Mission Drift in Microfinance,

the influence of institutional and country risk indicators on the trade-off between the financial and social performance of microfinance institutions.

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Executive summary

Investments in microfinance allow for a financial return, complemented with a social return from the instrument's poverty alleviation potential. The interest of institutional investors, like ING Micro Finance, in this dual return investment opportunity of microfinance is growing. At the same time, however, the microfinance industry is facing growing pains.

Previously, microfinance institutions (MFIs) were encouraged to rapidly become financially sustainable. Establishing a commercial microfinance market was thought to enhance the global outreach of microfinance. Consequently, a group of MFIs is rapidly commercialising and increasingly competes to attract capital from institutional investors. More recently, a social performance movement advocates the measurement and assessment of the impact and outreach of MFIs.

Tension between the financial sustainability- and social performance advocates is rising. Rapidly commercialising MFIs show signs of *mission drift*, whereby the average loan size of an institution increases as a result of a shift in the composition of new clients. Reaching out to wealthier clients, while crowding out poorer clients, enhances profitability.

This research aims to find empirical evidence on the phenomenon of mission drift. The research is taking into consideration important investment decision-making indicators for foreign institutional investors in microfinance. The dataset contains data of 600 MFIs operating in 84 countries around the world in 2007.

First, *the research concentrates on the role of institutional and country risk indicators in predicting the financial and social performance of MFIs*. Evidence shows that regulation, network membership and institution's size do not affect the financial performance of MFIs. The institution's years of age are negative quadratic related to the financial performance. Country risk rating is negatively associated with the financial performance of MFIs. Alternatively, regulation, size and country risk rating negatively affect the social performance of MFIs. Network membership positively affects the social performance of MFIs. Years of age do not affect the social performance of MFIs. Next, *the research explorers the influence of institutional and country risk indicators on the trade-off between the financial and social performance of MFIs*. Strong evidence for the existence of a trade-off between the financial and social performance of MFIs is found. Nevertheless, by balancing the (1) profitability, (2) cost efficiency, and (3) productivity of the institution, MFIs can prevent the occurrence of mission drift. The regulation and size of institutions make MFIs more susceptible, while network membership make MFIs less susceptible to the occurrence of mission drift. Young MFIs are more susceptible to mission drift, while more mature MFIs are more susceptible to reverse mission drift. No evidence is found suggesting that MFIs operating in country associated with a high country risk rating are more susceptible to the occurrence of mission drift.

Based on these findings, institutional investors can prioritise institutional and country risk rating indicators in order to assess the balance between the financial and social performance of MFIs.

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Chapter 1 Introduction

1.1 Introduction to the problem

In August 2009, the Wall Street Journal (2009) reported that the microfinance industry proofs a profitable industry for institutional investors. Over the years, successful microfinance institutions (MFIs) increasingly compete to attract funding from foreign institutional investors. For ambitious MFIs, maximizing profits seems to become a mean to attract funding and an key objective by itself. Concerning the industry in India, the Indian Institute of Management[1] states, "we've seen a major mission drift in microfinance [institutions], from being a social agency first to being primarily a lending agency that wants to maximize its profit" (Wall Street Journal, 2009, p. 2).

In July 2008, the Financial Times (2008) also warned for the commercialisation of MFIs. The increasing interest of institutional investors, and the large amount of money injected into the microfinance industry, seems to enhance the for-profit motive in the industry. Muhammad Yunus, the Nobel laureate pioneer of microcredit, claimed, "when you are making profits you are moving into the mentality of the loan shark. We are trying to get that loan shark out" (Financial Times, 2008, p).

The phenomenon of mission drift captures the process whereby MFIs depart from their social mission, and increasingly focus on their financial performance. This focus on financial performance may harm the potential impact and outreach of microfinance programmes, diminishing the poverty alleviation potential of microfinance. At the same time, this focus may harm the dual return that foreign institutional investors expect to gain from the financial and social performance of MFI invested in. Both effects may occur if the balance between the financial and social performance of a MFI turns into a trade-off. The ongoing process of the commercialisation of MFIs is leading to such a trade-off.

Are foreign institutional investors to blame for the rapid process of the commercialisation of MFIs around the world? Yes, according to the Wall Street Journal (2009) and Financial Times (2008). No, according to those who advocate that establishing a commercial market for microfinance will enhance the outreach of the poverty alleviation instrument.[2] Meanwhile, awareness of the social performance of MFIs and demand for the measurement and assessment of the social performance of MFIs are growing. Foreign institutional investors, like ING Micro Finance, are increasingly aware of the social performance movement, and are increasingly willing to assess the balance between the financial and social performance of the MFIs they invest in. Essentially, the question is: how can foreign institutional investors prevent mission drift taking place amongst the MFIs in their own portfolio, while still benefiting from the dual return prospect of investing in the microfinance industry?

[1] Quote from Arnab Mukherji Assistant Professor at the Center for Public Policy at Indian Institute of Management at Bangalore.

[2] Rhyne (1998), Christen (2001), Tucker (2001), and Hermes, Lensink & Meesters (2007).

1.2 Problem statement and research questions

This research aims to find empirical evidence on the occurrence of mission drift. The research takes into account the perspective of foreign institutional investors in microfinance, like ING Micro Finance. As mentioned, foreign institutional investors are interested in the dual return of microfinance, and want to avoid the phenomenon of mission drift occurring amongst MFIs they invest in. In their investment decision-making process foreign institutional investors analyse several institutional and country risk indicators. Ultimately, the research provides an insight in the affect of these institutional and country risk indicators in predicting the occurrence of mission drift.

The problem statement distinguishes between the explanatory function of the institutional and country risk indicators in the investment decision-making process and in the influence of these indicators on the balance or trade-off between the financial and social performance of MFIs. Formally the problem statement states: first, *what is the explanatory function of the institutional and country risk indicators in predicting the financial and social performance of MFIs*?, and second, *how do institutional and country risk indicators affect the trade-off between the financial and social performance of MFIs*?

1.3 Structure of the research

First, *Chapter 2* provides an introduction to the microfinance industry, the characteristics of MFIs and to ING Micro Finance. *Chapter 3* explorers the measurement methodologies and assessment of the financial and social performance of MFIs. *Chapter 4* discusses the debate between the institutionalists and welfarists on the assessment of the performance of MFIs. Essentially, the trade-off between financial and social performance is captured by the phenomenon of mission drift. The phenomenon of mission drift is defined and existing empirical evidence is discussed in more detail. In *chapter 5* the problem statement is converted into a structured research model. Complementing the problem statements four appropriate hypotheses are constructed. Also, variables and indicators are selected for: (1) the financial performance indicators, (2) the social performance indicators, (3) several institutional risk indictors, and (4) the country risk rating indicators used for the research. Finally, the chapter provides an introduction to the regression approach used in the research. *Chapter 6* discusses the data collection and characteristic of the dataset. The dataset contains information and financial and social performance data of 600 MFIs from 84 countries around the world. Also, the section provides a preliminary data analyses of the descriptive statistics and correlation coefficients found for the dataset. *Chapter 7* provides the financial regression model analysis, the social regression model analysis and the mission drift model regression analysis. Finally, *Chapter 8* provides a general conclusion to the research. In addition, the chapter discusses the limitations of the research, and the recommendations for further research.

Chapter 2 Microfinance: a dual return investment opportunity

Microfinance is an umbrella term describing financial services provided by MFIs to low-income people. Section 2.1 provides an introduction to microcredit, the core service provided to low-income people, and to the providers of microfinance services. Section 2.2 discusses the attractiveness of the microfinance industry as an investment opportunity. Finally, section 2.3 provides an introduction to the microfinance unit of ING.

2.1 Microfinance at a glance

Modern microfinance derives from microcredit initiatives taken in the 1970's in South-Asia and Latin-America. During the 1990's, a number of donor-orientated microcredit businesses transformed into formally regulated financial institutions. In 2005, the United Nations launched the International Year of Microcredit. In 2006, Professor Muhammad Yunus and Grameen Bank were awarded the Nobel Peace Prize for "their effort to create economic and social development from below" (Nobel Foundation, 2009).

At the end of 2007, 3.552 MFIs reported to serve approximately 155 million microfinance clients around the world. Characterising the industry, 83,4% of these clients are women. (Daley-Harris, 2009)

Figure 2.1. Number of total clients per region (2007)

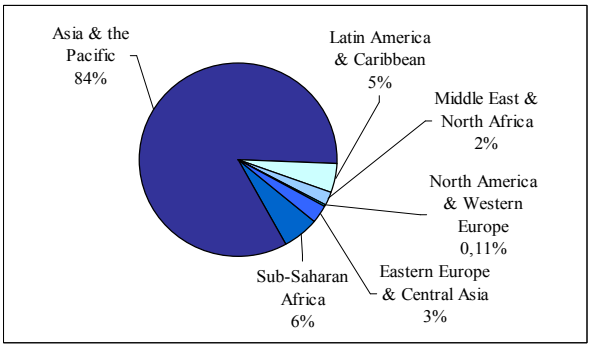
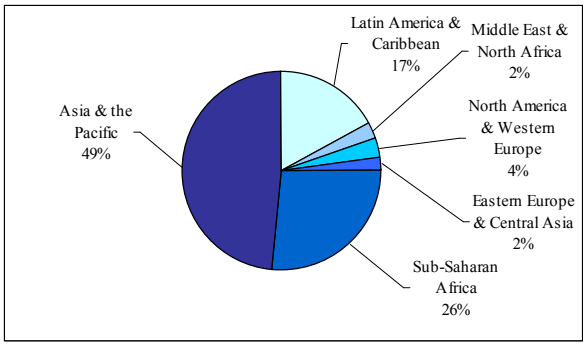


Figure 2.2. Number of MFIs per region (2007)



Source: Daley-Harris (2009, p. 29)
A total number of clients of 154.825.825 were reported by a total number of 3552 self-reporting MFIs worldwide at the end of 2007.

2.1.1 Microcredit

CGAP (2006) distinguished between three functions describing the effectiveness of microfinance. First, microfinance provides low-income people with the ability to deal with life-cycle events, like marriage, death and education. Second, microfinance reduces the individual's vulnerability by increasing the ability to deal with emergencies, like personal crises and natural disasters. Third, microfinance provides opportunities to invest in businesses, land, or other household assets.

The core service of microfinance is the provision of microcredit, defined as the provision of "small loans to very poor people for self-employment projects that generate income, allowing them to care for

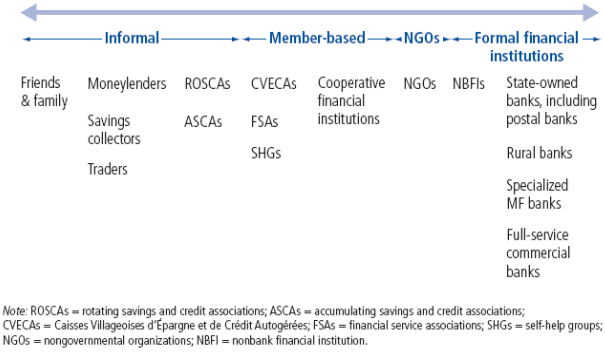
themselves and their families". (Grameen Bank, 2009) Microcredit recognizes and challenges the entrepreneurial skills of low-income people, and may aim to support existing small-scale businesses or may aim at starting-up supplementary activities to diversify the family´s sources of income. (Microfinance Information eXchange (2009[a])[3]

2.1.2 Microfinance institutions

MFIs provide financial services to low-income clients who are not served by mainstream financial service providers. (Mersland & Strøm, 2009)

CGAP (2006) reported that the organisational structure and management in combination with the degree of oversight of supervision by the government determines the institutional formality of MFIs.

Figure 2.3. The spectrum of financial service providers



Source: CGAP (2006, p. 36)

According to CGAP, low-income people predominantly obtain their financial services through *informal arrangements*. Arrangements may be made amongst friends and family, or with moneylenders, saving collectors, and shop keepers. Financial cooperatives are *member-based organisations,* owned and controlled by their members. Most financial cooperatives are not regulated by a state banking supervisory agency, but they may fall under the supervision of a national or regional cooperative council. Financial cooperatives are predominantly non-profit institutions. *Nongovernmental organisations* (NGOs) have been the true pioneers of the microfinance industry. According to CGAP, at least 9000 NGOs are providing financial services. NGOs may face constraints in the range of financial services that they are authorized to provide. For example, NGOs may not be allowed to offer deposits-taking services. On the one hand, the existence of microfinance is owed to the inability or unwillingness of *formal financial institutions* to serve the unbanked. On the other hand, these institutions have the means to make the financial system truly inclusive. For example, CGAP (2006, p. 49) considers state-owned banks as "immense sleeping giants [that] could play a big role in

[3] The Microfinance Information eXchange (MIX) is a non-profit organisation that aims to promote information exchange in the microfinance industry. The organisation provides a publicly available online dataset, with financial information obtained from a large number of participating MFIs.

scaling up financial services for the poor". Amongst private commercial banks four types of institutions can be distinguished. *Rural banks* have emerged in specific countries.[4] These target clients in non-urban areas, and who are generally involved in agricultural activities. *Nonbank financial institutions* (NBFIs) include: mortgage lenders, consumer credit companies, insurance companies, and certain types of specialized MFIs. A separate license for NBFIs may exist. The category of *specialized microfinance banks* entails transformed NGOs, NBFIs, and banks that from their establishment were fully dedicated to microfinance. *Commercial banks* are fully licensed financial institutions regulated by a state banking supervisory agency. (CGAP, 2006; MIX, 2009[b])

In addition, Cull, Demirgüç-Kunt & Morduch (2007, 2009) distinguished between three lending methodologies for providing microcredit. The *individual lending* method applies to MFIs that use standard bilateral contracts between a lender and a single borrower. *Solidarity group lending* applies to institutions that use contracts between a lender and a solidarity group of borrowers.[5] Loans are made to individuals, but the group faces a joint liability for repaying the loan. The *village bank* methodology applies to institutions that offer large groups the opportunity to engage in participatory lending by forming a single branch.

2.2 An attractive dual return investment opportunity

According to CGAP (2006, p.5) microfinance "has demonstrated that poor people are viable customers, created a number of strong institutions focusing on poor people's finance, and begun to attract the interest of private investors".

2.2.1 Microfinance institutions tapping the capital market

The funding situation of MFIs is associated with their degree of commercialisation. Cull et al. (2009) found that microfinance banks rely predominantly on commercial funding and deposits. NGOs rely mainly on donations and non-commercial borrowing. Characterising credit unions as a member-based financial institution, they rely predominantly on deposits provided by their own members.

Table 2.1. Shares of funding by institutional type (2005-2007)

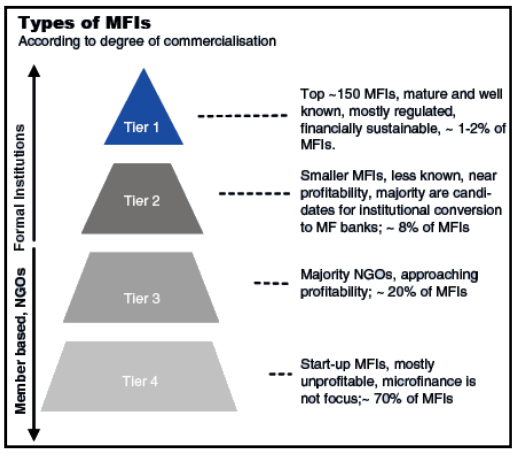
	Donations	*Noncommercial borrowing*	*Equity*	*Commercial borrowing*	*Deposits*
Bank	2%	1%	13%	13%	71%
Credit union	11%	3%	16%	6%	64%
Nonbank financial institution	23%	11%	18%	28%	21%
Nongovernmental organisation	39%	16%	8%	26%	10%
Total	26%	11%	13%	23%	27%

Source: Cull et al. (2009)

[4] For example: Ghana, Indonesia, Philippines, and Tanzania.
[5] Three to ten borrowers, depending on the institution and region.

A classification of MFIs according to their degree of commercialisation pictures the growing divide. Meehan (2004, p. 7) stated, "a growing divide is emerging between larger more commercially-oriented specialized MFIs, many of whom are, or intend to become, regulated financial intermediaries, and smaller, NGO-managed MFIs". Tier 1 MFIs are developing into formal financial institutions, and are increasingly attracting the attention of private and institutional investors. Typically, Tier 1 MFIs are profitable, have a more experienced management team, and are regulated institutions. On the contrary, tier 2 are smaller and younger MFIs. According to Deutsche Bank Research (2008), these institutions are predominantly NGOs that are in the process of transforming into regulated MFIs. Tier 2 MFIs may receive funding from public or institutional investors. Tier 3 MFIs are predominantly NGOs. These institutions are near to becoming profitable MFIs, but are characterized by a lack of sufficient funding. Finally, tier 4 MFIs are start-ups or informal financial institutions for whom microfinance is not their core-business.

Figure 2.4. Breakdown of specialized microfinance industry

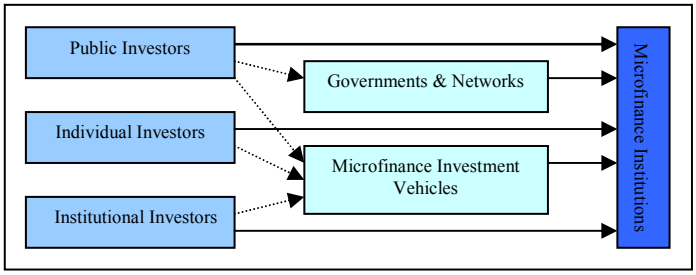


Source: Deutsche Bank Research (2008)

2.2.2 Foreign capital investment in microfinance

Investments in microfinance offer an attractive dual return to multilateral institutions, donors, social investors and institutional investors. The landscape of foreign investment in microfinance is categorized by three main types of investors.

Figure 2.5. Landscape of foreign investment in the microfinance industry



Source: CGAP (2008)

Public investors are government-owned development institutions. CGAP (2008) found that these investors provide over half of the total foreign investments in MFIs. *Individual investors* predominantly invest in the industry via microfinance investment vehicles. *Institutional investors* include international banks, pension funds, and insurance companies. According to CGAP, wholesale service to MFIs, in the form of loans, guarantees and technical support, are the most common form of involvement of institutional investors in microfinance. Remarkably, "approximately half of all microfinance investment from public investors, individuals and institutions is channelled through specialized financial intermediates, so-called *microfinance investment vehicles*" (CGAP, 2008, p. 5).[6]

In 2008, ING reported on the differences in contribution and commitment towards microfinance among large international banks. Their strategy and organisational structure of microfinance activities can be categorized in: (1) no involvement, (2) corporate social responsibility, (3) dual strategy, (4) dual strategy in a separate business unit, (5) normal business with social impact and (6) normal commercial business. According to ING, large international banks predominantly follow the dual strategy, with some banks setting up separate business units. The dual strategy "is characterised by covering the costs, large social impact and a 'healthy' growth in total assets" (ING, 2008, p. 17). International banks following the approach aim to balance their corporate responsibility policy and commercial business targets. According to Deutsche Bank Research (2008), the dual return profile of microfinance investments forms an ideal match for the dual investment strategy approach of foreign investors.

Over the last years, the involvement of foreign institutional investors in microfinance increased dramatically. ING estimated the total provision of wholesale loans to MFIs by large global financial institutions to be in the range of US $ 450 million and US $ 550 million for 2006. For 2007, ING estimated the total provision to be in the range of US $ 1.1 billion to US $ 1.4 billion. ING (2008, p. 32) adds that, "although not always the case, many international banks declared that most of their (wholesale) microfinance investments are to tier 1 and tier 2 MFIs". According to ING, tier 2, 3, and 4 MFIs are underexposed and unable to benefit from existing commercial funding opportunities.

2.3 ING Micro Finance

ING is a global financial institution of Dutch origin offering financial services to 85 million private, corporate and institutional clients around the world. In 2009, ING was positioned 19th in the European Financial Top 20 institutions, based on market value. (ING, 2009[a])

The microfinance activities of ING are spread over different departments within the institution. First, ING Micro Finance provides wholesale loans to MFIs around the world. ING Micro Finance is part of ING Green Finance, which essentially concentrates on financing green projects. Today, a total amount of approximately € 50 million is provided MFIs, either directly or through

[6] Like: ProCredit, Oikocredit and Grameen Foundation.

subsidiaries of ING Group. For example, ING Vysya in India is active in providing wholesale loans to local MFIs, in lending activities to self-help groups, and in developing micro-insurance products for the rural community. Second, in 2004 ING established the ING Microfinance Support programme. This programme aims at providing technical assistance to MFIs by giving Dutch employees of the ING Group the opportunity to participate in microfinance efforts. In addition, ING Microfinance Support was responsible for publishing the 'A Billion to Gain' reports in 2005, 2006 ("An Update") and 2008 ("The Next Phase"). These reports aim to provide an insight into the microfinance activities of global financial institutions around the world.

ING Micro Finance is intending to increase their investments made in microfinance. While increasing their activities, ING follows the dual strategy by balancing the financial and social returns obtained from microfinance. Ultimately, this growth in investments should lead to the establishment of a separate business unit: the ING Microfinance bank. Currently, ING is exploring the attainability to establish a separate business unit based upon the 'Regulation for social-ethical projects'. This regulation, introduced by the Dutch Ministry of Foreign Affairs, enables private investors to benefit from a specific tax discount when investing in projects related to food security, social or cultural development, economic development, employment and regional development in developing countries. The tax discount amounts 2,5% of the invested amount outstanding at the end of the year.

Chapter 3 The performance measurement of microfinance institutions

This chapter provides an insight in the financial and social performance measurement of MFIs. Section 3 highlights the debate on the use of the average microfinance loan size as a social performance indicator. Section 4 of the chapter explorers the impact of the current financial crisis on the performance of MFIs and the microfinance industry.

3.1 Financial performance of microfinance institutions

3.1.1 The attention and weight given to financial performance measurement

Multiple authors discussed the increasing importance of financial viability in the microfinance industry.[7]

Cull et al. (2009) discussed the influence of policymakers in the 1980s and 1990s, who increasingly drew attention to the financial performance of MFIs. First, these policymakers believed that making microcredit a profitable business will enhance the outreach to microfinance clients. Consequently, increasing the access to credit for low-income people should prevail above the price of credit charged to low-income people. In fact, charging interest rates below the rates of the traditional moneylenders is thought to be beneficial to low-income people. With microfinance, relatively high interest rates are demanded from low-income people. Second, the policymakers believed that subsidisation of MFIs weakens the incentives for innovation and further cost-cutting. Innovation and further cost-cutting are important to enhance outreach and to reduce the interest rates charged to microfinance clients. Third, according to the policymakers, the amount of subsidies available to the industry is not sufficient to fuel its ongoing growth. The policymakers concluded that no practical alternative would exists but to pursue profitability and, ultimately, to establish a fully commercial market to attract commercial funding.

Tucker (2001) and Hermes, Lensink & Meesters (2007) discussed more recent challenges affecting the role of financial performance in the microfinance industry. First, the authors discuss the role of growing competition among the institutions. Tucker (2001) argues that in several countries a steady growth in the number of MFIs increases local competition. MFIs increasingly compete in terms of attracting new clients and in attracting new funds. Second, Hermes et al. (2007) find that local commercial banks have a growing interest in providing microfinance. Also, some governments actively stimulate commercial banks to enter into the field of microfinance.[8] According to the authors, local competition leads to lower interest rates, MFIs lowering their costs, MFIs increasing their efficiency, and the introduction of new financial services. Third, the authors mention the growing interest of commercial banks and investors, especially from developed countries, in funding MFIs.

[7] CGAP (2003), Tucker (2001), Hermes, Lensink & Meesters (2007), Gutiérrez-Nieto, Serrano-Cinca & Mar Molinero (2007a & 2007b), Microfinance Information eXchange (MIX) (2005, 2008 & 2009a), Cull, Demirguç-Kunt & Morduch (2009).

[8] For example: Malaysia, Nepal and Thailand.

According to Tucker (2001), the ability of foreign investors to compare the performance of MFIs leads MFIs to focus on improving their business practises. Previously, the measurement and benchmarking of the performance of MFIs had been difficult due to the lack of publicly available and reliable financial data. Tucker (2001, p. 110) expects that "greater transparency would create a more open market for funding allocation, enabling the most efficient MFIs to survive".

Finally, Gutiérrez-Nieto, Serrano-Cinca & Mar Molinero (2007[a]) discussed the increasing role played by rating agencies in the performance measurement and assessment of MFIs. With the first microfinance rating activities taking place in 1996, today 13 specialized rating agencies are active in this field.[9]

3.1.2 The financial performance measurement of microfinance institutions

Reports published by Standard and Poor's (S&P) (2007), Fitch (2008), and Morgan Stanley (2008) provide a comprehensive insight in the risk assessment of MFIs. However, these reports also demonstrate how different agencies assess different categories of risk, how their methodologies differ, and how they apply different rating scales. (Gutiérrez-Nieto et al., 2007[a])

In 2003, a consensus group composed of microfinance rating agencies, donors, multilateral banks and private voluntary organisations agreed to guidelines on the definitions of financial terms, ratios, and adjustments for microfinance. In general, the guidelines distinguish between four categories of financial ratios: (1) sustainability/profitability, (2) asset/liability management, (3) portfolio quality, and (4) efficiency/productivity.

[9] Apoyo & Asociados, Accion International, Classrating, Equilibrium, Feller Rate, Fitch Rating, Planet Rating, M-Cril, JCR-VIS, Microfinanze, Microrate, CRISIL, and Pacific Credit Rating.

Table 3.1. Microfinance consensus guidelines on financial ratios

Categories	*Financial ratio*
Sustainability/profitability	Return on equity
	Return on assets
	Operational self-sufficiency
	Profit margin
	Financial self-sufficiency[10]
Assets/liability management	Yield on gross loan portfolio
	Current ratio
	Yield gap
	Funding expense ratio
	Cost-of-fund ratio
Portfolio quality	Portfolio at risk ratio > 30 days
	Write-off ratio
	Risk coverage ratio
Efficiency/productivity	Loan officer productivity
	Personnel productivity
	Average disbursed loan size
	Average outstanding loan size
	Operating expense ratio
	Cost per borrower
	Other expense ratios

Source: CGAP (2003)

3.1.3 The financial performance of microfinance institutions

The Microfinance Information eXchange (2009[c]) provides a yearly benchmark analysis of selected financial ratios. Table A1 in the appendix shows the benchmark analysis 2007.

MIX (2008, 2009[d]) reported that, over the past decade, MFIs have benefitted from operating efficiency gains. However, "increasing commercial debt and slowed client growth have drained much of this effect in 2007" (MIX, 2008, p. 32).

On the one hand, slimmer gains from improved operating efficiency and the growth of loan portfolio sizes cause declining *operating expense over loan portfolio* ratios. The ratio remains relatively high in Africa and the Middle East and North Africa region. In fact, the sub-Saharan Africa region showed a great improvement in the operating expense over loan portfolio ratios. Alternatively, the operating expense ratios are relatively high for NGOs, but in general slightly declined over the 2005-2007 period.

On the other hand, MIX (2009[d], p. 21) reports that "small gains in operating expenses have been offset by rising funding costs as MFIs shift more funding to commercial sources". The negative effect of increasing *financing expenses* is best shown by the fast declining *operational self-sufficiency* (OSS) ratios of MFIs in the Eastern Europe and Central Asia region in the period 2006-2007. Previously, these MFIs experienced a fast growth in commercial borrowing. Alternatively, NBFIs and rural banks

[10] The ratio recalculates the MFI's operational self-sufficiency, whereby the revenues and expenses are adjusted for subsidies. The ratio indicates the institution's ability to generate sufficient revenue to cover its costs without relying on ongoing subsidies.

perform best in terms of their OSS. NBFIs and NGOs do show a decline in their OSS ratios for the period 2005-2007.

The *financial self-sufficiency* (FSS) ratios show that MFIs in the African region rely on subsidies to be profitable. After offsetting the effect of subsidies, MFIs in Latin America and the Caribbean show the best performance in terms of their profitability. The level of profitability decreased significantly in the Middle Eastern and Central Asia region over the period 2005-2007. Alternatively, NBFIs and microfinance banks perform best in terms of FSS. NGOs also proof financially sustainable.

In terms of revenue, the *real yield on gross loan portfolio* ratios show that relatively high interest rates are charged to microfinance clients in the Latin America and Caribbean and Middle Eastern and North Africa regions. Alternatively, the yield on gross loan portfolio ratios of NGOs are highest. On average the ratios are roughly 10% higher than the yield on gross loan portfolio ratios for microfinance banks. The yield on gross loan portfolio of microfinance banks, credit unions and NBFIs declined over the period 2005-2007.

Furthermore, MIX (2008) reports that growth in *profit margin* ratios stagnated in most regions in the 2006-2007 period. One exception can be found, the profit margins in sub-Saharan Africa improved slightly. Alternatively, the stagnation of the growth of profit margins seems equally spread over the different types of institutions, with credit union and rural banks being exceptions. NBFIs show the highest profit margins in 2006 and 2007. NGOs and NBFIs are also outperforming microfinance banks in terms of their return to assets ratios.

Finally, the profitability of MFIs is affected by increasing loss loan provision expenses at the end of 2007. The data show a deterioration in portfolio quality, with *write-off* ratios slightly increasing in the Africa, Asia, Latin America and the Caribbean and the Middle East and North Africa regions. The write-off ratios are significantly higher for credit unions and rural banks, while the write-off ratios found for NGOs, NBFIs and microfinance banks are similar. Over the past years, the write-off ratios for NGOs showed an increase, whereas the write-off ratios for NBFIs and banks showed a slight decrease. According to MIX (2008), this downward trend in profitability of the MFIs is not yet reflected in the short term delinquency, as the *PAR* ratios slightly decrease in 2007. The ratios are relatively high in the Africa and Latin America and the Caribbean regions. The data shows significantly higher PAR ratios for credit unions and rural banks, whereas the PAR ratios for NGOs, NBFIs, and microfinance banks are showing little differences.

3.2 Social performance of microfinance institutions

3.2.1 The emergence of social performance measurement in microfinance

Over the past years several initiatives and attempts to integrate social performance measurement into the business practise and into performance assessment of MFIs were made. (CGAP,

2007) Multiple scholars have proposed a framework for the measurement of the social performance of MFIs.[11]

For example, Schreiner (2002, p. 1) proposed "a framework for outreach – the social benefits of microfinance for poor clients – in terms of six aspects: worth to clients, cost to clients, depth, breath, length, and scope". First, the worth of outreach to clients is defined as the microfinance clients' willingness to pay. The costs to clients entail the price costs and transaction costs charged to the microfinance clients. The depth of outreach is the net added value of an active microfinance client to the society as a whole. "In welfare theory, depth is the weight of a client in the social-welfare function", with this weight depending on the preferences of the society. (Schreiner, 2002, p. 7) Currently, the most common used proxy is *average loan size*, whereby smaller average loan size are associated with reaching out to poorer microfinance clients, implying greater depth of outreach.[12] The breath of outreach is measured by the number of microfinance clients reached. The length of outreach refers to the future time frame of the supply of microfinance. Lastly, the scope of outreach is determined by the number microfinance products provided to microfinance clients.

Following from the work of multiple scholars, the Social Performance Task Force (SPTF) was created.[13] Aiming for standardisation of the social performance measurement of MFIs, a social performance standards report was developed and distributed by the SPTF in 2009. According to the SPTF, "social performance is the effective translation of an institution's social goals into practise in line with accepted social values; these include sustainably serving increasing number 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 they serve" (CGAP, 2007, p. 3).

[11] Yaron (1994), Schreiner (2002), Zeller, Lapenu & Greely (2003), and Hishigsuren (2007).
[12] Alternatively, indirect proxies of depth to outreach could be: (1) sex, with outreach to women preferred; (2) location, with rural areas preferred to urban areas; (3) education, less education is preferred; (4) ethnicity, minorities are preferred, (5) housing; with small and vulnerable houses preferred; and (6) access to public services, whereby a lack of access is preferred.
[13] The Social Performance Task Force is established in 2005, by CGAP, the Ford Foundation, and the Argidius Foundation. The SPTF is made up of 350 microfinance leaders from around the world.

Table 3.2. Social performance standards report

Dimension	*Sub dimensions*	*Indicator*
Intent & design		Mission and social goals
		Governance
Internal systems & activities	Strategies & systems	Range of products and services (financial and nonfinancial)
		Training of staff on social performance
		Staff performance appraisal and incentives
		Market research on clients
		Measuring client retention
		Poverty assessment
	Policies & compliance	Social Responsibility to clients
		Cost of services to clients
		Social Responsibility to staff
		Social Responsibility to community
		Social Responsibility to environment
Outputs, outcomes & Impact	Achievement of social goals	Geographic outreach
		Women outreach
		Clients outreach by lending methodologies and other clients outreach
		Outputs
		Employment (family and hired in credit supported small enterprises)
		Children in school
	Poverty measurement	Poor and very poor clients at entry
		Clients in poverty after 3 or 5 years
		Clients out of poverty after 3 or 5 years

Source: Social Performance Task Force (2009)

3.2.2 Literature review on social performance measurement of microfinance institutions

In the social performance standards report a distinction is made between the achievement of social goals by MFIs and the poverty measurement amongst microfinance clients. Also, Zeller, Lapenu & Greely (2003) argued that social performance measurement is not the same as social impact measurement. Social impact measurement should be concerned with the poverty outreach, and the changes in welfare and quality of life of microfinance clients, whereas social performance measurement is associated with the outreach measurement of microfinance programmes.

3.2.2.1 Impact studies on microfinance

Although the number of empiric studies on the impact of microfinance from large samples of microfinance clients is growing, "measuring the impact of financial services has become one of the most controversial issues facing the microfinance industry". (Meyer, 2006, p. 225)

Armendáriz & Morduch (2005) and Meyer (2006, p. 226) found several "issues of study design, data collection and statistical analysis", making impact measurement and analysis troublesome. First, appropriate poverty proxies have to measure the initial levels and the change in the poverty levels of microfinance clients and non-clients. Second, an important issue in providing empirical evidence on

the benefits of microfinance is clarifying the causal role of microfinance. Accordingly, identifying reliable treatment and control groups is crucial. In more detail, while measuring the impact of microfinance programmes one should (1) account for the displacement of economic activity undertaken by non-clients, (2) one should consider current and past clients, by identifying previously successful and inactive microfinance 'graduates', and (3) one should deal with attrition, by accounting for household drop outs (through for example: migration or death). (Armendáriz & Morduch, 2005)

Third, Meyer (2006) considers two important forms of selection biases. The selection of microfinance clients participating in microfinance programmes is likely be biased. Random selection is unlikely since new microfinance clients may be: (1) more entrepreneurial, (2) willing to take risk, or (3) may have more carefully been selected by loan officers. Also, the programme's placement is likely to be biased, since MFIs may choose to locate their activities in area with better infrastructure and communication facilities.

3.2.2.2 Studies on the social performance of microfinance institutions

In 2006, Zeller & Johannsen examined the breadth and depth of outreach of microfinance in Bangladesh and Peru. The authors (2006, p. 29) find "that member-based organisations, namely cooperatives in Peru and NGO-MFIs based on solidarity group lending in Bangladesh, perform best with respect to depth of poverty outreach". The authors find that a long-term relationship between the financial service provider and client enhances the institution's financial sustainability and the programme's social impact. Also, poorer populations seem to demand microcredit services rather than saving services. The authors (2006, p. 31) concluded that "MFIs that expand in rural areas, that actively target women, and that use poverty targeting indicators to screen out wealthier applicants are likely to have a higher poverty outreach".

In 2007, Mersland & Strøm (2007) found that the type of ownership of MFIs does not significantly influence their social performance. The authors (2008, p. 4) use Schreiner's (2002) framework, but reject the hypothesis that greater depth in NGOs is trade-off against lower breadth, length and scope of their activities. "NGOs are not more socially orientated that SHFs [shareholder-owned MFIs], nor are SHFs more profit orientated than NGOs", according to Mersland & Strøm (2007, p. 5). On the contrary, Gutiérrez-Nieto, Serrano-Cinca & Mar Molinero (2009) found that NGOs show the highest level of social efficiency, with the number of active women borrowers reached as their output.

More recently, Lensink & Mersland (2009) explored the concept of 'microfinance plus'. The authors distinguish between MFIs that specialize in their financial service activities and MFIs that provide additional non-financial service.[14] The authors find that microfinance plus providers are: (1) NGOs, (2) unregulated by banking authorities, and (3) mainly providing microfinance services through village banking methodologies. Being part of an international microfinance network does not seem to

[14] For example, MFIs may provide literacy training, health services or business training to their microfinance clients.

influence whether a MFI provides plus services. Also, the authors find that microfinance plus providers reach out to poorer microfinance clients and reach out to a higher percentage of women borrowers.

Table A2 in the appendix shows the MIX (2009[c]) benchmark analysis 2007 of selected social performance indicators.

The number of clients reached by the MFIs grew significantly over the period 2005-2007. The median *number of active borrowers* is highest in Asia. Outreach to microfinance clients grew in 2007, but at a slower pace than in previous years. Microfinance banks perform exceptionally well in terms of number of active borrowers reached. Second, MFIs in Asia seem to concentrate on solely serving *women microfinance clients*. MFIs in the Africa, Latin America and Caribbean, and the Middle East and North Africa region predominantly serve women borrowers. Less than 50 percent of the microfinance clients in the Eastern Europe and Asia region are women. Alternatively, NGOs and rural banks perform best in reaching out to women micro-entrepreneurs. Third, the *cost per borrower* ratios are calculated by dividing the operating expense by the average number of microfinance clients over a period of a MFIs. The expenses per client are lowest for NGOs and rural banks, while microfinance bank face significantly higher operating expenses. Despite their average number of borrowers reached, microfinance banks do not seem to benefit from economies of scale. Alternatively, the costs per borrower ratios are highest in the Eastern Europe and Central Asia region, and lowest in the Asian region. Fourth, the *average loans balance per borrower / the GNI per capita* is highest in Eastern Europe and Central Asia. Unexpectedly, the correction for GNI per capita allows for a relatively high average loan size in Africa. The *average loan balance per borrower/ GNI per capita* is unambiguously lowest for NGOs. Banks report average loan sizes over five times as high the average loan sizes reported by NGOs. Credit unions and NBFIs report average loan sizes in-between those reported by NGOs and microfinance banks. (MIX, 2008, 2009[d])

3.3 Highlight: the special role of average loan size as a social performance indicator

Multiple authors use the *average loan size* of MFIs as a proxy for the depth of outreach to microfinance clients.[15] Essentially, Schreiner (2002, p. 8) argued, "along each dimension of size, smaller amounts or shorter times usually mean greater depth because as clients are poorer, they are less able to signal their risk to lenders, and so they get smaller loans to reduce the exposure of the lender to losses from default and must repay in more frequent instalments to allow the lender to monitor them".

However, a number of authors have questioned this fundamental assumption.[16] For example, Hatch & Frederick (1998) and Dunford (2002) found that loan size is ineffective in attracting and

[15] Yaron (1994), Schreiner (2001, 2002), Cull, Demirguç-Kunt & Morduch (2007, 2009), Lensink & Mersland (2009), Gutiérrez-Nieto, Serrano-Cinca & Mar Molinero (2007b, 2009).
[16] Hatch & Woodworth (1998), Morduch (2000), Dunford (2002), Johnston & Morduch (2008).

selecting poor individuals, since large size loans are often unavailable or unattractive (higher interest rates and guarantee requirements) to non-poor individuals. Second, loan size can be considered a weak instrument for predicting and determining the poverty-level of microfinance clients. Initial loans offered to new clients vary widely, while some MFIs offer standard initial loan sizes to new clients regardless of their repayment capacity or experience.

Johnston & Morduch (2008) provided empirical evidence in support of Hatch & Frederick (1998) and Dunford (2002). The authors examined data from 1438 households living in Indonesia, obtained in 2002. First, the authors (2008, p. 525) find that "the probability of borrowing recently [from a conventional bank] rises steadily with household income from 14 percent for poor households to only 31 percent for non-poor households with per capita income up to three times the poverty line". Second, Johnston and Morduch (2008) find evidence against the power of average loan sizes in predicting the poverty-level of clients. Amongst poorer households, 49 percent of the microfinance loans were used for business-related purposes; households operating a family enterprise (85 percent) used 57 percent of their loans for business-related purposes. Non-poor households used 57 percent of their loans for business-related purposes; households operating family enterprises (67 percent) used 71 percent of their loans for these purposes. Johnston and Morduch (2008, p. 549) concluded that "while microcredit advocates focus sharply on loans for business in promoting microcredit, microcredit customers look to the financial system to meet a much broader range of needs".

3.4 The impact of the current financial crisis

Financial crises in the past have tested the resilience of the microfinance industry.[17] In these times, MFIs serving low-income people generally performed better than mainstream banks.

Today, the microfinance industry has a stronger connection to domestic and international financial markets. Fitch (2009) found that commercially orientated private and public funding has been reduced and has become more expensive. International financial institutions have become more risk averse, and are reaching limits due to adjusted counterparty or country exposure limitations.

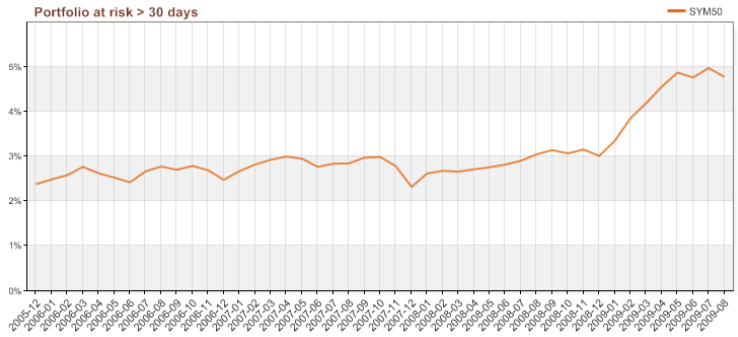
Also, in February 2009, CGAP found that low-income people are suffering from high food prices, causing some clients to: (1) to cut back on non-food expenses, (2) withdraw savings, and (3) in some cases to face difficulties with loan repayment. In addition, the financial crisis is causing lower remittances being send to developing countries.[18] CGAP (2009[a], p. 2) concluded "this creates both liquidity and credit risks for MFIs".

In May 2009, CGAP presented the results of an opinion survey that reached out to 400 MFI managers. According to the survey respondents: (1) sustained high food prices, (2) severe economic contraction, and (3) massive job losses are hurting clients most. About 60% of the respondents indicate that their

[17] Like the currency crisis in Asia and the banking crisis in Latin America in the 1990s.
[18] The World Bank (2008) predicts the flows of remittances towards developing countries to reach an absolute minimum point in 2009.

clients are having trouble repaying their loans, as the price of food and production inputs has risen. On the side of the MFIs, 52% of the respondents have experienced liquidity constraints over the past six months. Also, 65% of the respondents reports zero or negative growth figures. The quality of loan portfolios is under pressure, with 69% of the respondents reporting an increase in their PAR ratio. Figure 3.1 shows the PAR ratios for the Symbiotic 50, a microfinance benchmark tracking the performance indicators and data of a selection of 50 MFIs representative of the industry.[19]

Figure 3.1. Symbiotics 50 benchmark, portfolio at risk > 30 days (2006-2009)



Source: Symbiotics (2009)

In July 2009, Microfinance Banana Skins (CSFI, 2009) report showed that the perception of risk factors in the microfinance industry is changing. According to the industry, the (1) worsening of business environment, (2) threats to funding and liquidity, and (3) the potential damage to the reputation of microfinance are the latest and most relevant risks.

3.5 Conclusion

Policymakers in the 1980s and 1990s have encouraged the importance given to the measurement of financial performance in the microfinance industry. In addition, growing competition amongst MFIs, pressure from competing local commercial banks, and the increasing interest from (foreign) commercial banks and investors enhances the measurement and assessment of the financial performance of MFIs.

The rating agencies Fitch, Morgan Stanley and S&P have published reports on risk assessment in the microfinance industry. Unfortunately, their measurement and methodologies differ, and the rating agencies apply different rating scales. In 2003, guidelines on the definitions of financial terms, ratios, and adjustments for microfinance were composed by CGAP.

Awareness for the social performance of MFIs has grown over the past years. Multiple scholars have build on a framework to measure and assess the impact and outreach of microfinance programmes. In addition, specialized rating agencies have become active in the field of social performance

[19] Symbiotics provides the microfinance industry with investment intermediation service.

measurement.[20] In 2007, the Social Performance Task Force published the social performance standards report aiming to standardise the existing measurement and assessment methodologies. However, the range of relevant categories is wide, the data availability for some categories is relatively scarce, and the prioritisation of social performance indicators may be subjective.

The special role of the average loan size measure as a proxy for the depth of outreach of microfinance is highlighted. The quality of the measure as an indicators of attracting new and relatively poorer microfinance clients by a MFI is at least questionable. Despite this criticism, multiple authors choose to use the average loan size measure as their fundamental indicator for the social performance of MFIs.

Finally, CGAP provides the latest insight in the impact of the financial crisis on the microfinance industry. Based on signal from the industry: (1) the worsening of business environment, and (2) threats to funding and liquidity are the latest and most relevant risks.

[20] Like MicroRate, Planet Rating, and M-Cril.

Chapter 4 The relation between the financial and social performance of microfinance institutions

This chapter provides an introduction to the debate between institutionalists and welfarists; who respectively advocate the performance measurement of MFIs in terms of financial performance and in terms of social performance. From this debate, the question arises whether a trade-off between the financial sustainability and efficiency and the outreach to the poorest microfinance clients by MFIs exists. Section 2 explorers the empirical evidence on mission drift in microfinance.

4.1 Mission drift: the institutionalists versus the welfarists

4.1.1 The debate between institutionalists and welfarists

The growing emphasis on the financial sustainability and efficiency of MFIs is believed to reduce the scope for the social objectives and outreach to microfinance clients.[21] Consequently, a debate on the assessment of the performance of MFIs has emerged between the *institutionalists* and *welfarists*.[22]

In 2009, Gutiérrez-Nieto et al. claimed that the institutionalists appear to have the upper hand in the debate. In general, "each position differs in their views: (1) on how microfinance services should be delivered (NGO versus commercial banks), (2) on the technology that should be used (a 'minimalist' approach versus an 'integrated' service approach), and (3) on how their performance should be assessed" (Olivares-Polanco, 2004, p. 3).

Institutionalists believe that the performance of a MFI should be assessed in terms of the institution's success in reaching a financially self-sustainable position. According to Rhyne (1998, p. 7), "the sustainability group argues that any future which continues dependence on donor and governments is a future in which few microfinance clients will be reached". According to Hermes et al. (2007), the commercialisation of MFIs is believed to ensure the growing amount of commercial funding, ensuring and enhancing the future outreach to new microfinance clients around the world. Also, Rhyne (1998) and Olivares-Polanco (2004) reported that the institutionalists approach combines financial sustainability with (breath of) outreach objectives. Institutionalists aim to provide access to financial services to the full spectrum of low-income people living around the world. Nonetheless, Schreiner (2002) recognized that the self-sufficiency approach is believed to target less-poor clients.

Welfarists believe that the performance of a MFI should be assessed by determining whether the institution is successful in reaching its poverty alleviating objectives. Olivares-Polanco (2004) stressed that a key advantage of the welfarists approach is the opportunity to gain a direct insight in the poverty alleviating potential of microfinance. Olivares-Polanco (2004, p. 6) reported that "the methods used by

[21] Dichter & Harper (2007), Hermes, Lensink & Meesters (2007), and Mersland & Strøm (2009).
[22] Yaron (1994), Morduch (2000), Schreiner (2002), Olivares-Polanco (2004), Hermes, Lensink & Meesters (2007), and Gutiérrez-Nieto, Serrano-Cinca & Mar Molinero (2009).

the welfarists assesses the impact of the programme on their clients, by measuring changes in dependent variables such as the level of income, the level of production, sales, assets or the general well being of the clients". According to Schreiner (2002), the welfarists approach is expected to target the very poor clients, compared to the less-poor clients targeted by the institutionalists approach.

Alternatively, some are advocating the *win-win proposition* of microfinance. For example, Yaron (1994) proposed a framework combining the assessment of the financial self-sufficiency and outreach of MFIs. One the one hand, the author argues that state support and donations are a fundamental source of resources for newly established MFIs initially facing a negative cash flow. On the other hand, the author argues that the mobilisation of savings is fundamental in the support of the expansion of more-mature MFIs, allowing for less government support and donations. Also, "one key to success appears to be the introduction of a social mechanism that lowers transaction costs, while supplying effective peer pressure for screening loan applications and collecting loans", according to Yaron (1994, p. 68).

In addition, Morduch (2000, p. 617) states that for the win-win proposition "a key tenet is that poor households demand *access* to credit, not *cheap* credit". The author identifies a number of assumptions underlying the win-win proposition. First, raising the costs of financial services will not negatively affect the demand of microfinance. Second, financially sustainable MFIs can achieve a greater scale and outreach than subsidized MFIs. Third, subsidies reduce the scope for savings mobilisation. Fourth, financial sustainability is critical for the access of MFIs to commercial financial markets. Fifth, "microfinance has been and should continue to be a movement with minimal governmental involvement" (Morduch, 2000, p. 624).

4.1.2 The concept of mission drift

At the heart of the debate, the question arises whether a trade-off between the financial sustainability and efficiency and the outreach to the poorest microfinance clients by MFIs exists. The occurrence of a trade-off between the financial and social performance of MFIs is captured by the concept of mission drift.

Armendáriz & Szafarz (2009, p. 2) defined mission drift as "a phenomenon whereby an MFI increases its average loan size by reaching out wealthier clients neither for progressive lending nor for cross-subsidization reasons". In other words, an increase in average loan sizes may result from progressive lending, whereby microfinance clients reach out to higher credit ceiling based on their performance and demand. Also, average loan sizes may be higher resulting from cross-subsidisation. Cross-subsidisation means that a MFI reaches out to the wealthier unbanked, using larger average loan sizes, in order to finance a larger pool of the poorest unbanked, using small average loan sizes. Instead, the authors argue that mission drift occurs because MFIs find it more profitable to reach out to wealthier clients while crowding out poorer clients. In addition, the authors add that mission drift can only occur when a MFI's announced mission is not aligned with the MFI's maximisation objective.

Cull et al., (2007, p. 23) underlined that mission drift occurs when a MFI shows "a shift in the composition of new clients, or a reorientation from poorer to wealthier clients among existing clients". Mersland & Strøm (2009, p. 3) reported that "if mission drift occurs, the MFI's outreach to poor customers, its depth of outreach (Schreiner, 2002), is weakened". In practise, the average loan size is the most common used proxy for measuring the depth of outreach.[23] Alternatively, the authors argue that increasing the depth of outreach implies increasing the outreach to women clients. Also, the authors argue that switching from the group-based lending methodology to the individual lending methodology can be an indication for the occurrence of mission drift.

4.2 Empirical evidence on mission drift in the microfinance industry

Multiple authors have discussed the trade-off between the financial and social performance of MFIs.[24] However, only a handful of studies have found empirical evidence on the existence of a trade-off between the financial sustainability and outreach to microfinance clients of MFIs. (Hermes et al. 2007) In the studies discussed empirical evidence on mission drift is found. The studies discussed use different regression approaches, types of data, and variables and indicators for the financial and social performance of MFIs.

Cull et al. (2007) studied the financial performance and outreach of leading MFIs. Essentially, the authors aimed to find empirical evidence on mission drift, by controlling for different lending methodologies.

Information is used from a high-quality survey of 124 MFIs in 49 countries, with observation over the period 1999-2002. The authors use the ordinary least square (OLS) estimation methods. Cull et al. (2007) analyze the relationship between several outreach and profitability indicators to test for the occurrence of mission drift. The measures of outreach are: (1) *average loan size / per capita GDP*, (2) *average loan size / per capita GDP for the poorest 20%*, and (3) *percentage of women borrowers*. Their key financial performance indicator is the *FSS* ratio. For robustness, the *OSS* and *ROA* ratios are also used as financial performance indicators. Furthermore, the independent variables include the *real gross portfolio yield*, a measure of the interest rate charged to the microfinance clients. A cost matrix is included combining *capital costs* and *labour costs* relative to the MFI's total assets. A MFI history matrix is included combining the institution's *age* and measure for the institution's *size*. The MFI's size is measured by the institution's total assets. An orientation matrix is included, describing the MFI's business practises. The matrix combines the *ratio of loans to total assets*, the *average loan size / GNP per capita*, and a variable indicating the MFI's *profit status*. And, a matrix of dummy variables for the different *regions* is included.

[23] Schreiner (2002), Cull, Demirguç-Kunt & Morduch (2007), and Mersland & Strøm (2009).
[24] Pischke (1996), Mosley & Hulme (1998), Morduch (2000), Christen, (2001), Tucker (2001), Olivares-Polanco (2004), Copestake (2007), Cull, Demirguç-Kunt & Morduch (2007), Hermes, Lensink & Meesters (2007), Hishigsuren (2007), and Armendáriz & Szafarz (2009).

First, the authors find no empirical evidence on the occurrence of mission drift. The FSS ratio is not significantly related to any of the outreach indicators. The authors continue by specifying the regression model with including interaction terms for the FSS indicators and the different lending types. Subsequently, the authors find evidence on reverse mission drift for MFIs using the individual-based lending methodology. The finding implies that individual-based lending MFIs that perform well financially tend to be focussed on poorer clients by offering smaller size loans. Alternatively, weak evidence on the occurrence of mission drift is found for MFIs using the village-based and group-based lending methodology.

Second, the authors add the variables years of age and size. In the significant and positive coefficient for age related to the average loan size / per capita GDP for the poorest 20% the authors find evidence for mission drift over time. In addition, the authors (2007, p. 26) find that "the significant positive coefficients for institution size in the average loan specifications, and the significant negative coefficient in the specifications on gender, indicate that larger individual-based lenders perform relatively poor in terms of outreach". For village-based lending MFIs the size-related variable have significant but opposing coefficients. Variation in the size of MFIs does not seem to be associated with differences in their outreach. For group-based lending MFIs the same holds, only the size-related variables have a smaller magnitude. Moreover, by controlling for age, size, and lending type, the authors find that financially sustainable village-based and group-based lending MFIs have smaller average loan sizes and reach out to a higher share of women microfinance clients.

Table 4.1. Summary of mission drift results by Cull et al. (2007)

	Association with Size of Loans (significance)	**Association with Proportion of Loans to Women (significance)**
Individual-Based Lenders		
Increases in:		
Age of firm	Larger (5%)	No significant relation
Size of firm	Larger (10%)	Lower (5%)
Financial Self-Sufficiency	Smaller (5%)	Higher (5%)
Solidarity Group Lenders		
Increases in:		
Age of firm	No significant relation	No significant relation
Size of firm	Larger (1%)	Lower (1%)
Financial Self-Sufficiency	No significant relation	Higher (5%)
Village Banks		
Increases in:		
Age of firm	No significant relation	No significant relation
Size of firm	No significant relation	No significant relation
Financial Self-Sufficiency	No significant relation	No significant relation

Source: Cull et al. (2007)

In conclusion, Cull et al. (2007) reported that only individual-based lending MFIs, as they mature and grow larger, are more sensitive to mission drift than village-based lending and group-based lending MFIs.

The findings of Cull et al. (2007) confirmed previous findings by Olivares-Polanco (2004). This author explored the effect of commercialisation on the depth of outreach measures proposed by Christen (2001) and Schreiner (2001).

Olivares-Polanco (2004) uses the OLS regression approach, and a sample containing data of 28 MFIs from Latin America with observations for the period 2000-2005. The dependent variables are Christen's: (1) *average outstanding loan*, and (2) *average outstanding loan / per capita GNP*, and Schreiner's (2002) proposes a ratio that compares the (3) dollar-years of resources provided by a loan to dollar-years of resources provided by income.[25] The independent variables include the *type of institution* (NGO, or not). The author expects relatively large average loan sizes for NGOs compared to non-NGOs. And, the institution's *age* is expected to positively influence the average loan size disbursed to microfinance clients. (Christen, 2001) As a measure of financial sustainability the *return to assets* ratio is included. The author reports that financial sustainability and outreach are perceived opposing objective. The breadth of outreach is measured by the *number of active borrowers*. Olivares-Polanco (2004, p. 13) finds that "as breadth and sustainability are positively related, then both are inversely related to depth, so the larger the number of clients, the lower the depth or the larger loan size". *Competition* is measured by the market share of the four largest MFIs in the country. The higher their market share, the lower the competition on the market. Competition is expected not to influence the average loan size of MFIs. The variable gender is measured by the *percentage of women* microfinance clients. According to the author, women are expected to be relatively poorer than man and are expected to receive smaller average loan sizes. And, the *credit methodology* used by MFIs is also expected to influence the average loan size of MFIs. The author expects a larger share of individual-based loans to imply a lower depth of outreach, resulting in larger average loan sizes.
Olivares-Polanco (2004) finds that the model is successful in explaining the *average outstanding loan / per capita GDP of the 20% poorest* and *dollar-years loan divided / dollar-years income of the 20% poorest*. Significant coefficients are found for the independent variables age, financial sustainability, and competition. The signs of the coefficients for the variable age are negative, suggesting that older institutions offer smaller size loans. The coefficients for financial sustainability are positive, implying a trade-off between profitability and depth of outreach. The level of competition is found to be positively related to loan sizes. Olivares-Polanco (2004, p. 21) argues, " […] more competition in a microfinance market will also reflect larger loan sizes, suggesting that institutions will probably search for more profitable clients and reduce administrative costs".

Hermes et al. (2007) aimed to find how close the actual costs of operating are compared to the best practise operating costs of MFIs facing the same conditions. Essentially, cost efficiency is their measure of financial performance. The dataset used contains 1318 observations for 435 MFIs over the period 1997-2007. In terms of methodology, the authors state (2007, p. 8) "most studies on cost efficiency use data envelopment analysis (DEA) or stochastic frontier analysis (SFA) to calculate this frontier". The authors (2007) choose to use SFA.

25 $\frac{Dollar-years\ loan}{Dollar-years\ income} = \frac{(Average\ dollar\ disbursed)*(\frac{12}{Average\ term\ to\ maturity})}{(\frac{GDP\ per\ capita}{2})}$

Hermes et al. (2007) specify the *total cost function* and discuss the estimation results for the cost frontier. A positive and significant coefficient implies an increase the MFI's costs. First, the *operating expenses* and *financial expenses* of each MFI are included as the inputs of the total cost function. As expected, a positive and significant relation for the operating expenses is found. The relation between the total cost function and the financial expenses variables is ambiguous. The total cost function is further specified by adding a dummy for the *type* of MFI. NGOs and NBFIs show lower costs than microfinance banks. Cooperative unions and rural banks show the lowest costs. A *loan loss reserves* variable is included to control for differences in the MFIs' risk taking strategies. The loan loss reserves variable shows a positive and significant relation with the institution's total cost function.

Next, the authors specify the inefficiency equation, measuring the extent to which a MFI can be considered (cost) inefficient. The inefficiency measure is depending on: (1) the *average loan balance per borrower*, and (2) the *percentage of active women borrowers*. The inefficiency equation also includes control variables for the *loan methodology*, *age*, and *year of establishment*. First, the coefficient for the average loan balance is negative and highly significant, showing that lower average loan sizes are associated with a higher level of inefficiency. Second, the coefficient for women borrowers is positive and significant, showing that a higher percentage of women borrowers imply a higher level of inefficiency. Third, a negative and significant relationship between the year of establishment variable and the inefficiency level of MFIs is found. According to the authors (2007, p. 17), "this may be explained by a learning curve effect: due to the strong growth of the microfinance business worldwide, knowledge has increased and has spilled-over, and people have become more experienced in managing MFI activities". Fourth, the age variable is positive and significant, implying that older MFIs are relatively less efficient. Younger MFIs seem to profit more from the existing knowledge base in the microfinance industry, and may leapfrog older MFIs in terms of efficiency. Fifth, the loan methodology type dummy variable for the group-based lending type is negative and significant. In line with results of Cull et al. (2007), Hermes et al. (2007) find that group-based lending methodology is in general less costly, and can positively affect the efficiency level of the institution.

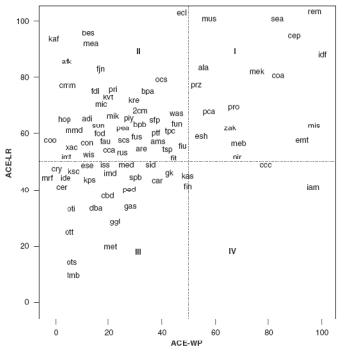
Hermes et al. (2007, p. 16) concluded that "the results […] suggest that there is a rather strong evidence for a trade-off between outreach to the poor and efficiency of MFIs".

Gutiérrez-Nieto et al. (2009) used the data envelopment analysis (DEA) methodology, instead of the SFA methodology. Gutiérrez-Nieto et al. (2007[b], p. 133) explain that "one advantage of DEA (nonparametric) over parametric approaches to measure efficiency is that this technique can be used when the conventional cost and profit functions cannot be justified". The methodology requires an output and input selection to calculate efficiency levels. The inputs selected are *total assets (A)*, *operating cost (C)*, and *number of employees* (E). For the outputs two financial and two social variables of the MFIs are selected: *number of active women borrowers (W)*, *indicator of benefit to the poorest (P)*, *gross loan portfolio (L)*, and *financial revenue (R)*. As the *indicator of benefit to the poorest* the authors (2009) decide to use the average loan balance per borrower divided by per capita

GNI. The authors concentrate on the relation between financial and social performance, or levels of efficiency, of 89 MFIs with 2003 data.

Gutiérrez-Nieto et al. (2009) find a correlation between the social efficiency (ACE-WP) and financial efficiency (ACE-LR) of 0,346. The correlation is significantly different from zero at a 1 percent level, but is relatively small. A scatter plot, provided by the authors (2009) and shown in figure 4.1, shows a revealing picture.

Figure 4.1. Scatter plot of social efficiency versus financial efficiency by Gutiérrez-Nieto et al. (2007[a])



Source: Gutiérrez-Nieto et al. (2007[a])
Social efficiency (ACE-WP) on the horizontal axis and financial efficiency (ACE-LR) on the vertical axis.

Most MFIs can be found in the top-left quadrant, showing institutions that are financially efficient but score less on social efficiency. These MFIs could improve their social efficiency by providing smaller size loans or reaching out to a higher percentage of women borrowers. The right-bottom quadrant show that almost no MFI is socially efficient without being financially efficient. Gutiérrez-Nieto et al. (2009, p. 110) concluded, "when faced with a choice between financial efficiency and social efficiency, institutions would aim for financial performance in order to guarantee the possibility of being able to continue with their social work".

Most recently, Mersland & Strøm (2009, p. 1) "investigate mission drift using average loan size as a main proxy and the MFI's lending methodology, main market, and gender bias as further mission drift measures". The authors have a dataset including observations of 379 MFIs in 74 countries over the period 2001-2008. Mersland & Strøm (2009) chose to apply different panel data methodologies: (1) fixed effects, (2) random effects, and (3) first difference.

The *average loan size*, *lending methodology*, *main market*, and *gender bias* are tested as dependent variables. The regression model includes *average profit*, *average cost*, and *risk* as the independent variables. The risk variable is based on the risk of repayment and the PAR ratio is used as a measure. The authors also include the *age* and *size* of the MFI as control variables.

Mersland & Strøm (2009) find that average profit is positive and significant related to average loan size. The finding supports the idea that wealthier clients tend to crowd out poorer clients. Second, the average cost per clients is positively and significantly related to the average loan size. The finding implies that: (1) cost inefficient MFIs need to increase their average loan size, or that (2) cost efficient

MFIs are better able to reach out to poorer clients. The authors (2009, p. 18) argue that "this means that inefficient MFIs are those most susceptible to mission drift". Unexpectedly, the regression results show that the economic effect of average costs is larger than the economic effect of average profits. On the one hand, Mersland & Strøm (2009) find evidence for mission drift, as profit-seeking MFIs seem to shift to wealthier clients. On the other hand, "the effect of higher efficiency counteracts this tendency", since cost efficient institution's are able to lend smaller size loans. (Mersland & Strøm, 2009, p.19) Third, the influence of risk as a determinant of the average loan size of a MFI found is ambiguous. Fourth, age is positively and significantly related to average loan size, but only when using the first difference regression method.

Alternatively, Mersland & Strøm (2009, p. 20) report that, "if mission drift is the case among MFIs, one should expect MFIs to place less weight upon group lending, lending to rural customers, and to women". First, such results are found for the variables average profit and average cost. For example, higher average cost implies that MFIs: (1) target more individual lenders, (2) more clients in urban areas, and (3) concentrate less on women borrowers. Second, the risk variable is significant and positive for lending methodology and negative for gender bias. Hence, an increasing repayment risk implies more lending on individual basis and less focus on reaching women borrowers.

The authors concluded that they do not find evidence of mission drift. Instead, "profits and costs may outweigh each other and thus not lead to mission drift or lower outreach" (Mersland & Strøm, 2009, p. 22). According to the authors, future research should focus on the cost efficiency of MFIs, rather than on the effects of the commercialisation of MFIs.

Despite the above empirical evidence, a number of institutionalists disputed the existence, the drivers, and the effects of mission drift.[26] For example, Christen (2001) questioned whether commercialisation leads to mission drift. Christen (2001, p. 13) argues that "loan sizes are not necessarily an indication of mission drift and could be a function of different factors […]". First, changes in the average loan size of a MFIs could result from the "generational factor". The author (2001, p. 14) claims that being part of the first generation of institutions in the market or targeting the first generation of microfinance clients in the market affects the MFI's targeting. Second, average loan size should be considered as a deliberate choice made by the MFI. Depending on the MFIs' objectives, institutions may differ widely in the targeting of microfinance clients. Plus, objectives and the targeting on microfinance clients may change over time. Finally, Christen (2001) argued that average loan balances of MFIs in Latin America show a natural evolution over time. The author (2001, p. 16) argues that "the average loan balance of a typical MFIs could easily double or triple as both the programme and its target group mature".

[26] Rhyne (1998), and Christen (2001).

4.3 Conclusion

A debate on the assessment of MFIs has emerged. Institutionalists believe that the performance of MFIs should be assessed in terms of their financial performance. Welfarists believe that the performance of a MFI should be assessed by determining whether the institution is successful in reaching its poverty alleviating objectives. Some are advocating the win-win proposition of microfinance, while building on a framework combining the financial and social performance measurement. The win-win proposition allows for the dual return potential of microfinance. On the one hand, the advocates recognize poverty alleviating potential of microfinance. On the other hand, they acknowledge that establishing a commercial market for microfinance ensures sustainability over time and the growing outreach to microfinance clients.

Essentially, the trade-off between the financial sustainability and efficiency and the outreach to the poorest microfinance clients by MFIs is captured by the concept of mission drift. Mission drift occurs because MFIs find it more profitable to reach out to wealthier clients while crowding out poorer clients. As such, the commercialisation of MFIs is expected to harm the social performance of MFIs. Multiple authors have discussed the existence of a trade-off between the financial performance and social performance of MFIs. A handful of studies have found empirical evidence on the occurrence of mission drift in the microfinance industry.

Table 4.2 Summary of empirical evidence found on mission drift

Author(s) (year)	*Empirical evidence of mission drift found?*	*Approach*
Cull, Demirgüç-Kunt & Morduch (2007)	Yes, but based on very weak evidence.	Ordinary least squares
Olivares-Polanco (2004)	Yes	Ordinary least squares
Hermes, Lensink & Meesters (2007)	Yes, find strong evidence	Stochastic frontier analysis
Gutiérrez-Nieto, Serrano-Cinca & Mar Molinero (2009)	Yes, financial performance is prioritized above social performance.	Data envelopment analysis
Mersland & Strøm (2009)	Yes, but cost efficiency improvements may outweigh the negative effect of profitability.	Panel data

Chapter 5 The research model & regression approach

In section 5.1, the selection of variables and indicators used in the research is presented. In section 5.2, the formal problem statement is transformed into a structured research model, and four hypotheses are introduced to complement the problem statement. The regression methodologies and techniques used in the research are introduced in section 5.3.

5.1 The problem statement and selection of variables and indicators

The research aims to find empirical evidence on the occurrence of mission drift. At the same time, institutional and country risk indicators that are important in the investment decision-making process of foreign institutional investors in microfinance are taken into account. Formally the problem statement questions: first, *what is the explanatory function of the institutional and country risk indicators in predicting the financial and social performance of MFIs*?, and second, *how do institutional and country risk indicators affect the trade-off between the financial and social performance of MFIs*?

Following the problem statement, the research requires a selection of variables and indicators to study the financial performance, and social performance of MFIs. In addition, a selection of variables and indicators for the institutional and country risk characteristics of MFIs is required. The selection is made based upon the previous discussed information and literature, and the existing knowledge and experience of the rating agencies S&P (2007), Fitch (2008), and Morgan Stanley (2008).

The selection of variables and indicators used in this research is presented in table B1 of the appendix. The measurement of a number of variables and indicators is discussed in table B2 of the appendix.

5.1.1 Selection of the financial performance indicators

The (1) operational self-sufficiency ratio, the (2) return on assets ratio, and the (3) profit margin ratio are the key indicators of financial performance in this research. The selection of the financial performance indicators corresponds to the selection of indicators considered by ING Micro Finance in their investment decision-making process.

Operational self-sufficiency

Essentially, the ratio measures how well a MFIs is able to covers the institution's total costs of operating. Morgan Stanley (2007) and Fitch (2008) implicitly included the OSS ratio in their rating methodologies to assess the financial sustainability of MFIs. Fitch (2008, p. 10) analysed the OSS ratio "to assess the 'adequacy' of an MFI's cost and revenue structure".

Complementary to the FSS ratio, Cull et al. (2007) decided to include the OSS ratio to assess the financial performance of MFIs.

Return on assets

The return on assets (ROA) ratio indicates how well a MFI is using the institution's total assets to generate returns. The ratio functions as an indicator of financial performance in the research by Olivares-Polanco (2004) and Cull et al. (2007). Morgan Stanley (2008, p. 126) reported, "return on average assets takes into account taxes and other source of revenues, including income earned on cash in the bank, thereby providing a more complete measure of profitability".

Profit margin

The microfinance consensus guidelines also included the profit margin ratio as an indicator of financial performance of MFIs. The ratio "measures what percentage of operating revenue remains after all financial, loan-loss provision, and operating expenses are paid" (CGAP, 2003, p. 13). The indicator is included in this research for reasons of robustness.

5.1.2 Selection of the social performance indicators

As discussed in section 3.2.2.1, the impact analysis of microfinance programmes has proven troublesome. Today, data availability predominantly allows for the measurement and assessment of the outreach to microfinance clients for a large sample of MFIs.

ING Micro Finance monitors the average loan size measures and the percentage of women borrowers measurement of MFIs. In addition, ING monitors the operational efficiency of a MFI, the internal operating structure, and the customer focus of the institution. Due to data unavailability these measures could not be included in this research.

Average loan size

The average loan size measure is the most common used proxy for the depth of outreach to microfinance clients in the existing empirical research on the social performance of MFIs.[27]

S&P (2007) included the average loan size in their management and strategy assessment of a MFI. The agency stressed that the appropriateness of the measure of depth of outreach is depending on the institution's self-declared social objectives. In addition, the SPTF (2009) standards report showed that depth of outreach is an important feature in the various performance measurement and assessment tools used.

Olivares-Polanco (2004) found that the *per capita GNP* and the *per capita GNP of the 20% poorest* average loan size measures are highly correlated. However, Schreiner (2001) opposed the use of average per capita GNP for two reasons. First, the per capita GNP is typically higher than a country's median per capita GNP or compared to the poverty-line income. Secondly, per capita GNP is a flow from average income in a year, whereas the term the flow disbursed as a loan may be very different.

[27] Olivares-Polanco, 2004; Hermes, Lensink & Meesters, 2007; Cull, Demirguç-Kunt & Morduch, 2007 & 2009; Gutiérrez-Nieto, Serrano-Cinca & Mar Molinero 2009, and Mersland & Strøm, 2009.

Following the studies of Olivares-Polanco (2004) and Cull et al. (2007) both the (1) average loan size divided by per capita GDP and the (2) average loan size divided by per capita GDP of the 20% poorest measures are considered in this research.

Percentage of women borrowers

An alternative proxy for the depth of outreach of microfinance is the percentage of women borrowers measure. Sections 3.2 and 4.2 discuss the importance of this measure in the measurement and assessment methodologies for social performance. The SPTF (2009) report showed that women outreach is considered an important indicator in the various social performance measurement and assessment tools used.

5.1.3 Selection of the institutional risk indicators

A range of institutional risk indicators are considered in the investment decision-making process of foreign institutional investors in microfinance. The institutional risk indicators included in this research are (1) institutional type, (2) regulation, (3) network membership, (4) years of age and the (5) size of the institution.

Institutional type

The legal or institutional type is one of the MFI's most important characteristic. Morgan Stanley (2008) reported that the optimal legal structure of a MFI is often related to the maturity of the institution. According to Morgan Stanley, a transformation process may follow from recognizing the profitability of maturing microfinance activities. Along this process, MFIs have to (re)balance their financial and social performance. Essentially, the various legal structures and institutional types have various advantages and disadvantages. "As NGOs, MFIs operate without facing heavy taxation or much intervention from regulatory government agencies, allowing them to reach their social goals in an easier manner" (Morgan Stanley, 2008, p. 131). Alternatively, NBFIs generally benefit from more allowances in terms of providing financial services and in terms of attracting funds. Nevertheless, becoming a NBFI may require a capital injection and may involve regulation and reporting requirements. Such requirements, together with tax requirements, are even stronger for microfinance banks. On the positive side, microfinance banks have easier access to less expensive financial resources.

Interestingly, Cull et al. (2009) found that being a profitable institution does not necessarily imply being a for-profit type of MFI. The authors (2009, p. 175) state, "the distinction is important, as it means that the microfinance industry's drive towards profitability does not necessarily imply a drive toward "commercialisation" […]". The financial performance of the various institutional type of MFIs differs. These findings support S&P (2007), Morgan Stanley (2008) and Fitch (2008), who all argued that none of the institutional types necessarily outperforms another in terms of financial performance.

Olivares-Polanco (2004) found that institutional type has no significant affect on the average loan size measure of MFIs. On the contrary, Gutiérrez-Nieto et al. (2009) found higher average levels of social efficiency for NGOs, although "the only field in which NGOs clearly outperform non-NGOs is the support of women" (Gutiérrez-Nieto et al., 2009, p. 112).

Regulation

Regulation is an important consideration in the assessment of financial service providers in the conventional financial market. According to Fitch (2008), regulation is an equally important consideration for MFIs, despite the weak regulatory and supervisory framework in many developing and emerging countries. Fitch argued that government regulation has at least the potential to positively affect the development of MFIs. S&P (2007) argued that establishing an appropriate legal, regulatory, and supervisory framework for the microfinance industry is a critical responsibility of the government. Alternatively, the agency emphasized the importance of political independent regulatory and supervisory institutions. Morgan Stanley (2008) added that the regulation of MFIs is difficult to compare amongst the various institutional type of institutions and between different countries and regions.

In 2001, Tucker discussed the financial performance of regulated MFIs, unregulated MFIs, and commercial banks in Latin America. Tucker (2001) found that unregulated MFIs showed better financial results, but faced higher operating expenses. Regulated MFIs performed better in terms of efficiency. Regulated MFIs showed a higher number of loans per loan officer, and a higher average loan size compared to unregulated MFIs. Finally, regulated and unregulated MFIs showed a similar performance in terms of their portfolio at risk > 30 days ratios.

Membership of a microfinance network

The number of international, regional, and national networks and associations connecting and facilitating MFIs worldwide has increased over the decades. These organisations provide services, like policy advocacy, information dissemination, capacity building, performance monitoring, and financial intermediation. (CGAP, 2006)

According to Morgan Stanley (2008, p. 127), "due to the young nature of the microfinance industry, many MFIs rely on shareholders and networks for financial, strategic, and technical support". A formal or informal relationship between a MFI and a national or international network can positively affect the development of the financial institution. A microfinance network may provide funding and technical services, or the reputation of the network may provide greater opportunities in attracting such sources of support. Fitch (2008) reported that the membership of a national or international microfinance network positively affects the MFI's rating.

Years of age

The age of MFIs is expected to be related to: (1) the institutional type, its (2) main source of funding, and (3) the regulation of MFIs. In addition, the maturity of a MFI is important in the assessment of institution's management, strategy and operational risk. S&P (2007), Fitch (2008), and Morgan Stanley (2008) reported that a short track record can weigh negatively on the MFI's risk rating.

Cull et al. (2007) found that the years of age measure is positive and significant related to the financial performance indicators of MFIs. Christen (2001) argued that an increasing average loan size results from the natural evolution of maturing and growing MFIs. Olivares-Polanco (2004) explored Christen's (2001) assumptions, and expected older institutions to show larger average loan sizes. Unexpectedly, Olivares-Polanco (2004) found a significant and negative relation between the variable age the average loan size divided by per capita GDP for the poorest 20%, suggesting that older institutions offer smaller size loans. On the contrary, for MFIs applying the individual based lending methodology, Cull et al. (2007) found a significant and positive coefficient for age related to the average loan size divided by per capita GDP for the poorest 20%. Mersland and Strøm (2009) found the same positive relationship for MFIs using various lending methodologies. Lastly, Gutiérrez-Nieto et al. (2009) found no significant relationship between the age and social performance of MFIs.

In the study of Cull et al. (2007) a log-variable for *years of age* was included. However, a percentage change interpretation of the years of age measure seems inappropriate, and the advantage in dealing with outliers by including the log-variable seem irrelevant. Consequently, the regression models include a normal variable for years of age.

Size of the institution

The size of financial institutions is expected to reflect the institution's capacity to absorb financial problems and the level of diversification in operations. Alternatively, MFIs are predominantly small and undiversified financial institutions operating on a regional level. Consequently, "the size factor limits an MFI's ability to gain efficiencies through economies of scale, and limits their ability to significantly lower their cost income ratio to levels typical of normal mainstream banks" (Fitch, 2008, p. 11).

Fitch and Morgan Stanley (2008) chose to assess the size of MFIs by analyzing the institution´s loan portfolio and total assets base. The agencies argue that the regional size of the economy and population directly affects the portfolio size of MFIs. Morgan Stanley reported that the loan portfolio size provides an important insight in the institution's stability, experience and growth potential. Alternatively, S&P (2007) analyzed the capitalisation and ability to absorb unexpected losses by the size of the total asset base of a MFI.

Cull et al. (2007) found that "the significant positive coefficients for institution size in the average loan specifications, and the significant negative coefficient in the specifications on gender, indicates

that larger individual-based lenders do relatively poorly in terms of outreach". On the contrary, the size measure was not significant in the model of Mersland and Strøm's (2009).

This research includes a log-variable for the base of total assets, since a concern for outliers and heteroskedastistic errors exist in the case of the size indicator. Alternatively, Cull et al. (2007) included a size indicator for the gross loan portfolio, categorising: (1) small, (2) medium, and (3) large loan portfolios.

5.1.4 Selection of the country risk indicator

By definition "country risk covers all risks that are related to the conclusion of financial contracts with a foreign partner whereby it is possible that economic events adversely affect the creditworthiness of all debtors within a country (collective debtor risk) or whereby intervention of a foreign government prevents that financial obligations to be met" (van Efferink et al., 2003, p. 13). Three types of risk, not necessarily independent, determine country risk. First, *sovereign risk* measures the capacity and willingness of a sovereign government to realize direct and indirect external debt-service obligations. Second, the risk that a local currency is no longer convertible into a foreign currency or that a foreign currency can no longer be transferred abroad (for example, due to a lack of liquidity) is measured by the *transfer risk*. In addition, transfer risk may include the risk of a significant devaluation or depreciation of a local currency. As a result, the foreign currency wealth of a local debtor may decline, hindering the debtor's ability to meet obligations previously made related to foreign currency denominated loans. Third, *political & economic risk*, or collective debtor risk, measures the risk that political or economic events negatively affect the creditworthiness of all debtors within a country. (van Efferink et al., 2003)

At ING, the Country Risk Research department is part of the Corporate Credit Risk Management department, which supports the global wholesale activities of the bank. ING's *country risk rating* is determined by the domestic macro risk and transfer risk. The domestic macro risk indicator is similar to the previously mentioned political & economic risk indictor. ING distinguishes between four country risk rating categories.

Table 5.1. Classification of country risk rating categories by ING

Rating	*Creditworthiness*	*Countries*
1-7	Investment grade: prime rating	Best performing high income countries
8-10	Investment grade: medium risk rating	Lowest performing high income countries and better performing middle income countries
11-17	Speculative grade	More vulnerable middle-income developing countries
18-22	Debt problem grade	Countries facing debt problems

Source: ING Country Risk Research (2009)

In addition, ING reports a separate *central government rating*, covering the sovereign government risk. ING (2009[b]) and van Efferink et al. (2003, p. 15) reported that "the banks' risk appetite, which

could be reflected by an imposed limit on total foreign commitments, together with a risk indicator for the countries (country rating) determine the maximum desired amount of claims on individual countries (country limits)". Country limits may be spread over different dimensions, like: (1) type of debtors, (2) type of economic activities, (3) maturity of lending, or (4) type of currencies.

The relation between country risk ratings and the performance of the microfinance industry is ambiguous. First, Gonzalez (2007) found no significant or positive relation between the performance of MFIs and changes in GNI per capita for 639 institutions in 88 countries. These finding illustrate the resilience of the microfinance industry to domestic macroeconomic shocks. Second, Krauss & Walter (2008) found that MFIs were significantly detached from global capital markets in terms of their sensitivity to market risk. More interestingly, MFIs were significantly more sensitive to domestic market risk. However, the domestic risk exposure of MFIs was still lower than for most alternative emerging market investments. Krauss & Walter (2008) argued that the difference in sensitivity to market risk was based on the predominantly non-public ownership structure of MFIs. The non-public ownership structure reduces the institutions' dependence on capital markets and the limits the international exposure of microfinance clients. Second, several characteristics of microfinance clients reduced the MFI's resistance to macroeconomic shocks. Third, the authors (2008) found that the sensitivity to market risk of MFIs increases as the industry matures. Krauss & Walter (2008, p. 24) concluded, "the results suggest that MFIs may have useful diversification value for international portfolio investors able to diversify away from country risk exposures".

Summarizing, ING's country risk rating indicator, including the domestic macro risk indicator and transfer risk indicator, is used as the measure of country risk in the research model. In the research, ING's central government rating indicator is ignored, since the correlation between country risk rating and central government rating indicators is close to perfect.[28]

5.1.5 Selection of the control variables

For reasons of robustness, four control variables are used in the regression explaining the financial performance of MFIs: (1) yield on gross loan portfolio, (2) portfolio at risk (PAR), (3) financial expense, and (4) operating expense over. Also, two control variables are included in the regression explaining the social performance of MFIs: (1) borrowers per staff member, and (2) cost per borrower. In addition, differences in the financial and social performance amongst different regions are captured by including regional dummies.

Yield on gross loan portfolio

The nominal yield on gross loan portfolio indicates the portfolio's ability to generate cash financial revenue from interest, fees and commissions. (CGAP, 2003) Fitch (2008) found that, traditionally,

[28] Correlation coefficient of the country risk rating indicator and government risk indicator for the countries present in the dataset = 0,975.

MFIs show a relatively high portfolio yield ratio. The MIX (2009[e]) reported on the nominal and real yield on gross loan portfolio, but data availability for real yield is limited.

Cull et al. (2007) studied the relationship between the financial performance and real yield of MFIs, and found a positive and significant relationship. Interestingly, the financial and OSS ratios increased in yield, but only up to the point where a negative quadratic yield variable outweighed the positive linear coefficient, at approximately 60 percent per year. The inverted U-shaped relationship was found for MFIs applying the individual-based lending methodology. The authors (2007, p. 18) stated, "when lenders face informational asymmetry and borrowers lack collateral, charging interest rates above a certain threshold could aggravate problems of adverse selection".

Portfolio at risk > 30 days

The PAR ratio, is the most accepted measure of loan portfolio quality. The ratio is calculated by dividing the PAR by the gross loan portfolio. Including the ratios as an independent variable allows testing the association of loan portfolio quality with the financial performance of MFIs.

Morgan Stanley (2008) reported that the PAR ratio is widely used in the microfinance industry. According to the agency, the conservative ratio fits the infancy of the industry and the relatively short-term maturity of microloans. Fitch (2008) expected the PAR ratio of MFIs to be in the low single-digits range, but recognized that the ratio may vary across regions.

Mersland & Strøm (2009) expected the average loan size of MFIs to increase with risk per credit client. However, the PAR indicator was never significant, and the influence of the indicator on the occurrence of mission drift therefore remained ambiguous.

Financial expense and operating expense

The financial and operating expenses provide an insight in the cost structure of the MFI. As discussed in table B2 of the appendix, financial expenses include all interest, fees, and commissions incurred on deposit accounts held by microfinance clients of the MFI. The operating expenses include personnel expenses and administrative expenses, but exclude financial expenses and loan loss provision expenses. (CGAP 2003, MIX, 2009[b]) Unfortunately, the loan loss provision expenses could not included in the research due to the limited availability of data. Both expenses are divided by the institution's average periodic total assets, to control for the variation in institutional size.

Both Fitch (2008) and Morgan Stanley (2008) recognized the operating expense over assets ratio as an important cost efficiency indicator for MFIs. Cull et al. (2007) found a positive relation for the labour cost, and a negative relation for the capital cost with the financial performance of the MFIs in their dataset.

Borrowers per staff member and cost per borrower

Two control variables are included in the regression models for the social performance of MFIs. The borrowers per staff member and cost per borrower measures are respectively a productivity and a efficiency indicators.

First, the number of borrowers per member of staff indicate the work load of loan officers, and the level of personal attention and interaction between microfinance clients and the MFI. (CGAP, 2003). On the one hand, a low number of borrowers for the indicator may be indicating a high level of productivity. On the other hand, a low number of borrowers may be associated with the targeting of larger and wealthier clients. The explanatory role of the productivity measure in social performance is ambiguous

Second, the cost per borrower determines the average cost of maintaining an active microfinance client, and is considered a meaningful efficiency measure. Mersland & Strøm (2009) found that the average loan size of MFIs increased with the average cost per client. According to the authors, inefficient MFIs are the most susceptible to mission drift and should shift towards providing larger average size loan. Mersland & Strøm (2009, p. 18) stated "when an MFI increases its cost efficiency, it is better able to advance loans to poorer members of the community". In terms of the explanatory function of financial performance and the cost per borrower, the authors found that the effect of the cost per borrower was larger on the occurrence of mission drift. The authors (2009, p. 18) concluded that "if an MFI tends to increase cost efficiency more than average profit, we should not expect mission drift".

Region

Finally, dummy variables are included to correct for country differences in the financial, social performance and the occurrence of mission drift in the regression models. Section 3.1 and 3.2 provided an insight in the regional differences in the financial and social performance of MFIs around the world.

5.2 The hypotheses and research model

First, the research concentrates on the financial performance of MFIs. The general assumption underlying hypothesis 1 is that higher risk indicators imply lower financial performance by the MFIs.

- *Hypothesis 1a: The institutional risk indicators are negatively related to the financial performance of a MFI.*
- *Hypothesis 1b: The country risk indicators are negatively related to the financial performance of a MFI.*

A high risk profile is associated with relatively young and small size MFIs, and with MFIs that are independent from international networks. Based upon previous studies, the relation between the regulation of MFIs and their financial performance remains ambiguous. The expectation is that MFIs

transformed into NBFIs and microfinance banks perform better than NGOs in terms of their financial performance. The exact relationship between the country risk rating indicator and financial performance is yet ambiguous. The expectation is that country risk rating is negatively associated with economic and financial market development. An unstable or less developed capital market, a low level of competition, and a higher share of NGOs or socially driven MFIs could cause a negative relation between the country risk rating indicator and financial performance measures.

Second, the research concentrates on the social performance of MFI. The general assumption underlying hypothesis 2 is that higher risks indicators imply higher social performance by the MFIs.

- *Hypothesis 2a: The institutional risk indicators are positively related to the social performance of a MFI.*
- *Hypothesis 2b: The country risk indicators are positively related to the social performance of a MFI.*

A high risk profile is associated with more mature and large size MFIs, or commercialising institutions. NGOs are expected to outperform other institutional types of MFIs in terms of social performance. The relation between the social performance of MFIs and both international network membership and regulation is yet ambiguous. In addition, the exact relation between the country risk rating indicators and the social performance of MFIs is ambiguous. In the line of reasoning, the country risk rating indicators may be expected to be positively related to the social performance measures.

Third, the research explorers the occurrence of mission drift in microfinance. The occurrence of mission drift is found in a negative relationship between the social performance and financial performance indicators.[29]

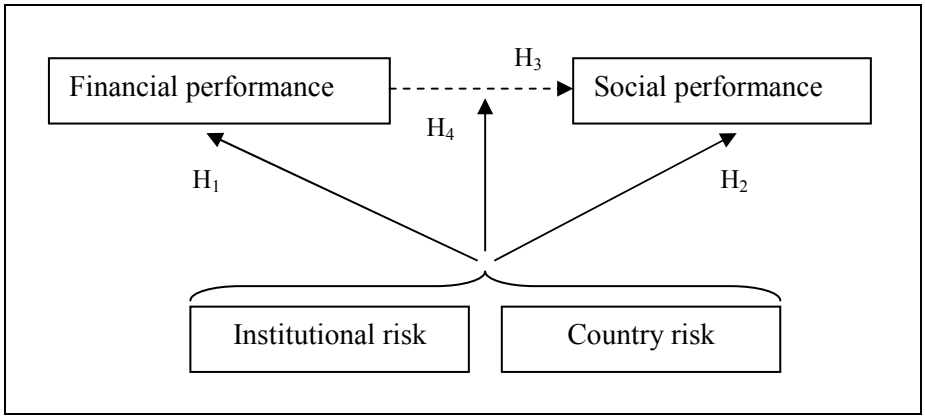
- *Hypothesis 3: A negative relationship is found between the social performance and the financial performance indicators of the MFIs.*

Fourth, hypothesis 4 explorers the influence of the institutional and country risk indicators in predicting the occurrence of mission drift. Following from hypothesis 1 and 2, the expectation is that the risk indicators have a moderating effect on the negative relationship between the social and financial performance indicators.

- *Hypothesis 4: The risk indicators have a moderating effect on the relation between the social performance indicator and the financial indicator of a MFI.*

[29] Cull, Demirguç-Kunt & Morduch (2007), Olivares-Polanco, F. (2004), Hermes, Lensink & Meesters (2007), Gutiérrez-Nieto, Serrano-Cinca & Mar Molinero (2009), and Mersland & Strøm (2009).

Figure 5.2. The research model and hypotheses



5.3 Regression approach

Following the work of Olivares-Polanco (2004) and Cull et al. (2007), the ordinary least square regression approach (OLS) is used in this research. In line with the hypotheses the research requires three general regression models: (1) financial performance regression, (2) social performance regression, and (3) mission drift.

General multiple regression models are used to analyse the explanatory function of the control variables and independent variables. The selected financial and social performance indicators are first used as the dependent variables for testing hypothesis 1 and 2. For hypothesis 3 and 4, the social performance indicators function as the dependent variables, and the financial performance indicators become part of the independent variables in the regression. Throughout the research, the independent variables include the selected institutional and country risk indicators. Alternatively, regression models with interaction terms are used to analyse the influence of the independent variables in more detail. The dummy variables *institutional type bank*, *country risk category 1* and *region Latin America and Caribbean* are left out of the regression analysis for reasons of singularity.

In chapter 6, section 6.3.1 provides an insight in the descriptive statistics of the variables and indicators present in the dataset. Preliminary, the minimum and maximum values suggest a wide range for many of the variables. Hence, outliers may be a concern in the regression analyses. Woolridge (2003, p. 312) stated "OLS is susceptible to outlying observations because it minimizes the sum of squared residuals: large residuals (positive or negative) receive a lot of weight in the least squares minimization problem". Cull et al. (2007, p. 17) faced the same concern and applied a robust estimation technique. The authors found that "those results are similar to the base results, although there are a few minor differences".

Extreme outliers, even in a large sample, can influence the error variances of regression coefficients and the standard error of the regression. Consequently, outliers can harm the homoskedasticity assumption underlying the OLS regression approach. The homoskedasticity assumption implies that the errors in the regression have a constant variance, conditional on the explanatory variables. The homoskedasticity assumption is crucial for justifying the t-tests, F-tests and confidence intervals of the

linear regression model. To deal with the outliers, and subsequent potential presence of heteroskedasticity, White's heteroskedasticity consistent standard errors are used in the research.[30] White's standard errors produce more normally distributed standard errors.

In chapter 6, section 6.3.2 provides an insight in the correlation between the selected variables and indicators. Preliminary, no exact or extremely high linear combinations between the independent variables are found. Mersland & Strøm (2009) found some significant bivariate correlations amongst explanatory variables, but were not concerned with problems of colinaerity. The authors (2009, p. 13) reported that correlations need to be in the range of 0,8 to 0,9 to detect collinearity among two variables. Consequently, the presence of perfect collinearity or multicollinearity is not a concern.

Additionally, the percentage of women borrowers is a limited dependent variable, whose range is between 0 and 100. A limited dependent variable is best approached by using the Tobit model. "Tobit models refer to regression models in which the range of the dependent variable is constrained in some way" (Amemiya, 1984, p. 3). However, using a Tobit model for truncated models offered no new insights.

5.4 Conclusion

A selection of variables and indicators used for the financial performance, social performance, institutional risk, and country risk measures is presented. An overview of the selection and measurement of the variables and indicators is presented in appendix tables B1 and B2. Unfortunately, a number of relevant financial performance indicators and institutional risk indicators could not be included due to the unavailability of data for a large sample of MFIs. For robustness, a selection of control variables have been added to the regression models.

The formal problem statement is transformed into a structured research model. The general assumption underlying *hypothesis 1* is that higher risk indicators imply lower financial performance by the MFIs. The general assumption underlying *hypothesis 2* is that higher risk indicators imply higher social performance by the MFIs. *Hypothesis 3* assumes that a negative relationship between the social and financial performance indicators is found, providing evidence for the occurrence of mission drift. *Hypothesis 4* predicts that the risk indicators the institutional risk and country risk indicators have a moderating effect on the negative relationship between the social and financial performance indicators. Apart from the relationship between financial performance and social performance, the research analyses the relationship between cost efficiency and productivity and social performance.

In this research the OLS regression approach is used. The regression approach has been successful in previous studies. In line with the hypotheses the research contains three general regression models: (1) financial performance regression, (2) social performance regression, and (3)

[30] White proposed replacing the homoskedasticity assumption by a weaker assumption, the squared regression error is assumed uncorrelated with all the independent variables, the squares of the independent variables and all cross products. "The [White] test is explicitly intended to test for forms of heteroskedasticity that invalidates the usual OLS standard errors and test statistics" (Woolridge, 2003, p. 268)

mission drift regression. To deal with the concern for outliers, and subsequent potential presence of heteroskedasticity, White's heteroskedasticity consistent standard errors are used in the research.

Chapter 6 Data collection and preliminary data analysis

Section 6.1 provides an insight in the various sources and the process of data collection. Multiple sources have been combined in order to collect general information, financial and social performance data of 600 MFIs active in 84 countries around the world. Section 6.2 provides an introduction to the sample of MFIs, by discussing the distribution of MFIs over the institutional type and regions. Section 6.3 provides the preliminary data analysis. The section concentrates on the descriptive statistics and correlation of the selected variables and indicators.

6.1 Data collection

Data is obtained from the Microfinance Information eXchange (2009) database. In June 2009, the MIX contained the information from 1406 MFIs operating in several regions around the world. Per MFI, the database provides: (1) general and background information, (2) information on the institution's outreach and impact, (3) financial data, (4) audited financial statements, and (5) rating reports.

Apart from the data obtained from the MIX, data on the gross domestic product (GDP) of the countries present in the dataset is retrieved from the Central Intelligence Agency (2009) and the International Monetary Fund (2009). Data on the GDP of the 20% poorest of the population is retrieved from the United Nations Development Programme (2007) and the United Nations University (UNU WIDER, 2009). Unfortunately, data on the income distribution is unavailable for Afghanistan, East Timor, Palestine region, Serbia and Montenegro, Syria, and Togo. For the average loan size per borrower over GDP per capita of the 20% poorest of the population variable the dataset contains observation of 576 MFIs. Finally, the country risk rating indicators are retrieved from Country Risk Research department of ING (2009[b]).

6.2 The dataset

The dataset contains general information, financial performance data and social performance data of 600 MFIs. All the observations are from the year 2007. In some cases the information and data is from the period March 2007 to March 2008. The 600 MFIs reach out to 49.799.038 microfinance clients around the world, of whom 37.358.038 are women microfinance clients. The MFIs are active in 84 countries, which are categorized into 6 regions.[31] In addition, the MFIs are categorized by institutional type.[32]

Table 6.1 shows the distribution of the MFIs, total assets, active borrowers and women borrowers in the dataset by institutional type. Most of the institutions in the dataset are a NGO or

[31] Namely: (1) Africa, (2) East Asia and Pacific (EAP), (3) Eastern Europe and Central Asia (EECA), (4) Latin America and the Caribbean (LAC), (5) Middle East and North Africa (MENA), and (6) South Asia (SA)

[32] Namely: (1) microfinance banks (banks), (2) cooperatives and credit unions (CCU), (3) non-bank financial institutions (NBFIs), (4) non-profit organisations (NGOs), (5) rural banks, and (6) other institutions.

NBFI. The dataset contains relatively few microfinance banks, while the banks hold 38 percent of the assets. NGOs reach out to the highest number of active microfinance clients, while cooperatives and credit unions reach out to relatively few borrowers. Also, NGOs reach out to the highest percentage of women borrowers, 53 percent of the total number of women clients. Alternatively, 86 percent of the number of active borrowers reached by NGOs are women clients.

Table 6.1. Data distribution by institutional type

	Institutions	*Assets*	*Borrowers*	*Women borrowers*
	%	*%*	*%*	*%*
Bank	5%	38%	21%	16%
CCU	15%	16%	5%	3%
NBFI	33%	28%	27%	26%
NGO	41%	16%	46%	53%
Rural Bank	2%	1%	1%	1%
Other	4%	1%	1%	1%
	100%	100%	100%	100%

Table 6.2 shows the distribution of the MFIs, total assets, active borrowers and women borrowers in the dataset by region. Most MFIs in the dataset are located in the LAC region, and most of the total assets are found in the LAC region. MFIs in the Africa and EECA region hold relatively few assets. As expected, MFIs in the South Asia region reach out to the highest percentage of total borrowers, and to the highest percentage of women borrowers. Alternatively, 89 percent of the borrowers reached in South Asia are women borrowers. In the EECA region the women borrowers make up only 49 percent of the total number of borrowers.

Table 6.2. Data distribution by regions

	Institutions	*Assets*	*Borrowers*	*Women borrowers*
	%	*%*	*%*	*%*
Africa	15%	10%	7%	5%
EAP	11%	10%	15%	14%
EECA	17%	7%	2%	1%
LAC	39%	58%	21%	15%
MENA	6%	4%	4%	3%
South Asia	13%	11%	51%	61%
	100%	100%	100%	100%

The distribution of the MFIs' institutional types over the different regions in the dataset is shown in table 6.3. In Africa, 36 percent of the 87 MFIs are NBFIs, followed 33 percent of the MFIs being NGOs. Only 3 percent of the MFIs are microfinance banks. In the EAP region, 46 percent of the 65 MFIs are NGOs. Rural banks make up 25 percent of the MFIs, and NBFIs make up 33 percent of the institutions. NBFIs make up 60 percent of the 99 MFIs in the EECA region in the dataset. In this region, cooperatives and credit unions make up 23 percent of the institutions. In the LAC region 51 percent of the 236 institutions are NGOs, followed by NBFIs making up 25 percent of the institutions.

NGOs dominate in the MENA region, making up 70 percent of the 33 institutions in the region. Banks and cooperatives and credit unions are not found in the MENA region, while 12 percent of the institutions are classified as other institutions. In South Asia NGOs and NBFIs respectively make up 41 percent and 38 percent of the 80 MFIs.

Table 6.3. Data distribution of institutional types over regions

	Africa	*EAP*	*EECA*	*LAC*	*MENA*	*South Asia*
	%	*%*	*%*	*%*	*%*	*%*
Bank	3%	5%	7%	7%	0%	3%
CCU	25%	3%	23%	16%	0%	4%
NBFI	36%	22%	60%	25%	18%	38%
NGO	33%	46%	10%	51%	70%	41%
Rural Bank	1%	25%	0%	0%	0%	5%
Other	1%	0%	0%	1%	12%	10%
	100%	100%	100%	100%	100%	100%

Table 6.4 provides an insight in the distribution of the MFIs over the four country risk categories of ING. More than half of the MFIs in the dataset are positioned in ING's country risk category 3, namely 369 MFIs. Respectively 110 and 116 MFIs are found in ING's country risk category 2 and category 4. ING's country risk category 1 only contains 5 MFIs. Distributed by country risk categories, NGOs make up the highest percent of the total institutions in each category. The percentage of NGOs increases slightly, representing 40 percent, 41 percent and 43 percent of the institutions in the country risk categories 1, 2, and 3. NGOs make up 35 percent of the MFIs in country risk category 4, while the percent of cooperatives and credit unions increases from 10 percent in category 3 to 22 percent in category 4.

Table 6.4. Data distribution of institutional types over country risk categories

	Category 1	*Category 2*	*Category 3*	*Category 4*
	%	*%*	*%*	*%*
Bank	20%	2%	6%	7%
CCU	20%	22%	10%	22%
NBFI	20%	33%	34%	33%
NGO	40%	41%	43%	35%
Rural Bank	0%	1%	7%	0%
Other	0%	2%	2%	3%
	100%	100%	100%	100%

6.3 Preliminary data analysis

6.3.1 Descriptive statistics

The descriptive statistics for the variables and indicators used in the research are presented in table B3.

First, the *mean*, *median* and *standard deviations* found for the variables and indicators are similar to the findings of Cull et al. (2007) for the period 1999-2002. In addition, the descriptive statistics seem to correspond to the financial and social information discussed in section 3.1.3 and section 3.2.2.2. The mean ROA ratio is positive (1,958), and the standard deviation is half of the standard deviation found by Cull et al. (2007). Alternatively, Cull et al. (2007) found a negative mean (-0,27). The mean average loans size/ GDP per capita (0,484) is slightly below that of Cull et al. (2007) (0,676), while the average loan size over GDP per capita of the poorest 20% (1,624) significantly lower (2,983). Compared to the 2002-2004 data used by Cull et al. (2007) either: (1) on average loan sizes have slightly declined, and/or (2) on average GDP per capita has increased, and/or (3) the income share of the 20% poorest has on average declined. The mean nominal yield of gross loan portfolio variable (0,333) is slightly below the real yield on gross loan portfolio (0,348) of Cull et al. (2007). An average interest rate of 33 percent charged to microfinance clients by the microfinance industry is probable. The Symbiotics 50 benchmark analysis (2009), for the period 2006-2009, showed an average yield of approximately 32 percent. Meanwhile, a maximum value of interest rates charged to clients of 109 percent is extremely high. As expected, the mean PAR ratio (4,997) is higher than that (3,3) of Cull et al. (2007), as the industry experienced a slight decrease in PAR ratios at the end of 2007.

Second, as mentioned in section 5.3, the *minimum and maximum values* for some variables indicate that outliers may be a concern. For example, the ROA and profit margin ratios in the dataset show very low minimum values. However, the minimum value for the ROA ratios (-86,85) is significantly larger than the size of the minimum value (-154,1) found by Cull et al. (2007). In addition, the average loan size measures show very high maximum values, although both are below the values found by Cull et al. (2007). The PAR ratios show some very high values reaching up to 96,14 percent of the loan portfolio. The value is significantly higher than the maximum value of the PAR ratio (22,3) found by Cull et al. (2007). Lastly, the maximum value of the total assets held by a number of MFIs is very high. More specifically, three MFIs report a significantly large average base of assets.

6.3.2 Correlations

A correlation coefficient measures the linear relationship between two variables that does not depend on the variables' unit of measurement. Table B4 shows the correlation between the selected variables and indicators used in the research.

First, positive and relatively high correlation coefficient between the financial performance indicators variables are found. Nonetheless, no perfect correlation is found. The correlation coefficients are similar to those found by Cull et al. (2007). The correlation between the social performance indicators average loan size/GDP per capita and average loan size/GDP per capita for the 20% poorest is positive and close to perfect (0,930). A very high correlation is expected, as a similar result was found by Olivares-Polanco (2004) (0,924). The correlation between the percentage of women borrowers and the average loans size measures is negative, as expected from the previous findings of Cull et al. (2007) and Hermes et al. (2007).

Second, the control variables show some correlation with the financial and social performance indicators variables. Contrary to the financial expense ratios, the operating expense ratios consistently show a relevant negative correlation with the financial performance indicators. In addition, the operational expense ratios show a high and positive correlation with the nominal yield on gross loan portfolio, although the correlation is not close to perfect (0,745). The cost per borrower ratio shows a consistent correlation with the social performance indicators, which is positive for the average loan size measures and negative for the percentage of women borrowers. The borrowers per staff ratio show an opposite pattern, and a slightly weaker correlation with the social performance indicators.

Third, noteworthy are the positive correlation between NBFIs and regulation (0,316), and the negative correlation between NGOs and regulation (-0,522). These findings are expected: the regulation of MFIs is discussed in more detail in the sections 2.1.2 and 5.1.3. The total assets measure shows a correlation (0,370) with the dummy variable for microfinance banks, which is expected.
Fourth, the country risk rating indicator shows a moderate positive correlation with the average loan size measures, and a weak negative correlation with the percentage of women borrowers indicator.
Finally, the East Asia and Pacific dummy is positive correlated with the institutional dummy rural banks (0,358). The Eastern European and Central Asia dummy shows a positive correlation (0,389), while the South Asia dummy is negative correlated (-0,304) with the cost per borrower ratio. In addition, the South Asia dummy shows a positive correlation with the country risk rating category 2 dummy (0,433).

6.4 Conclusion

A number of sources have been used to obtain the general information, financial and social performance data of 600 MFIs operating in 84 countries around the world. The MIX (2009^{e}) database is the dominant source, and is frequently used for (academic) research purposes. Unfortunately, this data is collected through self-reporting and remains largely unverified.

The 600 MFIs in the dataset reach out to 49.799.038 microfinance clients, of whom 37.358.038 are women microfinance clients. NGOs represent 41 percent of the MFIs in the dataset. The NGOs reach out to 46 percent of the microfinance clients in the dataset, and 53 percent of the

women microfinance clients in the dataset. Microfinance banks represent only 5 percent of the MFIs in the dataset, but hold 38 percent of the total assets.

Alternatively, 39 percent of the MFIs are located in the Latin America and Carribbean region. The MFIs in South Asia reach out to 51 percent of the microfinance clients in the dataset, and 61 percent of the women microfinance clients on the dataset. In general, the distribution of MFIs over the different regions is good. In each region either NBFIs or NGO are the dominant institutional type, while the shares of microfinance banks and rural banks are very low. Distributed by country risk categories, NGOs make up the highest percent, approximately 40 percent, of the total institutions in each category. More than half of the MFIs in the dataset are positioned in country risk category 3, making up 369 MFIs.

The preliminary data analysis explorers the descriptive statistics and correlation table for the variables and indicators used in the research. No extremes or unexpected values for the mean, median and standard deviations of the variables and indicators are found. In addition, the descriptive statistics concentrate on the minimum and maximum observations in the sample. As expected, some extreme values are found. The correlation tables show some medium and high correlation coefficients, but no extremes or perfect correlation between any of the variables is found.

Chapter 7 Regression analysis

Introduced in section 5.2, four hypotheses are derived from the problem statement. These hypotheses can be tested using three regression models: the (1) financial performance regression, (2) social performance regression, and (3) mission drift regression.

This chapter provides the financial performance regression analysis, the social performance regression analysis, and the mission drift regression analysis. The tables presenting the regression results can be found in appendix C.

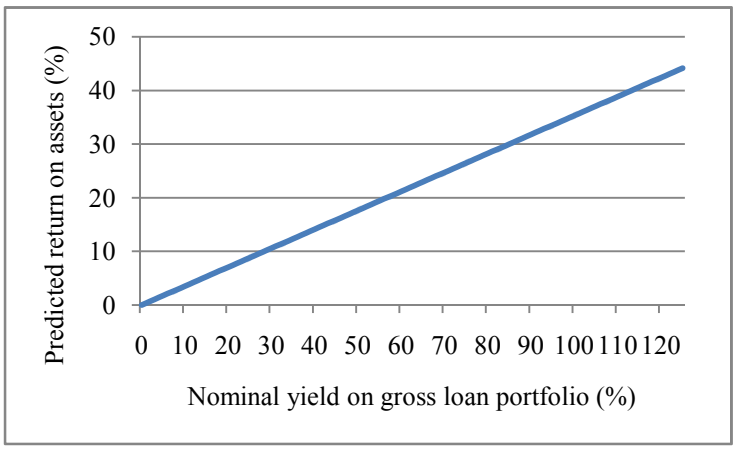
7.1 Financial performance regression analysis

Table C1 shows the general regression models 1, 3, and 5, with R^2's of respectively (0,398), (0,595), and (0,476). Models 2, 4 and 6 have been adjusted for the functional form of a number of independent variables. Improved R^2's of (0,447), (0,649), and (0,488) are found.

The control variables: (1) nominal yield on gross portfolio, (2) portfolio at risk > 30 days, (3) financial expense/total assets, and (4) operational expense/total assets play an important role in the explanatory power of the regression models.

The *nominal yield on gross portfolio* indicator is positive and significant related to the financial performance indicators. Logically, interest rates charged to microfinance clients positively effect the profitability of MFIs. Cull et al. (2007) found evidence suggesting a negative quadratic relationship between the yield and financial performance of individual-based lending MFIs. Evidence of such a quadratic relationship is not found in this research.

Figure 7.1. Partial effect of nominal yield on gross loan portfolio on the predicted return on assets

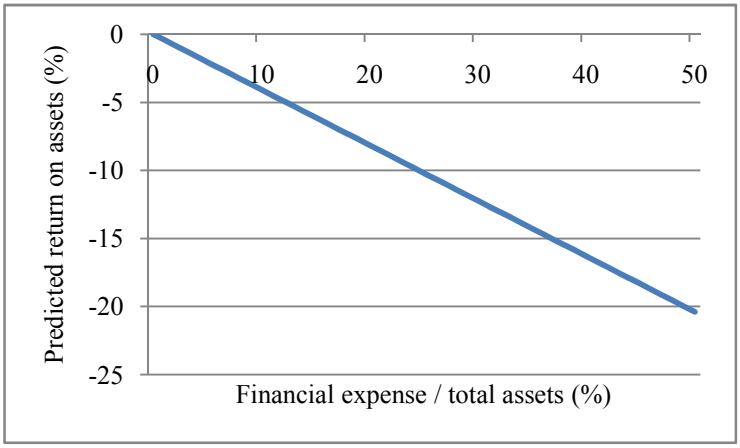


Based on model 4 in table C1.

The regression coefficients of the *financial expense/total assets* and *operational expense/total assets* measures are negative and significant. Rationally, the effect of expenses on the financial performance of MFIs is negative. In addition, the adjusted models 2, 4, and 6 show that the functional form of the

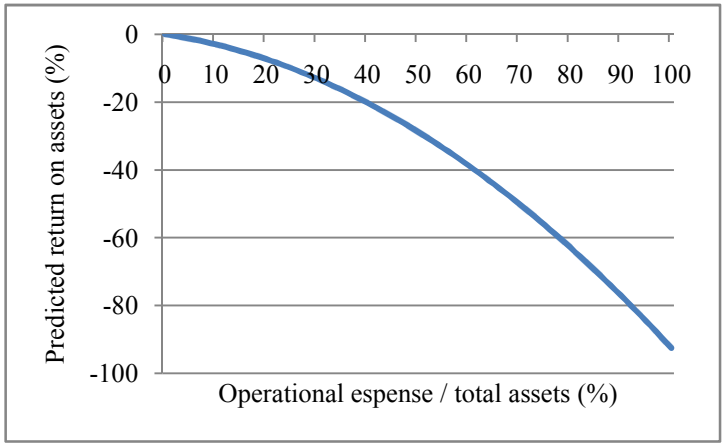
relationship between the financial performance indicators and the operational expense/total assets measure is quadratic. The negative effect of increasing operating expenses on the financial performance of MFIs is progressive.

Figure 7.2. Partial effect of financial expense/total assets on the predicted return on assets



Based on model 4 in table C1.

Figure 7.3. Partial effect of operational expense/total assets on the predicted return on assets

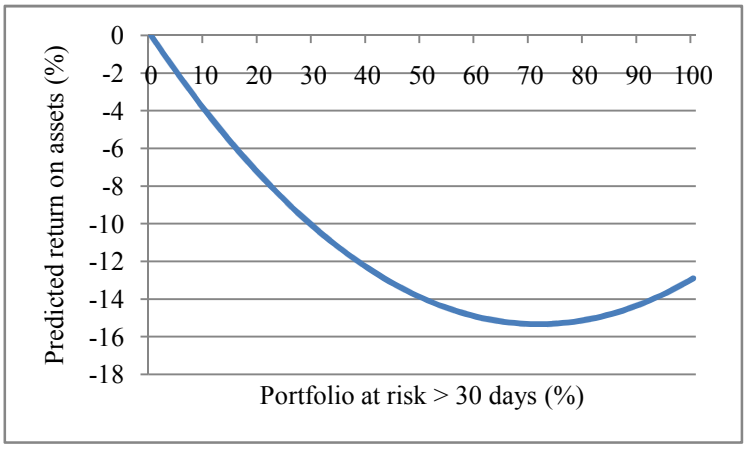


Based on model 4 in table C1.

Regression models 1, 3, and 5 show that the *PAR* indicator is negative and significant related to the financial performance indicators. Alternatively, the adjusted models 2, 4, and 6 show that the functional form of the relationship between the financial performance indicators and PAR ratio is quadratic. The predicted financial performance decreases with the PAR ratio, but only to the point where a positive quadratic PAR variable outweighs the negative linear coefficient. The breakpoint is found at a PAR ratio of approximately 70%.

Logically, the PAR ratio is negatively associated with the financial performance of a MFI, as the measure is an indicator for the quality of the loan portfolio of a MFI. The empirical evidence suggesting a positive quadratic relationship is weak, since only 4 MFIs on the dataset have a PAR ratio above 50%.

Figure 7.4. Partial effect of portfolio at risk > 30 days on the predicted return on assets



Based on model 4 in table C1.

Next, the regression analysis concentrates on the explanatory function of the institutional and country risk indicators in predicting the financial performance of MFIs.

First, the *institutional type* dummies provide an insight in the financial performance of informal and formal MFIs. NBFIs and NGOs outperform in terms of their OSS, but only in model 1. These findings provide weak evidence in support of Cull et al. (2009), who found that being a profitable institution does not necessarily imply being a for-profit type of institution. Also, rural banks show a significant higher ROA ratio compared to microfinance banks, but only in model 4.

Second, the regression results suggest that the *regulation* of MFIs has no significant affect on the financial performance of these institutions. Morgan Stanley (2008) predicted that comparing regulation amongst different types of MFIs and amongst different countries would be troublesome. Nevertheless, table C2 shows the specified regression models 7, 8, and 9 by including interaction terms for the regulation of MFIs.[33] The alternative R^2's found are respectively (0,407), (0,622), and (0,519). Table C2 shows that the positive effect of yield is stronger for regulated MFIs, but only in terms of their ROA and profit margin ratios. Second, the effect of the PAR measure on predicting the financial performance of MFIs is the same for unregulated and regulated MFIs. Already, Tucker (2001) found similar PAR ratios for unregulated and regulated MFIs. Third, the financial and operational expense ratio coefficients are negative for unregulated and regulated MFIs. Regulation does affect the weight of the expenses: the financial and operational expenses weigh heavier on the financial performance of regulated MFI.

Third, the *network membership* of MFIs has no significant affect on the financial performance of MFIs. Although the coefficients of the network membership indicator are consistently positive, the

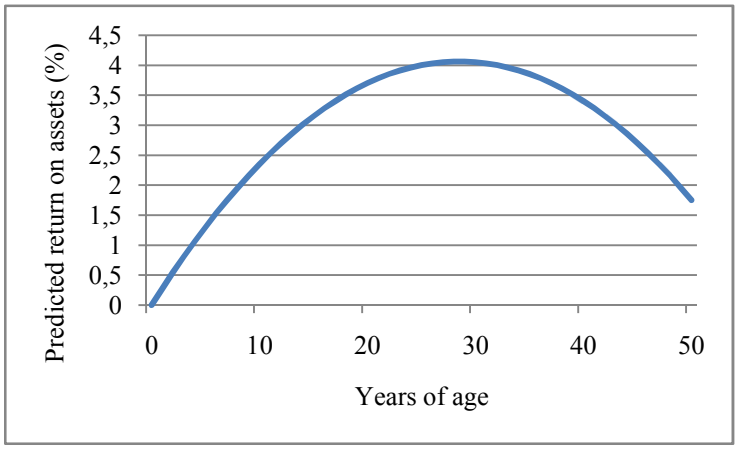
[33] Note, including interaction terms for network membership, years of age, size, and country risk rating provided no new insights.

relationship with the financial performance indicators is never significant. As mentioned in section 5.1.3, such membership does positively affect the rating a MFIs. (Fitch, 2008)

Fourth, no significant relationship is found between the *size* of MFIs and the financial performance indicators. On the contrary, Cull et al. (2007) found a positive and significant relationship between a loan portfolio size indicator and the financial performance indicators of MFIs.

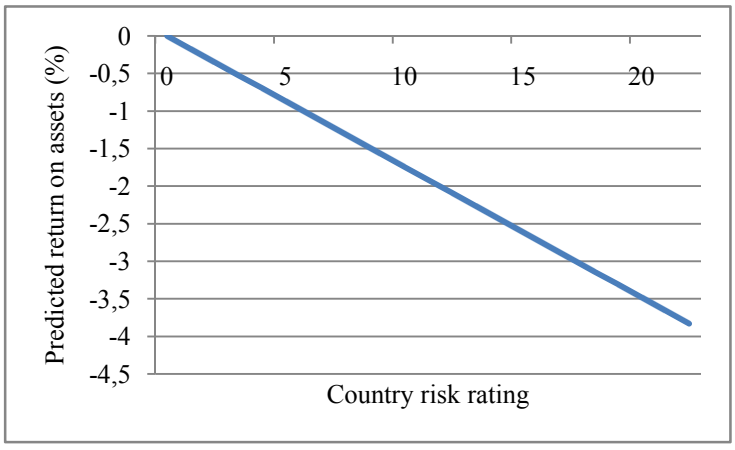
Fifth, Cull et al. (2007) showed that the *years of age* are positive and significant related to the financial performance of MFIs. Hermes et al. (2007) found a negative and significant relationship for the year of establishment; and a positive and significant relation for the years of age in relation to the inefficiency level of MFIs. However, models 1 and 3 consistently show positive but insignificant regression coefficients. Alternatively, models 2, 4, and 6 show that the relationship between the years of age and financial performance indicators of MFIs is in fact quadratic. The predicted financial performance increases with years of age, but only to the point where a negative quadratic age variable outweighs the positive linear coefficient. The breakpoint in years of age is found at approximately 29 years. Hence, the result found pictures Hermes et al.'s (2007) learning curve effect, whereby younger MFIs visibly leapfrog older MFIs in terms of financial performance.

Figure 7.5. Partial effect of years of age on the predicted return on assets



Based on model 4 in table C1.

Figure 7.6. Partial effect of country risk rating on the predicted return on assets



Based on model 4 in table C1.

In terms of country risk, the research provides an insight in the relation between *country risk rating* and the financial performance of MFIs. The regression models show a negative and significant relationship between country risk rating and the predicted financial performance of MFIs. Consequently, country risk rating proofs a relevant indicator in predicting the financial performance of MFIs, despite the limited sensitivity of the microfinance industry to domestics market risk found by Kraus & Walter (2008).

Finally, the *region dummies* provide an insight in the financial performance of MFIs operating around the world. Compared to MFIs in other parts of the world, MFIs in South Asia report lower financial performance ratios. MFIs in Africa, East Asia, and the Middle East and North Africa report

lower ROA and profit margin ratios compared to MFIs in Latin America and the Caribbean and Eastern Europe and Central Asia.

7.2 Social performance regression analysis

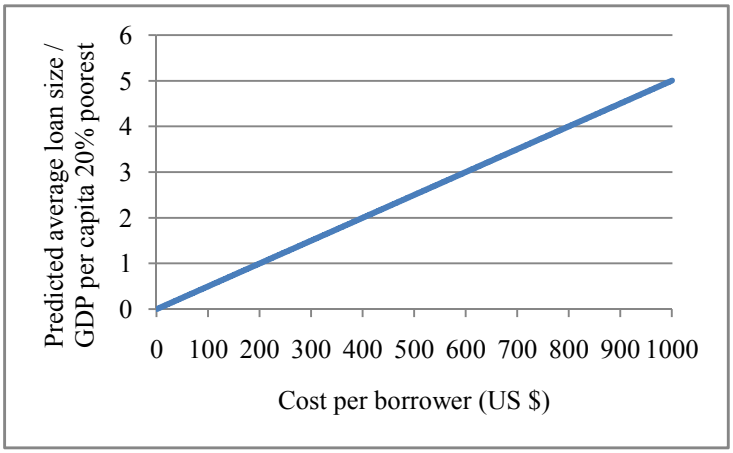
Table C3 presents the general regression models 10, 12, and 14, with R^2's of respectively (0,381), (0,371), and (0,341). Models 11, 13 and 15 have been adjusted for the functional form of some independent variables, improved R^2's of (0,395), (0,387), and (0,349) are found.

Again, the control variables: (1) cost per borrower, and (2) borrowers per staff play an important role in the explanatory power of the regression models.

Table C3 shows a positive and significant relationship between the *cost per borrower* measure and average loan size measures of MFIs. This results implies that: (1) cost inefficient MFIs need to increase their average loan size, or that (2) cost efficient MFIs are better able to lower their average loan size. (Mersland & Strøm, 2009)

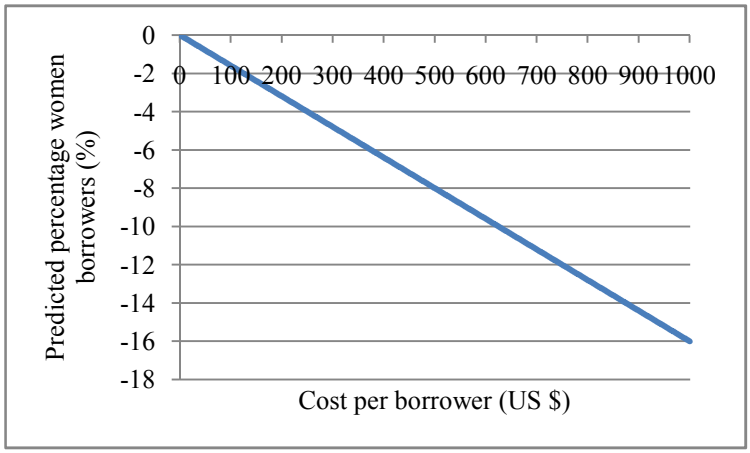
The same relationship is found by Hermes et al. (2007) and Mersland and Strøm (2009). In support of Mersland and Strøm (2009), more evidence is found on the relationship between cost per borrower and the percentage of women borrowers measure. Regression models 14 and 15 show a negative and significant relationship between the cost per borrower measure and the social performance indicator. This result implies: (1) that cost inefficient MFIs need to reduce their outreach to women borrowers, or that (2) cost efficient MFIs are better able to reach out to women borrowers.

Figure 7.7. Partial effect of cost per borrower on the predicted average loan size/GDP per capita 20% poorest



Based on model 13 in table C3.

Figure 7.8. Partial effect of cost per borrower on the predicted percentage women borrowers



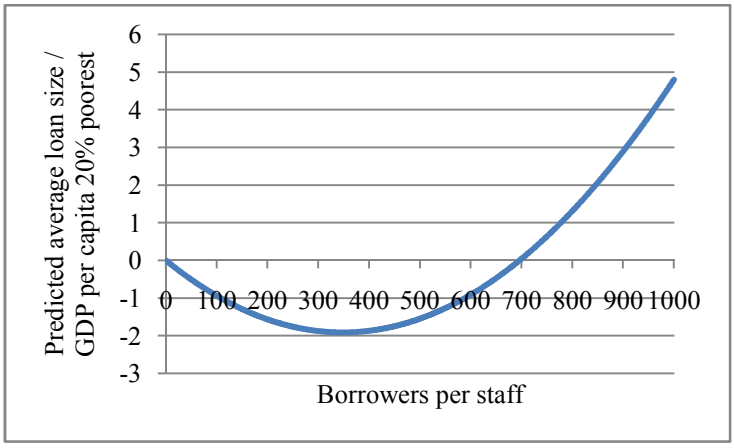
Based on model 15 in table C3.

Second, regression models 10 and 12 show a negative and significant relationship between the *borrowers per staff* measure and the average loan size measures. Alternatively, models 11 and 13 provide a better insight, by showing that the relationship is in fact quadratic. The predicted average loan size measures decrease with borrowers per staff, but only to the point where a positive quadratic

variable outweighs the negative linear coefficient. The breakpoint in borrowers per staff is found at approximately 350 borrowers.

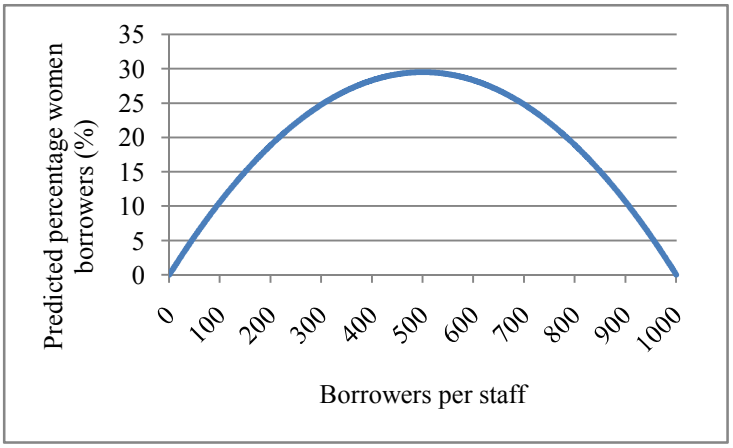
In addition, model 15 provides an insight in the relationship between the productivity measure and the outreach to women microfinance clients by MFIs, by showing that the relationship is also quadratic. The predicted percentage of women borrowers increases with borrowers per staff, but only to the point where a negative quadratic variable outweighs the positive linear coefficient. The breakpoint in borrowers per staff is found at approximately 500 borrowers.

Figure 7.9. Partial effect of borrowers per staff on the predicted average loan size/GDP per capita 20% poorest



Based on model 13 in table C3.

Figure 7.10. Partial effect of borrowers per staff on the predicted percentage women borrowers



Based on model 15 in table C3.

In terms of outreach these findings imply that: (1) less productive MFIs need to target relatively wealthier clients and fewer women borrowers, or that (2) more productive MFIs are better able to target poorer clients and women borrowers, although (3) MFIs that increasingly improve their productivity need to target relatively wealthier clients and fewer women borrowers. Notably, productivity improvements may result from: (1) improvements in the operational efficiency, or (2) by increasing the number of microfinance clients.

The empirical evidence suggests that in the process of making productivity improvements, making a shift from relatively poorer clients to relatively wealthier clients seems to prevail above scaling down the percentage of women borrowers in the active portfolio.

Next, the regression analysis concentrates on the explanatory function of the institutional and country risk indicators in predicting the social performance of MFIs.

First, the dummies for *institutional type* provide an insight in the social performance of informal and formal financial institutions. In terms of average loan size, cooperatives and credit unions slightly outperform, but only in model 11. Rural banks show a significant higher lower outreach to women borrowers compared to banks, in both regression models 14 and 15.

These findings support the study of Olivares-Polanco (2004), who found no significant differences in the average loan size measures of Christen (2001) and Schreiner (2002) among different institutional type of MFIs.

Second, weak evidence is found for the influence of the *regulation* of MFIs on the social performance of MFIs. The regression coefficients are consistently positive for the average loan size measures and negative for the percentage of women borrowers measure, but are only significant in model 12. These findings support Tucker (2001), who found higher average loan size measure for regulated MFIs.

Third, the regression coefficients for the *network membership* of MFIs are consistently negative in relation with the average loan size measure of the MFIs. However, the coefficient is only significant in model 10. The relatively weak evidence suggests that member institutions of a national or international microfinance network tend to reach out to poorer microfinance clients.

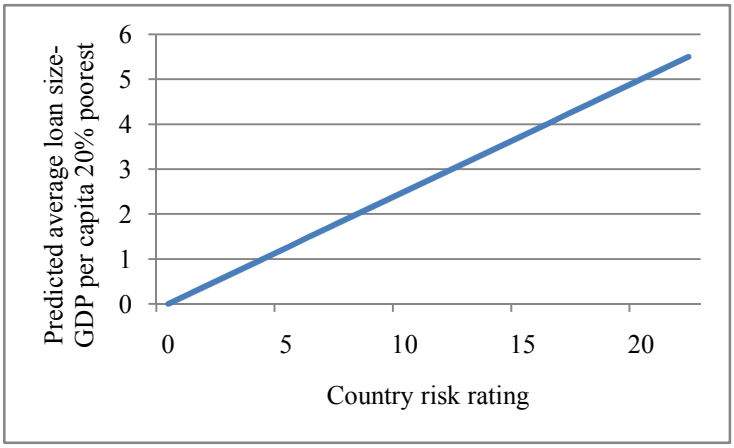
Alternatively, the relationship between network membership of MFIs and outreach to women borrowers is positive and significant, in both model 14 and 15. Microfinance networks, for example the Women´s World Banking network, positively influence the outreach to women microfinance clients by MFIs.

Fourth, Cull et al. (2007) and Mersland and Strøm (2009) found a positive and significant relationship between the *years of age* measure and the average loan size measures of MFIs. On the other hand, Olivares-Polanco (2004) found a negative and significant relation between the variable years of age and the average loan size/GDP per capita 20% poorest measure. The finding suggested that older institutions are offering relatively smaller size loans. Unexpectedly, the regression models 10, 12, and 14 show no significant relationship between the years of age measure and the social performance indicators of MFIs. In addition, regression models 11, 13, and 15 aim to find a quadratic relationship, which is also not found. Also, including the log-variable variant of the years of age measure, as suggested by Cull et al. (2007), provides no new insights.

Fifth, a positive and significant relationship between the *size* measure and the average loan size measures of MFIs is found. In addition, a negative and significant relationship between the size and outreach to women borrower by MFIs is found. A positive and significant relationship is also found by Cull et al. (2007). The result implies that relatively larger size MFIs are expected to target relatively wealthier clients, through providing relatively larger size loans. Alternatively, relatively larger size MFIs are expected to concentrate less on outreach to women borrowers.

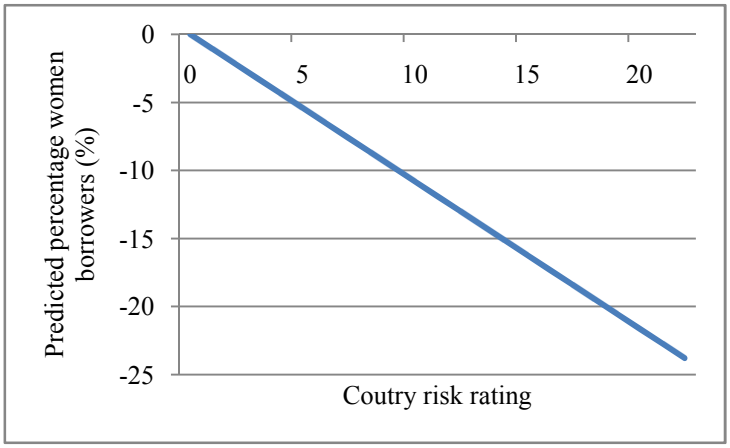
As mentioned in section 5.1.4, the relationship between the *country risk rating* and the social performance of MFIs is ambiguous. The regression models show a positive and significant relationship between the country risk indicator and average loan size measure. Also, the magnitude of the influence of country risk rating on the predicted social performance indicators is substantial. The result suggests that MFIs operating in high risk countries: (1) need to target relatively wealthier clients and (2) need to scale down the percentage of women borrowers in the active portfolio.

Figure 7.11. Partial effect of country risk rating on the predicted average loan size/GDP per capita 20% poorest



Based on model 13 in table C3.

Figure 7.12. Partial effect of country risk rating on the predicted percentage women borrowers



Based on model 15 in table C3.

Finally, the *region dummies* provide an insight in the social performance of MFIs operating around the world. MFIs in Africa and East Asia show positive and significant coefficients for the average loan size/GDP per capita measure. MFIs in the Eastern Europe and Central Asia region provide relatively smaller size loans, as shown by the negative coefficient for the average loan size/GDP per capita 20% poorest measure. In terms of outreach to women borrowers, MFIs East Asia and South Asia considerably outperform MFIs operating in other regions of the world. Illustrative, the outreach to women borrowers by MFIs in South Asia is on average 15 percent higher than the outreach by MFIs in Latin America and the Caribbean.

7.3 Mission drift regression analysis

Table C4 provides general regression models 19, 20 and 21, with R^2's of respectively (0,397), (0,379), and (0,316). The general regression models for the three measures of social performance indicators: (1) average loan size/GDP per capita, (2) average loan size/GDP per capita 20% poorest, and (3) percentage of women borrowers include the financial performance indicator OSS.[34]

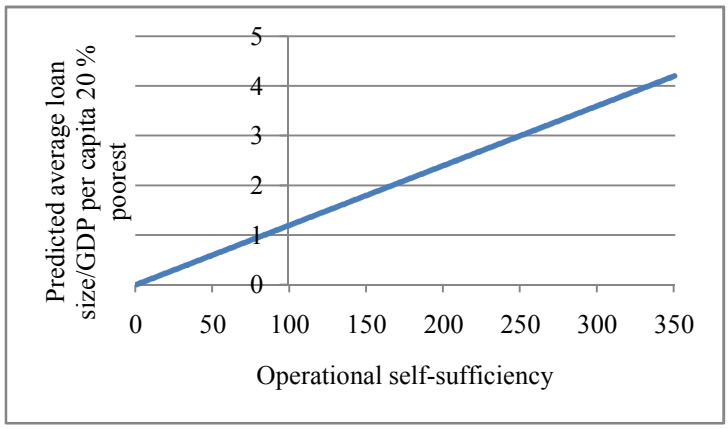
First, the regression analysis aims to find empirical evidence on the occurrence of mission drift in the microfinance industry.

Evidence for the occurrence of mission drift is found for the *operational self-sufficiency* indicator. In other words, strong evidence for the existence of a trade-off between the financial and social performance of MFIs is found. The financial performance indicator is positive and significant related to the average loan size measures, in model 19 and 20. The financial performance indicator is negative related to the percentage of women borrowers measure, however the regression coefficient in model 21 is not significant.

[34] Similar results are found using the financial indicators: *returns on assets* and *profit margin*.

Olivares-Polanco (2004) also found a positive and significant relation between the ROA measure and the average loans size/GDP per capita 20% poorest measure. Consequently, the authors claimed to have found a trade-off between profitability and the depth of outreach. Mersland & Strøm (2009) found the same positive and significant relation between their average profit indicator and average loan size measure.

Figure 7.13. Partial effect of operational self-sufficiency on the predicted average loan size/GDP per capita 20% poorest



Based on model 20 in table C4.

The finding implies that (1) MFIs with an OSS ratio below 100% need to target wealthier microfinance clients, and (2) more profitable MFIs are able to target poorer microfinance clients. In other word, more profitable MFIs present evidence for the occurrence of mission drift. Noteworthy, the financial regression analysis in section 7.1 showed that the financial performance indicators of MFIs are (1) positive related to the yield charged by MFIs, (2) negative related to the financial expenses, and (3) negative related to the operational expenses of MFIs.

Second, evidence for the occurrence of mission drift is found in the *cost per borrower* measure. The cost efficiency measure is positive and significant related to the average loan size measures, and negative and significant related to the outreach to women borrowers measure. This result implies that cost inefficient MFIs are more susceptible to the occurrence of mission drift, both in terms of outreach to poorer clients and outreach to women microfinance clients.

Third, evidence for the occurrence of mission drift is found for the *borrower per staff* measure. As mentioned in section 7.2, a positive quadratic relationship is found between the productivity measure and the average loan size measures. Alternatively, a negative quadratic relationship is found between the productivity measure and the percentage women borrowers measure. Consequently, great improvements in terms of productivity, or high levels of productivity, may signal that MFIs are more susceptible the occurrence of mission drift. Again, in the process of making productivity improvements, making a shift from relatively poorer clients to relatively wealthier clients seems to prevail above scaling down the percentage of women borrowers in the active portfolio. Notably, the

occurrence of mission drift is harder to perceive, as improvements in terms of productivity first allow for the occurrence of reverse mission drift of MFIs.

As mentioned in section 4.2, Mersland & Strøm (2008) found a similar pattern of relationships for the average profit and the average cost measures and the average loan size measure of MFIs. The authors found that profitability and cost efficiency may outweigh each other, and concluded that empirical evidence on the occurrence of mission drift is not found. Hence, the previous findings support the suggestions made by Mersland & Strøm (2008): MFIs are able to prevent the occurrence of mission drift by balancing their levels of profitability, cost efficiency, and productivity.

Next, the research concentrates on the influence of the institutional risk and country risk indicators on the trade-off found between the financial and social performance of MFIs.

First, the *institutional type* dummies provide an insight in the financial and social performance of informal and formal MFIs. The regression analyses from section 7.1 and 7.2 provide weak evidence suggesting differences in the financial and social performance between the types of institutions. In terms of financial performance, weak evidence suggests that NBFI's and NGO outperform. No significant evidence is found suggesting that NBFIs and/or NGOs perform relatively good or bad in terms of social performance. Hence, NBFIs and NGOs are relatively more susceptible to the occurrence of mission drift. In addition, weak evidence suggest that rural banks perform relatively good in terms of financial performance. On the contrary, the social performance regression analysis shows that rural banks perform lowest in terms of outreach to women borrowers. Consequently, rural banks are the most susceptible to the occurrence of mission drift, through weak social performances.

Second, the financial performance regression analysis shows that the *regulation* of MFIs has no affect on the financial performance of MFIs. Alternatively, weak evidence is found suggesting that the regulation of MFIs positively affects the average loan size measures of MFIs. Consequently, regulations makes MFIs more susceptible to the occurrence of mission drift, by negatively affecting the social performance of the institutions.

Third, the financial performance regression analysis shows that the *network membership* of MFIs has no affect on the financial performance of MFIs. The social performance regression analysis shows weak evidence suggesting that the network membership of MFIs negatively affects the average loan size indicators. Strong evidence suggests that the network membership of MFIs positively affects the percentage of women borrowers measure. Hence, MFIs associated with national or international microfinance networks are less susceptible to the occurrence of mission drift, as their membership is expected to positively affect their social performance.

Fourth, the social performance regression analysis shows that the *years of age* of MFIs has no affect on the social performance of MFIs. On the contrary, the financial performance regression analysis shows evidence suggesting a negative quadratic relationship between the years of age and the financial performance of MFIs. Figure 7.5, in section 7.1, shows evidence of a learning curve effect, whereby younger MFIs visibly leapfrog older MFIs in terms of financial performance. Younger MFIs,

approaching the age of approximately 30 years, are more susceptible to the occurrence of mission drift. Alternatively, MFIs beyond the age of approximately 30 years are more susceptible to the occurrence of reverse mission drift.

Evidence is found suggesting that larger *size* MFIs are more susceptible to the occurrence of mission drift, through their outreach to wealthier clients and reduced outreach to women microfinance clients. The financial performance regression analysis shows that the size measure has no affect on the financial performance of MFIs. On the contrary, the social performance regression analysis shows a positive affect on the average loan size measures, and negative affect on the percentage women borrowers measure.

The financial performance regression analysis shows a negative association between the *country risk rating* indicator and the financial performance of MFIs. Alternatively, the social performance regression analysis shows a positive association between the risk indicator and the average loan size measures, and a negative association between the risk indicator and the outreach to women borrowers measure. Consequently, no evidence is found suggesting that MFIs operating in countries associated with a high country risk rating are more susceptible to the occurrence of mission drift.

Lastly, the *region dummies* provide an insight in the predicted financial and social performance of MFIs operating around the world. The financial and social regression models show mixed findings. Evidence suggests that MFIs operating in Africa perform relatively weak in terms of financial performance and in terms of outreach to poorer clients. Weak evidence suggests that MFIs in East Asia perform lower in terms of financial performance perform. Also, evidence suggests that MFIs in East Asia perform lower in terms of outreach to poorer clients, while the MFIs perform better in terms of outreach to women borrowers. MFIs operating in the Eastern Europe and Central Asia region outperform MFIs in other regions in terms of social performance, by reaching out to relatively poorer microfinance clients. Evidence suggests that MFIs operating in the Middle East and North Africa region perform relatively weak in terms of financial performance. Nevertheless, MFIs operating in South Asia score lowest in terms of financial performance. In terms of social performance, MFIs in South Asia outperform all other regions in outreach to women borrowers, while targeting relatively wealthier clients. Finally, MFIs operating in the Latin America and Caribbean region seem to perform relatively strong in terms of financial performance, while the social performance of MFIs operating in the region is ambiguous.

7.4 Conclusion

The *financial performance regression models* successfully explain a part of the variation in the financial performance of the MFIs in the dataset. Especially the models including the dependent variable ROA are successful.

The regression models demonstrate that the explanatory function of the control variables is considerable. Next, the regression analysis concentrates on the explanatory function of the institutional and country risk indicators in predicting the financial performance of MFIs.

Table 7.1. Summary of financial performance regression

Independent variable	*Financial performance*	
Yield on gross portfolio	Positive (1%)	
Portfolio at risk	U-shape (1%)	Breakpoint at 70%
Financial expense	Negative (1%)	
Operational expense	Negative (1%)	Progressive
Regulation	No relation (-)	
Network membership	No relation (-)	
Age	Inverted U-shape (5%)	Breakpoint at 29 years
Size	No relation (-)	
Country risk rating	Negative (5%)	

Based on table C1.

Disappointing are the regression results found for the institutional type dummies. Only little significant empirical evidence is found explaining differences in financial performance.

The *social performance regression models* successfully explain a part of the variation in the social performance indicators of the MFIs in the dataset. Notably, the R^2's found for the social performance regression models are lower than the R^2's found for the financial performance regression models. As expected, the findings for the average loan size measures are similar.

Again, the regression models demonstrate that the explanatory function of the selected control variables is considerable. Next, the regression analysis concentrates on the explanatory function of the institutional and country risk indicators in predicting the social performance of MFIs. Notably, the empirical evidence is mixed for the influence on the average loan size measures and percentage of women borrowers measure.

Table 7.2. Summary of social performance regression

Independent variable	*Average loan size*	*Women borrowers*
Cost per borrower	Positive (5%)	Negative (5%)
Borrower per staff	U-shape (1%)	Inverted U-shape (5%)
	Breakpoint at 350	Breakpoint at 500
Regulation	Positive (10%)	No relation (-)
Network membership	Negative (10%)	Positive (1%)
Age	No relation (-)	No relation (-)
Size	Positive (1%)	Negative (1%)
Country risk	Positive (1%)	Negative (1%)

Based on table C3.

Again, disappointing are the regression results found for the institutional type dummies. Little significant empirical evidence is found in support of differences in social performance. Strong

evidence is only found for the influence of the size of the institution and the association with the country risk rating indicator.

In terms of regional differences in the financial and social performance of MFIs, the regression models find mixed evidence.

Table 7.3. The financial and social performance found for different regions

	Financial performance	*Social performance*
Africa	Relatively weak	Relatively weak
East Asia	Relatively weak	Mixed *
Eastern Europe and Central Asia	Ambiguous**	Relatively strong
Latin America and Caribbean	Relatively strong**	Ambiguous**
Middle East and North Africa	Relatively weak	Ambiguous
South Asia	Lowest performance	Mixed*

** MFIs in Asia perform exceptionally good in outreach to women microfinance clients, but target relatively wealthier clients.*
*** Findings are not statistically significant.*

Third, the *mission drift regression models* successfully explain a part of the variation in the social performance indicators of the MFIs in the dataset. The R^2's found are reasonable. More important, the regression models provide a useful insight in the influence of the profitability, cost efficiency, and productivity indicators of MFIs.

Strong evidence found suggests that (1) more profitable MFIs show evidence of the occurrence of mission drift, (2) cost inefficient MFIs are more susceptible to the occurrence of mission drift, and (3) MFIs with strong productivity improvements, or high levels of productivity, are more susceptible to the occurrence of mission drift. Consequently, by balancing the (1) profitability, (2) cost efficiency, and (3) productivity of the institution, MFIs can prevent the occurrence of mission drift.

Next, the research concentrates on the influence of the institutional risk and country risk indicators on the trade-off found between the financial and social performance of MFIs. In terms of institutional type, the evidence suggests that rural banks are the most susceptible to the occurrence of mission drift. However, since the dataset contains information for only 11 rural banks, the evidence found is weak. In addition, NBFIs and NGOs are found more susceptible. Second, weak evidence found suggests that the regulation of MFIs makes the institution more susceptible, by negatively affecting the social performance of the institutions. Third, MFIs associated with microfinance networks are less susceptible to the occurrence of mission drift, as membership positively affects the social performance of the institutions. Fourth, younger MFIs are more susceptible to the occurrence of mission drift. MFIs beyond the age of approximately 30 years are more susceptible to the occurrence of reverse mission drift. Fifth, that larger *size* MFIs are more susceptible to the occurrence of mission drift, through their outreach to wealthier clients and limited outreach to women microfinance clients. Sixth, no evidence is found suggesting that MFIs operating in countries associated with a high country risk rating are more susceptible to the occurrence of mission drift.

Chapter 8 Conclusions, limitations and recommendations

8.1 Conclusions

This research aims to find empirical evidence on the occurrence of mission drift. At the same time, institutional and country risk indicators that are important in the investment decision-making process of foreign institutional investors in microfinance are taken into account. The problem statement states: first, *what is the explanatory function of the institutional risk and country risk indicators in predicting the financial and social performance of MFIs*?, and second, *how do institutional and country risk indicators affect the trade-off between the financial and social performance of MFIs*?

First, based upon empirical evidence this research aims to provide an insight in *the explanatory function of the institutional and country risk indicators in predicting the financial performance of MFIs*.

The financial performance regression analysis shows that strong evidence is found suggesting that the financial performance of MFIs is positively effected by the yield charged to microfinance clients. The financial performance of MFIs is negatively effected by the financial and operational expenses of the institutions. In addition, the financial performance of a MFI is negative associated with the institution's portfolio at risk ratio, identifying the quality of the institution's loan portfolio.

- *Hypothesis 1a: The institutional risk indicators are negatively related to the financial performance of a MFI.*

Surprisingly, the empirical evidence suggests that the regulation, network membership and size of the institution do not affect the financial performance of MFIs. Alternatively, a negative quadratic relationship is found between the years of age and the financial performance of MFIs. This result pictures a learning curve effect, whereby younger MFIs visibly leapfrog older MFIs in terms of financial performance. The breakpoint is found at 30 years of age.

- *Hypothesis 1b: The country risk indicators are negatively related to the financial performance of a MFI.*

As expected, the country risk rating indicator is negatively associated with the financial performance indicators of MFIs. Unstable or underdeveloped capital markets, lower levels of competition, and higher shares of NGOs or socially driven MFIs could be causing a negative relation between the country risk rating indicator and financial performance measures.

Second, the research aims to provide an insight in *the explanatory function of the institutional and country risk indicators in predicting the social performance of MFI.*

The social performance regression analysis shows that the cost per borrower measure is positive related to the outreach to poorer clients, and negative related to the outreach to women clients by MFIs. These findings imply (1) that cost inefficient MFIs need to target relatively wealthier clients and fewer women borrowers, or that (2) cost efficient MFIs are better able to target relatively poorer

clients and women borrowers. Alternatively, the borrower per staff measure is positive quadratic related to the outreach to poorer clients and negative quadratic related to the outreach to women borrowers. Respectively, the breakpoints found are 350 and 500 borrowers per staff member. These finding imply (1) that less productive MFIs need to target relatively wealthier clients and fewer women borrowers, or that (2) more productive MFIs are better able to target relatively poorer clients and women borrower, although (3) MFIs that increasingly improve their productivity need to target relatively wealthier clients and fewer women borrowers.

- *Hypothesis 2a: The institutional risk indicators are positively related to the social performance of a MFI.*

Unexpectedly, the empirical evidence found suggests that age of institutions do not affect the social performance of MFIs. The network membership of MFIs positively affects the social performance measures of the institutions. The regulation of MFIs positively affects the outreach to poorer microfinance clients, but has no affect on the outreach to women microfinance clients. The size of the institution negatively affect the social performance of MFIs, both in terms of outreach to poorer clients and in terms of outreach to women borrowers.

- *Hypothesis 2b: The country risk indicators are positively related to the social performance of a MFI.*

Surprisingly, country risk rating indicator is negatively associated with the social performance of MFIs. Complementary to the association with the financial performance of MFIs, country rating is negatively associated with the overall performance of MFIs.

Third, *the research explores the occurrence of mission drift in microfinance based upon empirical evidence.* Mission drift is found in a negative relationship between the social performance and financial performance indicators.

- *Hypothesis 3: A negative relationship is found between the social performance and the financial performance indicators of the MFIs.*

The mission drift regression analysis shows strong evidence for the existence of a trade-off between the financial and social performance of MFIs. More profitable MFIs provide relatively larger size loans to relatively wealthier microfinance clients. At the same time, cost inefficient MFIs and MFIs with strong productivity improvements are also susceptible to the occurrence of mission drift. Consequently, by balancing the (1) profitability, (2) cost efficiency, and (3) productivity of the institution, MFIs can prevent the occurrence of mission drift and (1) restore, (2) maintain, or (3) improve their outreach to poorer microfinance clients and women borrowers. The evidence supports the win-win proposition of microfinance.

Furthermore, the expectation was that the risk indicators have a moderating effect on the negative relationship between the social and financial performance indicators.

- *Hypothesis 4: The risk indicators have a moderating effect on the relation between the social performance indicator and the financial indicator of a MFI.*

The regulation of MFIs make institutions more susceptible, by negatively affecting the social performance of the institutions. Also, younger MFIs are more susceptible to the occurrence of mission drift. MFIs beyond the age of approximately 30 years are more susceptible to the occurrence of reverse mission drift. Years of age affect the financial performance of MFIs, while the size of MFIs affects the social performance of MFIs. Larger size MFIs are more susceptible to the occurrence of mission drift, resulting from their outreach to wealthier clients and limited outreach to women borrowers. Alternatively, MFIs associated with national or international microfinance networks are less susceptible to the occurrence of mission drift, as membership positively affects the social performance of these institutions. Finally, no evidence is found suggesting that MFIs operating in countries associated with a high country risk rating are more susceptible to the occurrence of mission drift. In fact, country risk rating is negatively associated to both the financial and social performance of MFIs.

Based on these findings, institutional investors can prioritise institutional and country risk rating indicators in order to assess the balance between the financial and social performance of MFIs.

Table 8.1 The susceptibility of MFIs to the occurrence of mission drift.

	Effect on the financial performance of MFIs	*Effect on the social performance of MFIs**	*Influence on the susceptibility of MFIs to the occurrence of mission drift*
Operational self-sufficiency	-	Negative	More susceptible
Cost per borrower	-	Negative	More susceptible
Borrowers per staff	-	Positive -> Negative	Less susceptible -> More susceptible
Regulation	No relation	Negative	More susceptible
Network membership	No relation	Positive	Less susceptible
Years of age	Positive -> Negative	No relation	More susceptible -> Less susceptible
Size	No relation	Negative	More susceptible
Country risk indicator	Negative	Negative	No relation

** Affecting either the average loan size measures or the percentage of women borrowers measure.*

8.2 Limitations and recommendations

The occurrence of mission drift involves both the financial and social performance of MFIs. Consequently, this research required a comprehensive analysis of the performance of MFIs. Choices have been made, leading to limitations and recommendations.

This research is largely depending on the data availability of the MIX platform. The platform offers a large amount of information and data for a large number of MFIs. Alternatively, a large amount of information and data on the platform is obtained from self-reporting MFIs and remains unverified. In order to solve for both the unavailability of (social performance) data and for the usage of unverified information and data of MFIs, one could choose to obtain information and data from specialized microfinance rating agencies. Notably, this would reduce the number of MFIs in the dataset, since a limited amount of MFIs have been subject to the rating by these agencies. Also, one would have to overcome the different financial and social performance rating methodologies and rating scales used by the individual rating agencies.

Section 3.3 highlights the debate about the appropriateness of the average loan size measure as a proxy for the depth of outreach provided by MFIs. As mentioned, the appropriateness of this measure as an indicator for attracting and selecting relatively poorer microfinance clients by MFIs is at least questionable. For robustness, the proxy gender is included in this research, with outreach to women microfinance clients preferred. Alternative proxies for the depth of outreach by MFIs are suggested by Scheiner (2002). For example: (1) location, with rural areas preferred to urban areas; (2) education, less education is preferred; (3) ethnicity, minorities are preferred, (4) housing; with small and vulnerable houses preferred; and (5) access to public services, whereby a lack of access is preferred.

Section 5.1 presents the selection of the variables and indicators used in the research. Amongst the financial performance indicators the financial self-sufficiency ratio is missing. Including this financial performance ratio would allow the research to comment on the financial sustainability of MFIs adjusted for subsidies. Together with the operational self-sufficiency regression results a comparison would be possible, providing an insight in the importance of subsidies for the financial performance of MFIs. Unfortunately, data availability on the financial self-sufficiency ratios of MFIs is limited. In terms of the institutional risk indicators, the lending methodology used by MFIs is missing. The lending methodology used by a MFI is a fundamental characteristic of the institution. Also, lending methodology is the key institutional characteristic in the research by Cull et al. (2007). Unfortunately, data on the lending methodology used is unavailable for a large sample of MFIs.

The dataset combines information and data obtained from 600 MFIs operating in 84 countries. Consequently, country specific information and characteristics are ignored, but should be taken into account by institutional investors. For example, the average age of MFIs may differ amongst regions or countries. Also, the institutional size indicator used in this research is not corrected for differences per region or country. MIX provides a guidance on how to correct for region specific differences in loan portfolio size of MFIs. Also, only weak evidence is found for the influence of a regulatory or supervisory framework on the performance of MFIs. As mentioned in section 5.1, the regulation of MFIs is difficult to compare amongst the various institutional types of MFIs and between different countries.

Finally, using cross sectional data does not allow for the analysis of adjustments over time in the empirical evidence. For example, as mentioned in section 5.1, the age of MFIs is expected to be related to (1) the institutional type, (2) main source of funding, and (3) the regulation of MFIs. Time series data would allow to control the analysis of the adjustment over time, while panel data series would also allow to control for specific dimensions.

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Appendix A

Table A1. MFI benchmarks financial trend lines 2007

Ratio	*Institution*	*2007*	*Region*	*2007*
Financial self-sufficiency (%)*	Bank	109,7	Africa	99,3
	Credit Union	104,9	Asia	107,7
	NBFI	112,3	ECA	111
	NGO	107,1	LAC	112,1
	Rural Bank	111,5	MENA	108,9
Operational self-sufficiency (%)*	Bank	115,6	Africa	112,5
	Credit Union	107,4	Asia	114,3
	NBFI	121,8	ECA	122,2
	NGO	113,5	LAC	116,8
	Rural Bank	125,4	MENA	128,4
Return on assets (%)	Bank	0,95	Africa	-0,6
	Credit Union	0,5	Asia	0,6
	NBFI	1,85	ECA	1,05
	NGO	1,7	LAC	2,1
	Rural Bank	1,35	MENA	1,95
Profit margin (%)	Bank	8,85	Africa	-0,7
	Credit Union	4,6	Asia	7,1
	NBFI	10,9	ECA	9,95
	NGO	6,55	LAC	10,8
	Rural Bank	10,3	MENA	8,1
Yield on gross portfolio (real, %)	Bank	16	Africa	21,5
	Credit Union	15,1	Asia	18,5
	NBFI	22	ECA	19,6
	NGO	26,2	LAC	25,1
	Rural Bank	23,15	MENA	25,5
Portfolio at risk > 30 days (%)	Bank	1,05	Africa	1,7
	Credit Union	2,4	Asia	1,4
	NBFI	0,8	ECA	0,5
	NGO	1,4	LAC	1,7
	Rural Bank	2,35	MENA	0,6
Write-off-ratio (%)	Bank	0,9	Africa	1,8
	Credit Union	1,9	Asia	1
	NBFI	1,05	ECA	0,5
	NGO	1,3	LAC	1,9
	Rural Bank	2,8	MENA	0,6
Operating expense/loan portfolio (%)	Bank	14,05	Africa	28,6
	Credit Union	14,1	Asia	15
	NBFI	16,6	ECA	15,25
	NGO	22,5	LAC	18,2
	Rural Bank	16,6	MENA	19,9

Source: Mix (2009[c])

ECA: Eastern Europe and Central Asia; LAC: Latin America and the Caribbean; MENA; Middle East and North Africa

Table A2. MFI benchmarks social trend lines 2007

		2007		*2007*
Number of active borrowers	Bank	63.027	Africa	23.787
	Credit Union	6.560	Asia	41.483
	NBFI	23.355	ECA	10.341
	NGO	15.663	LAC	16.497
	Rural Bank	4.351	MENA	26.093
Percent of women borrowers (%)	Bank	48,50	Africa	62,85
	Credit Union	45,70	Asia	99,40
	NBFI	53,85	ECA	45,10
	NGO	75,50	LAC	61,35
	Rural Bank	70,60	MENA	67,85
Cost per borrower (US $)	Bank	274	Africa	114
	Credit Union	231	Asia	42
	NBFI	146,5	ECA	279,5
	NGO	86,5	LAC	148
	Rural Bank	98	MENA	67,5
Average loan balance per borrower / GNI per capita (%)	Bank	118,10	Africa	71,00
	Credit Union	67,00	Asia	19,10
	NBFI	52,20	ECA	72,80
	NGO	19,00	LAC	34,60
	Rural Bank	51,50	MENA	14,10

Source: Mix (2009c)

ECA: Eastern Europe and Central Asia; LAC: Latin America and the Caribbean; MENA; Middle East and North Africa.

Appendix B

Table B1. List of dependent and independent variables

Dependent variables	*Unit*
Financial performance	
Operational self-sufficiency	%
Return on assets	%
Profit margin	%
Social performance	
Average loan size per borrower/GDP per capita	%
Average loan size per borrower/GDP per capita of 20% poorest	%
Women borrowers	%
Independent variables	*Unit*
Institutional risk	
Institutional type bank	Dummy: yes = 1; no = 0
Institutional type cooperative/credit union	Dummy: yes = 1; no = 0
Institutional type non-bank financial institution	Dummy: yes = 1; no = 0
Institutional type non-governmental organisation	Dummy: yes = 1; no = 0
Institutional type rural bank	Dummy: yes = 1; no = 0
Institutional type other	Dummy: yes = 1; no = 0
Membership international network	Dummy: yes = 1; no = 0
Regulation	Dummy: yes = 1; no = 0
Age	Years
Total assets	US $
Country risk	
Country risk indicator	Number (1-22)
Country risk category 1 (rating 1-7)	Dummy: yes = 1; no = 0
Country risk category 1 (rating 8-10)	Dummy: yes = 1; no = 0
Country risk category 1 (rating 11-17)	Dummy: yes = 1; no = 0
Country risk category 1 (rating 18-22)	Dummy: yes = 1; no = 0
Control variable	
Yield on gross loan portfolio (nominal)	%
Portfolio at risk > 30 days	%
Financial expense/assets	%
Operating expense/assets	%
Cost per borrower	US $
Borrowers per staff member	Number
Region Africa	Dummy: yes = 1; no = 0
Region East Asia and the Pacific	Dummy: yes = 1; no = 0
Region Eastern Europe and Central Asia	Dummy: yes = 1; no = 0
Region Latin America and the Caribbean	Dummy: yes = 1; no = 0
Region Middle East and North Africa	Dummy: yes = 1; no = 0
Region South Asia	Dummy: yes = 1; no = 0

Table B2. Measurement of variables

Operational self/sufficiency

$$\text{Opperational self-sufficiency} = \frac{\text{Total financial revenue}}{(\text{Financial expense} + \text{Loan loss provision expense} + \text{Operating expense})}$$

In more detail, the total financial revenue includes revenues from the loan portfolio and investments. Interest, fees, and commissions (including late fees and penalties) are earned from the loan portfolio. From investments made, MFIs may earn interest, dividends, or other payments generated by financial assets. Financial expenses includes all interest, fees, and commissions incurred on: (1) deposit accounts held by microfinance clients, (2) on commercial or concessional borrowing, (3) mortgages, and (4) other liabilities of the MFI. The loan loss provision expenses create a loan loss allowance on the institution's balance sheet. Lastly, the operating expenses include personnel expenses and administrative expenses, but exclude financial expenses and loan loss provision expenses.

Return on assets

$$\text{Return on assets} = \frac{(\text{Net operating income} - \text{Taxes})}{\text{Period average assets}}$$

The total operating revenue includes the total financial revenue and other operating revenue from financial services. Note, the total operating revenue does not include revenue from non-financial services. Subsequently, the net operating income is calculated by subtracting the financial expenses, loan loss provision expenses and operating expenses from the total operating revenue. CGAP (2003) reports that MFIs are encouraged to indicate if taxes are deducted from the net operating income.

Profit margin

$$\text{Profit margin} = \frac{\text{Net operating income}}{\text{Total financial revenue}}$$

Average loan size measures

$$\text{Average loan size / GDP per capita} = \frac{\text{Average Loan Balance per Borrower}}{\text{GDP per Capita}}$$

$$\text{Average loan size / GDP per capita 20\% poorest} = \frac{\text{Average Loan Balance per Borrower}}{\text{GDP per Capita of the 20\% poorest}}$$

Note, the average loan size of an institution is calculated by dividing the gross loan portfolio by the institution's total number of active borrowers.

Country risk rating

$$\text{Country risk} = \text{Domestic macro risk} + \text{Transfer risk}$$

Yield on gross loan portfolio

$$\text{(Nominal) Yield on gross loan portfolio} = \frac{\text{Interest and fees on loan portfolio}}{\text{Average gross loan portfolio}}$$

Source: CGAP (2003), ING (2009[b]) and MIX (2009[b])

Table B3. Descriptive statistics

Variable	*Mean*	*Std. Dev.*	*Median*	*Minimum*	*Maximum*	*Observations*
Operational self-sufficiency	117,122	32,491	113,550	19,820	335,650	600
Return on assets	1,958	9,270	2,665	-86,580	46,580	600
Profit margin	5,624	42,175	11,935	-404,630	70,210	600
Average loan / GDP per capita	0,484	0,694	0,288	0,014	7,760	600
Average loan / GDP per capita 20% poorest	1,624	2,456	0,930	0,040	33,797	576
Women borrowers	64,304	26,756	63,700	0,000	100,000	600
Nominal yield gross loan portfolio	33,331	16,678	29,670	1,420	109,030	600
Portfolio at risk > 30 days	4,997	8,260	2,845	0,000	96,140	600
Financial expenses / total assets	5,424	3,907	4,690	-0,350	30,330	600
Operational expenses / total assets	17,979	12,520	14,050	1,890	94,070	600
Cost per borrower	153,383	152,110	114,000	1,000	988,000	600
Borrower per staff	143,893	94,056	123,000	6,000	753,000	600
Bank	0,053	0,225	0,000	0,000	1,000	600
Cooperative / credit union	0,145	0,352	0,000	0,000	1,000	600
Non-bank financial institution	0,332	0,471	0,000	0,000	1,000	600
Non-governmental organisation	0,410	0,492	0,000	0,000	1,000	600
Rural bank	0,042	0,200	0,000	0,000	1,000	600
Other	0,018	0,134	0,000	0,000	1,000	600
Regulated	0,520	0,500	1,000	0,000	1,000	600
Network	0,782	0,413	1,000	0,000	1,000	600
Age	13,855	8,080	12,000	2,000	49,000	600
Total assets	46999017	190000000	7402272	56595	3120000000	600
Country risk rating	14,272	3,287	14,500	6,000	21,000	600
Country risk rating category 1	0,008	0,091	0,000	0,000	1,000	600
Country risk rating category 2	0,183	0,387	0,000	0,000	1,000	600
Country risk rating category 3	0,615	0,487	1,000	0,000	1,000	600
Country risk rating category 4	0,193	0,395	0,000	0,000	1,000	600
Africa	0,145	0,352	0,000	0,000	1,000	600
East Asia	0,108	0,311	0,000	0,000	1,000	600
Eastern Europe and Central Asia	0,165	0,371	0,000	0,000	1,000	600
Latin America and Carribean	0,393	0,489	0,000	0,000	1,000	600
Middle East and North Africa	0,055	0,228	0,000	0,000	1,000	600
South Asia	0,133	0,340	0,000	0,000	1,000	600

Table B4. Correlation table

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Operational self-sufficiency	1															
2	Return on assets	0,779	1														
3	Profit margin	0,771	0,864	1													
4	Average loan / GDP per capita	0,117	0,035	0,087	1												
5	Average loan / GDP per capita 20% poorest	0,070	0,026	0,069	0,930	1											
6	Women borrowers	-0,007	-0,012	-0,065	-0,323	-0,278	1										
7	Nominal yield gross loan portfolio	-0,056	0,011	-0,035	-0,226	-0,191	0,235	1									
8	Portfolio at risk > 30 days	-0,258	-0,217	-0,219	-0,004	0,013	-0,140	-0,020	1								
9	Financial expenses / total assets	-0,089	-0,067	-0,051	0,000	-0,012	-0,077	0,135	-0,074	1							
10	Operational expenses / total assets	-0,377	-0,450	-0,434	-0,252	-0,213	0,223	0,745	0,040	-0,048	1						
11	Cost per borrower	-0,132	-0,121	-0,079	0,355	0,358	-0,365	0,018	0,198	0,209	0,042	1					
12	Borrower per staff	0,118	0,118	0,132	-0,279	-0,252	0,348	-0,174	-0,154	-0,050	-0,178	-0,487	1				
13	Bank	-0,013	0,013	0,022	0,160	0,132	-0,124	-0,068	-0,034	0,022	-0,073	0,126	-0,016	1			
14	Cooperative / credit union	-0,101	-0,068	-0,047	0,153	0,126	-0,198	-0,191	0,010	0,066	-0,167	0,206	-0,123	-0,098	1		
15	Non-bank financial institution	0,070	0,040	0,056	0,074	0,061	-0,106	0,055	-0,090	0,055	-0,001	0,096	-0,053	-0,170	-0,292	1	
16	Non-governmental organisation	0,027	0,025	-0,006	-0,268	-0,207	0,370	0,157	0,005	-0,159	0,203	-0,260	0,178	-0,199	-0,342	-0,594	1
17	Rural bank	-0,039	-0,031	-0,059	0,038	0,001	-0,165	-0,089	0,227	0,128	-0,134	-0,068	-0,094	-0,051	-0,087	-0,152	-0,177
18	Other	0,002	-0,037	0,003	-0,007	-0,013	-0,009	-0,026	-0,020	-0,018	0,029	-0,039	0,029	-0,026	-0,046	-0,079	-0,092
19	Regulated	-0,004	-0,055	-0,025	0,210	0,173	-0,216	-0,161	-0,015	0,067	-0,175	0,044	-0,040	0,229	0,077	0,316	-0,522
20	Network	0,066	0,039	0,058	-0,018	0,010	0,097	0,086	-0,024	-0,207	0,150	0,018	0,041	-0,006	-0,146	0,096	0,136
21	Age	0,042	0,071	0,097	0,147	0,214	-0,103	-0,170	0,167	-0,069	-0,181	0,040	0,013	0,015	0,147	-0,201	0,057
22	Total assets	0,017	0,022	0,028	0,058	0,078	-0,101	-0,126	-0,007	0,016	-0,136	0,051	0,176	0,370	0,009	-0,029	-0,126
23	Country risk rating	0,004	-0,036	-0,026	0,360	0,286	-0,163	-0,079	-0,015	-0,242	-0,007	-0,106	-0,132	0,060	-0,010	0,064	-0,092
24	Country risk rating category 1	-0,038	-0,018	-0,009	-0,039	-0,023	-0,052	-0,059	-0,031	0,064	-0,052	0,013	0,012	0,061	0,015	-0,027	-0,002
25	Country risk rating category 2	-0,020	0,014	-0,004	-0,225	-0,223	0,256	0,108	-0,037	0,291	0,023	0,025	0,141	-0,077	0,102	-0,010	-0,001
26	Country risk rating category 3	0,000	-0,030	-0,030	0,028	0,079	-0,113	-0,031	0,047	-0,187	0,014	0,020	-0,065	0,022	-0,170	0,001	0,047
27	Country risk rating category 4	0,030	0,028	0,046	0,211	0,140	-0,111	-0,059	-0,014	-0,081	-0,029	-0,056	-0,067	0,038	0,108	0,016	-0,060
28	Africa	-0,122	-0,218	-0,189	0,172	0,099	-0,036	0,087	0,065	-0,228	0,179	-0,141	0,115	-0,031	0,102	0,036	-0,067
29	East Asia	0,034	0,021	0,038	-0,070	-0,094	0,068	0,031	0,024	-0,021	-0,004	-0,190	-0,003	-0,011	-0,114	-0,088	0,031
30	Eastern Europe and Central Asia	0,087	0,084	0,090	0,108	-0,018	-0,213	-0,034	-0,076	0,203	-0,106	0,389	-0,254	0,037	0,119	0,249	-0,290
31	Latin America and Carribean	-0,001	0,086	0,081	-0,010	0,154	-0,061	0,115	0,029	0,030	0,118	0,173	-0,070	0,067	0,030	-0,153	0,174
32	Middle East and North Africa	0,103	0,069	0,078	-0,104	-0,097	0,042	-0,029	-0,078	-0,163	-0,032	-0,108	0,044	-0,054	-0,093	-0,059	0,140
33	South Asia	-0,068	-0,058	-0,111	-0,157	-0,162	0,283	-0,239	0,001	0,096	-0,224	-0,304	0,249	-0,064	-0,121	0,031	0,019

Indicates a correlation coefficient > 0,5

Indicates a correlation coefficient > 0,3

		17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
1	Operational self-sufficiency																	
2	Return on assets																	
3	Profit margin																	
4	Average loan / GDP per capita																	
5	Average loan / GDP per capita 20% poorest																	
6	Women borrowers																	
7	Nominal yield gross loan portfolio																	
8	Portfolio at risk > 30 days																	
9	Financial expenses / total assets																	
10	Operational expenses / total assets																	
11	Cost per borrower																	
12	Borrower per staff																	
13	Bank																	
14	Cooperative / credit union																	
15	Non-bank financial institution																	
16	Non-governmental organisation																	
17	Rural bank	1																
18	Other	-0,024	1															
19	Regulated	0,136	0,011	1														
20	Network	-0,282	-0,019	-0,113	1													
21	Age	0,080	-0,041	-0,012	0,124	1												
22	Total assets	-0,043	-0,019	0,159	-0,025	0,116	1											
23	Country risk rating	0,037	-0,023	0,062	0,110	-0,012	-0,095	1										
24	Country risk rating category 1	-0,020	-0,010	0,015	0,003	0,032	0,081	-0,222	1									
25	Country risk rating category 2	-0,082	0,027	-0,056	-0,197	-0,178	0,016	-0,622	-0,045	1								
26	Country risk rating category 3	0,144	0,019	0,064	0,049	0,176	0,013	0,039	-0,123	-0,639	1							
27	Country risk rating category 4	-0,095	-0,050	-0,028	0,144	-0,047	-0,054	0,660	-0,042	-0,217	-0,588	1						
28	Africa	-0,062	0,000	0,122	-0,053	-0,047	-0,033	0,254	-0,038	-0,198	0,134	0,044	1					
29	East Asia	0,358	-0,039	-0,026	-0,070	0,021	-0,011	-0,016	0,086	-0,172	0,246	-0,158	-0,144	1				
30	Eastern Europe and Central Asia	-0,096	-0,050	0,097	-0,103	-0,243	-0,064	0,087	-0,042	0,065	-0,091	0,060	-0,183	-0,159	1			
31	Latin America and Carribean	-0,177	-0,028	-0,204	0,299	0,291	0,089	-0,040	0,036	-0,126	-0,041	0,177	-0,339	-0,295	-0,375	1		
32	Middle East and North Africa	-0,048	0,122	-0,009	0,079	-0,063	-0,010	-0,135	-0,021	0,096	0,004	-0,101	-0,092	-0,080	-0,102	-0,188	1	
33	South Asia	0,131	0,057	0,097	-0,262	-0,089	-0,008	-0,209	-0,035	0,433	-0,219	-0,165	-0,150	-0,130	-0,166	-0,307	-0,083	1

Indicates a correlation coefficient > 0,5

Indicates a correlation coefficient > 0,3

Appendix C

Table C1. Financial performance regression

	Operational self-sufficiency		Return on assets		Profit margin	
	1	2	3	4	5	6
Nominal yield gross loan portfolio	0,941	1,175	0,428	0,353	1,495	1,420
	0,176	*0,170*	*0,055*	*0,047*	*0,288*	*0,251*
Portfolio at risk > 30 days	-1,023	-1,813	-0,222	-0,429	-1,339	-2,162
	0,209	*0,254*	*0,056*	*0,078*	*0,449*	*0,604*
Portfolio at risk > 30 days squared	-	0,015	-	0,003	-	0,015
		0,003		*0,001*		*0,008*
Financial expenses / total assets	-1,575	-2,042	-0,567	-0,408	-1,909	-1,748
	0,354	*0,326*	*0,112*	*0,081*	*0,601*	*0,483*
Operational expenses / total assets	-1,999	-3,512	-0,786	-0,226	-2,907	-2,227
	0,256	*0,412*	*0,091*	*0,103*	*0,440*	*0,509*
Operational expenses / total assets squared	-	0,021	-	-0,007	-	-0,008
		0,004		*0,001*		*0,008*
Cooperative / credit union	-3,168	-3,794	-1,465	-0,329	-4,977	-2,375
	4,990	*5,144*	*1,237*	*1,171*	*4,434*	*4,600*
Non-bank financial institution	7,997	6,245	0,557	0,785	3,862	3,623
	4,154	*4,237*	*1,028*	*0,925*	*3,893*	*3,924*
Non-governmental organisation	10,813	7,930	1,123	1,361	4,441	3,535
	5,415	*5,379*	*1,385*	*1,272*	*5,014*	*5,142*
Rural bank	11,490	9,092	1,238	3,256	3,273	6,579
	7,374	*7,531*	*1,680*	*1,554*	*16,252*	*16,779*
Other	14,869	7,700	0,827	3,081	17,431	19,631
	12,083	*13,011*	*2,631*	*2,245*	*11,332*	*11,872*
Regulated	0,794	1,353	-0,466	-0,291	-0,136	0,564
	2,851	*2,738*	*0,658*	*0,603*	*3,184*	*3,103*
Network	3,641	3,479	0,578	0,106	2,769	1,435
	3,351	*3,182*	*0,824*	*0,718*	*4,824*	*4,709*
Age	0,097	0,954	0,032	0,285	0,288	1,428
	0,115	*0,401*	*0,028*	*0,100*	*0,151*	*0,499*
Age squared	-	-0,019	-	-0,005	-	-0,025
		0,008		*0,002*		*0,010*
Log (total assets)	0,254	-0,660	-0,146	-0,006	-0,088	-0,197
	0,862	*0,873*	*0,216*	*0,216*	*0,883*	*0,940*
Country risk rating	-0,681	-0,477	-0,201	-0,174	-1,266	-1,106
	0,325	*0,303*	*0,084*	*0,072*	*0,494*	*0,458*
Africa	-2,453	-5,155	-3,354	-2,462	-9,788	-8,972
	4,013	*3,676*	*0,972*	*0,918*	*4,479*	*4,255*
East Asia	-1,410	-2,984	-2,054	-2,120	-3,937	-4,801
	3,703	*3,499*	*0,948*	*0,925*	*4,827*	*4,854*
Eastern Europe and Central Asia	5,268	3,526	0,121	0,081	1,305	0,529
	3,455	*3,295*	*0,677*	*0,660*	*3,049*	*2,849*
Middle East and North Africa	-1,070	-1,065	-2,049	-1,896	-17,722	-17,254
	5,035	*4,860*	*0,973*	*0,869*	*10,167*	*10,166*
South Asia	-16,243	-16,140	-4,975	-3,929	-26,981	-24,193
	4,644	*4,490*	*0,859*	*0,859*	*5,451*	*5,486*
Constant	130,894	152,640	11,524	2,154	41,875	28,372
	18,349	*18,452*	*4,745*	*4,745*	*17,912*	*17,243*
Observations	600	600	600	600	600	600
R-square	0,398	0,447	0,595	0,649	0,476	0,488

All models estimated via OLS, with White's Heteroskedasticity consistent standard errors.

Significant at 1% *Significant at 5%* *Significant at 10%*

Table C2. Financial performance regression & regulation

	OSS	Return on assets	Profit margin
	7	8	9
Nominal yield gross loan portfolio	0,771	0,334	0,864
	0,235	*0,073*	*0,269*
Nominal yield gross loan portfolio * regulated	0,357	0,159	1,125
	0,342	*0,085*	*0,420*
Portfolio at risk > 30 days	-0,925	-0,210	-1,311
	0,287	*0,082*	*0,711*
Portfolio at risk > 30 days * regulated	-0,273	-0,040	-0,109
	0,322	*0,091*	*0,772*
Financial expenses / total assets	-1,528	-0,283	-0,198
	0,469	*0,129*	*0,502*
Financial expenses / total assets * regulated	-0,157	-0,396	-2,515
	0,659	*0,155*	*0,720*
Operational expenses / total assets	-1,789	-0,599	-1,806
	0,330	*0,107*	*0,379*
Operational expenses / total assets * regulated	-0,342	-0,343	-2,005
	0,488	*0,130*	*0,559*
Cooperative / credit union	-2,222	-1,761	-6,886
	5,045	*1,311*	*4,674*
Non-bank financial institution	7,758	0,522	3,819
	4,127	*1,099*	*4,151*
Non-governmental organisation	9,862	0,876	3,275
	5,439	*1,445*	*5,290*
Rural bank	10,672	0,205	-2,202
	7,299	*1,678*	*15,617*
Other	15,103	0,882	18,544
	12,182	*2,782*	*11,336*
Regulated	-2,421	2,867	13,245
	6,438	*1,457*	*8,267*
Network	2,807	0,154	0,289
	3,268	*0,744*	*4,702*
Age	0,997	0,218	1,192
	0,405	*0,105*	*0,522*
Age squared	-0,021	-0,004	-0,021
	0,008	*0,002*	*0,011*
Log (total assets)	0,003	-0,324	-0,877
	0,922	*0,231*	*0,990*
Country risk rating	-0,631	-0,167	-1,120
	0,317	*0,078*	*0,505*
Africa	-2,332	-3,106	-8,103
	3,945	*0,862*	*3,597*
East Asia	-1,867	-1,776	-2,213
	3,673	*0,949*	*4,590*
Eastern Europe and Central Asia	4,928	-0,222	-0,692
	3,477	*0,676*	*3,017*
Middle East and North Africa	0,134	-1,426	-14,457
	5,101	*0,951*	*10,872*
South Asia	-14,920	-4,789	-26,198
	4,667	*0,862*	*5,333*
Constant	129,066	10,880	38,964
	18,958	*4,841*	*17,215*
Observations	600	600	600
R-square	0,407	0,622	0,519

All models estimated via OLS, with White's Heteroskedasticity consistent standard errors.

Significant at 1% *Significant at 5%* *Significant at 10%*

Table C3. Social performance regression

	Average loan / GDP per capita		Average loan / GDP per capita 20% poorest		Women borrowers	
	10	11	12	13	14	15
Cost per borrower	0,001	0,001	0,006	0,005	-0,024	-0,016
	0,000	*0,000*	*0,002*	*0,002*	*0,008*	*0,008*
Borrower per staff	-0,001	-0,004	-0,003	-0,011	0,057	0,118
	0,000	*0,001*	*0,001*	*0,003*	*0,012*	*0,030*
Borrower per staff squared	-	0,000	-	0,000	-	0,000
		0,000		*0,000*		*0,000*
Cooperative / credit union	0,255	0,291	0,562	0,619	-5,382	-6,612
	0,160	*0,159*	*0,573*	*0,535*	*5,258*	*5,273*
Non-bank financial institution	0,043	0,088	0,441	0,585	-0,494	-1,328
	0,135	*0,135*	*0,536*	*0,540*	*4,727*	*4,774*
Non-governmental organisation	0,058	0,122	0,345	0,645	7,665	7,065
	0,137	*0,143*	*0,536*	*0,584*	*5,196*	*5,359*
Rural bank	-0,021	0,033	-0,118	0,249	-21,583	-21,101
	0,160	*0,163*	*0,563*	*0,535*	*9,375*	*9,247*
Other	0,196	0,260	0,565	0,913	-6,773	-7,974
	0,186	*0,183*	*0,631*	*0,655*	*9,868*	*10,057*
Regulated	0,069	0,060	0,352	0,304	-0,985	-0,910
	0,049	*0,047*	*0,205*	*0,191*	*2,156*	*2,183*
Network	-0,169	-0,141	-0,589	-0,441	8,112	7,869
	0,094	*0,091*	*0,378*	*0,319*	*2,806*	*2,779*
Age	0,005	0,003	0,031	-0,050	-0,044	-0,590
	0,005	*0,017*	*0,025*	*0,070*	*0,117*	*0,398*
Age squared	-	0,000	-	0,002	-	0,013
		0,000		*0,002*		*0,008*
Log (total assets)	0,088	0,100	0,328	0,393	-2,987	-3,050
	0,014	*0,015*	*0,054*	*0,054*	*0,679*	*0,714*
Country risk rating	0,077	0,074	0,261	0,250	-1,123	-1,082
	0,010	*0,010*	*0,046*	*0,043*	*0,325*	*0,322*
Africa	0,390	0,391	0,235	0,278	0,635	0,922
	0,096	*0,091*	*0,261*	*0,245*	*2,980*	*2,989*
East Asia	0,204	0,150	0,112	-0,015	6,911	8,355
	0,058	*0,059*	*0,227*	*0,257*	*3,434*	*3,304*
Eastern Europe and Central Asia	-0,102	-0,118	-1,404	-1,462	-0,547	-0,252
	0,092	*0,092*	*0,404*	*0,403*	*3,183*	*3,215*
Middle East and North Africa	0,035	0,019	-0,198	-0,280	-0,923	-0,828
	0,065	*0,066*	*0,293*	*0,255*	*4,524*	*4,529*
South Asia	0,138	0,115	-0,138	-0,262	15,720	15,551
	0,071	*0,070*	*0,309*	*0,280*	*3,791*	*3,776*
Constant	-2,238	-2,144	-8,093	-7,742	114,311	113,015
	0,312	*0,302*	*1,328*	*1,261*	*14,267*	*14,181*
Observations	600	600	576	576	600	600
R-square	0,381	0,395	0,371	0,387	0,341	0,349

All models estimated via OLS, with White's Heteroskedasticity consistent standard errors.

Significant at 1% *Significant at 5%* *Significant at 10%*

Table C4. Mission drift regression

	Average loan / GDP per capita	Average loan / GDP per capita 20% poorest	Women borrowers
	19	20	21
Operational self-sufficiency	0,004	0,012	-0,026
	0,001	*0,003*	*0,035*
Cost per borrower	0,001	0,006	-0,018
	0,000	*0,002*	*0,008*
Borrower per staff	-0,004	-0,012	0,122
	0,001	*0,003*	*0,031*
Borrower per staff squared	0,000	0,000	0,000
	0,000	*0,000*	*0,000*
Cooperative / credit union	0,282	0,646	-6,196
	0,157	*0,558*	*5,298*
Non-bank financial institution	0,051	0,444	-1,285
	0,133	*0,526*	*4,743*
Non-governmental organisation	0,094	0,433	6,397
	0,137	*0,526*	*5,241*
Rural bank	-0,001	-0,048	-22,543
	0,157	*0,566*	*9,125*
Other	0,201	0,760	-7,890
	0,181	*0,623*	*9,870*
Regulated	0,065	0,340	-0,810
	0,047	*0,201*	*2,180*
Network	-0,133	-0,479	7,432
	0,091	*0,377*	*2,805*
Age	0,004	0,028	-0,038
	0,005	*0,025*	*0,116*
Log (total assets)	0,086	0,326	-3,165
	0,015	*0,060*	*0,699*
Country risk rating	0,076	0,253	-1,068
	0,010	*0,046*	*0,324*
Africa	0,435	0,388	0,363
	0,095	*0,248*	*3,100*
East Asia	0,139	-0,085	8,253
	0,055	*0,234*	*3,308*
Eastern Europe and Central Asia	-0,185	-1,633	0,236
	0,095	*0,414*	*3,269*
Middle East and North Africa	0,012	-0,327	-0,526
	0,068	*0,300*	*4,519*
South Asia	0,204	0,001	15,667
	0,082	*0,334*	*3,721*
Constant	-2,406	-8,532	113,794
	0,325	*1,399*	*14,242*
Observations	600	576	600
R-square	0,428	0,401	0,347

All models estimated via OLS, with White's Heteroskedasticity consistent standard errors.

Significant at 1% *Significant at 5%* *Significant at 10%*

List of figures and tables