0.045)			(0.012)		
Regulatory quality	–0.112			–0.044**		
	(0.059)			(0.016)		
Hansen J-statistic	0.112	1.028	0.048	0.012	0.494	0.224
P-value	0.7384	0.3107	0.8267	0.9133	0.4823	0.6363
Observations (Groups)	1147 (394)	1147 (394)	1157 (398)	1147 (394)	1147 (394)	1157 (398)

Note: Time effects were not included. * p<0.05, ** p<0.01, *** p<0.001.

line with the 'competition-stability' view of Boyd and De Nicolo (2005). This might be due to the fact that MFIs, unlike commercial banks which are generally profit oriented, are mostly constrained by double bottom lines. MFIs need to fulfil their social mission of reaching the very poor (the first bottom line) while attaining the FSS (the second bottom line) objective. Thus, the 'competition-stability' hypothesis of theoretical

Table 11.6 The effect of market power (concentration) on non-performing loans and capitalization (PAR30 and capital assets ratio) of MFIs

	PAR30			**Equity ratio**		
	Model 1	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**
Log of HHI-loans	–4.846*	–5.084*	–6.885*	4.428***	3.742***	4.129***
	(2.058)	(2.407)	(3.430)	(1.230)	(1.121)	(1.246)
Real yield	21.787	28.741	–11.609*	–0.148	0.028	–0.315
	(15.634)	(17.479)	(4.742)	(0.578)	(0.554)	(0.488)
Age	0.288	0.218	0.620**	0.173*	0.134	0.043
	(0.207)	(0.244)	(0.192)	(0.082)	(0.070)	(0.052)
Age-squared	–0.007	–0.006	–0.011	–0.004*	–0.004*	–0.003
	(0.004)	(0.005)	(0.006)	(0.002)	(0.002)	(0.002)
Size	0.348	0.585	–0.922*	–0.131	–0.105	–0.184
	(0.530)	(0.595)	(0.450)	(0.131)	(0.133)	(0.127)
Loans to assets ratio	1.004	1.570	–1.635	0.216	0.297	0.128
	(1.636)	(1.791)	(1.037)	(0.334)	(0.317)	(0.309)
Inflation	16.822	22.395		0.798	0.583	
	(13.230)	(14.958)		(0.713)	(0.674)	
Log of GDP per capita	–2.200	–1.840		–3.318**	–2.131*	
	(2.333)	(2.406)		(1.138)	(0.853)	
Control of corruption	–0.803			0.053		
	(0.794)			(0.283)		
Political stability	0.356			0.778**		
	(0.475)			(0.287)		
Regulatory quality	0.481			0.361		
	(0.617)			(0.289)		
Hansen J-statistic	0.162	0.209	0.190	0.316	1.128	0.647
P-value	0.9224	0.9008	0.9095	0.5738	0.2881	0.4212
Observations (Groups)	1082 (373)	1082 (373)	572 (228)	588 (232)	588 (232)	590 (233)

Note: Time effects were not included. * p<0.05, ** p<0.01, *** p<0

banking literature suggesting higher bank risk due to increased market power may not hold for the microfinance institutions.

We also seek to establish whether MFIs that enjoy a higher degree of market power do in fact hold more equity capital as a cushion to absorb the losses which may result from higher loan portfolio risk. The positive and highly significant coefficients of the HHI-loans variable confirm that MFI capitalization levels are higher for MFIs with more market power. It is therefore possible for MFIs to cover up potential loan default risks through increased equity capitalization. Our results demonstrate that increased market power of MFIs in selected countries does not lead to riskier loan portfolios, but overall their risk is reduced at least in part because microfinance institutions are also likely to hold significantly more equity capital. This result may also have other implications. For instance, MFIs enjoying more market power seem to be exposed to less overall risk, most likely as a result of their higher franchise value (Berger et al., 2009). In other words, the higher concentration brought about by the recent increased competition among the MFIs may result in riskier loan portfolios, but those MFIs are also likely to hold higher capital or use other means to mitigate the overall risks to guarantee safer portfolios.

Finally, we briefly consider the control variables used in the analysis. First, as we would expect, banks with a larger percentage of loans (relative to total assets) have higher average loan size and higher ROAs. This may indicate that with increased focus on lending, our sampled MFIs are still able to maintain small loans to poor borrowers and higher returns in spite of increased market power. Second, we find that larger MFIs are better focused on the poor in terms of average loan size and achieving better FSS. However, MFI size does not matter much for non-performing loans. Therefore, it may be the case that they have a better loan portfolio quality or better monitoring capability than smaller banks; they also enjoy greater overall financial stability. One plausible reason of this finding is that the equity ratio used in the analysis does not consider the donations, grants and subsidies, and hence riskiness, of MFIs' assets. Also, there may be other techniques that MFIs apply to immunize their loan portfolios without necessarily increasing the capital base. Third, we find that older MFIs do not seem either to perform better financially or to have higher capitalization levels.

We also find that economic development, measured by the log value of GDP per capita, is not significantly linked with MFIs' depth of outreach (average loan size), loan risk and MFIs' FSS. But it adversely affects their capitalization levels. This has the plausible meaning that microfinance beneficiaries still do not cover a huge section of the economy so that GDP in the sampled countries may be influenced greatly. However, reduction in capitalization with economic expansion is quite logical. We also find some evidence that stronger regulatory quality decreases MFIs' ROAs. This may be due to the fact that regulated microfinance services may not help increasing MFIs' profitability. Again, the positive significant effect of political stability on MFIs' capitalization is quite self-explanatory as a politically stable situation help boosting up more equity capital in terms of assets.

6 Conclusion

We investigate how competition impacts MFIs' depth of outreach, financial performance, quality of loan portfolio and capitalization. Using MIX market data and employing GMM technique our estimation results suggest that MFIs with a higher degree of market power have less overall risk exposure. Thus, our results are inconsistent with the traditional 'competition-fragility' view.

Negative effects of increased competition can be minimized, for instance, through improved regulatory measures. In this way market power can be ensured while loan portfolio quality is maintained. As previous studies suggest, sharing information among the MFIs can potentially contribute to lower delinquency rates and prevent borrowers from taking multiple loans and getting into debt traps. However, our results need to be qualified by two limitations. First, due to lack of information we do not take subsidies, donations and grants into account while calculating MFIs' real ROAs. Second, the MIX data are biased towards self-sufficient and commercially oriented MFIs and regionally dominated by Latin American MFIs. Future research should specifically attempt to focus on using alternative measures of competition and how they affect efficiency, screening, and monitoring scenarios of microfinance operations.

Notes

1. MFIs need to fulfil their social objectives of reaching the very poor (the first bottom line) while attaining financial self-sufficiency (the second bottom line).
2. Market value goes beyond the book value.
3. Our focus in this article is not to discuss this elaborately. For further details, see Berger et al. (2009), for example.
4. Bertrand competition defines interactions among the price-setting sellers and their buyers who choose quantities at that price. Unlike the Cournot model, Bertrand argued that if firms chose prices rather than quantities, then the competitive outcome may occur by equaling price and marginal cost.
5. HHI = $\sum s_i^2$ (i=1,2, … ,N), where s_i is the market share of MFI i and N is the total number of sampled MFIs in the industry. For an industry with N MFIs, the index ranges between the maximum value of 1 (single monopoly: as concentration yields market power, competition is impaired in a highly concentrated microfinance sector) to the minimum of 1/N (concentration is reduced as N increases). We computed HHI from the gross loan portfolios of the sampled MFIs in a country.
6. These regional classifications are according to the World Bank.
7. MFIs that follow both individual and solidarity loan delivery methods are placed in the 'individual' category.

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The Efficiency of Microfinance Institutions in Ethiopia: A DEA Approach[1]

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1 Introduction

In the last three decades, microfinance, as an effective tool for fighting poverty, has been gaining wider attention among policy makers, governments, international donors, and academicians across the globe. At the helm of this matter are microfinance institutions (MFIs) – institutions that have been playing a key role in reducing poverty by providing financial services to the poor. These institutions are mainly established to serve the poor – people who have little or no access to capital and formal financial services – and the role they are currently playing cannot be overemphasized. By the end of 2010, the 2,000+ MFIs around the world had reached more than 200 million low-income people (Deutsche Bank Research, 2012). However, while it is an important tool, it should still be noted that microfinance is not a panacea for poverty eradication.

MFIs are relatively small financial institutions that have traditionally provided small loans to low-income citizens with the objective of helping them to engage in productive activities. They give poor people, particularly women and small businesses, access to financial services. MFIs differ from traditional financial institutions in the sense that they provide services to low-income customers and often provide loans without the conventional form of collateral. They also provide skill-based training to enhance productivity and organizational support, and consciousness-building training to empower the poor. The financial services of such institutions target the poor through innovative approaches that include group lending, progressive lending, regular repayment schedules, and collateral substitutes.

There are various arguments as to how the performance of MFIs should be assessed. One of the most commonly cited is the 'Critical Microfinance Triangle' of Zeller and Mayer (2002). According to them, the evaluation of MFIs' performance should include outreach to the poor, financial sustainability, and impact. Outreach in its general sense refers to the number of clients served. Ceteris paribus, the larger the number of clients served, the higher will be the performance level attributed to the MFI. On the other hand, financial sustainability focuses on the ability of the MFIs to render their services on a long-term basis. They could achieve this by generating enough income to cover all costs, whether explicit or implicit. Finally, MFIs may be evaluated based on their impact in reducing poverty.

MFIs are special financial institutions that emerged with social and financial objectives and, as such, their operations are different from those of traditional banks. However, the fact that MFIs tend not to operate in the same way as traditional banks does not mean that they are not interested in profitability and efficiency issues (Gutiérrez-Nieto et al., 2007). In the early days, MFIs received huge support/subsidies from donors but it is highly unlikely that this will continue in the future, considering the economic crisis that continues to grip many developed nations. Therefore, if these MFIs are going to play their role successfully, they have to operate efficiently. Operating efficiently will help them to increase their outreach and serve the poor in a sustainable manner. This, among other things, will be possible if the institutions can cover their costs and generate reasonable profits.

In Ethiopia, there are 30 MFIs operating in different regions (AEMFI, 2010). The industry, though still relatively young, is rapidly approaching maturity. MicroNed's 2008–2010 country strategy for Ethiopian microfinance has revealed that most of the MFIs are doing remarkably well in terms of financial performance; the big ones have passed the threshold of FSS and the vast majority have moved beyond the OSS mark. It is not clear, though, whether these MFIs are achieving their goals. The objective of this paper, therefore, is to assess the operating and financial efficiencies of MFIs operating in Ethiopia using the data envelopment analysis (DEA) technique.

Unlike most of the previous efficiency studies, this paper adopts a single-country approach in applying DEA. The use of DEA enables a comparison of MFIs against the DEA-identified benchmark, and in a single-country study, the comparison becomes even more relevant, as the MFIs included in the study belong to the same legal framework (external governance system), and have similar cultures, similar economic contexts, etc.

2 The microfinance industry in Ethiopia

The emergence of microfinance is a relatively recent phenomenon in Ethiopia. The first microfinance service in Ethiopia was introduced as an experiment in 1994, when the Relief Society of Tigray (ReST) attempted to rehabilitate drought- and war-affected people through a rural credit scheme. This was inspired by other countries' experiences and adapted to the conditions of the Tigray region. In the second half of the 1990s, the success achieved through the microfinance provision in Tigray triggered a gradual establishment of similar MFIs in other regions (Berhanu and Thomas, 2000). The Ethiopian MFIs are established as stock companies and are administered by their respective boards of directors. Some of the MFIs operate primarily in rural areas while others are urban-based. Most of the bigger MFIs, however, operate in both rural and urban areas and deliver uniform loan and saving services to all clients. Foreign ownership of MFIs is not allowed, as is the case with other financial institutions. Though the majority of the MFIs are owned by NGOs or regional governments, the composition of ownership of the MFIs licensed so far also includes individuals and associations (Wolday, 2002).

Ethiopia is one of the least-developed countries and poverty is prevalent there. Poverty reduction and ultimately eradication is, therefore, the top agenda of the Ethiopian government (PASDEP, 2006). To respond to the poverty challenges at hand, the existing government has designed various interventions, in which it believes the MFIs' role, through the provision of financial services to the poor, is fundamental. It is clear, however, that these MFIs will contribute only if they can operate efficiently. For this reason, the issue of the efficiency of MFIs demands a great deal of attention. However, the efficiency of MFIs (particularly in the Ethiopian context) is their least-researched aspect, while there are a number of studies on their impact on poverty and other societal issues.

3 Methodology

3.1 Model specification

Berger et al. (1997) indicated that the first task in evaluating the performance of financial institutions is to separate those production units that, by some standard, perform well from those that perform poorly. This can be done by applying non-parametric or parametric frontier analysis to firms within the financial industry or to branches within a financial firm as explained below.

It is common to measure the performance of financial institutions using financial ratios. Various studies have used financial ratios to determine the performance of MFIs (Cull et al., 2007; Bassem, 2009; Mersland and Strøm, 2009; Mersland et al., 2011; Daher and Saout, 2013). A review by Hartarska et al. (2013) indicated that most studies of MFIs used a non-structural approach and analyzed efficiency and productivity using ratios. Even though ratios are powerful and have their own advantages, they are not without problems. This is because, among other things, the measurement of performance using financial ratios relies on benchmarks – that is, average values. In recent years, there has been a trend towards measuring firm performance using one of the frontier analysis methods (Hassan and Sanchez, 2009; Haq et al., 2010; Hartarska and Mersland, 2012; Hartarska et al., 2013; Kemonou and Anjugam, 2013). Frontiers have been estimated using many different methods, the two principal methods being DEA and stochastic frontiers. The resulting frontier functions are used to measure efficiency of production. DEA involves the use of linear programming whereas stochastic frontiers involve the use of econometric methods (Coelli, Rao, and Battese, 1997). In this paper, the DEA approach has been used since 'recent research has suggested that the kind of mathematical programming procedure used by DEA for efficient frontier estimation is comparatively robust' (Seiford and Thrall, 1990, cited by Sathye, 2003). It is also superior in this case as our sample size is small and reasonably homogeneous. In addition, Coelli, Rao, and Battese (1997) stated that the method has been extended and applied in a large number of papers since the term was coined by Charnes, Cooper, and Rhodes (1978).

Designed explicitly to measure efficiency, DEA attempts to determine maximal rather than average output levels producible from given input bundles. The predicted values from fitted regression models, however, provide the expected or average outcome from a given bundle of inputs and, as such, cannot be used to measure efficiency. Moreover, DEA can treat the observed output-input vectors as multiple-output production processes and eliminates the need to aggregate outputs into a single scalar index (Ray, 1991). DEA involves the use of linear programming methods to construct a non-parametric piecewise surface (or frontier) over the data. Efficiency measures are then calculated relative to this surface (Coelli, Rao, and Battese, 1997). The relative efficiency score of various decision-making units (DMUs) in a particular sample are calculated. In the DEA literature, the DMUs would be individual firms in the case of industry analysis or the individual branches in the case of firm analysis. In our case, the DMUs are the selected MFIs. DEA, in this case, evaluates the relative efficiency of MFIs in their use of multiple inputs to produce multiple outputs, where the efficient production function is not known or easily specified. In other words, in DEA, the observed outputs and inputs of several MFIs are compared. According to Sherman and Gold (1985), DEA identifies the more efficient 'best practice' subset of MFIs and the relatively inefficient subset of MFIs (and the magnitude of their inefficiencies compared to the 'best practice' MFIs).

The type of data provided by DEA assumes values between 0 and 1. This means that the derived efficiency rating of an MFI falls between 0 and 1. If a particular MFI being evaluated has an efficiency rating of $E = 1$, it means it is relatively more efficient than an MFI with an efficiency rating $E < 1$. If $E = 1$, the MFI being evaluated is a 'best practice' MFI, but this does not necessarily mean that it is fully/absolutely efficient. It only means that it is not less efficient than other MFIs in the sample. DEA assigns an efficiency score of less than one to relatively inefficient MFIs. A score less than one means that a linear combination of other MFIs from the sample could produce the same vector of outputs using a smaller vector of inputs. The score reflects the radial distance from the estimated production frontier to the MFI under evaluation, that is, the minimum proportional decrease in inputs yielding efficiency. DEA thus provides an efficiency rating of inefficient MFIs (Andersen and Petersen, 1993). DEA takes the observed input and output values to form a production possibility space, against which the individual MFIs are compared to determine their efficiencies. The output efficiency of an MFI measures the amount by which its output can be increased without the need to increase its inputs. The input efficiency is defined likewise (Sarrico, Hogan, Dyson, and Athanassopoulos, 1997).

If the efficiency rating of an MFI is less than one, an investigation may be required to understand the nature of inefficiency present. However, if the investigation of all MFIs in the sample were required, it could be costly and time consuming. DEA provides a solution by identifying the efficiency 'reference set', which is the subset of MFIs against which the inefficient MFI was most directly compared in calculating its efficiency rating. This is helpful because it enables the interested party to locate and understand the nature of inefficiencies present in the MFI by comparing it with a selected subset of more efficient MFIs in the sample. The ability of DEA to identify possible peers or role models as well as simple efficiency scores gives it an edge over other methods. DEA does not attempt to associate an MFI's performance with statistical averages that may not be applicable to that MFI. Comparing it to similar MFIs regarded as efficient, therefore, identifies the inefficiency in a particular

MFI (Sathye, 2003). Moreover, DEA provides information on alternative paths that would make an inefficient MFI relatively efficient. Based on these, management can select the most feasible and cost-effective path for improving the efficiency of each MFI (Sherman and Gold, 1985).

Most DEA models are invariant with respect to the units of measurement and may focus on achieving efficiency through the reduction of inputs or the augmentation of output. Each DEA model would seek to determine the empirical production frontier or the efficient frontier using the relatively efficient ones. An analysis of relative efficiency for multiple-input-multiple-output situations is provided by DEA, since it evaluates each MFI by measuring its performance relative to an envelopment surface composed of other MFIs. The frontier or envelope surface is formed as linear combinations of observed extremal activities ('best practice' activities). By tightly enveloping data points with linear segments, the programming approach reveals the structure of frontier technology without imposing a specific functional form on either technology or deviation from it. Units that lie on or determine the surface are considered as 'efficient', while units that do not lie on the surface are 'inefficient'. As pointed out by Banker et al. (1984), it must be borne in mind that it is not always appropriate to regard this envelope on a production function in the usual (classical) sense for some of the uses to which the Charnes, Cooper, and Rhodes formulation may be put. The fact that it is possible to identify the best practice MFIs against which inefficient (i.e., non-least-cost) MFIs are being compared does not mean that it is not possible to reduce costs in the 'efficient' MFIs (Pollitt, 1993, cited by Jerome, 2004).

A weakness of DEA is that a considerable number of observations are typically characterized as efficient, unless the sum of the number of inputs and outputs is smaller than the number of observations. Specialized units may be rated as efficient due to a single input or output, even though that input or output may be seen as relatively unimportant (Andersen and Petersen, 1993).

For the sake of simplicity, Farrell (1957) first discussed efficiency under the conditions of constant returns to scale (CRS). This was followed by a discussion on the variable returns to scale (VRS) model as proposed by Banker, Charnes, and Cooper (1984). Generally, DEA can have an input or output orientation.

3.2 Modelling the Ethiopian microfinance institutions

In order to evaluate the efficiency of selected MFIs and make firm-specific inferences, the VRS assumption was used along with input orientation.

The DEA software, however, calculates efficiency using both VRS and CRS assumptions, and this is necessary to determine scale efficiency. VRS rather than CRS was used because the CRS assumption is appropriate only when all firms are operating at an optimal scale (i.e., there are, among other things, perfect competition and no financial constraints). The input-oriented model was selected based on the assumption that the managers of these institutions have more control over inputs than outputs. It should be noted that, typically, the input- and output-oriented models will estimate exactly the same frontier and therefore, by definition, identify the same set of firms as being efficient. It is only the efficiency measures associated with the inefficient firms that may differ between the two methods (Coelli, Rao, and Battese, 1997). The method adopted in this study is the multistage DEA method.

To make a DEA evaluation, it is necessary to decide on the following:

- the sample of units to be evaluated;
- the input and output variables.

Sample of units

In the year 2009, there were 30 MFIs operating throughout Ethiopia. Data for that year were collected from the MFIs themselves and from the Association of Ethiopian Microfinance Institutions (AEMFIs). Due to a lack of complete data, 13 MFIs were excluded from the study, leaving 17.

Based mainly on the value of their total assets, the AEMFIs classifies the MFIs operating in Ethiopia into three major categories: small, medium, and large. Although we included only those with complete data, fortunately, the three groups are fairly well represented in the study. Moreover, the market share of the MFIs included in this study accounts for more than 90 per cent of the industry, and as a result the sample can be considered representative and unbiased.

Input and output variables

Defining the input and output variables is not an easy task, especially in financial institutions such as banks and MFIs. In the banking literature, for example, there are two alternative approaches: the intermediation and the production approach. The intermediation approach takes the view that banks use deposits as an input, together with other inputs, and produce financial services. On the other hand, the second approach takes the view that banks produce loans and deposit accounts, treating interest on deposits as an input along with other inputs. Similar approaches are followed in the MFI literature to measure efficiency using DEA. To achieve the objectives of this study, we adopt an approach similar to the production approach.

Various studies have been carried out on the efficiency of MFIs using DEA. Although the purpose of all these studies is the measurement of efficiency, their use of inputs and outputs is not always the same. For instance, when measuring the efficiency of 215 MFIs worldwide, Kabir Hassan and Benito Sanchez (2009) used total financial expenses, loss provision expenses, operating expenses, and labour as their inputs, and gross loan portfolio, total funds, financial revenue, and number of active borrowers as outputs. With the same worldwide view, 39 MFIs were considered by Hamiza Haq et al. (2010), who used the total number of staff and operating expenses as inputs, and gross loan portfolio and total savings as outputs. Another study by Gutierrez-Nieto et al. (2007) used the number of credit officers and operating expenses as inputs, and interest and fees income, gross loan portfolio, and number of loans outstanding as outputs. Their study focused on 21 MFIs operating in Latin America. Abdul Qayyum and Munir Ahmed (2006) applied DEA to measure the efficiency of 85 MFIs operating in India, Pakistan, and Bangladesh. The inputs and outputs used were credit officers' costs per borrower and loans disbursed, respectively.

Given the large number of conditional variables in each country context, every organizational decision to enter or serve a target market will involve balancing the conditions in the market. This decision-making process must keep in mind the two long-term goals of microfinance: outreach, that is, serving those who have been consistently underserved by financial institutions (such as women, the poor, and indigenous and rural populations) and sustainability, that is, generating enough revenue to cover the costs of providing financial services. Depending on which target market is selected, there will be consequences for the MFI's financial position, because costs will be affected (Ledgerwood, 1999).

This study tries to address the double profile of the MFIs: the banking side in which financial equilibrium is highlighted, and the social side, in which reach, low costs, and quality are called for. For this reason, the efficiency evaluation was conducted using two models: one operational and one financial.

(a) The Operational Model

The operational model reflects the ability of the institution to provide services efficiently. In order to mobilize savings and extend credit, MFIs use labour and other inputs. Thus, the number of loans disbursed, gross loans disbursed, and the value of savings (as a proxy for the number of savers) are included as outputs in the first model. The inputs include the number of workers, net fixed assets (as a proxy for physical capital), and general expenses (as a proxy for supplies and other consumables, and including all expenses other than salaries and benefits, loan losses, and interest expenses).

(b) The Financial Model
The second measure of efficiency reflects the management's success in controlling costs and generating revenue. In this model, there are four inputs – employees' salaries and benefits, interest and fee expenses, loan losses, and general expenses – and two outputs, namely interest income and non-interest income.

4 Empirical analysis

This section briefly presents the summary statistics of the variables used in the study and, more importantly, discusses the efficiency results for the selected MFIs, obtained using the multistage DEA method. The efficiency of the selected MFIs is discussed in relation to the CRS and VRS assumptions. As discussed in earlier sections, the DEA software generates efficiency scores for both CRS and VRS, even if the chosen assumption is VRS. Therefore, the discussion on targeted changes, peers, and analysis of specific MFIs is based on VRS, although a brief discussion is made on efficiency scores under both assumptions.

4.1 Descriptive statistics

Tables 12.1 and 12.2 report the summary statistics of the outputs and inputs used in the operational and financial models, respectively. Under the operational model, the mean of the number of loans disbursed is 135,977; the mean of gross loan portfolio is birr (ETB) 307,545,736 and mean value of savings is birr 137,790,936. For the same model, the inputs have the following mean values: number of workers 581; net fixed assets birr 11,015,700; general expenses birr 3,649,796.

For the financial model, the means of the two output variables, interest income and non-interest income, are birr 37,521,219 and birr 4,883,686, respectively. The mean of employees' salaries and benefits is birr 8,693,179; the mean of interest and fee expenses is birr 10,417,846 and the mean of loan losses is birr 3,424,425. For all these variables, the standard deviation is found to be high, and this can be seen from the large differences between the minimum and maximum values of the variables included in both the operational and financial models.

Table 12.1 Summary statistics of variables – operational model

Variable	**Minimum**	**Maximum**	**Mean**	**Standard Deviation**
No. of loans disbursed	455	679518	135977	208748
Gross loan portfolio (in 000′ ETB)*	1804	1656863	307545	523862
Value of savings (in 000′ ETB)*	574	988108	137790	274195
No. of workers	11	2732	581	852
Net fixed assets (in 000′ ETB)*	130	61336	11015	21093
General expenses (in 000′ ETB)*	205	15415	3649	4501

*At the end of 2009, the US DOLLAR ($) – ETHIOPIAN BIRR (ETB) exchange rate was 12.6283.

Table 12.2 Summary statistics of variables – financial model

Variable (all in 000′ ETB)*	**Minimum**	**Maximum**	**Mean**	**Standard Deviation**
Interest income	74	273530	37521	72968
Non-interest income	7	35525	4883	9037
Employees' salaries and benefits	281	43210	8693	13164
Interest and fee expenses	3	62448	10417	20718
Loan losses	1	24535	3424	6811
General expenses	205	15415	3649	4501

*At the end of 2009, the US DOLLAR ($) – ETHIOPIAN BIRR (ETB) exchange rate was 12.6283.

It is worth remembering, however, that the relative efficiency measures, or DEA efficiency scores, are based on peer groups.

4.2 Results based on multistage method

As mentioned in the previous sections, the multistage DEA model was used to investigate the efficiency of selected Ethiopian MFIs from two perspectives: operational and financial. The two models were solved using the DEA version 2.1 software developed by Tim Coelli of the Centre for Efficiency and Productivity Analysis, the University of New England, Australia. A summary of the efficiency results obtained from the multistage DEA model are presented in Table 12.3. Numbers rather than names are used to identify the MFIs for confidentiality reasons.

As Table 12.3 shows, based on CRS, the mean operating and financial efficiencies for the MFIs included in the sample are 0.731 and 0.951, respectively. On average, the MFIs included in the sample show higher financial efficiency than operating efficiency. According to the CRS

Table 12.3 Efficiency summary

	Types of Efficiency					
MFIs	**CRSOE**	**VRSOE**	**SCLOE**	**CRSFE**	**VRSFE**	**SCLFE**
1	1.000	1.000	1.000	1.000	1.000	1.000
2	1.000	1.000	1.000	1.000	1.000	1.000
3	0.477	0.819	0.583	1.000	1.000	1.000
4	0.860	0.933	0.923	1.000	1.000	1.000
5	0.713	0.741	0.962	1.000	1.000	1.000
6	1.000	1.000	1.000	0.989	0.994	0.995
7	0.527	0.580	0.908	0.785	0.802	0.979
8	0.515	0.613	0.841	0.949	1.000	0.949
9	0.768	0.934	0.823	1.000	1.000	1.000
10	0.282	1.000	0.282	1.000	1.000	1.000
11	0.884	1.000	0.884	1.000	1.000	1.000
12	0.791	0.807	0.980	1.000	1.000	1.000
13	1.000	1.000	1.000	0.959	1.000	0.959
14	0.674	0.744	0.906	0.704	0.725	0.971
15	0.664	0.716	0.927	0.921	0.954	0.965
16	0.853	0.898	0.950	1.000	1.000	1.000
17	0.416	0.427	0.973	0.862	1.000	0.862
Mean	0.731	0.836	0.879	0.951	0.969	0.981

Note: CRSOE = Operating efficiency from CRS DEA
VRSOE = Operating efficiency from VRS DEA
SCLOE = Scale efficiency for operating
CRSFE = Financial efficiency from CRS DEA
VRSFE = Financial efficiency from VRS DEA
SCLFE = Scale efficiency for financial

assumption, the number of institutions that are financially efficient is greater than those considered as operationally efficient. Based on the data provided on the outputs and inputs, the DEA identifies four MFIs (out of 17) as operationally efficient and ten as financially efficient (in relative terms).

On the other hand, according to the VRS assumption, across the MFIs included in the study, the mean operating and financial efficiencies are 0.836 and 0.969, respectively. Under this assumption, six MFIs are identified as operationally efficient and 13 as financially efficient. This indicates that the Ethiopian MFIs are doing well on the profitability front but relatively less well in discharging their social responsibility (i.e., increasing outreach).

Tables 12.4 and 12.5 summarize the results of the DEA evaluation for the operational and financial performance, respectively. The tables

Table 12.4 Operational performance

MFI	DEA score	Targeted changes					
		No. of workers	Net fixed assets	General expenses	No. of loans disbursed	Gross loans disbursed	Value of savings
1	1.000	0%	0%	0%	0%	0%	0%
2	1.000	0%	0%	0%	0%	0%	0%
3	0.819	–42.9%	–76.8%	–18.1%	0%	+114.4%	+122%
4	0.933	–6.8%	–59.5%	–43.4%	0%	+3.1%	0%
5	0.741	–25.9%	–67.9%	–31.4%	0%	+27%	+131.7%
6	1.000	0%	0%	0%	0%	0%	0%
7	0.580	–42%	–73%	–42%	0%	+19.7%	+146.3%
8	0.613	–38.7%	–55.6%	–38.7%	0%	+42.2%	+52.9%
9	0.934	–6.6%	–67.8%	–6.6%	0%	+97.1%	+37.1%
10	1.000	0%	0%	0%	0%	0%	0%
11	1.000	0%	0%	0%	0%	0%	0%
12	0.807	–21.2%	–19.3%	–19.3%	0%	0%	0%
13	1.000	0%	0%	0%	0%	0%	0%
14	0.744	–25.6%	–25.6%	–68.4%	0%	0%	+19.6%
15	0.716	–28.4%	–58.3%	–28.4%	0%	+29.7%	+1.9%
16	0.898	–10.3%	–71.8%	–10.3%	0%	+4.3%	+21.6%
17	0.427	–57.3%	–68.5%	–73.5%	0%	+0.01%	+52.9%

Table 12.5 Financial performance

MFI	DEA score	Targeted changes					
		Employees' sal. and benf.	Interest and fee expenses	Loan losses	General expenses	Interest income	Non-int. income
1	1.000	0%	0%	0%	0%	0%	0%
2	1.000	0%	0%	0%	0%	0%	0%
3	1.000	0%	0%	0%	0%	0%	0%
4	1.000	0%	0%	0%	0%	0%	0%
5	1.000	0%	0%	0%	0%	0%	0%
6	0.994	–0.6%	–41%	–61.4%	–12.5%	0%	113%
7	0.802	–19.8%	–19.8%	–79. 4%	–19.8%	0%	131.8%
8	1.000	0%	0%	0%	0%	0%	0%
9	1.000	0%	0%	0%	0%	0%	0%
10	1.000	0%	0%	0%	0%	0%	0%
11	1.000	0%	0%	0%	0%	0%	0%
12	1.000	0%	0%	0%	0%	0%	0%
13	1.000	0%	0%	0%	0%	0%	0%
14	0.725	–43.2%	–27.5%	–49.6%	–27.5%	0%	13.9%
15	0.954	–4.6%	–4.65	–51%	–4.6%	0%	1615%
16	1.000	0%	0%	0%	0%	0%	0%
17	1.000	0%	0%	0%	0%	0%	0%

also include information regarding the targeted changes in the inputs of the relatively inefficient MFIs. In both tables, the DEA efficiency score obtained for each MFI is shown in the second column. The subsequent columns reveal the targets for improvement in each variable that would take the inefficient institutions to the productivity frontier.

In this paper, an attempt has been made to measure the technical efficiency of selected MFIs. As discussed in the methodology section, the efficiency of the MFIs is calculated using VRS, and the input-oriented model of the DEA methodology. However, by running both CRS and VRS DEA, it is possible to determine the scale efficiency. A difference between the VRS and CRS DEA scores means that the particular MFI has a scale inefficiency. Based on the model run for this study, it can be observed that most of the institutions with scale inefficiency are operating with increasing returns to scale.

4.3 Analysis of specific MFIs

As mentioned earlier, DEA does not measure efficiency in absolute terms. Rather, DEA efficiency is measured in relative terms, in our case compared to an MFI reference set or peers. If we take MFI No. 7, its peers for the operational efficiency measurement are MFIs 11, 13 and 10; its peers for the financial efficiency measurement are MFIs 1, 2, 5 and 3 (see Table 12.6). As shown in the same table, MFI No. 7 has an operating efficiency score of 0.580 (or 58 per cent efficient relative to its peers or reference set). MFI No. 14, on the other hand, is about 74.4 per cent operationally efficient but compared to MFIs 13, 2, 6 and 10 (i.e., with its own reference set). Moreover, MFI No. 14 is inefficient, with a 72.5 per cent financial efficiency score. It has to be made clear, however, that this MFI is identified as inefficient based on different reference sets in the two models.

If MFI No. 14 is going to be as operationally efficient as its 'best practice' peer MFIs (or its efficiency reference set), it has to reduce its number of workers and net fixed assets by 25.6 per cent, and its general expenses by 68.4 per cent. To be operationally efficient, it has to increase the value of its savings by 19.6 per cent. When we come to the financial efficiency of the same MFI, similar inferences could be made by looking at the tables. The same analysis can be repeated for all the other MFIs.

On top of the pure technical efficiency, Table 12.3 presents for both the operating and financial dimensions. The two MFIs with the lowest SCLOE values are MFIs 3 and 10. This means that these two MFIs suffer

Table 12.6 Summary of peers or efficiency reference sets

	Peers	
MFI	**Operational model**	**Financial model**
1	1	1
2	2	2
3	13,10	3
4	11,13,10	4
5	13,11	5
6	6	1,10
7	11,13,10	1,2,5,3
8	11,13,10	8
9	11,13,10	9
10	10	10
11	11	11
12	13,1,6	12
13	13	13
14	13,2,6,10	5,2,10
15	11,13,10	3,2,5,10
16	11,13,10	16
17	13,11	17

from scale inefficiencies due to inefficient levels of activity. On the other hand, some MFIs have low levels of efficiency (in both CRSOE and VRSOE) because they have input endowments that are too high for their current levels of activity (e.g., MFI No. 17). Their efficiency, however, could be improved if they were to increase their current activity levels.

5 Conclusion

The evaluation of the technical efficiency of MFIs is of paramount importance to various parties. Such evaluations can take different forms and use different approaches. Using DEA is one such method. Unlike accounting ratios, which aggregate many aspects of performance such as financing, marketing, and operations, DEA can be used to look at different aspects separately. In addition to this, efficiency measurement using DEA does not require comparison with benchmarks that are stated in advance. It uses the concept of relative efficiency and is thus different from the averaging techniques. It is an extremal method, which seeks to identify, in our study, a relatively efficient MFI(s) from a set of MFIs. Each MFI is compared with the MFIs making up the efficient production frontier.

If MFIs are going to render their services sustainably, they have to be efficient both financially and operationally. In this study, MFIs are said to be financially efficient if they are better than other MFIs in their ability to generate enough income to cover all costs. On the other hand, as the MFIs are primarily meant to serve the poor, they should be able to reach as many poor people as possible. Reaching a higher number of clients with a given level of resources makes MFIs operationally efficient, in relative terms. This study, however, has revealed that about 64.7 per cent of the MFIs included in the sample are not operationally efficient. On the other hand, only 23.5 per cent of the institutions can be identified as financially inefficient. This does not necessarily mean, however, that the other MFIs, which have been identified as relatively efficient, are fully (absolutely) efficient.

According to the DEA results, the mean operating efficiency of the MFIs included in the study is 83.6 per cent, with the efficiency scores ranging from 42.7 to 100 per cent. However, the mean financial efficiency of the MFIs is 96.9 per cent, with a minimum efficiency score of 72.5 per cent. Of the MFIs included in the study, about 29.4 per cent (five MFIs out of 17) are relatively efficient both financially and operationally. Except for one, all of the MFIs identified as operationally efficient were also found to be financially efficient.

At this point, taking the earlier discussions into account, two things are clear. First, the mean financial efficiency score of these MFIs is greater than the mean operational efficiency. Second, there are more financially efficient MFIs than operationally efficient ones. This could be a good indication that the local MFIs are doing reasonably better on the sustainability front than they are in terms of their other major goal of increasing the poor's access to financial services.

In developing countries like Ethiopia, MFIs are expected to play a great role in poverty reduction, and this is mainly done by making finance accessible to the poor. This is manifested, among other things, by increased outreach, especially considering the relative infancy of the industry. However, the findings of this study reveal that the Ethiopian MFIs still have a long way to go in terms of discharging their social responsibility. Though their financial performance is reasonably good, they seem to be quite conservative in increasing their outreach.

In measuring the operational efficiency of the MFIs, some proxies were used. Better results could be achieved by using physical measures. Moreover, further research could be carried out to relate the efficiency or performance of MFIs to internal governance and ownership structures, in a single-country context.

Notes

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13

Financial Sustainability and Outreach of MFIs in Ethiopia: Does Ownership Form Matter?

Gashaw Tadesse Abate, Carlo Borzaga, and Kindie Getnet

1 Introduction

The way ownership is organized and its effects on social and economic performance have been at the centre of policy discussions in microfinance (Mersland, 2009; Mersland and Strøm, 2009). Over the last decades, shareholder-owned microfinance institutions have been promoted as an efficient ownership form over non-government and member-owned microfinance providers (Pischke, 1996; Armendáriz and Morduch, 2010). Proponents of the financial systems approach, in particular, subscribe to policies that entail the transformation of non-government and member-owned microfinance institutions into shareholder firms (Christen, 2001; Fernando, 2004; Rhyne and Otero, 2006; Frank, 2008). The rationale is that private ownership in microfinance can act as an external control mechanism or corporate governance system that can curb excess costs and attract commercial funds and deposits, which may improve efficiency and expand outreach to the poor (Christen, 2001).

Embedded in much of the policy discourse on microfinance is the notion that shareholder-owned microfinance institutions are more profit oriented and financially sustainable while non-government and member-owned microfinance institutions are focused on reaching the poorest clients (Rock et al., 1998; Christen and Rosenberg, 2000; Drake and Rhyne, 2002; Jansson et al., 2004). Such arguments often overlook non-government and member-owned microfinance institutions that pursue commercial objectives in serving the poor like that of shareholder-owned microfinance institutions. Thus, as indicated by

Mersland and Strøm (2008), the claimed performance difference between ownership forms may not be straightforward.

Moreover, the effect of profit or social orientation on microfinance performance is not clear-cut – profit orientation may not necessarily lead to greater financial sustainability and less of a social focus, and being socially oriented may not inevitably result in deeper outreach and poor financial performance. Empirical studies on the effects of ownership forms on achieving microfinance double bottom lines are limited. Exceptions are studies by Mersland and Strøm (2008) and Mersland (2009) on microfinance performance and cost of services by ownership type. Their findings indicated that non-government and shareholder-owned microfinance institutions are comparable in their profit and social orientation. The study also found only minimal performance differences between different ownership forms on the scale and scope of outreach, which emanated from legal constraints on savings mobilization (Mersland and Strøm, 2008).

This chapter complements the work of Mersland and Strøm (2008) by comparing shareholder-owned microfinance institutions with member-owned financial cooperatives that provide microfinance services including voluntary savings. The analysis also addresses whether the way ownership is organized and practised affects the ability of a microfinance institution to fulfil the dual objectives altogether – reaching the poorest clients on a cost-covering basis. The analysis uses a dataset that encompasses all shareholder-owned microfinance institutions and a sample of financial cooperatives in Ethiopia. The 107 microfinance institutions in the sample represent both commercially and socially oriented microfinance providers, potentially reducing the large or commercial firm bias seen in prior studies[1].

The results indicate differential performance between the two ownership forms. Shareholder-owned microfinance institutions perform relatively better in reaching more poor clients, but face higher costs, which creates tension between serving the poor and achieving financial sustainability.

The rest of the chapter is organized as follows: Section 2 discusses recent microfinance policies in view of ownership theories. Section 3 presents the microfinance landscape in Ethiopia. Section 4 describes the data source and summary statistics. Section 5 explains the methodology used to understand the potential trade-offs between outreach and financial performance by ownership form. The analysis and results are presented in Section 6. Section 7 concludes with a summary of the main findings.

2 Microfinance and ownership theories

There are many forms of microfinance institutions, ranging from social venture capital to private credit unions, financial cooperatives, specialized or non-bank microfinance institutions, non-government organizations, saving groups, and village banks (Zeller and Johannsen, 2006; Gaul, 2011). All of these ownership forms have varying degrees of ability to achieve the dual objectives of microfinance, that is, outreach to the poor and financial sustainability.

While financial cooperatives and nonprofit organizations were the pioneers of the microfinance practice (Mersland, 2009), recent microfinance policies show a preference towards shareholder-owned microfinance providers, sometimes at the cost of other ownership forms (Christen and Rosenberg, 2000; Jansson et al., 2004). The argument by policy makers is that shareholder ownership is better because it can reduce costs, attract commercial funds, and benefit from corporate governance systems. This claim is often guided by the comparative advantage of shareholder firms in reducing ownership cost, which is partly intrinsic; however, it overlooks differences in market contract costs, which are reportedly higher in financial markets where most of the microfinance providers operate (Mersland, 2009).

Ownership theories emphasize both ownership and market contract costs for the efficient assignment of ownership rights (Jensen and Meckling, 1976; Fama and Jensen, 1983; Hansmann, 1996; Mersland, 2009). In theory, while owners with pecuniary incentives reduce ownership or agency costs, owners that are customers themselves or closer to their customers better mitigate market contract costs. According to Hansmann (1996), efficiency of ownership calls for a patron(s) (e.g., investors, users, or workers) who can minimize total costs. Microfinance policies, however, tend to advance investor ownership, considering only agency costs. This overlooks the abilities of other ownership forms to reduce ownership costs. For instance, financial cooperatives can theoretically reduce ownership costs equally well, as there is no separation of ownership and control rights in that form. They can also mitigate market contract costs, as clients have credible individual incentives to select and monitor borrowers, as the members provide both the demand for and the supply of loanable funds.

Despite these theoretical guidances on the efficient assignment of ownership and control rights, policy advocates in microfinance often call for the transformation of non-government and member-owned microfinance providers into shareholder firms. The motivation of this chapter is to investigate whether policy makers' preference for shareholder firms over member-owned financial cooperatives is empirically supported.

3 The microfinance landscape in Ethiopia

In Ethiopia, mainstream financial institutions are not only unwilling but also lack the capacity to serve the needs of the poor (Amha, 2007). Financial services for the poor are largely delivered by the microfinance industry, which is mainly made up of services rendered by financial cooperatives, non-governmental organizations (NGOs) and shareholder-owned non-bank financial institutions (NBFIs). Financial cooperatives are the forerunners in delivering financial services to the poor, who are excluded by conventional financial institutions. They are notable in lending small uncollateralized loans, savings mobilization, and inculcating the importance of financial services in the society at large (Degefe and Nega, 2000).

As shown in Figure 13.1, over 7,000 primary SACCOs are reportedly providing microfinance services (i.e., savings, loans, and insurance)

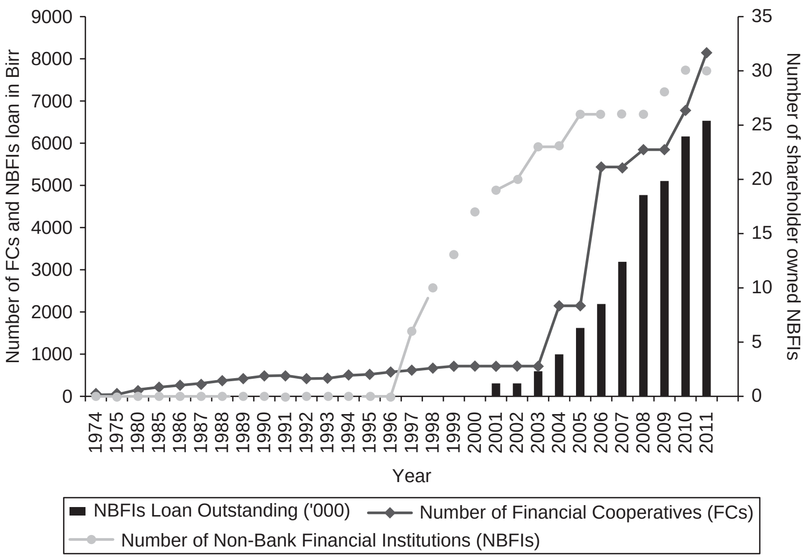

Figure 13.1 Number of microfinance institutions in Ethiopia and volume of loans outstanding, by ownership form

Source: FCA (2012); AEMFI (2012); EEA (2000).

to about one million members in Ethiopia (FCA, 2012). Similarly to most credit cooperatives elsewhere, financial cooperatives in Ethiopia are organized by individuals (i.e., farmers, labourers, employees, etc.) working or living in the same localities. They mainly use standard bilateral lending contracts between the cooperative and a member borrower. The liability for repaying the loan rests with the individual borrower and the co-signer, who is also a member of the same cooperative.

Besides the role played by financial cooperatives, the development of microfinance in Ethiopia also relies on efforts made by international NGOs, local NGOs, and government credit programs. Shareholder-owned microfinance emerged later, during the 1990s, as a result of the transformation of government and non-government credit providers following the economic reform in 1991. In addition to the shareholder-owned microfinance that evolved from prior NGOs and government credit programs, the industry also witnessed new start-ups of investor-owned microfinance providers. As of 2012, a total of 30 shareholder-owned NBFIs in Ethiopia reported serving over 2.3 million clients, with total loans outstanding of 6.5 billion *birr*[2] – about US$ 365 million (Figure 13.1).

Shareholder-owned NBFIs in Ethiopia are share companies that are registered and regulated by the National Bank of Ethiopia (NBE). They are owned by individuals, public bodies, NGOs, or by a combination of the three. Most of them are commercial lenders that aim at achieving FSS in serving the poor. Unlike financial cooperatives, which are confined to specific locations, NBFIs cover wider areas of operation. NBFIs use both bilateral individual lending contracts and contracts based on joint liability. In the case of group lending, which is the main lending contract of NBFIs in Ethiopia, loans are made to individuals, but the group that is formed by the borrowers must shoulder responsibility if one of the group members defaults on a loan.

4 Data and summary statistics

The analysis uses primary data collected from microfinance providers in Ethiopia between April and June 2012. The dataset includes all 30 non-bank microfinance institutions and 77 financial cooperatives, accounting for about nine per cent of the total number of financial cooperatives in the country. The selection of financial cooperatives was based on the auditing status of the institution (i.e., data availability – with those selected being those that were audited during 2011 and had an audit report for 2010) and the sample covers the four main regions and urban and rural financial cooperatives of varying sizes. Overall, the 107 institutions in the sample represent both commercially and socially oriented microfinance providers.

Table 13.1 presents summary statistics by ownership form on financial performance indicators, outreach variables, and other control covariates. On average, the microfinance institutions considered are marginally financially self-sufficient (i.e., their mean FSS ratio is 1.03). However, disaggregation by ownership form shows that NBFIs are not financially self-sufficient while financial cooperatives are. One possible explanation could be that, on average, financial cooperatives spend less on both personnel and capital expenditure relative to their assets. The costs of capital and labour and loan loss expenses are also higher for NBFIs, and statistically significant. A final measure of cost efficiency, cost per unit of *birr* lent, further indicates that cooperatives incur lower costs per unit of currency lent compared to NBFIs.

The outreach indicators suggest that NBFIs cater more to poor borrowers relative to financial cooperatives. On average, NBFIs offer lower loan sizes with short and frequent repayment schedules and serve a higher proportion of women borrowers. The differences in loan sizes, however, could be due to differences in breadth of outreach and length of client relationships. As shown at the bottom of Table 13.1, financial cooperatives are characterized by limited breadth of outreach, but have repeated interactions with their borrowers (i.e., longer relationships with their members, as measured by the average number of borrowings). Financial cooperatives in the sample serve a smaller set of members compared to NBFIs, 247 compared to 70,397. This difference in breadth of outreach is expected because financial cooperatives are confined to particular locations, and they have limited sources of capital as they rely heavily on members' equity and deposits for their lending.

The summary statistics in Table 13.1 also show the prices of loans to be considerably higher for NBFIs. On average, they charge 19 per cent on a flat basis compared to the 9.6 per cent charged by financial cooperatives. This difference could be due to differences in the costs of loans – the higher are the costs, the higher are the prices. The conventional measure of risk taking (i.e., equity-to-assets ratio) shows that financial cooperatives are less leveraged, indicating lower costs of capital. They use a higher proportion of their own equity to finance their assets. NBFIs, on the other hand, are found to take risks in their strategies, as measured by the extent of their loan loss reserves and equity-to-assets ratios.

Table 13.1 Descriptive statistics by ownership form

Indicator	Non-Bank Financial Institutions (NBFIs) (n=30)		Financial Cooperatives (n=77)		Significant Mean Difference?
	Mean	Std. Dev.	Mean	Std. Dev.	
Financial self-sufficiency (FSS)	0.771	0.426	1.133	0.591	*Yes*
Operational self-sufficiency (OSS)	1.031	0.466	1.372	0.525	*Yes*
Adjusted return on assets (ROA)	0.121	0.058	0.078	0.052	*Yes*
Average loan size (ALS)	0.464	0.340	1.135	1.224	*Yes*
Total number of active borrowers	70,397	149,377	247	600	*Yes*
Women borrowers, proportion	0.581	0.168	0.395	0.233	*Yes*
Rural borrowers, proportion	0.493	0.343	0.395	0.479	*No*
Gross loan portfolio (GLP)[3] (in millions)	232.81	537.48	1.56	3.27	*Yes*
Yield (in per cent)	19.01	5.699	9.652	2.295	*Yes*
Loan to assets	0.733	0.181	0.798	1.018	*No*
Labour cost to assets	0.067	0.054	0.021	0.031	*Yes*
Capital cost to assets	0.076	0.076	0.021	0.048	*Yes*
Cost per unit of *birr* lent	0.263	0.157	0.099	0.074	*Yes*
Loan loss reserves over GLP	0.080	0.160	0.035	0.035	*Yes*
Donations over loans	0.214	0.361	0.077	0.265	*Yes*
Age of institution	10.8	4.3	11.5	7.4	*No*
Size of institution (in total assets)	2.6	0.674	1.42	0.637	*Yes*
Time between payments	1.68	2.36	3.55	4.20	*Yes*
Number of sources of capital	2.4	0.498	1.85	0.530	*Yes*
Length of client relationship	5.31	1.94	8.59	4.48	*Yes*
Individual owned, proportion	0.400	0.498	1.000	0	*Yes*
NGO owned, proportion	0.266	0.449	0	0	*Yes*
Amhara region	0.066	0.253	0.363	0.484	*Yes*
Oromia region	0.066	0.253	0.415	0.496	*Yes*
Other regions[a]	0.233	0.430	0.064	0.248	*Yes*

[a] Other regions include Tigray, Benishangul-Gumuz, Dire-Dawa, Gambela, Harari, Somali and Southern Nations, Nationalities and Peoples Region (SNNP).

Note: Addis Ababa is a reference group for regions. Size refers to the size of microfinance institutions' assets and the institutions are categorized into small, medium, and large based on the value of their assets.

Source: Authors' calculations, based on primary data collected between April and June 2012.

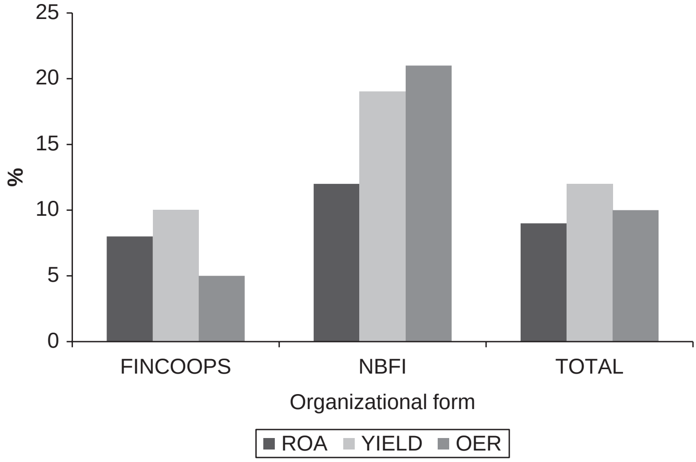

Figure 13.2 ROA, gross portfolio yield (Yield) and operation expense ratio (OER), by ownership form

Source: Authors' calculations, based on primary data collected between April and June 2012.

Moreover, NBFIs rely on grants for lending – on average 21 per cent of their loans come from donations.

Figure 13.2 shows that the patterns of revenues, prices, and costs vary systematically by ownership form. Despite access to cheaper financial capital, on average, NBFIs charge the highest prices and incur the highest average costs, as measured by the operational expense ratio (OER). The measure of interest rates, however, captures only direct interest charges and one can presume that the price charged could be even higher if the additional fees charged by NBFIs were accounted for. Since costs prevail slightly over the interest rates charged, significantly lower returns on assets relative to prices result. Financial cooperatives, conversely, charge lower interest rates and face much lower operational costs, resulting in higher returns relative to the prices of their loans.

These patterns points to cost containment differences between the two groups of lenders. Costs are higher for NBFIs and result in higher interest rates for their borrowers. On the other hand, the costs and interest rates charged by financial cooperatives are significantly lower. A possible explanation for this is that the NBFIs cater more to poor and female borrowers, thus entailing higher costs than financial cooperatives. The analysis also shows the risks facing NBFIs in market contracting. In all, the results from the summary statistics imply differences in cost efficiency, target markets, and contractual risks between the NBFIs and the financial cooperatives.

5 Empirical approach

Ordinary least squares (OLS) regression is used to describe the correlates of the profitability, total costs of lending, and outreach of microfinance institutions. It is used to understand why some microfinance providers are more financially sustainable than others and to examine which ownership form is best able to achieve FSS together with serving the poor. The estimated OLS model interacts factors of interest with lender ownership type in order to show the extent of the variation in profitability and cost containment relative to the scope and depth of outreach by ownership form, which is the primary objective of this chapter. The reduced form of the regression model is as follows:

$$Y_i = \alpha + \beta_1 x_i + \beta_2 D_i + \beta_3 (x_i \cdot D_i) + f^i(\cdot) + u_i \tag{1}$$

Where y_i is a dependent variable – representing profitability, total cost and outreach – x_i is a factor that is interacted with microfinance ownership form (e.g., interest rates in the profitability regression and FSS in the outreach-sustainability regression), D_i is an ownership dummy, and $f^i(\cdot)$ is a function that contains control variables pertaining to the history, orientation, ownership, and location of the microfinance providers.

Different specifications are used for the correlates of profitability, cost, and outreach. The first specifications, on profitability and then on total costs, are benchmark regressions that describe why some microfinance institutions are more profitable than others – focusing on the role of interest rates, lending expenses, loan sizes, and ownership form. The empirical profitability function estimated is specified as follows:

$$\begin{aligned} FSS_i = {} & \alpha + \beta_1 Yield_i + \beta_2 Yield_i \times OwnForm_i + \beta_3 CapitalCost_i \\ & + \beta_4 LabourCost_i + \beta_5 OwnForm_i + \beta_6 History_i \\ & + \beta_7 Orientation_i + \beta_8 Outreach_i + \beta_9 Region_i + \varepsilon_i \end{aligned} \tag{2}$$

FSS represents the financial self-sufficiency ratio of microfinance institution *i*. It is one of the profitability indicators used to measure the financial performance of microfinance institutions. Operational self-sufficiency (OSS) and return on assets (ROA) are also used as additional measures of profitability. The summary statistics of these dependent variables are within the expected ranges, although with a wider range between the maximum and minimum values. A robust regression method is used to ensure the robustness of the results to possible outliers.

Yield is a measure of the interest rates or the prices of loans charged by the microfinance institutions. *Yield* in this case captures only the direct interest rates charged by lenders. As shown in Table 13.1, the price of a loan varies largely by ownership form. As a result, *yield* is interacted with ownership form. Hence, the coefficient of the interaction term, β_2, shows how the effect of *Yield* varies by ownership type. As NBFIs are omitted for reference, the difference between β_2 and β_1 is a *yield* coefficient for financial cooperatives. Thus, β_1 is the effect of yields on the FSS of NBFIs. *CapitalCost* and *LabourCost* measure the effects of personnel and capital expenditure relative to assets on the lender's level of FSS. Besides its interaction with yields, the ownership form dummy, *OwnForm*, also enters the model independently (*OwnForm* =1 if the organization is a financial cooperative, 0 otherwise). Note that there is no parallel coefficient for NBFIs, as they are the omitted category.

The matrix *History* includes two common measures of organizational background – the age (measured by number of years since founding) and the size (measured by total assets) of the microfinance institution. The matrix *Orientation* includes variables that describe the lender's level of risk taking and the extent of its dependency on grants to sustain lending. The variables it contains are the loans to assets and donations to loan portfolio ratios. *Outreach* comprises proxy indicators of client or member poverty levels (i.e., average loan size, percentage of women borrowers) and a variable that measures the length of outreach based on the average length of client relationships with the microfinance institution. *Region* is a matrix of dummy variables for each major regional state and the regions that come under the 'Other regions' category, with Addis Ababa as the omitted reference group.

The second benchmark regression relates total cost per unit of currency lent to the average loan size of the microfinance institution. Understanding the effect of increasing loan sizes on the cost of loans and how this effect varies across ownership form are the empirical questions here. The model relates the cost of loans with the average loan size and other control variables. It is specified as follows:

$$\begin{aligned} TC_i = \alpha + \beta_1 LoanSize_i + \beta_2 LoanSize_i \times OwnForm_i + \beta_3 OwnForm_i \\ + \beta_4 History_i + \beta_5 Donation_i + \beta_6 Outreach_i + \beta_7 Region_i + \varepsilon_i \end{aligned} \tag{3}$$

where *TC* is the total cost of loans for microfinance institution *i*. It is the ratio of total operating costs during the period to the total amount of loans outstanding. Capital costs and labour costs are also used as dependent variables. *LoanSize* is the average loan size of the lenders. This variable is interacted with ownership form, and the interpretation of the coefficient is similar to that of *Yield* discussed above. In Table 13.3 that shows the results for the total cost regression, the squared average loan size is also included to capture potential non-linear effects. *Donation* is the ratio of grants to loans over the gross loan portfolio of the institution. The *History*, *Outreach,* and *Region* matrices are identical to those in the profitability regression.

The main regression model relates the sample microfinance institutions' outreach and profitability, the two main goals of such institutions, to one another. It analyzes the relationship between the depth of outreach and FSS using a variety of outreach proxy measures as dependent variables. The specification of the model is as follows:

$$\begin{aligned} LS_i = \alpha + \beta_1 FSS_i + \beta_2 FSS_i \times OwnForm_i + \beta_3 OwnForm_i + \beta_4 Age_i \\ + \beta_5 Age_i \times OwnForm_i + \beta_6 Size_i + \beta_7 Size_i \times OwnForm_i \\ + \beta_8 Donation_i + \beta_9 Length_i + \beta_{10} Ownership_i + \beta_{11} Region_i + \varepsilon_i \end{aligned} \tag{4}$$

where *LS* is average loan size relative to regional income per capita for microfinance institution *i*. It is a widely used measure of depth of outreach in the microfinance literature. As noted above, this study also uses other proxy measures of outreach, which include the percentage of women borrowers, the percentage of rural borrowers, and the time between instalment payments as a measure of outreach scope. *FSS* is financial self-sufficiency, which measures the ability of a microfinance institution to generate sufficient revenues to cover its costs. As is clear from the above equation, *FSS* is interacted with ownership form in order to explain any differences between ownership types in achieving financial viability together with outreach to the poor. The variables *Donation* and *Length* measure the ratio of grants received to loans and the average length of client relationships, respectively. *Ownership* is a matrix of dummy variables for individual- and NGO owned microfinance institutions, with government-owned institutions as the omitted category. *Region* is a matrix of regional dummies as defined in the preceding models.

6 Results and discussion

6.1 Financial performance

The summary statistics in the preceding sections show that the financial performance of the microfinance institutions is encouraging.

They indicate that over half of the institutions are profitable and, on average, all are financially self-sufficient. However, patterns of financial viability vary considerably when the sample is disaggregated by ownership form. The level of financial viability turns out to be below the cost-covering line for shareholder-owned NBFIs, indicating that NBFIs, on average, are not financially self-sufficient. In contrast, financial cooperatives remain financially viable after the disaggregation. This section further analyses the correlates of profitability, with a greater emphasis on the prices and the costs of loans charged and incurred by microfinance lenders and their varying effects on profitability by ownership form.

Table 13.2 summarizes the results from the estimation given by equation (2), which examines the relationship between profitability and the interest rate charged. The main hypothesis here is that variations in ownership form and related risk mitigation strategies affect interest charges made to borrowers and their impact on financial performance. The results support the theory and show a strong association between the interest rate and the level of financial performance, with varying effects across types of ownership. For NBFIs, the coefficient for the gross portfolio yield is positive and statistically significant across all measures of profitability used (i.e., financial self-sufficiency, operational self-sufficiency, and return on assets). This indicates that shareholder-owned microfinance institutions tend to be more profitable when their average interest rate is higher.

Conversely, the results for financial cooperatives show that raising interest rates reduces financial performance, rejecting the hypothesis that the effects of interest rates on financial performance are identical across forms of ownership. The coefficients of financial cooperatives are negative and significant across all profitability indicators, signifying that increasing interest rates does not necessarily result in improved financial performance for these institutions. The result remains the same after summing the coefficients for yield and the interactions between yield and microfinance ownership form, again showing an inverse and significant relationship between interest rates and profitability for financial cooperatives, even after controlling for costs and depth of outreach. This result may be due to well-functioning cooperatives having less incentive to increase returns, as their motive is, in principle, not profit maximization.

When the effects of interest rates are allowed to vary by ownership form, the financial cooperatives dummy introduced independently explains additional variation in financial performance. Across

Table 13.2 Gross portfolio yield and financial performance, by ownership form

Indicator	Financial self-sufficiency (FSS)	Operational self-sufficiency (OSS)	Return on assets (ROA)
Yield	0.027	0.024	0.007
	(2.49)**	(2.00)**	(7.50)***
Yield (coops)	–0.090	–0.069	–0.008
	(3.16)***	(2.38)**	(1.83)*
Capital cost to assets ratio	–1.806	–1.857	0.105
	(1.88)*	(2.73)***	(1.20)
Labour cost to assets ratio	–4.186	–4.656	0.179
	(3.17)***	(4.09)***	(1.71)*
Financial coops dummy	0.955	0.810	0.088
	(2.65)***	(2.17)**	(2.13)**
Age of the institution	–0.027	–0.025	–0.002
	(2.11)**	(2.44)**	(1.68)*
Institution's size (in total assets)	0.211	0.173	0.016
	(1.93)*	(1.91)*	(1.42)
Loans to assets ratio	0.166	0.165	0.014
	(2.86)***	(3.53)***	(3.20)***
Donations over loans	–0.076	–0.008	–0.007
	(0.49)	(0.08)	(0.58)
Average loan size	0.050	0.021	0.000
	(1.10)	(0.71)	(0.08)
% of women borrowers	0.512	0.619	0.010
	(1.84)*	(2.53)**	(0.38)
Length of client relationships	0.050	0.057	0.005
	(2.47)**	(4.06)***	(2.55)**
Amhara region	0.895	0.607	0.039
	(5.97)***	(5.08)***	(2.61)**
Oromia region	0.418	0.214	0.047
	(2.75)***	(2.00)**	(2.93)***
Other regions	0.189	0.173	0.008
	(1.10)	(1.46)	(0.40)
Constant	–0.395	–0.043	–0.101
	(1.02)	(0.12)	(2.97)***
R-squared	0.51	0.52	0.47
Number of observations	107	107	107

Note: * Significant at 10%, ** significant at 5%, and *** significant at 1%.

Source: Authors' calculations, based on primary data collected between April and June 2012.

all measures of profitability, the coefficient for the financial cooperatives dummy is positive and statistically significant, indicating that, in terms of financial performance, member-owned microfinance providers outperform shareholder-owned NBFIs.

The controls for depth of outreach produce mixed results. Average loan size is positively linked to financial performance (although not significantly so), suggesting that smaller loans are, on average, less profitable. Serving more women tends to be linked with improved financial performance. The coefficient of the percentage of women borrowers is positive and statistically significant for the first two measures of profitability. Length of outreach or client relationships, among the six aspects of outreach proposed by Schreiner (2002), is also positively associated with financial performance. Note that the analysis presented in Table 13.2 controls for institution's age and size, and potential regional variations.

The results summarized in Table 13.3 further extend the analysis of interest rates and profitability to examine the implications of high interest rates on financial performance by ownership forms. The charging of exorbitant interest rates by microfinance providers to offset higher costs of information and enforcement is not uncommon; however, based on agency theory, charging very high interest rates above a certain threshold could result in problems of adverse selection and moral hazard. Theoretically, high interest rates drive worthy borrowers out of the market, leaving only risky borrowers, which in turn may result in low repayment rates and profitability (Morduch, 1999). The relationship with demand is straightforward – high interest rates can reduce demand, as they crowd out safe borrowers (Armendáriz and Morduch, 2010; Stiglitz, 1990). If these assertions are true, microfinance providers charging comparatively higher interest rates should experience lower financial performance.

The implications of relatively high interest rates on financial performance are examined by including the quadratic term of gross portfolio yield in the profitability specification given by equation (2). The association between the squared portfolio yield and profitability is also allowed to vary by ownership form. As shown in Table 13.3, for shareholder-owned NBFIs, the relationship between interest rates and financial performance follows the hypothetical predictions. Both the linear yield and quadratic yield coefficients are statistically significant across the two measures of profitability, with positive and negative signs, respectively. This indicates that financial and operational self-sufficiency increases with portfolio yield for NBFIs, but only up to a certain point at which the negative quadratic yield coefficient outweighs the positive linear yield coefficient. Figure 13.3(a) shows the pattern of this relationship between interest rates and FSS for NBFIs based on the estimation from Table 13.3, column 1. Consistent with theoretical predictions, levels of

Table 13.3 Gross portfolio yield and financial performance: *allowing a non-linear effect of interest rates*

Indicator	**Financial self-sufficiency (FSS)**	**Operational self-sufficiency (OSS)**	**Return on assets (ROA)**
Yield	0.109	0.143	0.013
	(2.27)**	(2.98)***	(2.37)**
Yield squared	–0.002	–0.003	–0.001
	(1.93)*	(2.81)***	(1.18)
Yield (coops)	–0.299	–0.342	–0.028
	(1.71)*	(2.00)**	(1.11)
Yield (coops) squared	0.008	0.010	0.001
	(1.01)	(1.33)	(0.78)
Capital cost to assets ratio	–1.716	–1.730	0.113
	(1.73)*	(2.54)**	(1.27)
Labour cost to assets ratio	–4.175	–4.665	0.186
	(3.05)***	(3.92)***	(1.71)*
Financial coops dummy	2.412	2.771	0.222
	(2.35)**	(2.70)***	(1.48)
Age of the institution	–0.030	–0.028	–0.003
	(2.24)**	(2.80)***	(1.72)*
Institution's size (in total assets)	0.213	0.174	0.017
	(1.93)*	(1.88)*	(1.49)
Loans to assets ratio	0.147	0.142	0.012
	(2.43)**	(2.93)***	(2.19)**
Donations over loans	–0.081	–0.017	0.001
	(0.53)	(0.16)	(0.29)
Average loan size	0.060	0.034	0.012
	(1.29)	(1.06)	(0.49)
% of women borrowers	0.544	0.663	–0.006
	(1.90)*	(2.60)**	(0.56)
Length of client relationships	0.050	0.058	0.005
	(2.42)**	(4.07)***	(2.50)**
Amhara region	0.903	0.616	0.040
	(5.78)***	(5.14)***	(2.67)***
Oromia region	0.434	0.233	0.049
	(2.70)***	(2.11)**	(2.98)***
Other regions	0.218	0.218	0.010
	(1.25)	(1.87)*	(0.47)
Constant	–1.238	–1.260	–0.160
	(1.88)*	(2.08)**	(2.59)**
R-squared	0.52	0.54	0.48
Number of observations	107	107	107

Note: * Significant at 10%, ** significant at 5%, and *** significant at 1%.

Source: Authors' calculations, based on primary data collected between April and June 2012.

FSS increase with yield up to a point and then, as interest rates exceed about 25 per cent per annum, the curve starts trending downward[4].

For financial cooperatives, the coefficients for linear yield and quadratic yield have the opposite signs to those for NBFIs. Similarly to the results of the base regression, the linear portfolio yield coefficient is negative and significant before and after we sum the yield and yield interaction coefficients, signifying an inverse relationship between interest rates and financial performance. However, the hypothesis that associates relatively high interest rates with lower financial performance for financial cooperatives cannot be rejected, since the quadratic yield coefficient is not statistically significant (although it is positive). In other words, any relative increase in interest rates has a decreasing effect on the financial performance of financial cooperatives. Figure 13.3(b) shows the pattern of this relationship between interest rates and financial self-sufficiency for financial cooperatives based on the estimation from Table 13.3, column 1.

In summary, the results from the specification that permits non-linear effects of interest rates on financial performance (Table 13.3) suggest a negative association between financial performance and relatively high interest rates. NBFIs that charge higher interest rates above a given threshold are less profitable than those that charge lower rates. For financial cooperatives, on the other hand, charging lower interest rates tends to be strongly linked with improved financial performance. The signs and levels of significance of other cost and outreach control variables remain similar to those in the base profitability regression.

The profitability analysis in this section is further extended to examine the implications of the cost of loans on financial performance. As indicated previously, the higher interest rates charged by microfinance providers are often ascribed to the high lending costs associated with small loans. Based on the results of the base profitability regression and the theoretical predictions, another hypothesis asserts that the level of cost containment varies by ownership form. For instance, microfinance institutions whose ownership structure enables them to dispense with information and enforcement costs can, at the same time, overcome the loss of demand and repayment problems that might arise from the setting of higher interest rates. If this conjecture is true, those microfinance providers in the sample that contained their costs of lending should be more profitable than the others. The main questions now concern which forms of ownership contain costs and whether the relationship between cost containment and financial performance varies by ownership type.

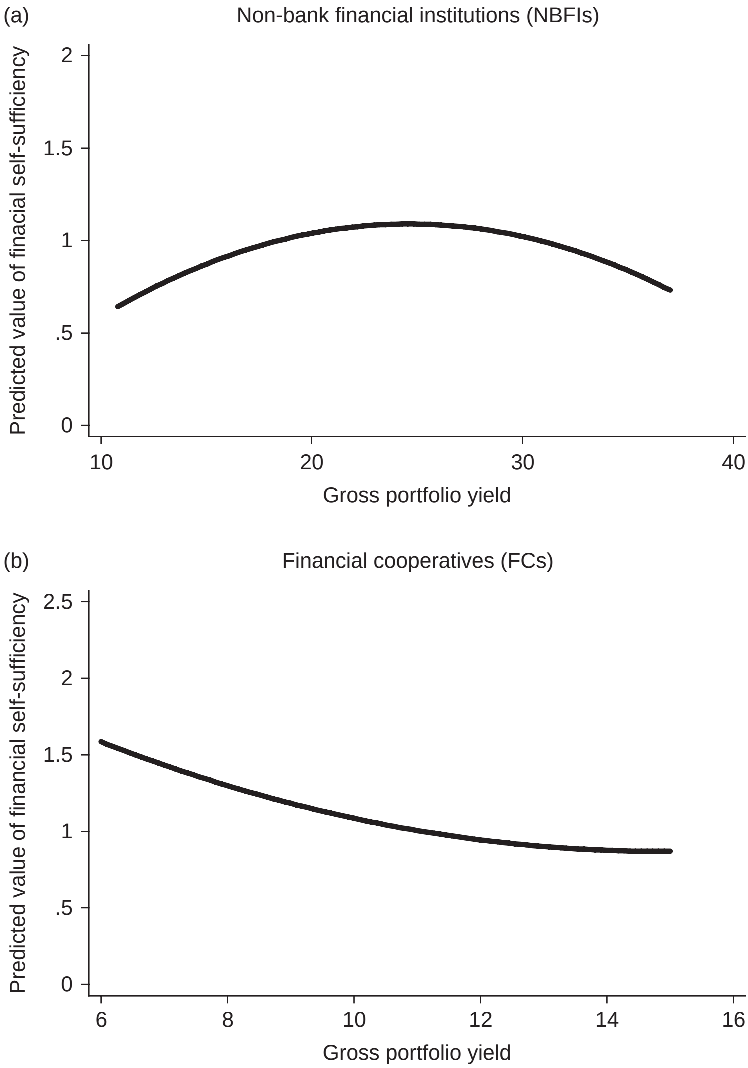

Figure 13.3 Predicted trade-off between financial self-sufficiency and gross portfolio yield, by ownership form

Note: Both of the graphs are from specification (column) 1 of Table 13.3.*Source*: Authors' calculations, based on primary data collected between April and June 2012

For shareholder NBFIs, the estimated coefficient for financial self-sufficiency suggests that cost containment is strongly related to improved financial performance. The results in Table 13.4 show that financially self-sufficient NBFIs are estimated to have 28 per cent lower costs per unit of currency lent than others within the same group that are not financially self-sufficient. Although lower in magnitude, when the coefficients of *FSS* and *FSS* interacted with ownership type are summed, the effect of the cost of loans on financial performance is also negative and

Table 13.4 Cost per unit of currency lent and financial performance, by ownership form

Indicator	**Total costs/ GLP**	**Capital costs/ GLP**	**Labour costs/ GLP**
Financial self-sufficiency	–0.276	–0.133	–0.127
	(5.13)***	(3.52)***	(3.51)***
Financial self-sufficiency (coops)	0.273	0.118	0.097
	(4.66)***	(2.74)***	(2.62)**
Financial coops dummy	–0.408	–0.181	–0.164
	(7.05)***	(2.97)***	(3.60)***
Age of the institution	–0.001	0.003	–0.003
	(0.29)	(1.72)*	(2.43)**
Institutional size (in total assets)	–0.023	–0.018	–0.007
	(1.14)	(0.91)	(0.46)
Average loan size indicator	–0.008	–0.008	–0.003
	(0.82)	(1.43)	(0.50)
% of women borrowers	–0.001	–0.014	–0.002
	(0.02)	(0.46)	(0.08)
% of rural borrowers	–0.023	–0.012	–0.013
	(0.95)	(0.71)	(1.03)
Donations over loan portfolio	0.001	–0.016	0.017
	(0.03)	(0.87)	(0.91)
Length of client relationships	0.002	–0.003	0.004
	(0.64)	(1.37)	(2.46)**
Amhara region	–0.023	–0.009	0.030
	(0.79)	(0.39)	(1.44)
Oromia region	0.023	0.010	0.010
	(0.89)	(0.50)	(0.75)
Other regions	–0.024	–0.032	0.005
	(1.01)	(1.64)	(0.26)
Constant	0.553	0.268	0.227
	(6.87)***	(3.01)***	(3.88)***
R-squared	0.67	0.46	0.51
Number of obs.	107	107	107

Note: * significant at 10%, ** significant at 5%, and *** significant at 1%.

Source: Authors' calculations, based on primary data collected between April and June 2012.

significant for financial cooperatives, indicating that cost containment results in profitability. Self-sufficient financial cooperatives are estimated to have 0.3 per cent lower costs per unit of currency lent than financial cooperatives that are not financially viable. These results are consistent with the finding of Mersland and Strøm (2010). Moreover, the financial cooperative dummy indicates that, as a whole, the cooperative lenders outperform the NBFIs in cost reduction. Financial cooperatives are estimated to have a statistically significant 41 per cent lower cost per unit of currency lent compared to NBFIs.

6.2 Outreach

Outreach is customarily used to measure microfinance social performance, and includes the breadth, depth, scope and length of the lender's product (Schreiner, 2002). The breadth of outreach of the microfinance providers in the sample is encouraging. On average, each microfinance provider extends services to about 19,915 individual borrowers; however, when disaggregated by ownership type, the coverage of the NBFIs is shown to be much wider than that of the other forms. Each of the NBFIs, on average, extends financial services to about 70,397 individuals, while financial cooperatives serve about 247 individuals on average. This does not mean that the coverage of the financial cooperatives is small overall, though, as there are over 7,000 of them, and the number of individuals served by them in total is comparable to the number served by NBFIs.

From the descriptive statistics, it is evident that shareholder-owned NBFIs do better than financial cooperatives in terms of depth of outreach, as measured by average loan sizes. NBFIs provide a small loan size at 46 per cent of the regional income per capita, on average. Financial cooperatives, on the other hand, provide loans with an average size equivalent to the regional income per capita. This section focuses on whether smaller loans have similar effects on the cost of lending across all ownership types. Table 13.5 presents estimated coefficients from a regression that relates the total cost per unit of currency lent to the average loan sizes of the microfinance providers in the sample (equation 3). It also includes the quadratic average loan size to capture non-linear effects and allows the effects of the loan size indicators to vary by ownership form.

While the magnitude varies across ownership form, the estimated coefficient for average loan size indicates that large loan sizes are associated with lower average costs, but only up to a certain point. For shareholder-owned NBFIs, the linear and quadratic loan size coefficients are negative and positive, respectively, with statistical significance. As shown in

Table 13.5 column 2 and Figure 13.4, for NBFIs, relatively larger loan sizes are estimated to have, on average, 43 per cent lower costs per unit of currency lent, up to a loan size equivalent to the regional income per

Table 13.5 Average loan size and cost per unit of currency lent, by ownership form

	Total costs/ GLP		Capital costs/ GLP		Labour costs/ GLP	
Indicator	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Average loan size	–0.113	–0.433	–0.079	–0.360	–0.066	–0.074
	(2.12)**	(2.33)**	(2.10)**	(3.23)***	(2.39)**	(0.68)
Average loan size squared	–	0.213	–	0.188	–	0.004
		(1.93)*		(2.50)**		(0.06)
Average loan size (coops)	0.115	0.409	0.076	0.346	0.067	0.054
	(2.09)**	(2.22)**	(1.92)*	(3.07)***	(2.23)**	(0.49)
Average loan size squared (coops)	–	–0.210	–	–0.187	–	–0.001
		(1.91)*		(2.49)**		(0.02)
Financial coops dummy	–0.273	–0.326	–0.141	–0.198	–0.138	–0.120
	(4.55)***	(4.39)***	(2.92)***	(3.36)***	(3.28)***	(2.52)**
Age of the institution	–0.002	–0.002	0.003	0.002	–0.003	–0.003
	(0.60)	(0.73)	(1.57)	(1.39)	(2.03)**	(2.01)**
Institutional size (in total assets)	–0.064	–0.055	–0.040	–0.034	–0.031	–0.028
	(2.52)**	(2.18)**	(1.70)*	(1.45)	(1.93)*	(1.75)*
% of women borrowers	0.070	0.063	0.008	0.004	0.008	0.006
	(1.31)	(1.16)	(0.24)	(0.10)	(0.29)	(0.22)
% of rural borrowers	–0.035	–0.044	–0.018	–0.022	–0.018	–0.025
	(1.33)	(1.45)	(1.08)	(1.13)	(1.21)	(1.62)
Donations over loan portfolio	–0.022	–0.026	–0.025	–0.027	0.012	0.010
	(0.72)	(0.81)	(1.06)	(1.12)	(0.57)	(0.47)
Length of client relationships	0.001	0.002	–0.004	–0.004	0.003	0.003
	(0.37)	(0.45)	(1.68)*	(1.60)	(1.52)	(1.49)
Amhara region	–0.060	–0.059	–0.036	–0.032	–0.007	–0.012
	(2.01)**	(1.97)*	(1.50)	(1.46)	(0.46)	(0.70)
Oromia region	–0.003	0.004	–0.004	0.003	–0.007	–0.008
	(0.08)	(0.13)	(0.15)	(0.13)	(0.48)	(0.52)
Other regions	–0.008	0.005	–0.027	–0.017	0.006	0.009
	(0.23)	(0.13)	(1.47)	(0.97)	(0.27)	(0.36)
Constant	0.480	0.545	0.258	0.314	0.230	0.233
	(5.22)***	(5.55)***	(3.00)***	(3.36)***	(3.81)***	(3.88)***
R-squared	0.52	0.54	0.38	0.41	0.39	0.41
Number of obs.	107	107	107	107	107	107

Note: * significant at 10%, ** significant at 5%, and *** significant at 1%.

Source: Authors' calculations, based on primary data collected between April and June 2012.

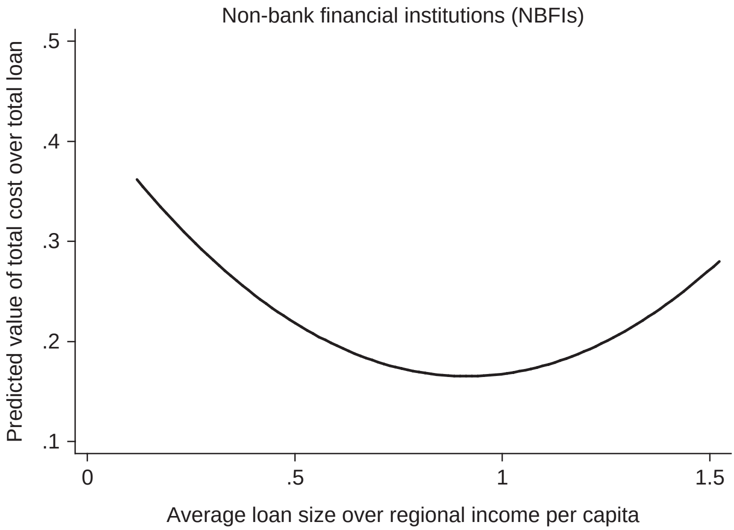

Figure 13.4 Predicted trade-off between cost per unit of currency lent and average loan size for non-bank financial institutions in Ethiopia

Note: This graph is derived from specification (column) 2 of Table 13.5.

Source: Authors' calculations, based on primary data collected between April and June 2012.

capita. Loan sizes above the regional income per capita are estimated to have 21 per cent higher costs, on average, per unit of currency lent.

When the linear and quadratic terms are summed up, the effect of loan size on loan cost turns out to be the same for financial cooperatives as for shareholder-owned NBFIs, but much smaller in magnitude. However, the ownership dummy introduced independently indicates that financial cooperatives perform well at cost containment, even after controlling for the average loan size. The estimated coefficient suggests that microfinance providers that are financial cooperatives have 33 per cent lower costs per unit of currency lent, on average, compared to shareholder-owned NBFIs.

6.3 Outreach and financial performance: Is there a trade-off?

The outreach to financial performance trade-off is an issue that has received attention due to a concern that financial performance can crowd out the small loans demanded by the poor as they are costly to service (Mersland and Strøm, 2010). The issue is gaining importance as the microfinance sector grows (Christen, 2001; Rhyne and Otero, 2006). Traditionally, the development impact of microfinance providers was assessed based on outreach. Institutions were considered successful if they expanded their outreach to the poor (Robinson 2001; Yaron et al., 1997). Currently, however, expanding outreach *per se* does not mean triumph over poverty. To be considered successful, a microfinance institution should provide durable and pro-poor financial services on a cost-covering basis. The latter criterion opens new debates on the compatibility of outreach and financial sustainability. There are few systematic empirical works that examine the trade-off between outreach to the poor and financial sustainability, and the evidence that has been produced is mixed (Mersland and Strøm, 2010; Bassem, 2012; Cull et al., 2007; Haremes et al., 2011; Quayes, 2011). This section further investigates this issue in a quest to understand possible variations in the effects of outreach to the poor on financial performance by ownership form.

Table 13.6 summarizes the results on the outreach to financial performance trade-off estimated using equation (4), which associates FSS with various measures of outreach to the poor. As shown in column 1 of Table 13.6, the coefficient for FSS corresponding to shareholder-owned NBFIs is positive and statistically significant for the average loan size variable, indicating that the NBFIs that are financially self-sufficient are those that offer relatively large loans. The negative and significant coefficient for women borrowers in column 2 of Table 13.6 suggests that NBFIs that are financially viable are also less focused on women borrowers. Moreover, NBFIs that are financially sustainable tend to provide loans with a limited scope of outreach – they offer loans with relatively extended instalment periods that are less likely to be demanded by poor clients. In all, the coefficients for NBFIs across the measures of outreach demonstrate the presence of a trade-off between FSS and outreach to the poor.

On the other hand, the coefficients of FSS for financial cooperatives turn out to have the opposite signs to those for NBFIs in all measures of outreach. The estimated coefficient for FSS against average loan size is negative and statistically significant, indicating a positive complementary relationship between outreach to the poor and financial viability. While financial cooperatives overall do not cater to women borrowers any more than NBFIs, the positive and significant coefficient for percentage of woman borrowers both before and after summing with the interaction term shows a harmony between outreach and FSS for cooperatives that are financially self-sufficient. This indicates that financially self-sufficient cooperatives serve higher fractions of women borrowers than their counterparts, implying a greater depth of outreach along with financial sustainability.

Table 13.6 Outreach and financial performance trade-off, by ownership form

Indicator	Average loan size over GNP per capita	Percentage of women borrowers	Percentage of rural borrowers	Time between instalments
Financial self-sufficiency	0.514 (2.28)**	–0.245 (2.39)**	–0.025 (0.16)	3.800 (2.64)***
Financial self-sufficiency (coops)	–0.628 (1.99)**	0.320 (2.90)***	0.028 (0.16)	–2.582 (1.55)
Financial coops	–0.648 (1.44)	–0.665 (6.40)***	0.638 (2.42)**	4.570 (2.91)***
Age of the institution	–0.014 (0.51)	–0.002 (0.32)	0.049 (3.81)***	0.189 (2.18)**
Age (coops)	0.076 (1.68)*	0.006 (0.62)	–0.054 (3.26)***	–0.124 (0.91)
Institutional size	0.092 (0.58)	–0.062 (0.99)	–0.175 (1.64)	–1.632 (2.51)**
Institutional size (coops)	0.664 (2.46)**	0.100 (1.29)	–0.108 (0.76)	0.268 (0.21)
Length of client relationships	–0.048 (1.04)	–0.003 (0.27)	–0.005 (0.29)	–0.400 (2.57)**
Donations over loan portfolio	0.098 (0.49)	0.234 (3.76)***	–0.022 (0.14)	0.590 (0.41)
Number of sources of capital	–0.532 (2.59)**	0.118 (3.02)***	0.116 (1.27)	0.463 (0.60)
Individual/investor-owned	–0.022 (0.11)	0.057 (0.75)	–0.077 (0.69)	–1.565 (2.03)**
NGO owned	–0.087 (0.40)	0.013 (0.15)	0.345 (2.31)**	–1.664 (1.60)
Constant	1.514 (2.79)***	0.611 (4.19)***	0.133 (0.42)	2.894 (1.64)
R-squared	0.46	0.43	0.30	0.31
Number of Obs.	107	107	107	107

Note: * significant at 10%, ** significant at 5%, and *** significant at 1%.

Source: Authors' calculations, based on primary data collected between April and June 2012.

As shown in the last column of Table 13.6, time between loan repayments is positively linked to financial performance for both NBFIs and cooperative lenders that are financially self-sufficient (although lower in magnitude and marginally insignificant for financial cooperatives). The results show that less frequent repayment schedules result in improved financial performance. This may be due to a reduction in transaction costs; however, the welfare consequences of less frequent repayment schedules for borrowers are not clear-cut. Less frequent repayments can be pro-poor as they do not require borrowers to have smooth income throughout the period. However, more frequent loan repayment schedules can reduce the burden of a lump-sum repayment for borrowers. If the first conjecture is true, financial cooperatives are better in terms of scope of outreach, as they provide loan terms with greater time between instalments than NBFIs and *vice versa*.

Besides the commonly accepted measures of outreach, this study estimated the effect of catering to rural borrowers on financial performance, as serving the rural poor may involve additional costs. The results in column 3 of Table 13.6 show that the percentage of rural borrowers is not significantly linked with FSS, irrespective of ownership form; however, a considerable proportion of clients served by financial cooperatives are from rural areas, as compared to NBFIs' clients, when analyzed by territory.

Overall, the evidence shows varying relationships between outreach to the poor and financial performance by ownership form. After controlling for experience and scale of operations, shareholder-owned NBFIs that are financially self-sufficient perform poorly in outreach to the poor, signifying a tension between outreach and financial performance. In contrast, financially self-sufficient cooperatives perform well and are able to balance their dual objectives. These results significantly demonstrate the crucial role of ownership form in microfinance delivery. Specifically, they indicate that ownership form (with differences in cost containment) matters for the fulfilment of the full promise of microfinance – serving the poor while ensuring financial sustainability.

7 Conclusions

This chapter has investigated the effects of the way ownership is organized and practised on the social and economic performance of microfinance institutions. It has specifically addressed whether the established microfinance policies that advocate shareholder-owned microfinance providers over non-government and member-owned ones are empirically supported. The analysis in this chapter compares shareholder-owned microfinance institutions with member-owned financial cooperatives in terms of their depth of outreach, FSS, and ability to expand their outreach to the poor on a cost-covering basis.

The results show performance gaps between the two forms of microfinance ownership – the shareholder-owned NBFIs in the sample reach more poor clients than the financial cooperatives; however, their depth of outreach emanates partly from scale and is traded-off against financial performance. The NBFIs that are financially self-sufficient are those with large average loan balances and a small proportion of women borrowers, suggesting that trade-offs are made between outreach to the poor and financial sustainability by shareholder-owned microfinance providers.

Despite their limited breadth of outreach, financial cooperatives outperform NBFIs in terms of their financial performance and their ability to achieve the dual objectives of microfinance altogether. The results indicate complementarity between depth of outreach and financial sustainability for member-owned financial cooperatives. Unlike the case of the NBFIs, the analysis shows that financially viable cooperatives offer small loans and provide more to women and rural borrowers. Overall, the results follow the theoretical predictions on the efficient assignment of ownership by Hansmann (1996), among others, and contradict the recent microfinance policies that promote shareholder-owned microfinance institutions over non-government and member-owned ones. Moreover, the absence of empirical support for the superiority of shareholder ownership in microfinance performance in this chapter is consistent with the prior findings of Hartarska (2005), Cull et al. (2007), and Mersland and Strøm (2008; 2009).

Notes

1. The analysis in works by Cull et al. (2007), Mersland and Strøm (2008), Hermes et al. (2011), and Quayes (2012) is largely based on microfinance institutions that self-select, in voluntarily supplying data to organizations like MIX Market or rating agencies, and are united by their strong commitment to achieving financial self-sufficiency. Meanwhile, the data used in this analysis include both type of microfinance institutions that are committed to achieving either economic viability or social visibility or both.
2. *Birr* is a currency of Ethiopia; its exchange rate to the US dollar was 17.2941 on December 30, 2011.
3. The observed significant difference in GLP between the two forms of ownership is partly because of the five big NBFIs that are largely public owned. For instance, after we drop these five institutions, the mean GLP becomes 27.5 million from 232.8 million. Limited breadth of outreach of financial cooperatives in the country explains part of the difference.
4. This could be due to higher costs corresponding to the charging of higher interest rates, as found by Roberts (2013) among for-profit microfinance institutions.

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14
Microbank Regulation and Earnings Quality: A Global Survey

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1 Introduction

Banking regulations have been subject to extensive research and debate for decades. In the aftermath of the 2008 global financial crisis, the focus on banking regulations and corporate governance has been particularly intense (e.g., Claessens and Yurtoglu, 2013). Simultaneously, within the global microfinance industry, there has been relatively less attention on regulations and other means of external control and transparency enhancing mechanisms (Hartarska, 2010: Beisland et al., 2014). In contrast to the traditional banking industry, the presence of banking regulations is not obvious in the microfinance industry; some microfinance institutions, or microbanks as we label them, are regulated by the national banking authority, others are not, even when they operate in the same national markets and follow similar business models (Mersland and Strøm, 2009). This research is motivated by the substantial double digit growth in microfinance across emerging markets (see e.g., Maes and Reed, 2012), and the positive role of access to credit on poverty alleviation (e.g., Akhter and Daly, 2009).

This study specifically addresses the call for more research on regulation and other corporate governance mechanisms of banks in emerging markets (Claessens and Yurtoglu, 2013). Thus far, the scarce existing microbank research has focused on regulations and performance. For example, both Hartarska and Nadolnyak (2007) and Mersland and Strøm (2009) find no relationship between being regulated, by the banking authorities, and microbank performance. Therefore, in this study, we focus on the impact of banking regulation on microfinance managers' behaviour. Specifically, we investigate if the presence of banking regulations affects the earnings quality of microbanks. Our starting premise is that there is a substantial degree of managerial discretion involved in the financial reporting process and the produced earnings quality. Earnings quality metrics measure the relevance and usefulness of the financial reporting and summarizes the degree to which such discretion is applied in a manner that is (un)favorable to an entity's external stakeholders.

Overall, the existing research on the relationship between earnings quality and governance mechanisms shows inconclusive results (see the comprehensive discussion in Francis, et al., 2008; cf. Dechow, et al., section 5.3., 2010). According to Francis et al. (2008), there are also mixed results for the more specific research on the influence of regulatory scrutiny on earnings quality. One possible explanation for these inconclusive results could be measurement difficulties and inherent weakness with the applied research settings. Therefore, this study on the microfinance industry provides a unique research setting because some microbanks are regulated while others are not, and the regulated versus the non-regulated microbank are otherwise rather similar (Mersland and Strøm, 2009).

Our tests suggest that there is more discretionary financial reporting behavior among regulated than non-regulated microbanks. The possible discretionary actions of the management of regulated organizations appear to result in smoother and more predictable earnings that, on average, are more representative of the organizations' long-term earning ability (see Melumad and Nissim, 2008). Thus, we conclude that the earnings quality is higher in regulated than in non-regulated microbanks. The study supports the view of Melumad and Nissim (2008) that discretionary actions to increase earnings smoothness and predictability are not necessarily explained by a management desire to obtain private gains through manipulation of financial reports; the more positivistic view is to claim that the explanation can equally well be a desire to reduce information asymmetries between the organizations and their stakeholders. This interpretation is strengthened by the finding that the earnings of the regulated microbanks are more influential for the microbanks' global risk assessments than the earnings of their non-regulated counterparts. The global risk assessments, or simply the microbank ratings, are broad measures of the microbanks' ability to achieve their multiple sets of objectives; they are frequently used by investors, lenders, donors, and others as a basis for decision making and capital allocation (Reille et al., 2002). Thus, the rating score constitutes a very important factor in the microfinance industry, and the 'rating relevance' of earnings can be regarded as a proxy for the value relevance measures that are frequently studied for exchange-listed corporations (Beisland and Mersland, 2013).

Overall, a starting premise in this study is that earnings quality is of value to key stakeholder (such as investors, donors, lenders) in the microfinance industry. Even if the regulations of the microfinance industry do not necessarily cover financial reporting per se, we conclude that microbank regulation, as an additional governance mechanism, improves the usefulness and relevance (i.e., the earnings quality) of the financial reporting information. This finding is attributed to the generally reduced opportunities for the management of regulated entities to act opportunistically, as well as the greater professionalism and the higher degree of awareness regarding the importance of high quality accounting information.

This study contributes to the existing research in several ways. First, the study answers the challenge put forth by Hartarska (2010); for more research on the influence of regulation on managerial attributes of microbanks. This study suggests that regulations, as a governance mechanism, affect microbank managers` behavior and effort, even in areas that are typically not directly covered by the regulations. The main argument for regulation has been that it enables the microbanks to attract deposits, but regulations may also increase the possibility for stakeholders to create and extract rent, and prevent entry by new competitors (as discussed by Hartarska, 2010). Thus, it is of vital public policy importance to understand a wider set of consequences from regulations, including possible spillover effects. Second, the study answers the challenge of Francis et al. (2008) for more research on the influence of corporate governance mechanisms in general, and regulations in particular, on earnings quality. Previous research suggests that regulations may have discernible economic effects, but the results from the limited existing research are inconclusive (Francis et al., 2008). The mixed results from past studies can possibly be attributed to comparability challenges in the research design, and the co-existence of regulated and non-regulated microbanks makes the microfinance industry a particularly attractive research setting.

This paper is organized as follows. Section 2 develops the hypothesis to be tested and outlines the research design of the study. Section 3 presents the data sample, and Section 4 discusses the empirical findings. Section 5 concludes the paper.

2 Hypothesis development and research design

2.1 Hypothesis development

Banks and financial institutions are regulated because their failure generate negative externalities for their customers, mostly their depositors (Freixas and Rochet, 1997; Inter-American Development Bank, 2004). Moreover, there is a need to protect the payment system and, more generally, the financial system (Inter-American Development Bank, 2004). An additional objective for the regulation of the microfinance industry is to increase the microbanks' outreach and sustainability and thus increase their contribution to poverty reduction (McGuire, 1999; Arun, 2005).

Being regulated enables the microbanks to attract deposits, just like regular banks, and this is often presented as the main argument for regulation (Hartarska, 2010). However, traditional banking regulations do not typically cover microfinance activities (Hartarska and Nadolnyak, 2007). Past research highlights how the appropriate microbank-regulation is contingent on country-specific characteristics such as the level of development and institutional capacities (Arun, 2005; Hardy et al., 2003), and therefore, there is no uniform regulation of microbanks across countries (McGuire, 1999). Since banking regulations are not uniformly applied to the microfinance industry, a 'hot' topic in the industry is whether such regulations should be imposed. Unfortunately, prior research on the consequences of microfinance regulation is limited (Hartarska, 2010).

Microfinance regulations can include rules governing microbank formation and operations, consumer protection, fraud prevention, the establishment of credit information services, secured transactions, interest rate limits, foreign ownership limits, and tax issues (Cull, et al., 2009). Several studies discuss how regulatory authorities may optimize the regulation of microbanks, given their special characteristics (see, for instance, Hardy et al., 2003). Any kind of regulation, as such, is problematic first and foremost because it may prevent competition and increase the possibilities for rent extraction (Stigler, 1971). Thus, in general, it is important to study all of the consequences of regulation, including possible spillover effects. For instance, as noted by Hartarska (2010), it is important to study whether the presence of a regulator promotes better managerial effort overall. In this study, we devote our attention to the possible influence of regulation, as a governance mechanism, on the quality of the financial reporting. Specifically, we argue that regulation might affect the managerial discretion involved in the reporting process and thus have consequences for the relevance and usefulness of reported earnings numbers. According to Chalevas and Tzovas (2010), one of the main objectives of corporate governance mechanisms is to restrain a possible tendency of the firm's management to manipulate reported accounting figures.

The main objective of high quality financial reporting in the microfinance industry is to reduce information asymmetries between the stakeholders and the microbank (Hartarska, 2010). Thus, high quality reporting improves the usefulness, relevance, and trustworthiness of the accounting information. However, there is no unique definition of either financial reporting quality or the more specific concept of earnings quality in the accounting literature (Dechow et al., 2010). Nevertheless, Melumad and Nissim (2008) provide an accurate description of the term earnings quality when they contend that 'earnings are of high quality if they are representative of long term earning ability' (p. 91). According to this interpretation of the concept, earnings should not only represent the current financial performance of a company or organization; the earnings are of high quality only if they also provide some type of information on the future performance of the entity. Based on this interpretation, we contend that accounting information is of limited usefulness if it only reflects historical events. Because the firm value is the present value of future cash flows, investors would only find the earnings numbers useful if they are indicative of the future cash flows of the company. Thus, earnings numbers reduce the investors' information risk if they reflect the current *and* future cash flow generating capabilities of a firm (see Francis et al., 2004). The reduced information risk stemming from high earnings quality can explain why high earnings quality is found to be associated with a lower cost of capital (Dechow et al., 2010; Ngo and Varela, 2012).

The earnings quality of a company or organization can be influenced by a large number of factors. Francis et al. (2008) distinguish between two sources, or determinants, of earnings quality. The innate sources are those that reflect the innate features of the business model and the operating environment, whereas the reporting sources arise from the financial reporting process (Francis et al., 2008). The accounting rules are the most obvious reporting source, and there is widespread evidence that accounting regulations have a direct effect on earnings quality (see, for instance, Barth et al., 2008). Other reporting sources include management decisions, information systems, audits, and governance structures. Company regulation (see Chalevas and Tzovas, 2010) is also a potentially important reporting source, but according to Francis et al. (2008), there are serious difficulties in measuring regulatory scrutiny. The microfinance industry offers a unique cross-country opportunity to investigate the influence of regulation on earnings quality, as some microbanks are regulated while others are not.

Collectively, the regulations can be considered to be an important governance mechanism. However, some of the individual microfinance regulations, such as an interest rate cap, cannot be assumed to be related to earnings quality. Nevertheless, Mersland and Strøm (2009) find that the various governance structures in the microfinance industry often complement each other. Thus, the regulated microbanks can be expected to have stronger (complementary) control mechanisms than the non-regulated microbanks.

Dechow et al. (2010) contend that the earnings quality literature mostly proposes a positive relationship between governance and earnings quality: '…the hypotheses are based on the assumption that better governance leads to increased reliability and credibility of the financial statements…' (Dechow et al., 2010, p. 368). However, Francis et al. (2008) maintain that prior research presents mixed results with respect to the specific interaction between governance mechanisms and earnings quality. They claim that the previous results are often dependent on whether '…the researcher views earnings quality as primarily innate – that is, governance structures respond to earnings quality – or primarily discretionary – that is, earnings quality responds to governance structures' (Francis et al., 2008, p. 288). In the microfinance industry, there has been little focus on earnings quality (except Beisland and Mersland, 2013), and we therefore suggest that regulations (or the introduction of other control mechanisms) are not a consequence of poor earnings quality. Thus, in our study of microbanks, it is reasonable to assume that earnings quality is a function of regulations and not the other way around; hence, we adopt a discretionary view on earnings quality.

Based on previous research in the general business literature, Francis et al. (2008) and Dechow et al. (2010) contend that when earnings quality is viewed as discretionary, firms with greater external monitoring have better earnings quality. Moreover, in their general discussion of the forces that influence earnings quality, Givoly et al. (2010) argue that opportunism can depress earnings quality. It is generally assumed that regulation promotes market discipline and reduces managers' ability to act opportunistically (Hartarska, 2010). Thus, based on the cumulative evidence from prior research on earnings quality and control mechanisms, we propose the following hypothesis:

- *The presence of microbank regulation leads to higher earnings quality.*

The hypothesis is developed from the general expectation of a positive, overall association between the governance structures and the earnings quality. We do not have information about the detailed regulations applied to each microbank in our data sample (see below). The reader should note that the regulations of microbanks may sometimes include provisions for performance measurements and financial accounting (Cull et al., 2009; McGuire, 1999). It is reasonable to assume that these provisions, when they exist, are intended to increase reporting trustworthiness. Thus, in addition to the indirect effect of general microbank regulations on earnings quality, there can also be a direct influential factor through the possible reporting rules embedded in the regulatory framework.

2.2 Research design

Earnings quality cannot be summarized into one composite score, but it can be evaluated through the scores on several earnings attributes (Dechow et al., 2010). For instance, earnings attributes such as smoothness, persistence, and predictability are labelled accounting-based attributes, whereas value relevance is an example of a market-based attribute (Francis et al., 2004). Because the accounting literature does not propose 'normal' or 'standard' tests for earnings quality, the number of earnings quality dimensions that are investigated in each earnings quality study varies.

Consistent with the findings that managers have an 'obsession' with stable earnings (Graham et al., 2005) and that the largest cost of capital effect from earnings quality is observed for the accounting-based attributes of earnings (Francis et al., 2004), Melumad and Nissim (2008) contend that practitioners appear to equate earnings quality with earnings persistence. However, consistent with the contention that there is no single best measure for earnings quality (Dechow et al., 2010), we apply a large number of metrics for accounting-based earnings quality in this study (Francis et al., 2004). One advantage of using several metrics is that it permits us to identify the source of any accounting quality differences between the regulated and the non-regulated microbanks (Barth et al., 2008). The earnings attributes of the study are defined as follows (see Beisland and Mersland, 2013):

Earnings smoothness: Earnings quality is higher when earnings are smooth, which is in line with the interpretation of earnings quality that defines high quality earnings as representative of long-term earning ability (Ngo and Varela, 2012). Earnings smoothness is measured as the standard deviation of earnings scaled by the total assets (Dechow and Dichev, 2002; Barth et al., 2008).

Earnings persistence: Persistence measures the degree to which future earnings equal current earnings. The higher the earnings persistence is, the higher the earnings quality. Persistence is measured as the slope coefficient from a regression of current earnings on lagged earnings (Francis et al., 2004: Sloan, 1996):

$$\text{Earn}_{i,t} = \beta_0 + \beta_1{*}\text{Earn}_{i,t-1} + \varepsilon \tag{1}$$

Earn is the net earnings scaled by the end-of-year total assets (Barth et al., 2008) for microbank *i* in year *t*.

Earnings predictability: Earnings quality is higher when the earnings are more predictable. The predictability is measured through the explanatory power, the adjusted R^2, from regression specification (1) (Francis et al., 2004).

Earnings management: Earnings management is defined as the purposeful intervention in the external financial reporting process with the intent of obtaining private gain (Schipper, 1989). Obviously, this type of intervention reduces earnings quality. The standard deviation of the change in earnings scaled by the total assets is our first metric for earnings management (Barth et al., 2008). A lower standard deviation is seen as evidence of earnings management. However, because this metric is also a measure of earnings stability, we include two additional proxy variables for earnings management. Hayn (1995) illustrates that companies often manage earnings to avoid reporting a loss, and her empirical results show an overrepresentation of small positive earnings for companies engaging in this type of earnings management. The proportion of small profits is our second measure of earnings management. Small profits are defined as earnings scaled by total assets in the interval 0 to 0.01 (Barth et al., 2008; Melumad and Nissim, 2008), and a higher small profit proportion is assumed to be associated with earnings management. Our third proxy variable for earnings management is timely loss recognition. Losses should be recognized as they occur and not postponed to future periods. Thus, one would expect that a higher earnings quality is associated with a higher frequency of large losses. A large loss is defined as scaled earnings that are smaller than –0.2 (Barth et al., 2008).

An important component of earnings quality is value relevance (Barth et al., 2008; Francis et al., 2004). Value relevance can be defined as the association between the market value of equity and the accounting information and it may be regarded as the foremost measure of accounting usefulness from the perspective of the stock investors. The previous literature on earnings quality typically refers to publicly listed companies (Dechow and Dichev, 2002; Francis et al., 2004; Barth et al., 2008). However, the microbanks are not publicly listed, there is no observable market price for the entities, and thus, standard value relevance analysis cannot be conducted for these organizations.

Even if prior research has indicated that accounting-based earnings quality metrics provide strong indications with respect to value relevance (e.g., Beisland, 2011), we apply one (additional) proxy for market-based earnings quality in microbanks (based on the approach taken by Beisland and Mersland, 2013); we analyse the degree to which the earnings numbers are related to a microbank's third party rating assessment. The microbank ratings measure a combination of credit-worthiness, trustworthiness, and excellence in microfinance (www.ratinginitiative.org) and are frequently applied by investors, donors and other stakeholders when evaluating the overall performance of a microbank. If the microbank's earnings are related to these ratings, one can conclude that the reported earnings are relevant and useful for the microbank's stakeholders and, hence, that the earnings are of high quality. Note that the microbank ratings are much broader than traditional credit ratings. Whereas traditional credit ratings solely focus on repayment risk, the microbank ratings are a broad measure of microbank performance (Reille et al., 2002).

Prior research has shown that the microbank rating scores are a function of more variables than just accounting earnings. We follow prior research (Gutiérrez-Nieto and Serrano-Cinca, 2007; Beisland and Mersland, 2012) and assume that the rating of a microbank is a function of size, profitability, efficiency, and risk. Thus, the earnings' 'rating relevance' is analyzed through the following regression:

$$\begin{aligned} \mathrm{RATE} = {} & \beta_0 + \beta_1\mathrm{PROF} + \beta_2\mathrm{SIZE} + \beta_3\mathrm{EFF} + \beta_4\mathrm{Risk} \\ & + \beta_5\mathrm{CONTROL} + \varepsilon \end{aligned} \tag{2}$$

where RATE is the rating score, PROF is a measure of the microbank's profitability, SIZE is the microbank's size, EFF is a measure of the microbank's efficiency, and Risk is a measure of the microbank's risk. Specifically, *EARN* is our profitability measure; it is defined as earnings scaled by the end of period total assets. We use the log of total assets, *LN(ASSETS)*, as the size variable in the regressions. The efficiency measure is operating expenses relative to the total loan portfolio, *OEX_PORTF*. Risk is measured as the portfolio at risk>30, *PAR30*.[1] This selection of proxy variables is based on the studies of Gutiérrez-Nieto and Serrano-Cinca (2007) and Beisland and Mersland (2012). *CONTROL* is a vector of control variables. The *CONTROL* vector consists of both firm controls and context controls. Specifically, we include the Human Development Index, *HDI*, the number of years since the microbank started conducting microfinance services, *AGE_MFI*, and indicator variables for the year of observation and the rating agency as our control variables. However, because the focus in the rating relevance test is on the relationship between the rating score and the earnings, all variables but *EARN* may be considered control variables in this study. Due to the ordinal nature of the rating scale, the regression is estimated using an ordered logistic regression (Greene, 2003).

Similar to the approach taken by Hartarska and Nadolnyak (2007), we split the sample in two groups depending on whether the particular microbank is regulated by the banking authorities. All tests are run on the sub-samples of regulated and non-regulated MFIs, respectively, and we analyse any possible significant differences between the two groups of organizations. Following Barth et al. (2008), we compute our earnings quality metrics from cross-sectional data (see Beisland and Mersland, 2013). When this type of pooled estimation is applied, one presents the metrics for the sub-samples as a whole and then analyses possible difference between the samples, as insightfully described by Barth et al. (2008, p. 481): 'As with prior research, we interpret differences in various summary statistics (e.g., variances, correlations, and regression R^2 values) relating to the metrics between two samples of firms being compared as evidence of differences in accounting quality. This approach to comparing accounting quality metrics for two groups of firms assumes that the metrics for the firms within each group are drawn from the same distribution, and that the metrics for firms in different groups are potentially drawn from different distributions.' This method of comparing the results from different sub-samples is similar to the industry-level estimation that is often applied in earnings quality research (see Dechow et al., 2010; Kwag and Stephens, 2010).

3 Data sample

The dataset contains information from 403 microbanks in 73 developing countries. All data are from the *risk assessment reports* made by the five ratings agencies: MicroRate, Microfinanza, Planet Rating, Crisil, and M-Cril. These agencies have been selected because they provide the most comprehensive reports and are the biggest players in the industry, and all five agencies are approved official rating agencies by the Rating Fund of the Consultative Group to Assist the Poor (CGAP) (www.ratingfund2.org). The fact that the ratings stems from a third party, independent from the microbank or the donors/funds providers, is of particular importance. So far, most performance-related research in microfinance has been conducted on self-reported data to the Mixmarket (www.mixmarket.org).

Our database comprises a sample of rating reports from 2000 to 2009, with the vast majority being from ratings conducted the last five years. The rating agencies differ in their emphasis and in the abundance of available information. The result is that the database contains microbank-specific information that differs in terms of numbers of observations, number of variables, and years covered. When needed, all of the numbers in the dataset have been annualiszed and dollarized using the official exchange rates from the given time

The geographical distribution of the data sample is outlined in Table 14.1. The dataset consists of 1525 earnings observations, and 425 of the observations are from regulated microbanks. The proportion of regulated microbanks is 27.9% in our sample.

4 Empirical findings

4.1 Accounting-based measures of earnings quality

Table 14.2 displays the results from the accounting-based tests on earnings quality. Panel A lists the distributional characteristics for the total sample, the sub-sample of regulated microbanks and the sub-sample of non-regulated microbanks. We note that the mean earnings equal 0.7% of total assets. This earnings level is lower than the typical level observed for banks and (other) exchange listed companies. The lower profitability can be attributed to the fact that most microbanks pursue a 'double bottom line' of social development and financial returns. In our sample, there appears to be no difference in the profitability of the regulated versus the non-regulated microbanks. This finding is consistent with prior research that shows that regulation has a negligible effect on bank profitability in general (Barth et al., 2004) and on microbank profitability in particular (Cull et al., 2009; Hartarska and Nadolnyak, 2007).

Table 14.2 lists the results from the empirical tests of accounting-based earnings quality metrics. Panel A displays the mean, the standard deviation, the first quartile (Q1), the median, the third quartile (Q3), and the number of observations (n) of earnings scaled by the end of period assets. The standard deviation of scaled earnings is applied as a proxy variable for earnings smoothness (shaded column). Panel B presents the results from the regression $\text{Earn}_{i,t} = \beta_0 + \beta_1{*}\text{Earn}_{i,t-1} + \varepsilon$, where Earn is

Table 14.1 Data sample

Country	No. of observations	Regulated	Proportion regulated	Country	No. of observations	Regulated	Proportion regulated
Albania	15	4	26.67%	Kosovo	18	11	61.11%
Argentina	4	0	0.00%	Kyrgyzstan	17	17	100.00%
Armenia	11	5	45.45%	Madagascar	3	3	100.00%
Azerbaijan	28	6	21.43%	Malawi	4	0	0.00%
Bangladesh	3	0	0.00%	Mali	11	4	36.36%
Benin	35	13	37.00%	Mexico	76	16	21.05%
Bolivia	75	6	8.00%	Moldova	9	0	0.00%
Bosnia Herzegovina	46	0	0.00%	Mongolia	9	6	66.67%
Brazil	54	7	12.96%	Montenegro	8	3	37.50%
Bulgaria	9	0	0.00%	Morocco	32	6	18.75%
Burkina Faso	12	6	50.00%	Mozambique	6	5	83.33%
Burundi	3	3	100.%	Nepal	7	7	100.00%
Cambodia	43	35	81.40%	Nicaragua	48	5	10.42%
Cameroon	17	6	35.29%	Niger	6	0	0.00%
Chad	3	0	0.00%	Nigeria	12	8	66.67%
Chile	8	8	100.00%	Pakistan	1	0	0.00%
China	4	0	0.00%	Paraguay	12	6	50.00%
Colombia	27	0	0.00%	Peru	126	60	47.62%
Croatia	4	4	100.00%	Philippines	17	2	11.76%

Dominican Republic	18	4	22.22%	Rep of Congo	3	0	0.00%
East Timor	1	1	100.00%	Romania	3	0	0.00%
Ecuador	81	8	9.88%	Russian Federation	56	0	0.00%
Egypt	17	0	0.00%	Rwanda	13	13	100.00%
El Salvador	25	0	0.00%	Senegal	31	21	67.74%
Ethiopia	44	40	90.91%	Serbia	4	0	0.00%
Gambia	4	0	0.00%	South Africa	14	4	28.57%
Georgia	23	1	4.35%	Sri Lanka	1	0	0.00%
Ghana	14	0	0.00%	Tajikistan	16	0	0.00%
Guatemala	28	0	0.00%	Tanzania	23	8	34.78%
Guinea	3	2	66.67%	Togo	13	13	100.00%
Haiti	13	3	23.08%	Trinidad and Tobago	2	0	0.00%
Honduras	34	6	17.65%	Tunisia	3	0	0.00%
India	82	1	1.22%	Uganda	49	11	22.45%
Indonesia	1	1	100.00%	Venezuela	21	10	47.62%
Jordan	12	4	33.33%	Vietnam	4	0	0.00%
Kazakhstan	11	4	36.36%	Zambia	4	0	0.00%
Kenya	31	8	25.81%	Total sample	1525	425	27.87%

Table 14.1 displays the distribution of the firm year observations with respect to the country and the regulatory status. The data sample for the study consists of 403 MFIs from 73 countries, in total 1,525 firm year observations. The observations are from the 2000 to 2009 period with the vast majority being from the last four years. The sample is hand collected from rating reports from the five microfinance rating agencies MicroRate, Microfinanza, Planet Rating, Crisil, and M-Cril. The rating reports are available on www.ratingfund.org.

Table 14.2 Earnings quality as measured using accounting-based earnings attributes

Panel A: Descriptive statistics and earnings smoothness

	Mean	St. Dev	Q1	Median	Q3	n
Total sample	0.007	0.118	–0.009	0.023	0.062	1525
Regulated MFIs	0.009	0.087	–0.004	0.021	0.052	425
Non-regulated MFIs	0.007	0.128	–0.012	0.024	0.067	1100
P-value of the difference:		0.000				

Panel B: Earnings persistence and predictability

	Slope coefficient	Adj. R^2	n
Total sample	0.511***	42.28%	1134
Regulated MFIs	0.518***	50.92%	320
Non-regulated MFIs	0.511***	41.05%	814
P-value of the difference:	0.921	0.017	

Panel C: Earnings management and timely loss recognition

	Change in earnings				
	Mean	**St. Dev**	**n**	**Small profits**	**Large losses**
Total sample	0.020	0.089	1134	9.2%	4.1%
Regulated MFIs	0.011	0.048	320	11.5%	2.6%
Non-regulated MFIs	0.023	0.101	814	8.3%	4.6%
P-value of the difference:		0.000		0.048	0.070

the earnings scaled by the end of period total assets. The slope coefficient β_1 is applied as a proxy variable for earnings persistence, whereas the adjusted R^2 is our proxy variable for earnings predictability (shaded columns). One (*), two (**), and three (***) asterisks denote the conventional 10%, 5%, and 1% significance levels, respectively, of the regression coefficients. Panel C displays the mean, the standard deviation, and the number of observations (n) of the change in earnings scaled by the end of period assets. The standard deviation of the change in scaled earnings is applied as a proxy variable for earnings management (shaded column). A second proxy variable for earnings management is the proportion of small profits, defined as earnings scaled by the total assets between 0 and 0.01 (shaded column). The proportion of large losses, defined as earnings scaled by the total assets smaller than –0.2, is a proxy variable for timely loss recognition (shaded column).The first metric of earnings quality that we study is earnings smoothness. Panel A of Table 14.2 presents evidence that the regulated microbanks report smoother earnings than the non-regulated ones. The standard deviation of the scaled earnings is 0.128 for the non-regulated microbanks, compared to only 0.087 for the regulated entities. An F-test for differences in the standard deviations shows that the difference is highly significant. Thus, the earnings quality, as measured by the earnings smoothness, appears to be higher for the regulated microbanks. This first test of earnings quality supports the proposed hypothesis.

Panel B of Table 14.2 reports the results from a regression of the current earnings on the lagged earnings. This analysis tests both the persistence and the predictability of the earnings numbers. The slope coefficient is the measure of earnings persistence, and it equals 0.51 in the total sample. The regulated microbanks report a persistence coefficient of 0.518, compared to 0.511 for the non-regulated ones. The difference is negligible and statistically insignificant.[2] Hence, the earnings quality of the two types of microbanks appears to be similar when earnings persistence is considered. However, the explanatory power – the adjusted R^2 – is 50.92% and 41.05% for the regulated and non-regulated microbanks, respectively. This difference in the adjusted R^2 is significant when measured with the Cramer (1987) test. Thus, the metric of earnings predictability suggests that there is superior earnings quality for the regulated microbanks.

The tests of earnings smoothness, persistence, and predictability do, to some extent, measure the same attribute because they all investigate the current earnings' ability to indicate the future financial performance of the microbanks. Melumad and Nissim (2008) state that 'Earnings are of high quality when they are expected to recur, that is, when the current level of earnings is a good proxy for the expected level of earnings in future years' (p. 92). The focus on earnings' ability to reflect future and not only current performance can be attributed to the use of earnings as a basis for making capital allocation decisions (see discussion in Francis et al., 2008, chapter 2). Higher quality information is more precise, and more precise information, in this case information on future financial performance, advances a more effective capital allocation. Research suggests that the demand for information on future earning ability from investors and other stakeholders is overwhelming;

in fact, an international survey by Graham et al. (2005) finds that 96.9 per cent of CFOs prefer stable earnings, and a surprising 78 per cent of CFOs would sacrifice value to achieve a smoother earnings path. Our finding that regulated microbanks present smoother and more predictable earnings numbers is important; if regulation promotes the production of earnings numbers that are more indicative of future financial performance, regulation may also have a direct effect on the capital allocation effectiveness within the industry.

Our next set of tests investigates the degree of earnings management within regulated and non-regulated microbanks, respectively. Panel C reports the result. A higher standard deviation for the change in earnings is expected to be associated with less earnings management. Similarly, a lower level of earnings management is expected to lead to a decreased frequency of profits just above zero and an increased frequency of particularly large losses. All of these three tests provide identical conclusions. The regulated microbanks have a lower standard deviation for the change in scaled earnings. Moreover, the regulated microbanks appear to be associated with both a higher small profit frequency and a lower large loss frequency (the latter result is only weakly significant). All of these findings suggest that there is more earnings management among the regulated than the non-regulated microbanks.

The apparently more widespread earnings management in regulated microbanks can possibly be attributed to larger pressure from the stakeholders of this group of institutions to meet certain performance benchmarks. This 'opportunistic behaviour hypothesis' (see Givoly et al., 2010) may be valid if the regulated microbanks have been more subject to professionalization and commercialization than the non-regulated microbanks. The opportunistic behaviour hypothesis contrasts with the 'demand hypothesis' (also discussed in Givoly et al., 2010). Under the demand hypothesis, more professional and commercial stakeholders should increase the demand for high earnings quality, thereby reducing earnings management. The results of Panel C may suggest that the opportunistic behaviour hypothesis dominates the demand hypothesis when earnings management is considered.

In general, managements' discretionary actions have the potential to increase earnings quality through improved earnings persistence, smoothness and predictability (Francis et al., 2004). However, if the discretionary actions have the characteristics of earnings management with the intent of obtaining some sort of private gain (Schipper, 1989), there is no doubt that this will reduce the precision and usefulness of earnings information, and hence, the earnings quality. Thus, discretionary reporting behaviour can be both advantageous and detrimental to earnings quality. In our sample, discretionary reporting behaviour appears to be most pronounced among regulated microbanks, leading to the most stable and predictable earnings numbers and, apparently, the earnings numbers that are the most contaminated by earnings management. From a practical banking management perspective, the findings may not be particularly surprising. Banking regulations typically include portfolio restrictions and reserve requirements; these regulations may encourage discretionary reporting behaviour.

In reality, it is difficult to measure earnings management (Kwag and Stephens, 2010). Thus, it is a challenge to disentangle the discretionary actions that increase earnings persistence and predictability to reduce uncertainty and information asymmetries (Melumad and Nissim, 2008) from the creation of '... an intentional bias in the financial reports' (Melumad and Nissim, 2008, p. 97). Guay et al. (1996) state that the discretionary component of earnings quality reflects both the management's attempt to improve the ability of earnings to reflect performance in a reliable and timely way and managerial opportunism that reduces information precision (see Francis et al., 2008).

4.2 Rating relevance

Table 14.3 presents the results from regression (2) – the analysis of rating relevance.

Table 14.3 analyzes the relevance and the information content of earnings by examining the influence of the scaled earnings on the microfinance ratings. The table reports the regression coefficients, the

Table 14.3 Rating relevance

Variable	**Total sample**	**Regulated MFIs**	**Non-regulated MFIs**	***P-value of the difference:***
EARN	15.87***	31.83***	13.46***	0.021
LN(ASSETS)	1.41***	1.80***	1.38***	
OEX_PORTF	−1.53**	0.80	−1.99***	
PAR30	−11.27***	−12.95***	−11.62***	
CONTROLS:				
HDI	2.96***	3.87***	2.76**	
AGE_MFI	−0.06***	−0.07***	−0.03	
Indicator var:				
Year	Yes	Yes	Yes	
Agency	Yes	Yes	Yes	
Pseudo R^2	19.72 %	29.02 %	18.26 %	
No. obs	380	112	268	

explanatory power (pseudo R^2), and the number of observations from the following regression model:

$$\begin{aligned} RATE = {} & \beta_0 + \beta_1 EARN + \beta_2 LN(ASSETS) + \beta_3 OEX\_PORTF \\ & + \beta_4 PAR\ 30 + \beta_5 CONTROL + \varepsilon \end{aligned}$$

RATE is the ratings score assigned to the MFI by the microfinance rating agency. The rating scales have been mathematically converted into a uniform scale, where the rating scores are assigned values between 0 and 1 (Beisland and Mersland, 2012). *EARN* is the earnings divided by the end of period total assets. *LN(ASSETS)* is the log of total assets, *OEX_PORTF* is the operating expenses relative to the total loan portfolio, *PAR30* is the portfolio at risk>30 (the relative proportion of the portfolio that is over 30 days in arrears), and *CONTROL* is a vector of control variables. *CONTROL* includes the Human Development Index (*HDI*), the number of years since the institution began microfinance activities (*AGE_MFI*) and indicator variables for the year of observation and the rating agencies. One (*), two (**), and three (***) asterisks denote the conventional 10%, 5%, and 1% significance levels, respectively, for the regression coefficients. Due to the ordinal nature of the rating scores, the regression is estimated using an ordered logistic regression (Green, 2003).

Consistent with prior research we document that the rating score is positively associated with size and operating efficiency and negatively associated with risk in the total sample (Gutiérrez-Nieto and Serrano-Cinca, 2007; Beisland and Mersland, 2012). However, the main focus of our analysis is the relationship between earnings and the rating scores, since rating relevance is a metric of the earnings quality of the microbanks. In accordance with prior research (Gutiérrez-Nieto and Serrano-Cinca, 2007; Beisland and Mersland, 2012), we find that (scaled) earnings are highly related to the microbank ratings; the higher the earnings, the better the rating score. Because the rating scores are frequently applied by investors, donors, lenders, and other stakeholders of the microbanks, the results suggest that there is useful and relevant information embedded in the reported earnings numbers. The result holds for both the total sample and the sub-samples of regulated and non-regulated microbanks, respectively. Nonetheless, we note that the regression coefficient is substantially larger for regulated than for non-regulated entities. The difference is statistically significant.[3] This difference suggests that each dollar of earnings has a larger effect on the rating score when microbanks are regulated, and thus, the rating relevance of the earnings of regulated microbanks is superior to the rating relevance of the earnings of non-regulated microbanks. We also note that the explanatory power in the ratings regression is substantially higher when the microbanks are rated.

The accounting-based earnings quality measures suggested that the earnings of regulated microbanks are more contaminated by earnings management than the earnings of their non-regulated counterparts. At the same time, the earnings of regulated entities appear to be smoother and more predictable. If the discretionary actions of management are applied to make earnings more indicative of the long-term earning ability of the microbanks (compare with the definition of earnings quality of Melumad and Nissim, 2008), rather than to obtain some type of private gain (compare with the definition of earnings management of Schipper, 1989), then the subjectivity is exercised in a manner that actually increases the informativeness of reported earnings. The rating relevance tests support this latter assumption. The regulated microbanks appear to present more precise information on the financial performance of the entities than the non-regulated microbanks, and this difference in earnings usefulness is manifested in a larger influence from the earnings of the regulated institutions on the microbank ratings.

Kanagaretnam et al. (2004) make the theoretical argument how managerial discretion in banks may induce both signalling (about future earnings prospects) and earnings management (referred to as smoothing in their study), contingent on bank managers. However, the empirical evidence from the banking sector is mixed and supports both signalling and smoothing motives (Kanagaretnam et al., 2004). The positive effects of discretionary reporting behaviour (i.e., signalling) in the banking industry have been documented by prior studies (e.g., Beaver and Engel, 1996), who state that discretionary behaviour may convey management's beliefs about the future earnings power of the entities. This study indicates that regulation causes increased discretionary reporting behaviour, and the motive is signalling rather than earnings manipulation. The higher rating relevance coefficient for the regulated entities supports that regulation, as a governance mechanism, has a disciplining role on managers and leads to higher earnings quality.

The binary regulation variable of this study might be correlated with the microbanks' degree of profit maximization; regulated entities may more often have an explicit for profit objective than non-regulated entities. In a study of how the for profit objective might influence the earnings quality of microbanks, Beisland and Mersland (2014) find few significant differences in earnings quality between their samples of for profit and nonprofit microbanks. Therefore, it seems reasonable to assume that the empirical findings of this study are driven by improved governance as measured by the presence of regulation and not possible differences in the degree of profit maximization.

All conclusions of this study withstand a large number of robustness tests. For instance, we have tested if systematic differences in microbank size and geographical coverage between our two sub-samples affect the findings, and we have analyzed the statistical relation between provisions for future losses and actual future losses as a proxy for accrual quality (an additional measure of earnings quality; see, e.g., Francis et al., 2004). All robustness tests are available from the authors upon request.

5 Conclusion

Does regulation affect financial reporting usefulness, relevance and trustworthiness, or more specifically, does it affect earnings quality? We analyze whether the presence of non-accounting regulations at an overall level affects the earnings quality in developing and emerging markets. A challenge in this type of study is that the presence of regulations is only one among many factors that could possibly affect earnings quality. In general, in a cross-sectional study, the overall earnings quality for every sub-sample is a weighted average of a large number of separate effects that potentially influence each organization differently (Francis et al., 2008). Thus, when splitting a sample according to only one attribute, such as the presence of regulations in this study, there is a risk that any earnings quality difference related to regulations will not be observed, even if they exist. Hence, we regard our results as being particularly strong from a statistical point of view.

Our results show that reporting discretion appears to be more widespread among regulated than non-regulated microbanks. The empirical tests suggest that this discretion increases the financial reporting quality because the regulated entities present smoother, more predictable and more rating relevant bottom line earnings numbers. Reporting discretion appears to be applied to signal future prospects rather than to opportunistically manage earnings. The policy implication of these findings is obvious: if the earnings quality of small microbanks matters, then such organizations should be regulated. However, this study, does not discuss any other consequences of regulation aside from earnings quality.

We believe that microfinance regulations have increased microbanks' awareness of the need for accounting information of high quality. Moreover, we suggest that regulations in general, as a monitoring device and a governance mechanism (Dechow et al., 2010), reduce the ability of microbanks to act opportunistically. The applied methodology do not identify the detailed mechanisms that cause the earnings quality to differ, which should be addressed in future studies. Thus, more research is needed to identify the specific influence of banking regulations on reporting practices, and further explore the impact of regulations on governance and managerial behaviour.

Notes

1. The relative proportion of the portfolio that is over 30 days in arrears
2. The p-value is estimated by re-running (1) using a pooled sample with a dummy variable for the observations of the regulated MFIs. The listed p-value is the significance level of an interaction variable of *Earn* multiplied by the dummy variable.
3. Measured as described in Footnote 2.

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