# Performance and international investments in microfinance institutions

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## Abstract

Using data from 319 microfinance institutions (MFIs) in 68 developing countries, we study the degree to which international debt investments are related to the financial and social performances of MFIs. We find that commercial investments are mainly related to financial performance and level of professionalisation of the MFIs. The targeting of women is not a priority, even though international commercial investors target MFIs that provide small loans. Subsidised investments, however, are mainly driven by the targeting of women, while financial performance and the level of professionalisation of the MFI is not a priority.

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## 1. Introduction

During the last decades, microfinance, the provision of banking services to poor families and micro-entrepreneurs, has evolved to become a global industry. Until recently, donations and subsidised loans have been the main source of funding for microfinance institutions (MFIs). Lately, however, the growth of the industry and the pressure by donors toward financial sustainability have motivated MFIs to turn to international capital markets. Moreover, international funding is regarded by many to be essential to fuel the growth of the sector, arguing that only international capital markets can handle the estimated US$200 billion needed to reach the potential demand for microfinance services worldwide (Swanson, 2008). Recent academic research (Mersland *et al.*, 2011) has also shown that internationalisation, notable through investments, can have an overall positive influence on the social performance of MFIs. This is particularly interesting considering microfinance pertains to the field of social entrepreneurship, where balancing both economic and social outcomes is a constant challenge (Zahra *et al.*, 2009).

The funding of the microfinance industry has rapidly become a new specialised market. The development of specialised investment funds, called microfinance investment vehicles (MIVs), illustrates the emergence of this new, but heterogeneous, capital market. MFIs typically have both financial and social objectives (Armendariz and Morduch, 2010) and attract funding from donors with varying degrees of profit motivation. In the first survey of the microfinance investments market, Goodman (2004) identified three categories of MIVs: development funds, quasi-commercial funds and commercial funds. Goodman (2004) also identified a total of 43 MIVs holding US$1 billion under management. In 2011, Reille *et al.* (2011) estimated that 95 MIVs are in operation, with US$8 billion under management. Most international investments come in the form of loans to MFIs[3], and according to Reille *et al.* (2009), the funding of MIVs come from public and private institutional investors (42%), individuals (34%), development institutions (21%) and other MIVs (3%).

Those investing in MIVs are attracted by both social and financial returns (Reille *et al.*, 2011). This paper examines whether MIVs' investments matches the expectations of the investors by identifying which MFIs are being targeted by international funding. More specifically, using

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[3] The repartition of microfinance assets invested by MIVs in 2010 was 82% loans and 18% equity (MicroRate, 2011).

data from 319 MFIs in 68 developing countries, we study whether there is a relationship between an MFI's access to international *commercial* and *subsidised* debt and its *financial* and *social* performance. We find that access to commercial debt is related strong financial performance, a high level of professionalisation and a low average loan indicating outreach to poor customers. The targeting of women is not a priority for MFIs accessing international commercial debt. As for those MFIs accessing subsidised international debt they target female customers to a greater extent than other MFIs.

The rest of this paper is organised as follows. Section 2 discusses how the financial and social performances of MFIs influence the type of funding received, and it outlines the hypotheses to be tested. Section 3 explains the model, the methodology and the dataset used for estimations while Section 4 presents and discusses the findings. Section 5 concludes.

## 2. International funding and the performance of MFIs

In this section we develop hypotheses on how international funding is associated with the financial and social performances of MFIs.

### 2.1. The relationship between international funding and MFI performance

As all MIVs claim to offer social returns to investors, they belong to the field of socially responsible investments (SRIs). Indeed, an SRI is "*an investment process that integrates social, environmental and ethical considerations into investment decision making*" (Renneboog el al., 2008). SRIs are strongly related to the corporate social responsibility (CSR) of the firms in which they are invested. CSR is based on the idea that firms have ethical obligations and must respond appropriately to pressures from society (Carroll, 1979). Initially, CSR was limited to corporate philanthropy (Cochran, 2007). The concept then evolved into the idea that real social responsibility is not just donating money to charities, but involves investing in projects that yield social and economic benefits (Porter and Kramer, 2002).

The screening criteria for SRI funds depend on the selected approach between *negative screening* and *positive screening* (Renneboog *et al*., 2008; Juravle and Lewis, 2008; Bollen, 2007). Negative screening involves a two step process. First, the investment horizon is defined by excluding specific fields or activities that investors consider "undesirable" (for instance, firms involved in weapons, alcohol or tobacco). Then, investments are selected by a financial risk/return analysis. The alternative approach, positive screening, does not exclude any field ex ante but selects investments because they meet higher performance levels in the desired criteria (e.g., high environmental or social performance).

If the MIVs use a positive screening approach, we would expect to find a positive relationship between access to international funding and social performance in the MFI. However, if the MIVs use a negative screening approach, that is, they screen out all *none* microfinance investments and consider microfinance a social investment *per se*, we would then not expect to find any statistical relationship between access to international funding and the social results of the MFI but, rather, a positive relationship with financial performance.

Based on the above, we propose the following general hypothesis posed in the alternative form:

In the case of positive screening,

*H1a: The presence of international funding in an MFI is positively related to its social performance*

In the case of negative screening,

*H1b: There is no relationship between the presence of international funding in an MFI and its social performance*

To propose hypotheses on the relationship between the access to international investments and the MFI's financial performance, we must understand that these investments can be split into two categories, namely, commercial funding and subsidised funding. Indeed, in his pioneer study on MIVs, Goodman (2004) lays out a framework illustrating the microfinance investment landscape as it, according to his analysis, *should be*[4]. In that landscape,

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[4] See Appendix 1 for the illustration.

development-oriented investors finance socially oriented, although not financially sustainable, MFIs with grants or subsidised loans, while commercial investors fund financially well-performing MFIs with loans and equity at market prices. Loans are labelled "commercial" when the MFI has to pay interest at the market rate, and the loan is labelled "subsidised" if the interest rate is below the market conditions (also referred to as a concessional loan). Therefore, we need to distinguish commercial from subsidised loans to understand their respective relationship with the social and financial performance of the MFI.

## 2.2 Commercial funding and MFI performance

We expect that international commercial investors invest in financially well-performing MFIs. Indeed, along with the growth of cross-border investments in microfinance, the sector has witnessed the increasing participation of commercial investors seeking market returns. Microfinance, at its best, has proven that it can generate profit and growth while being low risk (Swanson, 2008). MFIs can also be meaningful instruments for portfolio diversification. According to a study of MIV portfolios by Oehri & Fausch (2008), microfinance investments show low volatility and low correlation to other asset classes, which potentially makes microfinance an interesting asset to include in a portfolio for commercial investors.

Building on business life-cycle theory, which states that the development of organisations depends on their capacity to access adapted funding sources (Little, 1974; Channon, 2006), several authors (Kooi, 2001; de Sousa-Shields & Frankiewicz, 2004; Van Maanen, 2005; Bogan, 2008) argue that MFIs should be funded as follows: In the *youth* phase, MFIs need highly risk-tolerant subsidised capital in the form of grants and donated equity to support the early years of operation as MFIs are not sustainable enough to attract commercial funding. In the *growth* phase, MFIs must increase their scale and gain market shares with retained earnings and subsidised loans as the main sources of funding. This stage is also when, by complying with stricter banking regulations and transparency standards, MFIs can make the transition from non-profit organisations to regulated institutions so that they can then mobilise deposits and have easier access to commercial funding. Regarding this specific issue, Bogan (2008) notes that this transition to regulation is an expensive and difficult process that requires subsidised funding. Consequently, many large and established MFIs continue to receive support to finance the transition in the form of grants and subsidised loans along with

risk capital provided primarily by socially oriented investors. The last stage of the lifecycle is *maturity*, a stage when the MFIs are formal regulated banks with capital structures similar to those of commercial banks (Bogan, 2008). Thus, mature MFIs should be funded mostly by deposits, local capital markets and international commercial investors.

Taken together, commercial international funding should be positively related to the financial performance of the MFI, as outlined in this second hypothesis:

*H2: The presence of international commercial funding in an MFI is positively related to its financial performance*

## 2.3 Subsidised funding and MFI performance

As for subsidised funding, the lifecycle theory predicts that MFIs in their early stages need subsidised funding to compensate for their lack of profitability. We could, therefore, expect that international subsidised funding is negatively related to the MFI's financial performance. However, the relationship might not be that clear cut. The SRI literature provides insight into what type of MFIs the socially oriented investors would typically target. As previously outlined in section 2.1, social investors put their money into projects that yield the highest social benefits. However, socially oriented investors also intend to ensure good economic performance from their investments (Porter and Kramer, 2002). Therefore, MIVs claim to have "double bottom line" objectives, and thus they invest in socially *and* financially sound MFIs. Moreover, De Schrevel *et al.* (2009) indicate that the rapid growth of MIVs between 2004 and 2008 is explained by a narrow targeting of the most profitable and professional MFIs. This could indicate that there is a positive relationship between access to subsidised funding and the financial performance of the MFI.

To summarise, we propose the following two alternative hypotheses for the relationship between international subsidised funding in an MFI and the MFI's financial performance:

*H3a: The presence of international subsidised funding in an MFI is negatively related to its financial performance*

*H3b: The presence of international subsidised funding in an MFI is positively related to its financial performance*

We now set up a model that links a set of variables composed of financial and social performance indicators to the type of international funding received by MFIs.

## 2.4 Definitions of the variables

To proxy the MFI's financial performance, we use the return on assets (ROA), the operating expense ratio, and the 30-day portfolio-at-risk (SEEP Network, 2005).

The **ROA** indicates how well the MFI is able to generate profit from its assets and is calculated as (*Net Operating Income – Taxes) / Average Annual Assets*.

The **operating expense ratio**, calculated as (*Operating expenses/Average loan portfolio*), measures how well the MFI masters its operations (Jansson, 2003). Potential funders can use this indicator to better assess the robustness of an MFI's activities with a lower level of operating expenses indicating that the MFI is more efficient than one with higher operating expenses in the same local context.

The portfolio quality is crucial as the loan portfolio is the main source of risk for any financial institution. Loan portfolios of MFIs are their largest assets, and the risk associated with poor management of the portfolio can be dramatic, especially since microloans are generally not backed with bankable collateral (Jansson, 2003). The most used indicator of portfolio quality in the industry is the **portfolio at risk** (most generally PAR30), which measures the share of the MFI's outstanding loan portfolio with more than 30 days in arrears.

Social performance in microfinance is defined as "*The effective translation of an institution's social mission into practice in line with accepted social values such as serving larger numbers of poor and excluded people; improving the quality and appropriateness of financial services; creating benefits for clients; and improving social responsibility of an MFI*" (www.sptf.info). Obtaining measurable and trustable MFI's data with respect to this

qualitative definition of social performance is difficult. Consequently, the following measures have been used extensively in the microfinance literature.

*The **average loan size*** (weighted by GNI per capita) (e.g., Lensink *et al.,* 2011; Mersland and Strøm, 2010; Cull *et al.*, 2007; De Bruyne, 2008). According to Schreiner (2002), a lower loan size indicates that the MFI reaches out to poorer customers. To ensure comparability between countries, we take the average loan size as a percentage of per capita gross national income (GNI).

The ***targeting of women*** (e.g., De Bruyne, 2008, D'Espallier *et al.*, 2011; Armendariz and Morduch, 2010; Mersland and Strøm, 2010). We use a time-invariant dummy that indicates whether the MFI has a conscious bias toward lending to women as indicated in the rating reports (D'Espallier *et al.*, 2011).

The ***rural outreach*** (De Bruyne, 2008, Mersland and Strøm, 2010). We use a dummy variable defining whether the MFI serves rural markets. As rural areas are generally in financial need and more difficult for MFIs to penetrate, better rural outreach can be considered an indicator of higher social performance.

We also include a number of control variables that could influence whether an international MIV would lend to an MFI. First, we include institution-specific controls that could potentially influence the access to international funding: size (logarithm of MFI assets); age (number of years since start-up of MFI); a dummy stating whether the MFI was originated by an international initiator, as Mersland *et al.* (2011) show international orientation can have an impact on social performance of MFIs; a dummy indicating whether the MFI mobilise voluntary savings; and the level of professionalisation proxied by a dummy for the presence of an internal auditor reporting to the board. We then include context variables: the human development index to control for development differences across countries and regional dummies to capture differences across regions (Latin America, MENA region, EECA region, Asia and Africa).

**2.5 The model**

To investigate to which type of MFI the international funding is being channelled, we use a pooled cross-section probit estimation method (further explained in section 3). We estimate three regressions. In one regression, the dependent variable is a dummy stating whether the MFI holds international debt at all, and in the other two, the dependent variable distinguishes whether the MFI has international commercial debt or subsidised debt.

### 2.5.1 International investments

$\Pr(International\ debt = 1) = \Phi\ (\beta_0 + \beta_1\ ROA + \beta_2\ Opexp + \beta_3\ Par30 + \beta_4\ Avloan + \beta_5\ dmWomen + \beta_6\ dmrural + \beta_7\ Size + \beta_8\ Age + \beta_9\ dmIntInit + \beta_{10}\ dmSavings + \beta_{11}\ dmaudit + \beta_{12}\ HDI + \beta_{13}\ dmLatAm + \beta_{14}\ dmMena + \beta_{15}\ dmEECA + \beta_{16}\ dmASIA)$

where $\Phi$ is the cumulative normal distribution.

### 2.5.2 Commercial funding

$\Pr(International\ commercial\ debt = 1) = \Phi\ (\beta_0 + \text{same variables})$

### 2.5.3 Subsidised funding

$\Pr(International\ subsidised\ debt = 1) = \Phi\ (\beta_0 + \text{same variables})$

## 3. Data and estimation methodology

### 3.1 Dataset and descriptive statistics

The dataset comprises up to five years of data from 319 MFIs in 68 developing countries. The information has been compiled from risk assessment reports prepared by five rating agencies specialising in microfinance: MicroRate, Microfinanza, Planet Rating, Crisil and M-Cril. Comparisons of the methodologies applied by the rating agencies reveal no major differences in MFI assessment relevant for variables included in this study. The dataset has a certain sample selection bias as only rated MFIs are included. They represent international oriented MFIs with the intention to practice microfinance in a business-oriented manner, and they have the greatest likelihood of achieving the dual goal of social and financial performance.

The rating agencies differ in their emphasis and in the abundance of available information. Thus, different number of observations on different variables in different years is reported. The rating reports comprising the data used for this study are from 2001 to 2008, with the vast majority from 2005 to 2008.

A total of 65% of the MFIs in our sample have international debt. Of those having international debt 30% have only commercial debt, 42% have only subsidised debt, and 28% have both types of debt.

Table 1 provides descriptive statistics for all variables used in the study. The average ROA is 1% with a standard deviation of 13%, while the operating expense ratio is 36%, illustrating the high cost of microlending. The average PAR30 is 7% with a standard deviation of 11%. With respect to social performance, the average loan size represents, on average, 57% of the gross national income per capita in the country, 46% of the MFIs have a bias in favour of targeting women and 23% operate only in rural areas. The average MFI has been operating for nine years. Only 24% of the MFIs collect voluntary savings, which suggests that sample MFIs are primarily non-regulated institutions. As for geographical distribution, Latin America represents 45% of the observations followed by Eastern Europe and Central Asia with 21%.

<Table 1 about there>

Table 2 shows the correlation matrix of the variables. High correlations among explicative variables can indicate a multicollinearity problem. According to Kennedy (2008), correlations must be at least 0.8 to detect collinearity among variables. In this case, correlations among explicative variables are quite low.

<Table 2 about there>

## 3.2 Estimation methods

To determine which type of performance is associated with MFIs receiving international investments, we estimate two pooled probit regressions (Stock & Watson, 2006). This type of model allows us to observe the effect of a change in the explicative variables on the dependant variable expressed in terms of probability. In probit regressions, the coefficients of the explicative variables cannot be interpreted as marginal effects on the dependent variable, and their signs show whether the corresponding variable influences positively or negatively the likelihood for the dependent variable to equal 1. Coefficients are estimated using the maximum likelihood method (Stock & Watson, 2006). A most used measure of fit for models with binary dependent variables is the pseudo-$R^2$, which compares the values of the maximum likelihood function of all regressors to the value of the likelihood with no regressors.

As the data have a panel structure but the two dependent variables (commercial debt and subsidised debt) were reported only for the last year in the rating reports, we assume them to be constant over time. This assumption is natural as MFIs tend to keep international debt once received. In addition, the assumption corresponds to the reality behind investments as investors include historical performance when making their funding decisions. Therefore, we run cross-section pooled regressions. In all regressions, we use robust standard errors to correct for heteroskedasticity. Data have also been tested and treated for outliers using Grubbs' test (Iglewicz and Hoaglin, 1993). Finally, we run regressions with and without the regional control variables.

## 4. Empirical results

**4.1 Univariate statistics**

As a starting point, we compare the different groups of MFIs according to the type of international debt they have. We split our sample into three groups[5]: MFIs *without any* international debt, MFIs with international *commercial* debt only, and MFIs with international *subsidised* debt only. We first want to know if there is any difference in performance among these groups. For this, we use a one-way ANOVA analysis. We test the significance of variance differences among our three groups, regarding each financial and social performance variable.

Our null hypothesis is:

$H_0$: There is no difference among the performances of the three groups of MFIs.

Our alternative hypothesis is:

$H_a$: There is a difference among the performances of the three groups of MFIs.

<Table 3 about there>

The outcome of the one-way ANOVA is presented in Table 3. The significant F statistic shows that for the variables ROA, PAR30, Women bias and Rural market, there is a significant difference in performance among the three groups. However, the ANOVA does not show where the differences are. To determine this, we run mean comparison tests pairwise between the three groups.

<Table 4 about there>

The results in table 4.1 illustrate that MFIs receiving international funding significantly differ from other MFIs. MFIs holding international debt (either commercial or subsidised) show, on average, a greater focus on women and rural areas. Regarding financial performance, Par30 is significantly lower in MFIs holding international debt. Those MFIs are also more professionally structured (proxied by the presence of an internal auditor), and not surprisingly,

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[5] For the sake of clarity of interpretation, MFIs with both types of debt have been left out of the sample for the ANOVA analysis.

they are more international (more likely to have an international initiator) and are less likely to offer voluntary savings to their clients. Surprisingly, ROA and operating expense ratio do not distinguish between MFIs with and without international debt.

Table 4.2 compares MFIs holding only international commercial debt to MFIs without any international debt. The results are similar to those in table 4.1, except that the significantly greater focus on women, as seen in table 4.1, is not evidenced in MFIs holding only commercial debt. In addition, commercial debt is more common in younger MFIs. In table 4.3, we compare MFIs holding only international subsidised debt to MFIs without any international debt. Interestingly, we observe that the ROA is significantly lower in MFIs with subsidised debt, even if the PAR30 is also lower (but still higher than the average PAR30 of commercial debt holders). Those MFIs with subsidised debt are also more oriented towards women and rural areas. Finally, table 4.4 compares MFIs with only commercial debt to MFIs with only subsidised debt. The significant average differences show that compared to MFIs with subsidised debt, those with commercial debt have a higher financial performance in terms of higher ROA and lower PAR30, but they have a lower social performance, that is, a lower focus on women and rural areas.

In sum, the mean comparison tests show that commercial funding targets the more professional, financially well-performing and less socially performing MFIs, while the opposite is the case for subsidised debt. In the next sub-section we use a probit estimation method to see whether our findings hold in a multivariate setting.

## 4.2 Linking MFI performance and access to international funding

Table 5 shows the general model for international debt, regardless of the type of debt. This table (as well as tables 6 and 7) is composed of three regressions that correspond to different robustness checks. Column 1 tests the financial and social performance variables only, column 2 includes controls but not regional dummies, and column 3 adds the regional dummies.

<Table 5 about there>

Results of the general model show that three factors drive access to international debt: a higher average loan size, a smaller total asset size and the presence of an international initiator. Surprisingly, no financial performance variable explains the access to international debt. An international initiator is, indeed, more likely to provide the necessary contacts to the MFIs for access to international funding (Mersland *et al.*, 2011), while higher loan sizes can lead to a more cost-efficient structure (Lensink *et al.*, 2011), which can also attract international funders. However, these general results do not tell much about the relationship between the type of funding received and the performance of the MFI (H1a and H1b) as the effects could be very different from one type of funding to another. We therefore disentangle the international debt variable into two distinct variables: international commercial debt only, and international subsidised debt only[6].

Table 6 shows the regressions for international commercial debt.

<Table 6 about there>

Beginning with the relationship between access to commercial debt and financial performance (H2), our expectations are supported. Indeed, a higher ROA, lower operating expense ratio and lower PAR30 significantly increase the likelihood for an MFI to have international commercial debt. This finding is consistent with the notion that commercial investors target more robust and profitable MFIs (Bogan, 2008; Goodman, 2004). This also confirms the observation made by many that MIVs target the "niche" of financially profitable MFIs (De Schrevel *et al.,* 2009; Wiesner and Quien, 2010).

Regarding social performance, lower average loan sizes increase the likelihood of commercial debt for the MFI. Indeed, all microfinance funders declare that social performance matters. The average loan size is the most used and one of the easiest social indicators to gather about an MFI (Urgeghe, 2010). We find a significant negative relationship between the presence of commercial funding and the targeting of women by the MFI. Thus, commercial MIVs care about reaching the poor but do not consider reaching women a priority.

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[6] MFIs with both types of debt have been left out of the sample for regressions in tables 6 and 7, which explains a different N between table 5 and tables 6 and 7.

Control variables show that having an internal auditor reporting to the Board significantly increases the likelihood of accessing commercial funding, which is in line with the lifecycle theory and the expectations of professional investors regarding investees' institutional stability.

Table 7 shows the regressions for international subsidised debt.

<Table 7 about there>

First, regarding financial performance, the negative sign of the ROA coefficient indicates that subsidised funding is channelled to MFIs with weak financial performance. However, this relationship is only significant in one out of three regressions. The striking observation is the difference compared to MFIs with commercial debt. While financial performance explains much of the access to commercial funding, this is not the case for subsidised funding as the major drivers are the targeting of women, higher average loans sizes and less formal structure (cf. Internal auditor variable). The average loan size positive sign is the opposite of expected. While commercial debt goes to MFIs reaching poor customers (lower average loan size) subsidised debt goes to MFIs reaching less poor customers (higher average loan size). The most probable reason for this is that lending to the poor can indeed be good business for the MFI – low average loans and strong financial performance can be combined (Mersland and Strøm, 2010) -  and that MIVs providing subsidized debt are most concerned about supporting weak MFIs, especially when these reach out to women. This could mean that the targeting of women, and not necessarily the targeting of the poor, is what attracts subsidies in microfinance.

Control variables show that an international initiator is significantly and positively associated with subsidised funding. Not surprisingly, international linkages pay off in the form of access to subsidies. The results for MFI age lead to an interesting observation: older MFIs receive more subsidised debt than they receive commercial debt. These findings indicate that subsidised funding stick with some older MFIs instead of reaching younger MFIs as indicated by several policy makers (e.g. de Sousa-Shields & Frankiewicz, 2004). Instead our results show that young MFIs access commercial debt and probably, after some years, shift to other sources of funds such as deposits or local banks. Finally, the last control variables reveal what

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seems to be of high importance in explaining the segmentation of funding to MFIs, that is, level of professionalisation. The presence of an internal auditor reporting to the board is positively related to commercial funding and negatively related to subsidised funding. In a previous study by Mersland and Strøm (2009), having an internal auditor was one of the few governance variables with significant performance influence.

In sum, this analysis suggests that even if the international funding to MFIs comes from socially responsible investors, we need to distinguish between commercial and subsidised funding to understand MIVs practices. Commercial funding seems to be clearly driven by financial performance and the level of professionalisation of the MFI, while the targeting of women is clearly not a priority, even though they target institutions that provide smaller loans to their clients. This seems to match the *negative screening* approach – microfinance is *per se* considered a social investment so MIVs offering commercial debt can concentrate on analysing the level of professionalization and financial performance of the MFI. On the other hand, subsidised funding seems to clearly target institutions focusing on women without prioritising level of professionalization or financial performance. Thus, subsidised providers of debt seem to follow a *positive approach* but mainly limited to the targeting of women.

**5. Conclusion**

Starting with the statement that international funders of microfinance claim to pursue both financial and social bottom lines through their investments, this paper tests what type of characteristics and performance in an MFI actually attracts international investments, segmented into commercial and subsidised debt. The overall conclusion is that commercial funding seems to match the negative screening approach as it is mainly driven by financial performance and the level of professionalisation of the MFIs, while subsidised funding is mainly driven by the targeting of women and not by the level of professionalization or financial performance of the MFI. Thus, subsidised loan providers seem to follow a positive approach in their investments.

By applying financial criteria to select MFIs, commercial funding seems to consider those institutions, per se, part of the social investment horizon. As a result, any MFI that can

demonstrate a good level of professionalisation and a good financial return is likely to attract international commercial investments. The results also indicate that operational efficiency, such as a lower operating expense ratio and a lower portfolio at risk matter for commercial investors. Again, this shows that commercial microfinance investors consider the level of professionalization to be important as operating efficiency measures the degree to which the MFI masters its processes (Mersland and Strøm, 2010).

Two important policy implications can be drawn from this paper. First, MFIs should professionalise their operations and assure strong financial performance in order to attract international commercial funding. Second, MIVs providing subsidised funding need to rethink their targeting strategy. Even though the subsidised MFIs reach women to a larger extent that non-subsidised MFIs it may easily lead to a dependency trap if the subsidisation continue over several years as found in this paper. In addition, also subsidised MFIs should be concerned about their operational efficiency.

This paper is only a first step in understanding the drivers of international microfinance investments, and it has some limitations which should motivate more research. First, rough dummies are used to distinguish between MFIs with or without subsidised or commercial international debt. More information on the relative importance of each debt type as well as more information about the individual MIVs could potentially improve considerably the analyses. Thus, researchers could build a dataset where they combine variables from MIVs and MFIs. Second, we should be cautious in the way we measure social performance. Even though the three variables applied in this study (average loan size, targeting women and rural outreach) are widely used in academic and practitioner studies they are still only rough proxies of social performance. Social performance has a more qualitative nature and embraces many other aspects of the MFI activity, such as social responsibility and the interactions with various stakeholders of the MFI. Thus, how investors actually assess social performance in MFIs remains to a large extent "a black box" for future research to open. In addition, researchers should assess to what extent international investors consider operational efficiency to be a social variable. Finally, the causality direction could be reversed for variables such as internal auditor as debt holders can demand MFIs to hire an internal auditor as a condition for their funding. Event studies where ex-ante and ex-post performance is

compared in relation to the installation of new governance mechanisms, like an internal auditor, could bring interesting new knowledge.

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## 7. Tables

### Table 1: Summary statistics

**Table 1**
**Summary statistics**

|  | Obs | Mean | Std. Dev | Min | Max |
|---|---|---|---|---|---|
| Financial performance |  |  |  |  |  |
| ROA | 820 | 0.00 | 0.13 | -0.99 | 0.34 |
| Operating expense ratio | 813 | 0.36 | 0.51 | 0.02 | 11.32 |
| Portfolio at risk | 790 | 0.07 | 0.11 | 0.00 | 0.97 |
|  |  |  |  |  |  |
| Social performance |  |  |  |  |  |
| Average loan/GNI per capita | 690 | 0.57 | 1.00 | 0.00 | 11.75 |
| Women-targeting | 845 | 0.46 | 0.50 | 0.00 | 1.00 |
| Dummy rural market | 837 | 0.23 | 0.42 | 0.00 | 1.00 |
|  |  |  |  |  |  |
| Control variables |  |  |  |  |  |
| Logarithm of assets | 840 | 14.63 | 1.26 | 10.60 | 18.26 |
| MFI age | 856 | 9.04 | 7.05 | 0.00 | 43.00 |
| Dummy international initiator | 852 | 0.38 | 0.49 | 0.00 | 1.00 |
| Dummy voluntary savings | 856 | 0.24 | 0.43 | 0.00 | 1.00 |
| Dummy internal auditor | 733 | 0.39 | 0.49 | 0.00 | 1.00 |
| HDI | 856 | 0.69 | 0.13 | 0.37 | 0.87 |

**Cross-table - Number of MFI firm years per type of debt and region**

| Region | Latin America | Africa | Asia | EECA | MENA | Total |  |
|---|---|---|---|---|---|---|---|
| Commercial debt | 97 | 38 | 13 | 40 | 4 | 192 | **20%** |
| Subsidised debt | 98 | 45 | 60 | 49 | 15 | 267 | **27%** |
| Both types of debt | 87 | 15 | 13 | 57 | 11 | 183 | **19%** |
| No international debt | 161 | 69 | 34 | 55 | 19 | 338 | **34%** |
|  |  |  |  |  |  |  |  |
| Total | 443 | 167 | 120 | 201 | 49 | 980 |  |
|  | **45%** | **17%** | **12%** | **21%** | **5%** |  |  |

**Table 2: Correlations**

|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 - ROA | 1 | | | | | | | | | | |
| 2 - Operating expense ratio | -0.3592 | 1 | | | | | | | | | |
| 3 - Portfolio at risk (30 days) | -0.1899 | -0.0826 | 1 | | | | | | | | |
| 4 - Average loan/GNI per capita | 0.0457 | -0.142 | 0.0528 | 1 | | | | | | | |
| 5 - Women-targeting | 0.0415 | -0.0176 | -0.071 | -0.1289 | 1 | | | | | | |
| 6 - Dummy rural market | -0.1972 | 0.151 | -0.0026 | 0.1353 | -0.0473 | 1 | | | | | |
| 7 - Logarithm of assets | 0.2187 | -0.1801 | -0.0584 | 0.1535 | -0.0704 | -0.1068 | 1 | | | | |
| 8 - MFI age | 0.0453 | -0.1474 | 0.2522 | 0.0335 | -0.1223 | -0.1168 | 0.2354 | 1 | | | |
| 9 - Dummy international initiator | -0.1122 | 0.1181 | -0.1766 | -0.0309 | 0.2152 | 0.0139 | 0.0119 | -0.2158 | 1 | | |
| 10 - Savings | -0.0334 | -0.124 | 0.1656 | 0.0462 | -0.0619 | 0.1002 | 0.2171 | 0.2726 | -0.2033 | 1 | |
| 11 - Dummy internal auditor | 0.0605 | 0.0332 | -0.0412 | 0.1247 | -0.1898 | 0.0381 | 0.2663 | 0.1723 | -0.0481 | 0.008 | 1 |

...

**Table 3: One way ANOVA**

**Analysis of Variance**

Groups: no debt, commercial debt, subsidised debt

| | ROA | Operating Exp. Ratio | Par30 | Av. Loan/GNI | Women bias | Rural market |
|---|---|---|---|---|---|---|
| Variance between groups | 0.14795714 | 0.607170856 | 0.163420289 | 2.45033413 | 7.61874294 | 3.71340111 |
| Variance within groups | 12.6628549 | 208.04978 | 7.95579943 | 628.060553 | 187.705272 | 130.86683 |
| F stat | 4.43 | 1.1 | 7.49 | 1.24 | 15.91 | 11.01 |
| Prob > F | **0.0122**\*\* | 0.3348 | **0.0006**\*\*\* | 0.2888 | **0.0000**\*\*\* | **0.0000**\*\*\* |

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 4: Mean comparison tests**

| | Table 4.1 | | | | |
| --- | --- | --- | --- | --- | --- |
| | International debt | | No international debt | | Z-stat |
| | Mean | Std | Mean | Std | |
| ROA | 0.00 | 0.14 | 0.01 | 0.12 | -0.72 |
| Op. expense ratio | 0.37 | 0.60 | 0.34 | 0.41 | 0.82 |
| PAR 30 | **0.06** | 0.09 | **0.08** | 0.12 | **-3.11 *** |
| Average loan/GNI per capita | 0.59 | 1.14 | 0.49 | 0.74 | 1.25 |
| Women-targeting | **0.49** | 0.50 | **0.41** | 0.49 | **2.44 *** |
| Dummy rural market | **0.27** | 0.45 | **0.15** | 0.36 | **4.28 *** |
| Logarithm of assets | 14.55 | 1.18 | 14.70 | 1.35 | -1.54 |
| MFI age | 8.70 | 6.54 | 9.39 | 7.92 | -1.31 |
| International initiator | **0.48** | 0.50 | **0.31** | 0.46 | **4.77 *** |
| Voluntary savings | **0.20** | 0.40 | **0.31** | 0.46 | **-3.50 *** |
| Internal auditor | **0.43** | 0.50 | **0.35** | 0.48 | **2.17 *** |

Significance level: *10%

| | Table 4.2 | | | | |
| --- | --- | --- | --- | --- | --- |
| | Commercial debt only | | No international debt | | Z-stat |
| | Mean | Std | Mean | Std | |
| ROA | 0.02 | 0.14 | 0.01 | 0.12 | 1.15 |
| Op. expense ratio | 0.34 | 0.23 | 0.34 | 0.41 | -0.26 |
| PAR 30 | **0.05** | 0.06 | **0.08** | 0.12 | **-4.66 *** |
| Average loan/GNI per capita | 0.52 | 0.77 | 0.49 | 0.74 | 0.40 |
| Women-targeting | 0.35 | 0.48 | 0.41 | 0.49 | -1.18 |
| Dummy rural market | **0.22** | 0.42 | **0.15** | 0.36 | **2.04 *** |
| Logarithm of assets | 14.52 | 1.17 | 14.70 | 1.35 | -1.57 |
| MFI age | **7.97** | 4.86 | **9.39** | 7.92 | **-2.55 *** |
| International initiator | **0.43** | 0.50 | **0.31** | 0.46 | **2.75 *** |
| Voluntary savings | **0.13** | 0.33 | **0.31** | 0.46 | **-5.26 *** |
| Internal auditor | **0.55** | 0.50 | **0.35** | 0.48 | **4.35 *** |

Significance level: *10%

| | Table 4.3 | | | | |
|---|---|---|---|---|---|
| | Subsidised debt only | | No international debt | | Z-stat |
| | Mean | Std | Mean | Std | |
| ROA | **-0.02** | 0.13 | **0.01** | 0.12 | **-2.04 *** |
| Op. expense ratio | 0.40 | 0.76 | 0.34 | 0.41 | 1.08 |
| PAR 30 | **0.07** | 0.11 | **0.08** | 0.12 | **-1.66 *** |
| Average loan/GNI per capita | 0.63 | 1.36 | 0.49 | 0.74 | 1.35 |
| Women-targeting | **0.59** | 0.49 | **0.41** | 0.49 | **4.57 *** |
| Dummy rural market | **0.31** | 0.46 | **0.15** | 0.36 | **4.59 *** |
| Logarithm of assets | 14.58 | 1.19 | 14.70 | 1.35 | -1.13 |
| MFI age | 9.22 | 7.49 | 9.39 | 7.92 | -0.27 |
| International initiator | **0.51** | 0.50 | **0.31** | 0.46 | **4.92 *** |
| Voluntary savings | 0.25 | 0.43 | 0.31 | 0.46 | -1.55 |
| Internal auditor | 0.32 | 0.47 | 0.35 | 0.48 | -0.53 |

Significance level: *10%

| | Table 4.4 | | | | |
|---|---|---|---|---|---|
| | Commercial debt only | | Subsidised debt only | | Z-stat |
| | Mean | Std | Mean | Std | |
| ROA | **0.02** | 0.14 | **-0.02** | 0.13 | **2.72 *** |
| Op. expense ratio | 0.34 | 0.23 | 0.40 | 0.76 | -1.27 |
| PAR 30 | **0.05** | 0.06 | **0.07** | 0.11 | **-2.55 *** |
| Average loan/GNI per capita | 0.52 | 0.77 | 0.63 | 1.36 | -0.98 |
| Women-targeting | **0.35** | 0.48 | **0.59** | 0.49 | **-5.11 *** |
| Dummy rural market | **0.22** | 0.42 | **0.31** | 0.46 | **-2.08 *** |
| Logarithm of assets | 14.52 | 1.17 | 14.58 | 1.19 | -0.53 |
| MFI age | **7.97** | 4.86 | **9.22** | 7.49 | **-2.16 *** |
| International initiator | 0.43 | 0.50 | 0.51 | 0.50 | -1.59 |
| Voluntary savings | **0.13** | 0.33 | **0.25** | 0.43 | **-3.52 *** |
| Internal auditor | **0.55** | 0.50 | **0.32** | 0.47 | **-4.51 *** |

Significance level: *10%

**Table 5**

| Pooled probit regressions for International Debt | | | |
|---|---|---|---|
| | [1] | [2] | [3] |
| ROA | 0.226 | 0.561 | 0.722 |
| Operating expense ratio | 0.263 | 0.235 | 0.159 |
| PAR30 | -0.608 | -0.578 | -0.820 |
| Average loan/GNI per capita | **0.0959*** | **0.160*** | **0.172** |
| Women-targeting | 0.116 | -0.0204 | -0.137 |
| Dummy rural market | **0.349** | 0.198 | 0.127 |
| Logarithm of assets | | **-0.171*** | **-0.164*** |
| MFI age | | 0.0110 | 0.00633 |
| Dummy international initiator | | **0.226** | **0.298** |
| Voluntary savings | | -0.0844 | **-0.285*** |
| Dummy internal auditor | | -0.0133 | 0.0196 |
| HDI | | | 0.0353 |
| Region dummies | No | No | Yes |
| Constant | -0.294** | 2.097*** | 2.499*** |
| Pseudo R2 | 0.0177 | 0.0373 | 0.0630 |
| Observations | 678 | 604 | 604 |

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Notes:
Region dummies are included for Latin America, Africa, Eastern Europe and Central Asia, Middle East and North Africa, and Asia.

A robustness check (unreported) has been conducted by running the same regressions using a logit model, yielding almost exactly the same results with similar pseudo-$R^2$.

**Table 6**

**Pooled probit regressions for International Commercial Debt**

|  | [1] | [2] | [3] |
|---|---|---|---|
| ROA | **1.586**** | 1.196 | **1.688**** |
| Operating expense ratio | -0.0182 | **-0.485*** | **-1.018***** |
| PAR30 | **-2.440***** | **-2.024***** | **-1.982**** |
| Average loan/GNI per capita | -0.0429 | **-0.122*** | **-0.207***** |
| Women-targeting | **-0.409***** | **-0.322*** | **-0.287*** |
| Dummy rural market | 0.145 | 0.201 | **0.448*** |
| Logarithm of assets |  | **-0.112*** | **-0.107*** |
| MFI age |  | -0.00417 | -0.00904 |
| Dummy international initiator |  | 0.186 | 0.163 |
| Voluntary savings |  | **-0.658***** | **-0.934***** |
| Dummy internal auditor |  | **0.622***** | **0.627***** |
| HDI |  |  | -0.208 |
| Region dummies | No | No | Yes |
| Constant | -0.339*** | 1.263 | 2.300** |
| Pseudo R2 | 0.0445 | 0.114 | 0.177 |
| Observations | 539 | 482 | 482 |

*** p<0.01, ** p<0.05, *
p<0.1

Notes:
Region dummies are included for Latin America, Africa, Eastern Europe and Central Asia, Middle East and North Africa, and Asia.

A robustness check (unreported) has been conducted by running the same regressions using a logit model, yielding almost exactly the same results with similar pseudo-$R^2$.

**Table 7**

**Pooled probit regressions for International Subsidised Debt**

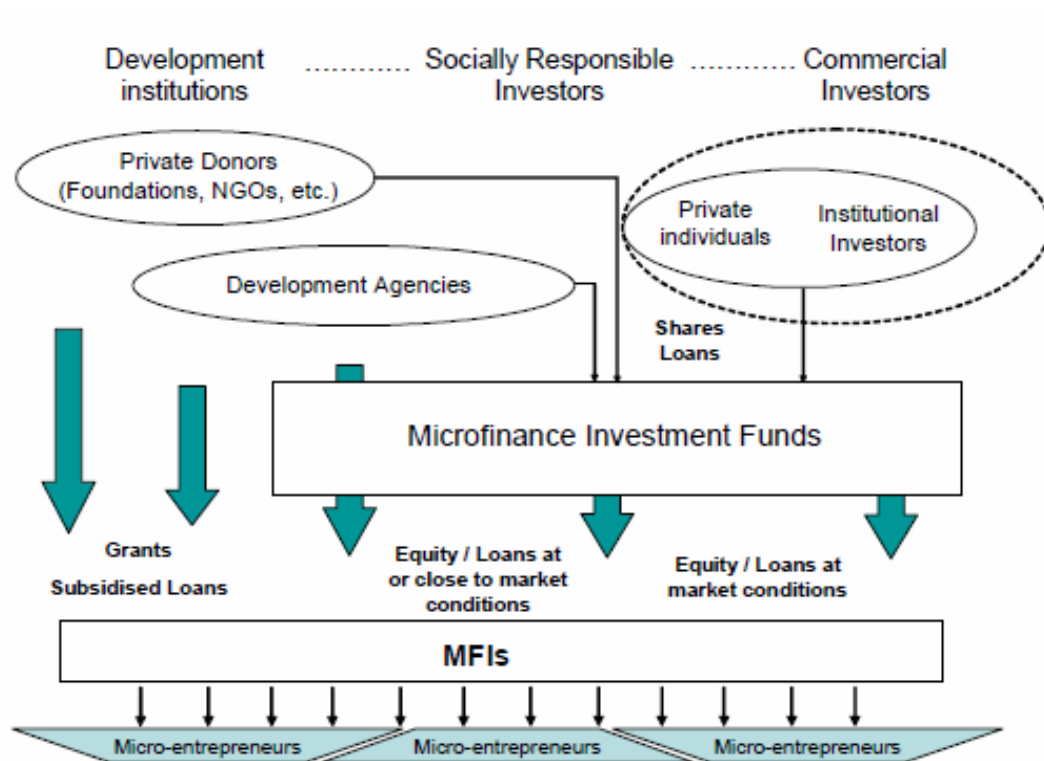|  | [1] | [2] | [3] |
|---|---|---|---|
| ROA | **-1.059*** | -0.498 | -0.671 |
| Operating expense ratio | 0.0865 | 0.23 | 0.432 |
| PAR30 | -0.11 | -0.183 | -0.144 |
| Average loan/GNI per capita | **0.127**** | **0.224***** | **0.284***** |
| Women-targeting | **0.549***** | **0.337***** | **0.316**** |
| Dummy rural market | **0.265*** | 0.248 | 0.0303 |
| Logarithm of assets |  | -0.0355 | -0.0274 |
| MFI age |  | **0.0206**** | **0.0211**** |
| Dummy international initiator |  | **0.235*** | **0.301**** |
| Voluntary savings |  | 0.112 | 0.213 |
| Dummy internal auditor |  | **-0.395***** | **-0.419***** |
| HDI |  |  | -0.618 |
| Region dummies | No | No | Yes |
| Constant | -0.843*** | -0.527 | -0.778 |
| Pseudo R2 | 0.0533 | 0.0706 | 0.103 |
| Observations | 539 | 482 | 482 |

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Notes:
Region dummies are included for Latin America, Africa, Eastern Europe and Central Asia, Middle East and North Africa, and Asia.

A robustness check (unreported) has been conducted by running the same regressions using a logit model, yielding almost exactly the same results with similar pseudo-$R^2$.

## 8. Appendices

1. Theoretical investment landscape in microfinance[7]



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[7] Goodman, P. (2004). « Microfinance Investment Funds: Objectives, Players, Potential », 2004 KfW Financial Sector Development Symposium, Berlin, p.14.