

Legal Form, Performance and Risk in the Microfinance Industry

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Abstract:

I examine whether a microfinance institution's (MFI) legal form influences its financial performance and risk using a sample of 349 MFIs from a global dataset over the period of 2004-2012. Three main results emerge. First, after controlling for MFI, country and time-specific effects, an MFI's commercialisation level has a negative impact on the institution's financial performance and operating efficiency. Secondly, using a proxy for insolvency risk (LN(Z-score)), the study identifies that a legal form's commercial orientation has a positive affect on an MFI's insolvency risk. Finally, in relation to loan quality, I find no significant difference between various legal forms' loan loss rates as they become more commercially orientated. These findings should prove useful for policy makers and investors involved in the microfinance industry in which there is no established 'best set-up'.

Section 1: Introduction

The growth of the microfinance industry over recent decades has provided low-income families and microenterprises with access to financial services in emerging economies. Over 200 million individuals were clients of microfinance institutions (MFIs) in 2012, of whom 115 million were earning less than \$1.25 per day; thus half a billion poor family members benefited from microfinance (Reed, Marsden, Ortega, Rivera, & Rogers, 2014). The scale of the industry and yearly growth rates exceeding 40% (Mersland & Strøm, 2010) allows for greater financial inclusion, which improves the standard of living of the impoverished and spurs economic activity (Cull, Ehrbeck, & Holle, 2014). The success has meant developmental organisations such as the World Bank consider microfinance to be a key tool in alleviating poverty.

Regardless of the overall success of microfinance, performance does differ across the industry. There is often a conflict between the dual objectives of social outreach and financial sustainability within MFIs, which makes it difficult to measure an institution's performance. Many studies (Hartarska, 2005; Mersland & Strøm, 2008; Mersland, 2009; Mersland & Strøm, 2009) have reviewed the role of governance on MFI performance in relation to its profit orientation, CEO characteristics, competition, regulatory status and ownership type. This study will contribute to MFI performance literature with particular focus given to an institution's financial performance and risk behaviour.

The existing literature on MFI ownership type and performance compares both shareholder firms and NGOs, or shareholder firms, cooperatives and NGOs. To the best of my knowledge this paper will be the first to separate shareholder firms into banks and NBFIs and identify whether the commercial orientation of the four legal forms (NGOs, Coops, NBFIs and banks) plays a significant role in an MFI's financial performance. Allowing banks and NBFIs to remain separate should account for each form's different characteristics and objectives, which should not be dismissed by combining the legal statuses into an ownership type. Therefore, this paper should prove useful to policy makers with regards to the financial sustainability of MFIs and also benefit microfinance investment vehicles (MIVs) by establishing which form has the greatest impact on returns.

Furthermore, despite the general success of MFIs, some do fail. Lending to the poor is often risky due to lack of collateral and background credit information. As a

consequence, the relationship between risk and return is particularly important for an MFI. Microfinance literature in relation to risk is rather limited in comparison to banking literature. Therefore, I wish to contribute to this topic by investigating whether the level of commercialisation of legal forms plays a significant role in the institution's risk behaviour. Again, this may be particularly important for policy makers such as financial regulators who are responsible for the protection of depositors or MIVs with a certain level of tolerance towards risk.

In microfinance literature, performance is explained through lending and governance methodologies (Cull, Demirgüç-Kunt, & Morduch, 2007; Hartarska, 2005; Mersland & Strøm, 2009). However, this paper takes a different approach and will follow a finance methodology set out by Iannotta, Nocera and Sironi (2007), which uses return on assets and the operating expenses ratio as proxies for performance, and insolvency and loan quality as proxies for risk. By examining these four variables, this paper will contribute to the area of research by quantitatively analysing the effects of MFI commercialisation on financial performance and risk, with the aim of establishing a link between them.

Beisland, Mersland and Randøy (2014) note there is no established 'best set-up' for MFI governance mechanisms and thus this paper should prove useful in helping to determine if there is a preferable legal form in relation to financial performance and risk. Therefore, the research question is formulated as follows:

Does an MFI's legal form influence its level of financial performance and risk?

After controlling for MFI, time and country-specific effects, results indicate that an increase in the level of commercialisation has an unexpected negative impact on an MFI's financial performance both in regards to profitability and efficiency. Additionally, in line with expectations, I identify that a more commercially orientated legal form does have a significantly lower level of insolvency, however loan quality does not vary significantly across different legal forms.

The remainder of this paper proceeds as follows: Section 2 presents the theoretical background and hypotheses. Section 3 introduces the data applied in the empirical study and summarises the sample's characteristics. Section 4 outlines the research methodology. Section 5 describes and discusses the empirical results and Section 6 concludes the study.

Section 2: Theoretical Background

Microfinance by definition is an extension of formal financial services to low-income families and small enterprises (Mersland & Strøm, 2012). The microfinance industry, similar to the banking industry contains a number of legal forms with a variety of different characteristics such as client type, governance processes and regulations. Banking literature (Hansmann, 1996; Rasmusen, 1988; Valnek, 1999) has investigated the differences between ownership types and governance structures of banks. The studies identify that ownership plays a significant role in the financial performance and risk tolerance between banks. For example, Iannotta et al. (2007) investigated the European banking industry and established that mutual and government-owned banks exhibit lower profits than privately owned banks. Akin to the banking literature, I speculate that legal form should play a significant role in the performance and risk of an MFI.

Non-Profit Organisations (e.g. NGOs), Credit Unions/Cooperatives (Coops), Non Bank Financial Institutions (NBFIs) and banks (Commercial and Rural) are all active in the microfinance industry (Jansson, Rosales, & Westley, 2004). Previous microfinance studies have investigated performance using governance mechanisms (Mersland & Strøm, 2008; Tchakoute-Tchuigoua, 2010) and based on ownership structure have either grouped MFIs into shareholder firms (Commercial/Rural banks and NBFIs) or non-profit organisations (Coops and NGOs) or else allowed Coops and NGOs to remain as separate forms. They investigated whether one type performs better than another and concluded that financial performance between various ownership types is negligible. Other studies (Hartarska, 2005; Cull et al., 2007; Mersland & Strøm, 2009; Beisland et al. 2014) have included ownership types as control variables when investigating MFI performance and found them to be insignificant.

The performance studies discussed employ ownership structure for comparative purposes, as microfinance NGOs are ownerless and are funded through donors, Coops are owned by their members, while shareholders own banks and NBFIs (Ledgerwood, 2013). However, each type of institution provides different services to their clients, which should not be disregarded. Microfinance NGOs only provide lending facilities to clients and most NBFIs only offer payday lending, leasing and micro-insurance services. Whilst banks and Coops provide both lending and saving facilities, the latter only

serving their own members (Ledgerwood, 2013). Table 2.1 outlines a classification of MFI legal forms ranked according to the MFI's commercial orientation.

Table 2.1- Commercial Orientation Classification of MFIs

Legal Form	NGO	Coop	NBFI	Bank
Regulated	No	Partly	Partly	Yes
Objectives	Dual	Dual	Financial	Financial
Ownership	No	Member	Shareholder	Shareholder
Services	Loans	Savings & Loans	Loans & Microinsurance	Savings & Loans
Client Type	Low Income	Depends on Members	Depends on Product Offering	Broad Target & SMEs
Funding	Donations & Subsidies	Deposits & Debt	Equity & Debt	Equity, Deposits & Debt
	Least	←—————→		Most
		Commercial Orientation		

Sources: Ledgerwood (2013) and Galema et al. (2012)

Furthermore, unlike traditional banking, MFIs often pursue dual social and financial sustainability objectives. NGOs are primarily concerned with social objectives such as poverty reduction, whilst still remaining financially sustainable (Hartarska, 2005). Coops are member-based and wish to maximise their returns but also maximise their social objectives by offering many financial services to their members even though they may not be cost effective (Ledgerwood, 2013). Banks and NBFIs involved in microfinance are influenced by their financial structure and are pressured to maximise returns to their shareholders, even though they claim to focus on social objectives (Galema, Lensink, & Mersland, 2012).

After the announcement of the initial public offering of the Mexican MFI Banco Compartamos in 2007, the trade-off between the dual objectives became a heavily debated topic. Commentators such as Nobel Prize winner Muhammad Yunus spoke out against the transformation of MFIs to more commercial legal forms. They argue that MFIs would become too focused on profit and growth and no longer serve the poor (Cull et al., 2007). Mersland and Strøm (2009) address the question of microfinance mission drift and the trade-off between outreach and sustainability. They conclude that efforts by MFIs to reduce costs through transformation will allow them to continue to reach out to the poor, as lending to the poor will continue to remain profitable.

Consequently, if outreach remains the same, policy makers and investors (both social and profit orientated) should continue to be mindful that the trade-off between

financial sustainability and poverty reduction could allow managers to justify their bad performance on one criterion by referring to the other (Galema et al., 2012). This is a known problem of multitask agency theory which is difficult to solve (Holmstrom & Milgrom, 1991) because in multitask environments incentive schemes become less attractive and are less likely to motivate managers (Dewatripont, Jewitt, & Tirole, 2000). Agency theories are often used as a framework for comparing different legal forms as they are attributed to the variation in decision-making, corporate risk taking and performance (Jensen & Meckling, 1976; Fama & Jensen, 1983a). In addition to the multitask agency theory, the principal-agent problem, which arises from the separation of ownership and control is often cited by policy papers (Christen & Rosenberg, 2000; Fernando, 2004; Jansson et al., 2004; C-Gap, 2003) that advocate for the transformation of NGOs to microfinance banks, NBFIs or Coops. They argue that the transformation will lead to adoption of a better governance structure with greater external oversight, allow the MFI to become a deposit taker and have greater access to more funding types, which will improve the MFI's financial performance.

In microfinance, the principal-agent problem varies across legal form, as the principal differs from donors to investors. Each legal form has different incentives and thus different costs are incurred depending on how MFIs are organised and monitored. NGOs are often entirely funded through donations and are ownerless; agency costs could be high due to the lack of monitoring of management by the board (Mersland & Strøm, 2008). Coops are funded from members' equity holdings and in smaller Coops management is often voluntary and thus could help align principal-agent interests (Ledgerwood, 2013). Banks and NBFIs are funded by a combination of equity and debt holders and the profit incentive suggests that the investors will monitor management in order to maximise financial performance thus reducing agency costs (Mersland, 2009). This reinforces the view that the more commercially orientated form should perform better than those who are socially orientated.

Therefore, based on the banking literature results discussed and the findings that outreach remains constant across MFIs (Mersland & Strøm, 2010). If the agency theories hold and the transformation advocates arguments in relation to better governance structure and funding stand true. Then the level of commercial orientation

based on the different characteristics of legal forms presented in the typology in Table 2.1 should affect an institution's financial performance. Therefore, I hypothesise:

Hypothesis 1:

In the microfinance industry, an increase in the level of commercialisation of an MFI will have a positive impact on the institution's financial performance.

Inter-related to the performance of MFIs are the risks they undertake. Iannotta et al. (2007) discover public sector banks have poorer loan quality and higher insolvency than other types of banks while mutual banks have better loan quality and lower asset risk than both private and public banks. Therefore, as an extension of the banking industry, differences in risk behaviour could be present within the microfinance industry.

Furthermore, the clients/borrowers of MFIs are those who cannot borrow from regular banks. These individuals could be categorised as sub-prime borrowers, who may borrow to smooth over their income in the short run or borrow for their microenterprise, which have a higher degree of risk than larger businesses (Beisland et al., 2014). They may also provide loans to rural and agricultural enterprises, which bear a higher degree of production and environmental risk (Ledgerwood, 2013). Therefore, clients and borrowers of MFIs are perceived to be more risky than traditional banking clients.

However, it is important to note that default rates are surprisingly low for MFIs. Muhammad Yunus's Grameen Bank reports recovery rates of more than 98% annually.¹ The low delinquency rate is noteworthy given that an MFI is subject to the problems of credit risk assessment and repayment because clients have little or no collateral (Armendariz & Murdoch, 2010). MFIs have identified ways to cope with the problem of lack of collateral by offering small loans, encouraging weekly repayments, providing incentives to build a good credit history and the innovation of group lending schemes. These additions increase screening and monitoring and allow MFIs to mitigate risk by reducing asymmetric information (Mersland & Strøm, 2009; Mersland, 2009).

Moreover, relationships between banks, their depositors and borrowers could be as important as the management's relationship with the board (Macey & O'Hara, 2003).

¹http://www.grameen.com/index.php?option=com_content&task=view&id=210&Itemid=379

Mersland (2009) examines both sets of relationships using the economic theory of ownership, an extension of agency theory developed by Hansmann (1996). He identifies that Coops and NPOs reduce asymmetric information costs through relationship lending efforts e.g. group lending schemes. Whilst shareholder firms often have a greater concentration of funders and can reduce costs by monitoring management and through better collective decision-making. This may explain the high loan recovery rate across the microfinance industry and why multiple legal forms are able to remain sustainable.

However, as well as financial performance, the principal-agent problem plays a significant role in a financial institution's risk behaviour. It suggests that if an institution is not properly monitored by owners, it is up to the management's own discretion to be responsible for the risk they take. Galema et al. (2012) argue that MFI managers of NGOs have greater discretion since donors have fewer incentives to monitor risk taking behaviour compared with profit driven investors and as a result will take greater risk. They identify that powerful CEOs of NGOs have more decision-making freedom than other MFI ownership types and that this induces them to take more risky decisions.

Related to an MFI's legal form, not all institutions are financially sustainable and self-sufficient. Some institutions such as NGOs rely on donors and subsidies in order to maintain sufficient capital levels to operate and meet borrowers demands. Therefore, a moral hazard problem may arise as the firm's management is aware that if they underperform they will receive funds nevertheless and could take excessive risk and be less cost efficient (Armendariz & Murdoch, 2010). Mersland (2009) argues that increasing management incentives to reach performance targets such as cost reduction, could align the principal and agent interests and reduce the problems of moral hazard that arise because management may take greater risks at the expense of depositors and donors.

Unlike the banking industry, the microfinance industry is not completely regulated. Regulators can often ignore the industry as it may only play a small role in the overall financial sector (Galema et al., 2012). Banks and other deposit-taking institutions involved in microfinance often distribute loans that are not backed by collateral. Central banks or other supervisory authorities regulate these institutions in order to prevent them losing deposits and thus mitigate the risk. Regulators ignore NGOs as they only have the capacity to lend funds; due to the lack of oversight NGOs are not constrained

by risk limits and management could be tempted to invest in risky projects that deliver perks (Galema et al., 2012). Hence, regulatory oversights when combined with agency problems reinforce the notion that those more commercially orientated are constrained and monitored by external parties and take fewer risks than the other legal forms. Therefore, I predict:

Hypothesis 2:

In the microfinance industry, an increase in the level of commercialisation of an MFI reduces its tendency to take risks.

Section 3: Data and Descriptive Statistics

I obtained MFI accounting data from Mix Market.² Mix Market is a non-profit organisation whose mission is to broaden financial inclusion and transparency in the microfinance industry. The Mix Market database is self-reported, where over 2,600 MFIs voluntarily submit data in relation to financial and social performance. MFIs share their annual reports, internal financial statements and management reports with the organisation to support the submitted data. Mix Market reviews and monitors the data to ensure accuracy and converts all data to US dollars.

Similar to the approach applied by Ahlin, Lin and Maio (2011), I draw up the sample to meet certain criteria. First, I select MFIs that are either ranked four or five diamond levels by Mix Market to ensure the quality of data provided by the MFI is high. Mix Market designates diamond levels as a measure of reliability based on the amount and quality of information reported by the institution. MFIs with a level of four diamonds disclose financial statements, which are audited by third party accountants and a level of five includes all information provided at level four but has also been rated by a specialised microfinance rating agency. Second, I select MFIs that have been observed for at least four continuous years between 2004 and 2012. Finally, the yearly data must correspond to a calendar-year fiscal year for comparability with the annual country data.

The second source used in the dataset is to control for macroeconomic specific effects that influence MFI performance. GDP per capita, PPP (Current International \$) is included from the World Development Indicators dataset (2015) to account for the impact of the economic cycle on the MFI's performance. Using a purchasing power parity rate will account for a truer reflection of MFI performance and efficiency within the local market (Mersland & Strøm, 2010). I follow the approach used by Iannotta et al. (2007) and do not include any other macroeconomic controls, as the country dummy variables should capture any institutional, regulation and competition differences. This will ensure that the sample size remains large, as the introduction of additional macroeconomic variables could further reduce the number of observations.

After the removal of those that do not meet the outlined criteria, 2,450 observations remain. The sample consists of 349 MFIs with sufficient data to perform the largest

² www.mixmarket.org

regression. When broken down into separate legal forms, the sample consists of 124 NGOs, 45 Coops, 126 NBFIs, and 54 banks. The MFI sample contains geographically diversified data from 64 countries and each MFI contains 4-9 years of observations from 2004-2012.

The data collected by Mix Market may not accurately reflect the MFI population, since it is contributed voluntarily. This may lead to self-reporting bias, as those who are most willing to submit, may be performing better and be more transparent. Bauchet and Murdugh (2009) find that the Mix Market dataset is tilted towards financially sustainable MFIs, which are often larger and may have access to more funding sources thus impacting the firm's performance. Therefore, the dataset may contain large firm bias. The use of the diamond level measure in the sample selection method to increase the reliability of the self-reported data could cause sample selection bias. The measure may remove younger, less developed MFIs that are less likely to be audited or rated, which may lead to a biased representation of the MFI population.

The main dependent variable I employ when investigating the firm's financial performance is the MFI's return on assets (ROA), as it is a common indicator of profitability across all MFIs regardless of legal form. ROA is a better indicator of financial performance than return on equity (ROE) because the financial structures of legal forms vary significantly (Tchakoute-Tchuigoua, 2010). Additionally, I investigate the operating expense ratio (OER) to identify if an institution's commercial orientation affects its operating efficiency (Mersland & Strøm, 2008).

In relation to the investigation of risk amongst legal forms, similar to Iannotta et al. (2007), Laeven and Levine (2009) and Galema (2011) I use a Z-score as the main dependent to measure risk of a financial institution. The Z-score measures the MFI's distance to insolvency and is computed as the return on assets plus the capital asset ratio divided by the standard deviation of the return on assets ($Z\text{-score} = \frac{ROA+CAR}{\sigma_{ROA}}$). The natural logarithm is used in the specification as the Z-score is highly skewed. Also, I investigate the loan loss rate to inspect whether the MFI's legal form affects its loan quality (Iannotta et al., 2007).

The main focus of this paper is to examine how the legal forms commercialisation level influences the dependent variables outlined. A categorical variable of MFI

commercialisation is constructed based on the typology illustrated in Table 2.1. The variable is ranked under the assumption that the more focused an MFI is on its financial objectives and the more a regulatory authority oversees an institution, the greater the level that will be assigned to the legal forms commercialisation.

I employ the following control variables that capture banking characteristics: size (natural logarithm of MFI assets) is included as larger banks often experience higher levels of performance due to economies of scale (Mersland & Strøm, 2009). I use a proxy for outreach (natural logarithm of average loan balance) in order to capture the firm's social performance (Hartarska, 2005). Loans (loans/total assets) are included as they might be more profitable than other securities but also be more costly to manage for some MFIs and loan loss (loan loss provision/total loans) is applied as a proxy to account for loan quality, as riskier loans should provide greater returns (Iannotta et al., 2007).

I employ the capital asset ratio (total equity/total assets) because higher levels of capital could denote banks with riskier assets and could also reflect better management quality. Deposits (deposits/total assets) account for funding costs, as retail deposits often carry lower interest costs and thus could increase the performance of an MFI (Iannotta et al., 2007). MFI experience is controlled for to capture learning effects (Ahlin & Lin, 2006). Finally, similar to Hartarska (2005) I employ external governance variables, regulation and rating status to account for their effects on an MFI's performance and risk. Table 3.1 provides more detail regarding the variables used in the study and their source.

Basic summary statistics of the sample are illustrated in Panel A of Table 3.2. When examining the main dependent variable for financial performance, ROA, the average return estimated is a mere 2.69%. However, a large variation can be witnessed from the standard deviation (6.7%) and the difference between the minimum (-33%) and the maximum (20%). The small mean may reflect the MFI's objective of social performance. What may capture investors' attention is the mean annual loan growth of the MFI, which from the sample (not calculated below) grows approximately 34% year on year. With regards to the insolvency risk measure, the higher the level of LN(Z-score) corresponds to a lower probability of default. The mean of 2.385 and standard deviation of 1.04 is in line with those reported by Galema (2011) and Laeven and Levine (2009).

Panel B provides a cross tabulation of the number of MFI observations per type across different regions.

Table 3.1 - Variable definitions (when available from Mix Market and The World Bank (2015))

Variable	Explanation	Source
Dependent		
Return on Assets	Profit Ratio. (Net Operating Income - Taxes)/ Assets.	MixMarket
Operating Expense Ratio	Operational Expense Ratio (Cost efficiency). Operating Expense/ Assets.	MixMarket
LN(Z-score)	Insolvency Risk. The natural logarithm of insolvency risk. (Return on Assets + Capital Asset Ratio)/ Standard Deviation of Return on Assets.	MixMarket
Loan Loss Rate	Asset Risk. (Write-offs - Value of Loans Recovered)/ Loan Portfolio.	MixMarket
Independent		
Commercialisation Level	Legal Form Categorical Variable. (NGO=1, Coop=2, NBF=3 and bank = 4). As the categorical variable increases so to does the commercial orientation of the legal form.	MixMarket
Deposit Asset Ratio	Deposits/ Total Assets	MixMarket
Capital Asset Ratio	Capital Asset Ratio. Total Equity/ Total Assets.	MixMarket
Outreach	Average Loan Balance per Borrower. Gross Loan Portfolio/ Number of Active Borrowers	MixMarket
MFI Size	The natural logarithm of the total of all net assets of an MFI.	MixMarket
Loan Asset Ratio	Gross Loan Portfolio/Total Assets.	MixMarket
MFI Experience	Experience Categorical Variable. (New=1, Young=2 and Mature=3). New refers to 1-4, Young 5-8 and Mature 8+ years old.	
Rating	Credit Rating Dummy. Each dummy variable is equal to one if the MFI is rated by an external credit rating agency and zero otherwise.	MixMarket
Bank Regulation	Bank Regulation Dummy. Each dummy variable is equal to one if the MFI is regulated by a supervisory authority and zero otherwise.	MixMarket
i.FiscalYear	Year Dummies. Each dummy variable is equal to one if the MFI observation refers to the corresponding year and zero otherwise.	MixMarket
i.Country	Country Dummies. Each dummy variable is equal to one if the MFI nationality is that of the corresponding country and zero otherwise.	MixMarket
Log GDP per capita	Log of GDP per capita based on purchasing power parity (PPP). PPP GDP is gross domestic product converted to international dollars using purchasing power parity rates. GDP per capita should explain the impact of the economic cycle on MFI performance.	World Bank

Bold: Winsorized variables at the 1st and 99th percentile

Table 3.2
Panel A – Summary Statistics

VARIABLES	N	MEAN	SD	MIN	MAX
Return on Assets	2450	0.0269	0.0672	-0.3265	0.1992
Operating Expense Ratio	2448	0.1810	0.1149	0.0369	0.6895
LN(Z-score)	2385	2.3847	1.0399	-2.9419	5.5196
Loan Loss Rate	2450	0.0154	0.0283	-0.0266	0.1571
Log GDP per capita	2450	8.7420	0.6875	6.3376	10.0893
Loan Asset Ratio	2450	0.7882	0.1484	0.2133	1.0324
Deposit Asset Ratio	2450	0.1800	0.2726	0	0.9907
MFI Size	2450	16.3867	1.7659	11.9122	22.4457
Capital Asset Ratio	2450	0.3356	0.2300	-0.0818	0.9756
Outreach	2450	6.6611	1.0490	4.3820	9.0171
MFI Experience	2450	2.6731	0.6059	1	3
Rating	2450	0.2102	0.4075	0	1
Bank Regulation	2450	0.6016	0.4897	0	1

See Appendix A for separate Legal Form Summary Statistics

Panel B – Cross-tabulation number of MFI observations per type and region

Current Legal Status	Region					
	Africa	East Asia and the Pacific	Eastern Europe and Central Asia	Latin America and The Caribbean	Middle East and North Africa	South Asia
NGO	49	50	52	626	66	46
COOP	44	6	65	171	0	0
NBFI	43	114	353	354	0	13
Bank	33	64	80	171	0	50

Table 3.3 presents the correlation between each of the variables and illustrates that multicollinearity does not appear to be an issue in the panel, with the exception of moderate multicollinearity between the commercialisation level and bank regulation. Therefore, results will be reported with and without bank regulation for discussion purposes.

Table 3.3 - Correlation matrix of main regression variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) Return on Assets	1													
(2) Operating Expense Ratio	-0.1779	1												
(3) LN(Z-score)	0.3677	-0.3069	1											
(4) Loan Loss Rate	-0.2847	0.2735	-0.2433	1										
(5) Commercialisation Level	-0.0592	-0.0678	-0.0700	0.0132	1									
(6) Log GDP per capita	0.0809	0.0693	0.0803	0.0521	-0.1151	1								
(7) Loan Asset Ratio	0.2302	-0.0049	0.1225	-0.109	-0.2330	0.1765	1							
(8) Deposit Asset Ratio	-0.1254	-0.2519	0.0082	-0.0893	0.3703	-0.0701	-0.2035	1						
(9) MFI Size	0.0568	-0.3340	0.0285	0.0370	0.4494	-0.0009	-0.1027	0.4108	1					
(10) Capital Asset Ratio	0.1117	0.2389	0.3512	0.0648	-0.2675	0.0542	0.0088	-0.4718	-0.4292	1				
(11) Outreach	-0.0438	-0.5136	0.1128	-0.0917	0.1966	0.2835	0.1486	0.2419	0.2972	-0.2478	1			
(12) MFI Experience	0.1086	-0.2204	0.1824	-0.0212	-0.1623	0.1023	0.0955	0.0605	0.2499	-0.1381	0.1548	1		
(13) Rating	0.0480	-0.0220	0.0744	0.0161	-0.0085	0.0695	0.0668	0.1333	0.2534	-0.1704	0.0580	0.1143	1	
(14) Bank Regulation	-0.0552	-0.2312	-0.0975	-0.0589	0.5787	-0.1932	-0.0108	0.4221	0.3142	-0.3126	0.2565	-0.1012	0.0421	1

Section 4: Methodology

In order to identify a more definitive outcome to the question, ‘does an MFI’s legal form influence its level of financial performance and risk?’ I will examine the two hypotheses set out in the theoretical background. I employ the dependent variables: return on assets, LN(Z-score), operating expense ratio and the loan loss ratio as proxies of financial performance and risk previously discussed, with particular attention being given to the former two variables. The main independent variable used in my investigation is the categorical variable that ranks legal form by its commercial orientation.

Unlike other MFI performance studies, I follow a finance methodology similar to Iannotta et al. (2007), which results in the following performance and risk regression models being estimated:

$$Y_{j,t} = \alpha + \beta LFC_{j,t} + \partial Year_t + \lambda Country_j + \tau GDP_{j,t} + \gamma C_{j,t} + \varepsilon_{j,t},$$

where the j and t subscripts indicate MFI and year respectively. $Y_{j,t}$ represents either the financial performance or risk dependent variable. $LFC_{j,t}$ is a categorical variable of the legal form’s commercial orientation (NGO=1, Coop=2, NBF=3 and bank=4).³ $Year_t$ indicates time-specific dummy variables and $Country_j$ indicates country-specific dummy variables. $GDP_{j,t}$ is the national GDP per capita, which is employed as a macroeconomic control. $C_{j,t}$ represents the MFI-specific control variables discussed in Section 3 (loan loss is dropped when examining the dependent risk variable) and $\varepsilon_{j,t}$ is the disturbance term. Winsorization at the 1st and 99th percentile is applied to variables with extreme values in order to reduce the effects of spurious outliers. Those winsorized are denoted in bold in Table 3.1.

I propose to use a single equation model similar to Hartarska (2005). She argues that in spite of theoretical suggestions to the contrary, the hypothesis that various governance and performance mechanisms are endogenous because of measurement errors, omitted variable bias or simultaneity is not always supported by empirical evidence.⁴ I apply a generalised least squares (GLS) random effects estimation; as the main independent

³ Rural and Commercial banks are combined into one entity because both have the same characteristics and after the sample selection criteria is applied only 9 Rural banks remain which could lead to unreliable estimates.

⁴ Similar to Hartarska (2005), I run a simple Hausman-Wu test using profit orientation as an instrument for the commercialisation level to check if the principal dependent variables employed display endogeneity. The residual t-stats computed are small and the Hausman-Wu chi-square statistics are also small, therefore we do not accept the null hypothesis that the variables are endogenous. Thus allowing me to use a single equation model.

variable for the risk and performance models, the commercialisation categorical variable is time invariant. Hence, a fixed effects model is not appropriate.⁵ The random effects estimator is appropriate as it captures the time constant unobserved effect of firm heterogeneity, which is uncorrelated with all the explanatory variables and is strictly exogenous (Wooldridge, 2013).

Consistent with the hypotheses outlined in Section 2 and the methodology discussed above, Table 4.1 illustrates the predicted signs of the independent variables with regards to the principal dependent variables employed.

Table 4.1- Definitions of independent variables and their hypothesised sign in respect to Return on Assets (ROA) and natural log of insolvency risk (LN(Z-score)).

Variable	Explanation	ROA Predicted Sign	LN(Z-score) Predicted Sign
Commercialisation Level	Commercialisation Categorical Variable	+	+
Capital Asset Ratio	Total Equity/ Total Assets	+	+
Deposit Asset Ratio	Deposits/ Total Assets	+	+
Loan Asset Ratio	Gross Loan Portfolio/Total Assets	+/-	+/-
MFI Size	Natural Logarithm of Total Assets	+	+
Outreach	Gross Loan Portfolio/ Number of Active Borrowers	-	-
MFI Experience	Experience Categorical Variable	+	+
Log GDP per capita	Log of GDP per capita based on purchasing power parity (PPP)	+	+/-
Loan Loss Rate	(Write-offs - Value of Loans Recovered)/ Loan Portfolio	-	
Rating	Rating Dummy Variable	+/-	+
Bank Regulation	Regulated Dummy Variable	+/-	+

⁵ I apply a Breusch-Pagan Lagrange multiplier test to examine if a random effects method or a pooled OLS method should be employed. The null hypothesis ($H_0: \text{Var}(U_{MFIID}) = 0$) is not accepted because of the significant chi-square statistic estimated. Thus, I conclude there is evidence of significant differences across MFIs and therefore a random effects method is more appropriate.

Section 5: Results

I report results from random effects panel data estimations of the relationship between the commercialisation level of an MFI's legal form and the MFI's financial performance and risk measures using the methodology set out in Section 4. For reporting and examination purposes of each hypothesis, I separate the results into three subsections: financial performance, risk and robustness checks.

Financial Performance

Regression results of financial performance measures, ROA and OER are presented in Table 5.1. The estimations contain variables from Table 3.1 and for illustrative purposes country and fiscal year dummies are omitted from the table. ROA and OER are discussed separately as results differ depending on which dependent variable is applied. Both dependent variables provide interesting results, as some coefficient signs were unexpected and include many significant findings.

The results of the relationship between the MFI's commercialisation level and ROA are illustrated in columns 1-4. I concentrate on column 1 and provide some additional insight into the relationship when external governance variables are included in columns 2-4. As illustrated, the commercialisation level is statistically significant at the 1% level, with a z-value of 3.33. However, the sign is negative, which contradicts hypothesis 1. Thus I cannot accept that an increase in commercialisation would increase the institution's ROA as the empirical result shows that a level increase in commercialisation (e.g. NGO to a Coop) will decrease ROA by 1% point, *ceteris paribus*.

Even though the finding is statistically significant, the decrease does not appear to be economically significant, *prima facie*. However, when accounting for the summary statistics depicted in Table 3.2, the commercialisation level increase leads to a 35% $((0.00952/0.0269)*100)$ point decrease in the mean ROA. This finding does not just contradict the initial hypothesis but also the results of Cull et al. (2007), Mersland and Strøm, (2009), and Beisland et al. (2014) that identify negligible differences between financial performance and ownership types. The finding could result from the funding structure of the institutions i.e. NGOs do not have to pay interest on donations, or the institution offers other profitable services other than microfinance (Ledgerwood, 2013). Appendix A presents summary statistics of each legal form and indicates that an NGO earns the largest mean ROA.

Most of the control variables in the model are in line with predicted expectations, conform to theory and display significance, with the exceptions of the Log of GDP per capita and the proxy for outreach LN(Average Loan Size). Both MFI size and experience both have a significant and positive coefficient, as an increase in both would clearly increase the MFI's ROA. Loan and capital asset ratios have positive and significant effects as an increase in loans provides greater interest repayments from borrowings and more equity funding allows for more capital to be invested in profitable opportunities. The deposit asset ratio is significant at the 10% level and is negative. This is perhaps because an increase in deposits means that an MFI has to dispense more savings interest. Finally, the loan loss rate has a significant and negative effect on ROA as an increase directly reduces the MFIs returns.

Furthermore, when including the external governance variables as controls in columns 2-4, little change can be observed of the relationship between the commercialisation level and ROA. The rating control is significant at the 10% level and is negative most likely because of the cost of being rated by a credit rating agency. Regulation is insignificant when included but does lead to smaller decrease in ROA when there is a level increase in commercialisation.

The relationship between the commercialisation level and the OER is examined in columns 5-8 in Table 5.1. In column 5, commercialisation level is again statistically significant at the 1% level with a z-value of 2.83. However, the result is positive, which similar to the ROA findings opposes my initial hypothesis and refutes the ownership theories such as multitask and principal-agent theory previously discussed. Interpreting the result empirically shows that an increase in the level of commercialisation increases operating expenses by 1.5%, *ceteris paribus*.

Again, the result is statistically and economically significant as an increase of the commercialisation level leads to an 8.6% $((0.01549/0.181)*100)$ point increase in the OER mean and thus a decrease in a institution's operational efficiency. This result extends on the argument that cost savings earned from relationship banking reduces asymmetric information costs and allows those less commercially orientated to compete with banks and NBFIs in the microfinance industry and suggests that this effect may be even greater than first believed (Mersland, 2009).

Table 5.1 - Panel Estimations of MFI Performance Measures on an MFI's Legal Forms Commercialisation Level

VARIABLES	(1) Return on Assets	(2) Return on Assets	(3) Return on Assets	(4) Return on Assets	(5) Operating Expense Ratio	(6) Operating Expense Ratio	(7) Operating Expense Ratio	(8) Operating Expense Ratio
Commercialisation Level	-0.010*** (0.003)	-0.010*** (0.003)	-0.008*** (0.003)	-0.008*** (0.003)	0.015*** (0.005)	0.015*** (0.006)	0.016*** (0.006)	0.016*** (0.006)
Log GDP per capita	-0.006 (0.026)	-0.007 (0.027)	-0.006 (0.026)	-0.007 (0.026)	0.118*** (0.043)	0.120*** (0.043)	0.118*** (0.043)	0.120*** (0.043)
Loan Asset Ratio	0.075*** (0.018)	0.076*** (0.018)	0.076*** (0.018)	0.077*** (0.018)	0.079*** (0.017)	0.078*** (0.017)	0.079*** (0.017)	0.078*** (0.017)
Deposit Asset Ratio	-0.020** (0.010)	-0.021** (0.010)	-0.018* (0.011)	-0.019* (0.011)	0.036*** (0.013)	0.037*** (0.013)	0.036*** (0.013)	0.038*** (0.013)
MFI Size	0.016*** (0.002)	0.016*** (0.003)	0.016*** (0.002)	0.016*** (0.003)	-0.031*** (0.005)	-0.032*** (0.005)	-0.031*** (0.005)	-0.032*** (0.005)
Capital Asset Ratio	0.063*** (0.015)	0.063*** (0.015)	0.063*** (0.015)	0.063*** (0.015)	-0.003 (0.016)	-0.002 (0.016)	-0.003 (0.016)	-0.003 (0.016)
Loan Loss Rate	-0.524*** (0.069)	-0.523*** (0.068)	-0.523*** (0.068)	-0.522*** (0.068)	0.081 (0.072)	0.079 (0.072)	0.081 (0.072)	0.079 (0.072)
Outreach	-0.004 (0.004)	-0.004 (0.004)	-0.004 (0.004)	-0.004 (0.004)	-0.040*** (0.005)	-0.040*** (0.005)	-0.040*** (0.005)	-0.040*** (0.005)
MFI Experience	0.014*** (0.005)	0.014*** (0.005)	0.014*** (0.005)	0.014*** (0.005)	-0.011** (0.004)	-0.011** (0.004)	-0.011** (0.004)	-0.011** (0.004)
Rating		-0.010* (0.006)		-0.009 (0.006)		0.038*** (0.011)		0.038*** (0.011)
Bank Regulation			-0.007 (0.008)	-0.006 (0.008)			-0.002 (0.014)	-0.006 (0.014)
Constant	-0.198 (0.181)	-0.203 (0.181)	-0.198 (0.181)	-0.202 (0.181)	0.020 (0.288)	0.030 (0.287)	0.021 (0.288)	0.030 (0.287)
Observations	2,450	2,450	2,450	2,450	2,448	2,448	2,448	2,448
R-squared	0.358	0.358	0.358	0.358	0.626	0.634	0.625	0.634
Number of MFIID	349	349	349	349	349	349	349	349

Notes: Models 1-4 report estimations using Return on Assets $\left(\frac{\text{Net Operating Income} - \text{Taxes}}{\text{Assets}}\right)$ as the dependent financial performance variable). Models 5-8 report estimations from using Operating Expense Ratio $\left(\frac{\text{Operating Expense}}{\text{Assets}}\right)$ as the dependent financial performance variable. All independent variables are defined in Table 3.1. I include country dummies listed in Appendix B, excluding Afghanistan and include year dummies from 2004-2012, excluding 2004. I do not display these variables for demonstration purposes. I report robust standard errors clustered by MFI in the parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Risk

Regression results of risk measures, LN(Z-score) and the loan loss rate are presented in Table 5.2. The estimations contain variables from Table 3.1 and again for illustrative purposes country and fiscal year dummies are excluded from the table. LN(Z-score) and loan loss are discussed separately as results differ depending on which dependent variable is applied. LN(Z-score) estimations provide interesting results as most coefficient signs are as expected and include many significant findings. However, loan loss estimations provide few coefficients of significance, which is interesting considering the control variables employed.

The results of the relationship between commercialisation level and the insolvency risk proxy LN(Z-score) provide interesting findings particularly if the financial performance findings hold and that outreach is constant across ownership type (Mersland & Strøm, 2010). Illustrated in column 1 of Table 5.2, the commercialisation level is positive and statistically significant at a 1% level with a z-value of 2.74. When interpreting the result economically, a level increase in commercialisation leads to a 17.9% point increase in the Z-score, *ceteris paribus* and therefore reduces its chance of default by increasing the MFI's distance to insolvency.

This finding would allow us to accept hypothesis 2, that an increase in the commercial orientation of an MFI will reduce its risk taking behaviour. The result is similar to findings in banking literature that identify that different forms of banks have different levels of risk (Iannotta et al., 2007). It also reinforces the outcome of Galema et al. (2012), which identifies that MFI's with greater manager discretion (e.g. NGO) have a greater risk level because of a lack of external oversight by principals and external governance parties.

This finding holds when the rating dummy variable is controlled for however, when regulation is accounted for the commercialisation coefficient becomes insignificant. As noted in Section 4, this may be due to moderate correlation between the two variables. Thus, one could argue that either transforming to a more commercially orientated form will decrease the risk of an MFI or if regulation were introduced uniformly across legal forms the MFI risk would decrease. Although, the latter could indirectly affect a firm's social objectives and each forms individual characteristics but as Cull, Demirgüç-Kunt, and Murdugh (2009) and Hartarska (2005) find regulation has no significant impact on

outreach. However, this might not hold empirically because MFIs are present in developing countries, which have weak institutional frameworks (Mersland, 2009) and thus may not have a legal system in place or have the resources to implement uniform regulations to those more socially orientated and which don't provide deposit facilities.

Most control variables are in agreement with the predicted expectations, except for the deposit asset ratio. The ratio is significant but negative. This result is similar to the investigation on the European banking industry by Iannotta et al. (2007) and may be simply because deposits are liabilities and may capture the leverage effects if a run on the MFI was to occur. As in times of volatility, the larger the deposit asset ratio means more liquid assets will be required by an institution to meet withdrawal demands. Illustrated in model 1, the capital asset ratio is extremely large and stands out in comparison with the rest of the coefficients and is significant at the 1% level. Again, this finding is comparable to Iannotta et al. (2007) finding, as the more capital an institution has available, the more likely they will be able to distribute any losses of non-performing loans.

The relationship between the commercialisation level of an MFI and the proxy for loan quality, the loan loss rate is non-existent. There are few significant variables in columns 5-8 with the exception of the loan asset ratio and the outreach proxy. Iannotta et al. (2007) make similar findings in their study but do find a significant difference across bank ownership forms. The external governance variable controls are insignificant, which is interesting considering their role in monitoring an institution's level of risk. The result also contradicts findings by Tchakoute-Tchuigoua (2010) who find that portfolio quality varies depending on if the institution is a Coop, an NGO or a shareholder firm.

This finding suggests that the investigation by Mersland (2009) holds true and that financial innovations, such as offering small loans, encouraging weekly repayments, providing incentives to build a good credit history; plus the introduction of group lending which increases screening and monitoring reduces the costs of asymmetric information. Therefore, this may allow more socially orientated firms prevent and reduce non-performing loans and compete with those more commercially orientated that employ more traditional risk prevention methods.

Table 5.2 - Panel Estimations of Risk Measures on an MFI's Legal Forms Commercialisation Level

VARIABLES	(1) LN(Z-score)	(2) LN(Z-score)	(3) LN(Z-score)	(4) LN(Z-score)	(5) Loan Loss Rate	(6) Loan Loss Rate	(7) Loan Loss Rate	(8) Loan Loss Rate
Commercialisation Level	0.179*** (0.058)	0.178*** (0.058)	0.069 (0.068)	0.069 (0.068)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)
Log GDP per capita	0.113 (0.173)	0.115 (0.173)	0.116 (0.172)	0.117 (0.172)	-0.019* (0.010)	-0.018* (0.010)	-0.018* (0.010)	-0.018* (0.010)
Loan Asset Ratio	0.316*** (0.111)	0.315*** (0.112)	0.312*** (0.112)	0.311*** (0.112)	-0.026*** (0.007)	-0.027*** (0.007)	-0.027*** (0.007)	-0.027*** (0.007)
Deposit Asset Ratio	-0.557*** (0.152)	-0.557*** (0.152)	-0.598*** (0.153)	-0.598*** (0.153)	-0.003 (0.005)	-0.002 (0.005)	-0.005 (0.005)	-0.004 (0.005)
MFI Size	0.105*** (0.022)	0.104*** (0.022)	0.105*** (0.022)	0.104*** (0.022)	0.000 (0.001)	-0.000 (0.001)	0.000 (0.001)	-0.000 (0.001)
Capital Asset Ratio	2.615*** (0.106)	2.615*** (0.106)	2.619*** (0.106)	2.619*** (0.106)	0.003 (0.005)	0.003 (0.005)	0.004 (0.005)	0.004 (0.005)
Outreach	0.038 (0.033)	0.038 (0.033)	0.034 (0.033)	0.035 (0.033)	-0.003** (0.002)	-0.003** (0.002)	-0.003** (0.002)	-0.003** (0.002)
MFI Experience	0.033 (0.028)	0.033 (0.028)	0.033 (0.028)	0.033 (0.028)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.002 (0.001)
Rating		0.072 (0.139)		0.044 (0.139)		0.003 (0.002)		0.003 (0.002)
Bank Regulation			0.469*** (0.154)	0.465*** (0.157)			0.005 (0.003)	0.005 (0.003)
Constant	-1.897 (1.211)	-1.886 (1.212)	-1.899 (1.204)	-1.892 (1.205)	0.156** (0.068)	0.158** (0.068)	0.156** (0.068)	0.157** (0.068)
Observations	2,396	2,396	2,396	2,396	2,450	2,450	2,450	2,450
R-squared	0.500	0.500	0.509	0.509	0.223	0.225	0.225	0.227
Number of MFIID	347	347	347	347	349	349	349	349

Notes: Models 1-4 report estimations using LN(Z-score) (The natural logarithm of insolvency risk (Return on Assets + Capital Asset Ratio)/ Standard Deviation of Return on Assets) as the dependent MFI risk variable. Models 5-8 report estimations from equation (3) using Loan Loss Rate (Write-offs - Value of Loans Recovered)/ Loan Portfolio) as the dependent MFI risk variable. All independent variables are defined in Table 3.1. I include country dummies listed in Appendix B, excluding Afghanistan and include year dummies from 2004-2012, excluding 2004. I do not display these variables for demonstration purposes. I report robust standard errors clustered by MFI in the parentheses. *** p<0.01, ** p<0.05, * p<0.1

Robustness Checks

Appendix C, Table A displays regression results with accounting performance metrics Return on Equity (ROE) and Portfolio at Risk 30 (the percentage of the total loan portfolio with more than 30 days in arrears (PAR30)) as alternative dependent variables. The estimations contain variables from Table 4.1 with country and fiscal year dummies again excluded from the table.

The relationship between the commercialisation level and ROE is statistically significant at a 10% level and is extremely economically significant across columns 1-4. However, this result may not be credible. As discussed in the methodology, ROE may not be a good indicator of performance in contrast to ROA when considering that the institution's equity and funding structure could notably differ across an MFI's legal form and this may be the reason for the outcome in columns 1-4. It may also account as to why the only control variable that switches sign between the two financial performance variables is the capital asset ratio (equity/assets).

I substitute PAR30 with loan loss to test if my finding in relation to loan quality holds, especially considering that there is little significance difference observed across specifications when tested. Again in columns 5-8, results conclude that the relationship between a legal forms commercial orientation and PAR30 is insignificant. Thus reinforcing that loan quality does not differ across legal form, which may be due to the innovations in lending in microfinance and the ability of those more socially orientated to reduce non-performing loans by reducing asymmetric information (Mersland, 2009).

Furthermore, Appendix C, Tables B & C clarify that results of Tables 5.1 & 5.2 hold when the categorical variable is separated into individual dummies. I perform a robustness check to confirm if the results hold if rural banks are considered a separate entity in the commercial orientation categorical variable. Again, the results found appear to illustrate that the initial findings hold (not included in the appendices). Moreover, I check to see if the results differ before and after 2008 to account for the global financial crisis and with the exception of the LN(Z-score) only becoming significant during the crisis, findings appear to remain robust. Finally, considering the ROA outcome, I rerun the regression estimations and include every MFI diamond level and again results hold.⁶

⁶ For secondary robustness results see the additional appendices document.

Section 6: Conclusion

I have studied whether legal form influences the financial performance and risk of MFIs. After empirically testing the hypothesis, that an increase in the level of commercialisation improves an institution's financial performance using the performance metrics, return on assets and the operating expense ratio. I conclude that the hypothesis cannot be accepted as results surprisingly demonstrate that an increase in the commercialisation level decreases returns and efficiency. This indicates that socially oriented forms such as NGOs and Coops have found sustainable competitive business models in the microfinance industry. Thus, in relation to investors/creditors, the findings suggest that an MFI's legal form should be taken into account as well as the institution's competition, manager characteristics and board composition when making an investment decision.

Perhaps the most interesting outcomes of the study are observed when I test the hypothesis to see if a more commercially orientated legal form reduces the institution's level of risk. The empirical results show that it does reduce an institution's insolvency risk, however when regulation is controlled for it becomes insignificant. This important contribution to the literature indicates that policy makers should either encourage the transformation to more commercially orientated forms as it lowers an MFI's level of risk or when taking into consideration the findings that there is no trade-off between regulation and outreach (Hartarska 2005; Cull et al., 2009), policy makers could introduce greater regulation onto NGOs and Coops to improve their solvency. Additionally, this result together with the financial performance findings should be taken into account by investors in relation to their level of risk tolerance, as the reduction in risk coincides with the decline in returns as the commercialisation level increases.

However, the findings identified are subject to the study's limitations. The dataset is not a representative of the entire MFI population and is restricted by its finite number of variables. The dataset does not include an institution's lending methodology, if subsidies are granted or if a deposit insurance scheme is in effect in a country to protect MFI depositors. If present, a more detailed and perhaps accurate examination of the impact of a legal forms commercialisation level on performance could be carried out with the additional variables controlled for. Therefore, I suggest future research could

be performed to validate the studies findings if datasets with the additional variables are employed. I propose greater investigation be conducted into the differences of a legal form's risk and regulation, as research into this subject is currently rather limited. Moreover, if the studies results are valid then an investigation should be performed to identify which legal form has the optimal level of return in relation to its risk. This is especially important considering that past MFI literature has identified that outreach remains constant across legal form.

Finally, I should emphasise that this study does not advocate one legal form over another, as it only focuses on a limited number of MFI characteristics. Different MFI legal forms consist of their own advantages and disadvantages. Mersland and Strøm (2008) sum up the complicated landscape of MFIs best, by arguing that because of multiple agency theories, clear predictions cannot be made regarding efficiency of ownership types in microfinance markets and could provide theoretical support for the existence of the multiple forms in microfinance, as well as in regular banking markets. This could be especially true in relation as to how MFIs establish themselves in imperfect markets and supports how pro-poor banks such as mutual and non-profit organisations have successfully competed with investor ownership in the past (Cull, Davis, Lamoreaux, & Rosenthal, 2006).

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Appendices

Appendix A: Sample Summary Statistics by Legal Form

Table – NGO (124)

VARIABLES	N	MEAN	SD	MIN	MAX
Return on Assets	889	0.0329	0.0672	-0.3265	0.1992
Operating Expense Ratio	889	0.1910	0.1018	0.0369	0.6895
LN(Z-score)	855	2.4311	0.9999	-2.9419	4.7196
Loan Loss Rate	889	0.0152	0.0260	-0.0266	0.1571
Log GDP per capita	889	8.7852	0.5620	6.3963	9.9112
Loan Asset Ratio	889	0.8038	0.1397	0.2133	1.0324
Deposit Asset Ratio	889	0.0443	0.1353	0	0.9786
MFI Size	889	15.7464	1.3813	12.6675	20.4862
Capital Asset Ratio	889	0.4043	0.2454	-0.0818	0.9756
Outreach	889	6.2863	0.9948	4.3820	9.0171
MFI Experience	889	2.8234	0.4592	1	3
Rating	889	0.2205	0.4148	0	1
Bank Regulation	889	0.1969	0.3978	0	1

Table – Coop (45)

VARIABLES	N	MEAN	SD	MIN	MAX
Return on Assets	286	0.0160	0.0382	-0.2272	0.1992
Operating Expense Ratio	284	0.1048	0.0568	0.0369	0.4021
LN(Z-score)	282	2.8736	1.0440	-1.0988	4.8158
Loan Loss Rate	286	0.0054	0.0112	-0.0231	0.0653
Log GDP per capita	286	8.9488	0.7470	6.9830	10.0893
Loan Asset Ratio	286	0.8090	0.1229	0.252	1.0324
Deposit Asset Ratio	286	0.5076	0.2752	0	0.9426
MFI Size	286	16.0514	1.5937	12.6610	19.9330
Capital Asset Ratio	286	0.2581	0.1795	0	0.9756
Outreach	286	7.4578	0.8575	4.3820	8.9413
MFI Experience	286	2.7203	0.5608	1	3
Rating	286	0.2273	0.4198	0	1
Bank Regulation	286	0.8287	0.3775	0	1

Table – NBF1 (126)

VARIABLES	N	MEAN	SD	MIN	MAX
Return on Assets	877	0.0259	0.0770	-0.3265	0.1992
Operating Expense Ratio	877	0.2120	0.1331	0.0369	0.6895
LN(Z-score)	852	2.1602	1.0719	-2.1036	5.5196
Loan Loss Rate	877	0.0199	0.0350	-0.0266	0.1571
Log GDP per capita	877	8.7007	0.7655	6.3376	9.9939
Loan Asset Ratio	877	0.8082	0.1321	0.2133	1.0324
Deposit Asset Ratio	877	0.0956	0.1970	0	0.9907
MFI Size	877	16.3551	1.6215	11.9122	21.1551
Capital Asset Ratio	877	0.3441	0.2210	-0.0818	0.9756
Outreach	877	6.6325	0.9513	4.3820	9.0171
MFI Experience	877	2.5131	0.6884	1	3
Rating	877	0.1904	0.3929	0	1
Bank Regulation	877	0.7662	0.4235	0	1

Table – Bank (54)

VARIABLES	N	MEAN	SD	MIN	MAX
Return on Assets	398	0.0235	0.0592	-0.3265	0.1992
Operating Expense Ratio	398	0.1447	0.0947	0.0369	0.6895
LN(Z-score)	396	2.4193	0.9108	-1.4994	4.2211
Loan Loss Rate	398	0.0131	0.0229	-0.0266	0.1571
Log GDP per capita	398	8.5881	0.6734	6.3376	9.7527
Loan Asset Ratio	398	0.6942	0.1798	0.2133	1.0324
Deposit Asset Ratio	398	0.4335	0.2804	0	0.8911
MFI Size	398	18.1277	1.8176	13.2493	22.4457
Capital Asset Ratio	398	0.2189	0.1789	0.0249	0.9756
Outreach	398	6.9889	1.0809	4.3820	9.0171
MFI Experience	398	2.6558	0.6424	1	3
Rating	398	0.2186	0.4138	0	1
Bank Regulation	398	0.9799	0.1405	0	1

Appendix B – MFI Sample Country List (64)

Afghanistan	Congo, Rep.	Lebanon	Romania
Albania	Costa Rica	Macedonia, FYR	Russian Federation
Armenia	Dominican Republic	Madagascar	Rwanda
Azerbaijan	Ecuador	Mexico	Samoa
Bangladesh	Egypt, Arab Rep.	Moldova	Senegal
Benin	El Salvador	Mongolia	Serbia
Bolivia	Gambia, The	Morocco	Sri Lanka
Bosnia and Herzegovina	Georgia	Mozambique	Tajikistan
Brazil	Guatemala	Nicaragua	Tanzania
Bulgaria	Haiti	Nigeria	Togo
Cambodia	Honduras	Pakistan	Tunisia
Cameroon	Indonesia	Panama	Turkey
Chile	Kazakhstan	Papua New Guinea	Uganda
China	Kenya	Paraguay	Ukraine
Colombia	Kosovo	Peru	Venezuela, RB
Congo, Dem. Rep.	Kyrgyz Republic	Philippines	Vietnam

Appendix C: Robustness Checks

Table A – Panel Robustness Estimations of MFI Performance and Risk Measures on an MFI's Legal Forms Commercialisation Level

VARIABLES	(1) Return on Equity	(2) Return on Equity	(3) Return on Equity	(4) Return on Equity	(5) PAR30	(6) PAR30	(7) PAR30	(8) PAR30
Commercialisation Level	-0.135* (0.075)	-0.135* (0.075)	-0.171* (0.099)	-0.173* (0.100)	-0.004 (0.004)	-0.004 (0.004)	-0.005 (0.004)	-0.005 (0.004)
Log GDP per capita	-0.300 (0.400)	-0.302 (0.401)	-0.296 (0.398)	-0.298 (0.399)	0.025 (0.045)	0.025 (0.045)	0.025 (0.045)	0.025 (0.045)
Loan Asset Ratio	0.291 (0.395)	0.296 (0.397)	0.254 (0.386)	0.260 (0.388)	-0.026 (0.024)	-0.025 (0.024)	-0.026 (0.025)	-0.025 (0.025)
Deposit Asset Ratio	-0.254 (0.207)	-0.258 (0.207)	-0.340 (0.218)	-0.348 (0.220)	0.026*** (0.010)	0.026*** (0.010)	0.026*** (0.010)	0.025** (0.010)
MFI Size	0.064*** (0.021)	0.067*** (0.022)	0.064*** (0.021)	0.068*** (0.022)	-0.001 (0.004)	-0.000 (0.004)	-0.001 (0.004)	-0.000 (0.004)
Capital Asset Ratio	-0.505* (0.293)	-0.508* (0.294)	-0.489* (0.286)	-0.492* (0.287)	0.030** (0.013)	0.030** (0.013)	0.030** (0.013)	0.030** (0.013)
Loan Loss Rate	-2.285*** (0.527)	-2.276*** (0.526)	-2.323*** (0.538)	-2.313*** (0.536)				
Outreach	0.008 (0.049)	0.008 (0.049)	0.002 (0.049)	0.001 (0.049)	0.004 (0.008)	0.004 (0.008)	0.004 (0.008)	0.004 (0.008)
MFI Experience	-0.104 (0.082)	-0.104 (0.082)	-0.102 (0.080)	-0.103 (0.081)	0.006 (0.004)	0.006 (0.004)	0.006 (0.004)	0.006 (0.004)
Rating		-0.046 (0.049)		-0.059 (0.055)		-0.004 (0.007)		-0.004 (0.007)
Bank Regulation			0.204 (0.153)	0.210 (0.156)			0.001 (0.007)	0.002 (0.008)
Constant	1.845 (2.919)	1.818 (2.912)	1.838 (2.914)	1.804 (2.905)	-0.187 (0.306)	-0.192 (0.310)	-0.187 (0.307)	-0.193 (0.312)
Observations	2,450	2,450	2,450	2,450	2,391	2,391	2,391	2,391
R-squared	0.107	0.107	0.107	0.108	0.0845	0.0846	0.0845	0.0846
Number of MFIID	349	349	349	349	349	349	349	349

Notes: Models 1-4 report estimations using Return on Equity (Net Operating Income, less Taxes)/ Equity, average) as the dependent financial performance variable. Models 5-8 report estimations using PAR30 (Portfolio at Risk > 30 days/ Loan Portfolio, gross) as the dependent MFI risk variable. All independent variables are defined in Table 3.1. I include country dummies listed in Appendix B, excluding Afghanistan and include year dummies from 2004-2012, excluding 2004. I do not display these variables for demonstration purposes. I report robust standard errors clustered by MFI in the parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table B - Panel Estimations of MFI Performance Measures on MFI Legal Forms

VARIABLES	(1) Return on Assets	(2) Return on Assets	(3) Return on Assets	(4) Return on Assets	(5) Operating Expense Ratio	(6) Operating Expense Ratio	(7) Operating Expense Ratio	(8) Operating Expense Ratio
Coop	-0.010 (0.010)	-0.011 (0.010)	-0.006 (0.012)	-0.008 (0.012)	-0.044*** (0.016)	-0.041*** (0.016)	-0.051*** (0.018)	-0.045** (0.018)
NBFI	-0.014** (0.007)	-0.013* (0.007)	-0.010 (0.008)	-0.010 (0.008)	0.011 (0.013)	0.007 (0.013)	0.005 (0.014)	0.003 (0.014)
Bank	-0.033*** (0.010)	-0.034*** (0.010)	-0.029*** (0.010)	-0.030*** (0.010)	0.049*** (0.017)	0.050*** (0.017)	0.041** (0.018)	0.045** (0.019)
Log GDP per capita	-0.007 (0.026)	-0.007 (0.027)	-0.007 (0.026)	-0.008 (0.027)	0.119*** (0.043)	0.121*** (0.043)	0.120*** (0.043)	0.121*** (0.043)
Loan Asset Ratio	0.074*** (0.018)	0.074*** (0.018)	0.074*** (0.018)	0.075*** (0.018)	0.081*** (0.016)	0.080*** (0.016)	0.080*** (0.016)	0.079*** (0.016)
Deposit Asset Ratio	-0.019 (0.012)	-0.019 (0.012)	-0.016 (0.012)	-0.017 (0.012)	0.046*** (0.014)	0.046*** (0.014)	0.044*** (0.014)	0.045*** (0.014)
MFI Size	0.016*** (0.002)	0.017*** (0.003)	0.016*** (0.002)	0.017*** (0.003)	-0.032*** (0.005)	-0.033*** (0.005)	-0.032*** (0.005)	-0.033*** (0.005)
Capital Asset Ratio	0.064*** (0.015)	0.063*** (0.015)	0.063*** (0.015)	0.063*** (0.015)	-0.004 (0.016)	-0.004 (0.016)	-0.003 (0.016)	-0.003 (0.016)
Loan Loss Rate	-0.524*** (0.069)	-0.522*** (0.068)	-0.523*** (0.068)	-0.521*** (0.068)	0.081 (0.072)	0.079 (0.072)	0.080 (0.072)	0.078 (0.072)
Outreach	-0.004 (0.004)	-0.004 (0.004)	-0.004 (0.004)	-0.004 (0.004)	-0.039*** (0.005)	-0.039*** (0.005)	-0.039*** (0.005)	-0.039*** (0.005)
MFI Experience	0.014*** (0.005)	0.014*** (0.005)	0.014*** (0.005)	0.014*** (0.005)	-0.012*** (0.004)	-0.012*** (0.004)	-0.012*** (0.004)	-0.012*** (0.004)
Rating		-0.011* (0.006)		-0.010* (0.006)		0.038*** (0.011)		0.038*** (0.011)
Bank Regulation			-0.008 (0.008)	-0.007 (0.009)			0.012 (0.015)	0.008 (0.015)
Constant	-0.205 (0.181)	-0.210 (0.181)	-0.203 (0.180)	-0.208 (0.180)	0.032 (0.288)	0.040 (0.287)	0.029 (0.287)	0.038 (0.286)
Observations	2,450	2,450	2,450	2,450	2,448	2,448	2,448	2,448
R-squared	0.357	0.357	0.358	0.358	0.638	0.646	0.638	0.646
Number of MFIID	349	349	349	349	349	349	349	349

Notes: The NGO dummy variable excluded to remove dummy variable trap. Models 1-4 report estimations using Return on Assets (((Net Operating Income - Taxes)/ Assets) as the dependent financial performance variable). Models 5-8 report estimations from using Operating Expense Ratio (Operating Expense/ Assets.) as the dependent financial performance variable. All independent variables are defined in Table 3.1. I include country dummies listed in Appendix B, excluding Afghanistan and include year dummies from 2004-2012, excluding 2004. I do not display these variables for demonstration purposes. I report robust standard errors clustered by MFI in the parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table C - Panel Estimations of Risk Measures on MFI Legal Forms

VARIABLES	(1) LN(Z-score)	(2) LN(Z-score)	(3) LN(Z-score)	(4) LN(Z-score)	(5) Loan Loss Rate	(6) Loan Loss Rate	(7) Loan Loss Rate	(8) Loan Loss Rate
Coop	1.118*** (0.207)	1.130*** (0.208)	0.963*** (0.252)	0.981*** (0.256)	-0.001 (0.003)	-0.001 (0.003)	-0.004 (0.004)	-0.003 (0.003)
NBFI	0.352** (0.146)	0.334** (0.141)	0.217 (0.182)	0.209 (0.177)	0.003 (0.003)	0.002 (0.003)	0.000 (0.004)	0.000 (0.004)
Bank	0.631*** (0.185)	0.630*** (0.186)	0.444** (0.202)	0.453** (0.204)	0.004 (0.003)	0.004 (0.003)	0.001 (0.004)	0.001 (0.004)
Log GDP per capita	0.111 (0.172)	0.115 (0.171)	0.113 (0.171)	0.117 (0.171)	-0.019* (0.010)	-0.018* (0.010)	-0.018* (0.010)	-0.018* (0.010)
Loan Asset Ratio	0.319*** (0.112)	0.318*** (0.112)	0.317*** (0.112)	0.316*** (0.112)	-0.026*** (0.007)	-0.027*** (0.007)	-0.027*** (0.007)	-0.027*** (0.007)
Deposit Asset Ratio	-0.644*** (0.153)	-0.645*** (0.153)	-0.659*** (0.153)	-0.659*** (0.153)	-0.002 (0.005)	-0.001 (0.005)	-0.003 (0.005)	-0.003 (0.005)
MFI Size	0.109*** (0.022)	0.107*** (0.023)	0.108*** (0.022)	0.106*** (0.023)	0.000 (0.001)	-0.000 (0.001)	-0.000 (0.001)	-0.000 (0.001)
Capital Asset Ratio	2.620*** (0.106)	2.620*** (0.106)	2.622*** (0.106)	2.621*** (0.106)	0.003 (0.005)	0.003 (0.005)	0.004 (0.005)	0.004 (0.005)
Outreach	0.029 (0.034)	0.030 (0.034)	0.028 (0.034)	0.028 (0.034)	-0.003** (0.002)	-0.003** (0.002)	-0.003** (0.002)	-0.003** (0.002)
MFI Experience	0.036 (0.028)	0.036 (0.028)	0.036 (0.028)	0.036 (0.028)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)
Rating		0.133 (0.130)		0.114 (0.133)		0.003 (0.002)		0.003 (0.002)
Bank Regulation			0.260 (0.170)	0.246 (0.173)			0.006 (0.004)	0.005 (0.003)
Constant	-1.778 (1.197)	-1.766 (1.197)	-1.840 (1.195)	-1.827 (1.196)	0.158** (0.068)	0.159** (0.068)	0.156** (0.068)	0.158** (0.068)
Observations	2,396	2,396	2,396	2,396	2,450	2,450	2,450	2,450
R-squared	0.537	0.539	0.539	0.541	0.224	0.225	0.226	0.227
Number of MFIID	347	347	347	347	349	349	349	349

Notes: The NGO dummy variable excluded to remove dummy variable trap. Models 1-4 report estimations using LN(Z-score) (The natural logarithm of insolvency risk (Return on Assets + Capital Asset Ratio)/ Standard Deviation of Return on Assets) as the dependent MFI risk variable. Models 5-8 report estimations from equation (3) using Loan Loss Rate (Write-offs - Value of Loans Recovered)/ Loan Portfolio as the dependent MFI risk variable. All independent variables are defined in Table 3.1. I include country dummies listed in Appendix B, excluding Afghanistan and include year dummies from 2004-2012, excluding 2004. I do not display these variables for demonstration purposes. I report robust standard errors clustered by MFI in the parentheses. *** p<0.01, ** p<0.05, * p<0.1