The role of ownership identity on the performance of microfinance institutions

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Abstract

This paper examines the impact of different ownership identity on risk and performance of microfinance institutions (MFIs) in several developing countries. In particular, we test whether different types of shareholders such as banks, social investors, Government entities, institutional investors and others may differently modulate the social performance of MFIs, their financial sustainability, and riskiness. The results show that different shareholders may have conflicting goals; some of them are interested in MFI profitability, other are more focused on social performance. This study is amongst the first of this type for the microfinance industry and carries many useful implications for practitioners, policy makers and all other stakeholders in the sector. They should carefully check and balance the objectives of different owners trying to reach an equilibrium that does not undermine the main goal of MFIs, the financial inclusion of the poorest.

Keywords: microfinance institutions, corporate governance, ownership structure, ownership identity

Introduction

Microcredit is the provision of small loans to the poor or to those that lack access to formal financial resources due to the absence of adequate collateral. In the last 20 years, this sector has received considerable attention from researchers and policy makers as it is considered a valuable tool for eradicating poverty around the globe. Nevertheless, the industry is threatened by different types of risk as the 2010 crisis in India showed[2]. In particular, if there are insufficient

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[2] The Indian MFI crisis was triggered by the impression of rapacious lending practices by MFIs which caused overindebtment and increasing difficulties for many small borrowers to pay back their loans. The Government of

safe and sound corporate governance practices in place, there is a concrete risk of a mission drift of these institutions. On this regards, there is evidence in the literature that when MFIs aim at strengthening their sustainability they tend to compromise their social mission (Morduch 2000, Hermes and Lensink, 2011).

The concept of corporate governance is relatively new in microfinance. It appeared in a document of CGAP, the World Bank think tank for assisting MFIs in developing countries in 1997 (CGAP, 1997). Since then, there is a growing body of research that has evidenced the importance of corporate governance in microfinance (Mersland and Strøm, 2009; Hermes and Lensink, 2011, Hatarska and Mersland, 2012; Mori and Mersland, 2014). These papers have mainly concentrated on different characteristics of MFI Boards and MFI performance. The former may comprise the number of independent and female board members, the duality between CEO and President of the Board, and the number of Board members nominated by controlling shareholders (Hartarska, 2005; Mersland and Strøm, 2008, 2009).

In the present paper we make a significant contribution to the literature by studying the importance of ownership identity on MFI performance. As far as we know there is only a paper by Mersland et al. (2011) based on the effect of internationalization on MFIs activity. They find that institutions founded or making part of an international network have more probabilities of succeeding in their social performance but not on their economic performance. In this study we go further by differentiating between different types of owners. They can be nonprofit organizations (NGOs), development financial institutions (DFIs), banks, microfinance investment vehicles (MIVs), local or central Government and other types such as directors of the company, executives, local private investors, or staff. We further differentiate between local and international shareholders. To the best of our knowledge this is the first study that tackles this relevant issue for the MFI industry.

The importance of ownership structure and ownership identity is particularly known and studied in management sciences and finance (Shleifer and Vishny, 1997). Differences in identity and resource endowments among owners determine their relative power, incentives, and ability to monitor managers (Douma et al. 2006). Secondly, different ownership categories have different objectives with implications for corporate strategy and performance (Thomsen and Pedersen, 2000). For example, institutional investors are more interested in increasing shareholder value, while others may have more complex relationships (banks may be owners and creditors).

The theoretical view concerning the relationship between ownership structure and firm performance has been tested in several studies (Morck et al. 1988; Thomsen and Pedersen, 2000; Gedajlovic and Shapiro, 2002; Douma et al. 2006). These studies have evidenced among other results a clear link between blockholder influence and firm performance.

Andhra Pradesh, the Indian state where 40% of the overall loans disbursed by MFIs in India is concentrated, issued a number of regulations aiming to stop these practices. This resulted in the closure of many MFIs and the near shutdown of the entire private MFI sector in the country.

With regards to the influence of ownership structure on bank performance, the evidence is still inconclusive (Auvray and Brossard, 2012). Anderson and Fraser (2000) find that outside blockholders do not have a remarkable influence in bank risk taking. Iannotta et al. (2007) report that ownership concentration has a negative impact on risk taking in European banks. Similarly, in a study of U.S. state-chartered banks, Sullivan and Spong (2007) highlight that when owners and managers concentrate their personal wealth in the bank, the overall bank risk tends to decline. On the other hand, Laeven and Levine (2009) assess that the presence of large shareholders increases the bank riskiness for a worldwide sample of financial institutions. Barry et al. (2010) investigate the change in ownership structure in a sample of European commercial banks and find that it does not impact in risk taking for publicly held banks whereas it does for privately held ones.

A copious bulk of research has also studied the effect of foreign ownership on local firm performance (Coffee, 2002; Berger et al. 2005; Luo et al. 2009; Leuz et al. 2009). The evidence on this regard is still inconclusive. A number of studies indicate that foreign-owned firms may have less success than locals due to severe information asymmetries (Choe et al. 2005). Second, poorly governed firms require more intense monitoring and this should be more costly for foreign investors. On the other hand, foreign-owned firms might benefit from the expertise, knowledge and know-how of the foreign investors which should enable them to perform better than other local competitors (Djankov and Hoekman, 2000; Khanna and Palepu, 2000a).

The main finding of the paper is that owner identity is important for MFI performance. We consider these institutions as microbanks[3] as they mainly provide loans to borrowers although with a dual goal compared to classic commercial financial intermediaries. Some owners such as banks and mutual funds have a clear positive impact on MFI profitability and a negative effect on MFI credit risk. Other shareholders such as Government entities, or NGOs are more interested on the social performance of the MFI. There is also evidence that local-owned banks behave better than foreign-owned ones suggesting that the latter group is facing severe agency problems when they decide to invest in these sector in developing countries.

The study has substantial implications for practitioners, policy makers, and other stakeholders of the sector. It indicates that different owners may have different polices and strategies for the MFI. These could be in conflict to each other. Hence, MFIs should try to find a balance between their dual mission and the goals of their main shareholder in order not to lose their social objective. Secondly, some types of social investors such as foreign DFIs push MFI towards financial sustainability as this is the common belief in the sector. However, this might come at a cost, namely poor social performance and mission drift for the microbank.

[3] In the present paper we use the term microbanks and microfinance institutions (MFIs) as synonyms, although some MFIs are not structured as banks. Nevertheless, their main function is to grant loans to borrowers; the main difference is the impossibility for NGOs or NBFIs to have access to deposits from customers.

Literature Review

The importance of ownership structure for firm performance has been thoroughly studied in corporate finance. There are several theoretical approaches that try to disentangle the link between, owner identity, ownership concentration, Board members, management and firm performance. Agency theory has studied the relationship between owners and managers (Jensen and Meckling, 1976; Li and Simerly; 1998), debt pressure (Jensen, 1989), or product market competition (Hart, 1983). Transaction costs theory considers the firm as a nexus of contracts with different stakeholders (Williamson, 1988; Thomsen and Pedersen, 2000). The transaction costs of the owners are reflected in their objectives which are then transferred to the owned firm (Fama and Jensen, 1985). Resource based theory posits that each firm's competitive advantage is based on the possession of tangible and intangible resources, which cannot be easily provided by other competitors (Barney, 1991). Different shareholders have different resource endowments especially when they are foreign or strategic ones.

Institutional theory emphasizes the importance of local regulatory, judicial systems but also cultural norms and values on firm organizational structure and behavior (Douma et al. 2006). This is particularly relevant in emerging economies which suffer greater imperfections in the markets for capital and managerial talent. In these countries foreign investors tend to invest in local firms that are relatively easier to monitor in order to reduce high monitoring costs (Khanna and Palepu, 2000b; Luo et al. 2009). These difficulties render some investors more capable than others to invest in emerging markets.

While there is a growing body of research on the effect of ownership structure and ownership identity on firm performance, there are a few papers that treat this argument for bank institutions. Most of them concentrate on ownership concentration and foreign ownership for banks in emerging markets. Claessens et al. (2001) find that foreign banks have higher profits than domestic banks in developing economies. Berger et al. (2003, 2005) evidence that State-owned banks have poor long-term performance, but they improve considerably after privatization. Other studies find that generally foreign-owned banks suffer disadvantages related to high monitoring costs and information asymmetries compared to local competitors on non-bank firms in developing markets (Berger et al. 2000; Lensink and Naaborg, 2007; Luo et al. 2009).

Other contributions have investigated the link between ownership concentration and risk taking by banks. Ianotta et al. (2007) show that the former has a negative impact on the latter for European commercial banks. Laeven and Levine (2009) find for a large sample of financial institutions all over the world that the presence of large shareholders increases the level of bank risk taking. Barry et al (2010) study a sample of European commercial banks and find only publicly held banks are influenced by changes in their ownership structure while this does not occur for privately held ones. More recently, Auvray and Brossard (2012) demonstrate that the presence of large block shareholders in banks increases the accuracy of leading indicators for predicting future bank distress.

Studies on the corporate governance of microfinance institutions have generally concentrated on the relationship between Board characteristics, CEOs and owners (Hartarska and Mersland, 2012). One important topic under current research in nowadays microfinance is a hypothetical trade-off between social performance (outreach) and financial sustainability of MFIs. Among other factors corporate governance is found to have a strong effect on both of them. However, the results are still controversial but they acknowledge the importance of independent members inside Boards, the separation between CEO and President, the presence of female Board members for stronger outreach and better economic performance. Mori and Mersland (2014) investigate the importance of owners in MFIs corporate governance and MFIs performance. Based on agency and resource dependence theory they evidence that various stakeholders influence MFI performance through their participation in Boards. Other papers have adopted similar approaches and have highlighted the importance of MFIs' legal status for their performance (Mersland and Strøm, 2009; Mersland, 2009; Servin et al. 2012). The results indicate that nonprofits and credit unions are able to achieve better social results but deposit-taking institutions have higher efficiency compared to other organizations. In a recent paper, Mersland et al. (2011) show that internationally connected MFIs perform better than local competitors other things being equal.

In this paper we partially build on Mersland et al. (2011) as we consider the effect of foreign ownership on MFI social and economic performance. We go further as we consider separately a possible effect of the identity of owners, local and foreign. In the last years, developing countries have removed restrictions on the ownership of banking and microfinance institutions. Shareholders can be local or foreign banks, local or foreign development agencies, microfinance investment vehicles (MIVs), nonprofits, local and central Governments, employees, executives and other private investors. We argue that all these categories may have different goals which are then transferred to the MFI. The main contributions on the current literature are mainly two; first we study the effect of ownership identity on MFI performance for which there are not any specific results up to now. Second, we shed light on the effect of foreign direct investment in microbanks in different developing countries.

Hypothesis development

Microfinance institutions are generally divided in two main groups, commercially-oriented and non-commercially ones. Usually, new MFIs pertain to the latter group. They are mostly organized as non-governmental organizations (NGOs). For-profit organizations are mainly structured as non-banking financial institutions (NBFIs), and banks[4]. During their lifecycle most MFIs decide to change from non-profit to profit organizations. Recently, it is frequent to observe

[4] Banks can be structured as commercial banks but also as credit unions, saving and rural banks.

also commercial banks that decide to develop a specific microfinance division to compete with "classic" MFIs.

The research on MFIs corporate governance has identified six major shareholder types in microfinance. These are banks, development agencies (DFIs), nonprofit organizations (NGOs), MIVs, Government and local investors. The latter can be executives, employees, or others. The first four groups can also be foreign-based or locally-based. Social investors (DFI and NGOs) are a varied group. The list includes large international financial institutions such as the World Bank's private equity arm IFC and Germany development bank KFW, as well as private funds such as the Omidyar Network and Netherland based Oikocredit (Conning and Morduch, 2011).

All firms can be considered as nexus of contracts between different stakeholders. Owners incur costs of ownership (Jensen and Meckling, 1976; Thomsen and Pedersen, 2000; Ashta and Hudon, 2009), which can encompass also monitoring and risk-bearing costs. Stakeholder analysis posits that their interests are not necessarily aligned even amongst them in the same group (Wolfe and Putler, 2002; Ashta and Hudon, 2009). In the microfinance industry this dilemma is increased by the dual goal of reaching a satisfying economic performance and also social outreach.

The presence of different types of block equity holders is assumed to have multiple effects on corporate performance (Shleifer and Vishny, 1997; Dwivedi and Jain, 2005). Diverse ownership groups adopt different approaches in influencing firm strategy (Ramaswamy et al. 2002). For instance, the effect of management ownership has attracted much attention (Morck et al., 1988; Jensen, 1993; Singh and Davidson, 2003). These contributions suggest that managerial shareholding help align the interests of shareholders and managers, reducing agency costs and enhancing corporate performance.

If we consider the literature on foreign investment, the impact of foreign banks ownership in developed countries is conflicting. On one hand, the general global advantage hypothesis predicts foreign-owned banks to be more profitable due to comparative advantages over domestic owned banks (Lensink and Naaborg, 2007). These advantages stem from more advanced technologies, more efficient organization and better access to qualified labour force. Similarly, according to the resource based view, international investors will positively affect the firm's ability to raise external capital, its organizational culture, and managerial talent (Barney, 1991; Hall, 1992, Mersland et al., 2011). On the other hand, the home field advantage predicts that domestic owned banks are more profitable due to their ability to reduce agency costs compared to foreign banks. Foreign investors are at an informational disadvantage relative to local investors (Choe et al. 2005). This is consequence to the fact that the degree of investor protection differs enormously among countries (La Porta et al., 2006). Leuz et al. (2003) point out that earnings management is more pervasive in countries with weak investor protection and in firms where ownership structures are more conducive to outsider expropriation.

Institutional investor ownership is likely to imply advantages in terms of profitability. This is due to the fact that the performance of these investors is measured in terms of shareholder value. This leads to the hypothesis that institutions with pursue firm economic performance more than other goals when they invest in it (Thomsen and Pedersen, 2000).

Based on these assumptions we assume the following:

H1a: There is a positive relationship between bank and MIV ownership and economic performance of MFIs.

H1b: The effect of bank foreign ownership is stronger than domestic bank shareholding

H1c: The effect of bank foreign ownership is weaker than local bank shareholding

H1d: There is a negative relationship between bank ownership and MFI riskiness

The effect of Government ownership on firm financial performance should be negative because Governments do not pursue merely economic goals but mostly political ones. Previous research has evidenced that Governments pay more attention to social performance (Hart et al. 1996). The property right hypothesis (Alchian, 1965) suggests that private firms should perform more efficiently that government owned and mutual firms. However, there is not much evidence confirming this view in the banking industry (Altunbas et al. 2001; Sapienza, 2004; Ianotta et al., 2007).

In terms of social performance, it seems that only Government entities should have an incentive to encourage this goal in MFIs among the groups considered above. There are also two other types of shareholders to be encountered, namely DFIs and NGOs. Both these groups invest in MFIs in developed countries to help them in their social mission. Generally NGOs are more socially oriented than other shareholders or donors (CERISE, 2006: Mersland and Strøm, 2008). However, the last years have seen an increased pressure from international organizations on MFIs requiring them to improve also their economic sustainability and to rely less on subsidies (Quayes, 2012). Hence, international development organizations should be concerned about the social inclusion of the poor but they focus also on the economic performance of MFIs.

With regards to founding-family ownership, Demsetz and Lehn (1985) and Andres (2008) among others evidence that this group has strong economic incentives to monitor managers and decrease agency costs. So, the higher the equity stake of the founders in the firm, the better would be firms performance. However, the strong presence of founding families bears also potential costs. Families could have an incentive to exchange profits for private rents and expropriate minority shareholders (Faccio et al., 2001).

Based on the aforementioned assumptions, we formulate the following hypotheses about the impact of Government, social investor and other shareholders on MFI outreach and sustainability:

H2a: There is a positive relationship between social investors' ownership (DFIs and NGOs) and social performance

H2b: There is a positive effect of international DFIs on MFIs' economic performance

H2c: The effect of foreign NGOs on MFI social performance is stronger than domestic ones

H3: The effect of Government ownership is negative on economic performance but positive on social performance

H4: The effect of founders and executive ownership on MFI economic performance should be positive.

Data and sample selection

The dataset comprises the largest 500 MFIs that report to the MixMarket for the period 2000-2011, the most important source of financial and social data from the microfinance sector. Missing data from MixMarket were completed by consulting also other sources such as Bankscope (Bureau Van Dijk). For each of these institutions we identify their owners or main donors in the case of NGOs by searching on their financial statements, official websites, or by asking them directly by email. Nonprofit organizations do not have shareholders but there is evidence that donors become shareholders when the NGO is transformed in a shareholder firm (Vanroose and D'Espallier, 2013). Main donors also have a substantial control over MFI strategies. We are aware that the sample may suffer from selection bias due to the restriction of the sample to only the largest firms that report to MixMarket. However, the microfinance sector is highly concentrated, these MFIs have 85% of the total gross loan portfolio of all those that report to MIX (about 1300 in 2011).

The MFIs in our sample are nonprofit organizations, non-banking financial institutions, and banks[5]. In Table 1 we sort firm-year observations based on the identity of the owner and the equity stake they hold. It can be observed that MFIs invested or owned by an NGO are the largest number (2749 firm-year observations or 26.13% of the row total). NGOs prefer to be controlling shareholders as the number of observations per equity stake higher than 50% outnumbers the others. This pattern is observed also for banks and private

[5] We classify as banks credit unions, savings banks, thrifts and rural banks, commercial banks. This classification is provided by MixMarket for every institution. Credit union do not have a profit maximization goal but their structure and corporate governance is similar to other banking institutions.

founder/executive/private investors. MIVs and DFIs prefer to hold minority stakes in the MFIs invested.

< insert Table 1 here>

For each of the MFIs on our sample we evidence in Table 2 information about performance, riskiness, and social performance.

<insert Table 2 here>

The main variables are sorted on the basis of the legal status, that is whether they are structured as NGOs, NBFIs or Banks. All variables were winsorized at the 1% and 99% level to avoid outliers. The number of firm-year observations is higher for the NGO group. The profitability variables are the Return on Asset (ROA), and operational self-sufficiency (Op_Self). These variables have been often used in the literature to proxy MFIs profitability (Mersland et al. 2011). The definition follows the one adopted by the MixMarket and we indicate in the Appendix how all variables are measured. The credit risk is measured by the PAR30 and write-off ratio. The first variable measures the value of all loans outstanding compared to gross loan portfolio (GLP) that have one or more installments past due from more than 30 days whereas the second one indicates the percentage of total loans written off compared to GLP. The social performance is proxied by two variables, the average outstanding loan balance to gross national income per capita ratio, and the percentage of female borrowers compared to total borrowers.

The ownership identity is identified through the use of the equity stake of different groups of shareholders. These can be banks, social investors (NGOs or DFIs), investment funds (MIVs), Government entities and local private investors (executives, founders or other individuals). At a later stage we consider separately the percentage of equity owned by foreign compared to local investors for the first three stock-owners. MIVs are almost always foreign-based, whereas Government and other private investors are always local.

In terms of profitability it seems that banks behave better that the other two groups; average ROA, and Op_self are higher compared to NGOs and NBFIs. The riskiness in terms of PAR30 and write-off ratio is slightly higher for banks. If we concentrate on the social performance, as expected, the first variable is much lower for NGOs. It is commonly observed that a signal indicating mission drift for MFIs is to lend only to individuals that are not among the poorest in a certain country. This is approximated by high values of this indicator. It indicates that the average amount borrowed is too high compared to the average gross national income per capita so only a small part of the population can access credit from these institutions. The percentage of female borrowers is another indicator of social performance. MFIs try to include in the formal

credit circuit women that are often more discriminated than men in many areas. The average values of this indicator are higher for NGOs compared to NBFIs and banks (75% compared to 61% and 52%).

The comparison of average values with medians suggest that there is some bias in the population but this is not verified for every variable. The analysis of standard deviation and lowest, highest percentiles show that NGOs suffer more from extreme values compared to NBFIs and banks.

Empirical results

We start the empirical analysis by exploiting in table 3 the pairwise correlation amongst main variables. Asterisks indicate significance at the 5% level. As expected, the profitability measures are highly correlated. There is a negative relationship between profitability and PAR30/Write-off ratio. The percentage of female borrowers is negatively correlated with average outstanding balance to GNI per capita.

<insert Table 3 here>

In order to test the impact of ownership identity on MFIs overall performance, we first regress the stake owned by different shareholders on different measures of MFI profitability, risk, and social performance. We apply a pooled OLS regression with errors corrected for heteroskedasticity. We include in the regression several control variables, namely, the natural log of the Gross Loan Portfolio (ln_GLP), region[6], MFI age and also time fixed effects. We apply separate regressions for NGOs, NBFIs and Banks. The specifications are as follows:

$$Profit. = f(Bank, DFI, NGO, MIV, Gov, Other, Region, Size, Age) \quad (1)$$

$$Risk. = f(Bank, DFI, NGO, MIV, Gov, Other, Region, Size, Age) \quad (2)$$

$$Social\ perf. = f(Bank, DFI, NGO, MIV, Gov, Other, Region, Size, Age) \quad (3)$$

Profitability is proxied by ROA and Op_self; risk by PAR30 and Write-off ratio whereas Social performance by Avg_oust and Fem_borr. Results are evidenced in Table 4.

[6] In MFI literature the developing countries are divided in the following regions: North Africa and Middle East (MENA), Eastern Europe and Central Asia (ECA), Latin America and the Caribbean (LAC), South Asia (SA), Eastern Asia and the Pacific (EAP), Sub-Saharan Africa (SSA)

<insert Table 4 here>

Financial performance

The profitability of NGOs and banks is positively and significantly influenced by bank ownership as predicted by H1a. This is not verified for NBFIs. For both profitability variables, ROA, and Op_self, the coefficients are significant at the 1% level. The effect of social investors' ownership on profitability is generally negative or not significant. MIVs seem to have a positive effect but again, not for NBFIs. With regards to MFI's riskiness, the presence of banks among the shareholders generally decreases the riskiness of the loan portfolio for NGOs, partially for NBFIs and also for banks but the effect for the latter is not significant. The hypothesis H1d is verified only partially. Reducing the riskiness of the GLP is a major concern for all shareholders because all of them seem to have a negative impact on PAR30 but not always for the write-off ratio. The effect of Government ownership on ROA is negative as predicted by H3 but only for NGOs and NBFIs. The presence of private investors such as executives, and founders is beneficial only to NGO performance in line with H4.

This results suggest that when bank ownership tend to have a positive effect on profitability compared to other stakeholders. This is verified for two out of three microfinance institutions. Government ownership as expected has a negative effect on firm performance confirming the view that for state-owned companies the financial sustainability *tout-court* is not the main goal. The effect of mutual fund ownership and local investors/managers/founder is positive as expected. This effect is strongly significant for NGOs but blurred for banks and not significant for NBFIs.

Social performance

The effect of owner identity on social performance is evidenced on the last two columns of Table 4. For NGOs, the average outstanding balance per GNI ratio depends negatively on banks, and Government. For NBFIs, the effect is positive for banks, DFIs but negative for NGOs and Government. In the case of banking institutions, only the effect of Government is negative.

In terms of percentage of female borrowers, bank or DFI owners have a negative effect when the MFI is an NGO, whereas MIVs and Government ownership have a positive impact. For NBFIs, ownership by NGOs, MIVs and Government play a positive role. Finally for banks, every owner type discourages female borrowers except Government.

From this analysis it seems that the role of Government ownership is in line with the second part of H3. As expected, the main goal of Government entities which invest in MFIs is their social return not merely the profitability. The presence of social investors is conflicting. They seem to

not have a clear impact on the social goals of the MFIs. Further analysis is required to better understand whether their presence as shareholders or donors entails significant effects in microbanks' performance.

In the following, we treat separately local owners from foreign owners to assess the predictability of other hypotheses, namely whether foreign ownership has a different impact on MFI performance compared to locally-owned institutions. As previously mentioned, MIVs are almost always foreign and Government/other are always local. Results are presented in Table 5.

< insert Table 5 here>

Economic performance

When the effect of foreign ownership is disentangled from local ownership, domestic banks seem to have a stronger effect on ROA and Op_self compared to foreign counterparts in line with H1c. This is verified for NGOs, banks but not for NBFIs where the impact of local banks is negative and foreign banks have no significant effect. NBFIs confirm their diversity compared to NGOs and banking institutions. The effect of local and foreign DFIs is negative and significant, similar to the effect of local NGOs, therefore there is evidence against H2b. MIVs and Government confirm the previous results observed in Table 4 above. If we concentrate one the riskiness of the loan portfolio, foreign banks are more able to reduce it, together with NGOs (local and foreign), MIVs and Government.

The impact of local banks is stronger than foreign institutions (as predicted H1c) for banking intermediaries. In terms of riskiness, PAR30 is negatively influenced by the ownership of local NGOs, DFIs, and MIVs. The write-off ratio is significantly reduced by foreign banks and private investors.

These results indicate that local banks seem to have a competitive advantage compared to foreign competitors in the microfinance sector. As previously mentioned, the positive effects of foreign ownership as the Resource Based Theory predicts are remarkably influenced by other factors such as the level of information asymmetries, the legal protection of shareholders and other institutional factors of the local environment. In the case of MFIs it seems that locally-based financial institutions can pursue higher returns due to a better knowledge of the local framework where they operate. The presence of social investors among the owners do not have any positive outcome in terms of profitability for MFIs. Neither NGOs nor DFIs do seem to influence positively ROA or Op_self, regardless of their origin.

Social performance

In terms of social performance, the average outstanding loan is reduced by the presence of foreign NGOs as H2c predicts. The presence of female borrowers is encouraged by foreign banks, foreign NGOs and MIVs. For NBFIs, the presence of foreign and local NGOs encourage lower outstanding loans, and a higher percentage of female borrowers but only for foreign NGOs.

In banking institutions the impact of NGOs is weaker, only foreign ones evidence a negative effect on average outstanding loans but not on female borrowers. DFIs have a negative effect on female borrowers and a conflicting effect on average loans (H2a and H2b partially not verified). The social performance is positively affected by local banks and foreign DFIs (in terms of average outstanding balance). Hence, for MFI social performance the origin of the social investors is important. Foreign NGOs are associated with lower outstanding loans per single borrower and higher percentage of financial inclusion for women. For these investors the Resource Based view is confirmed; international donors are in the position to help MFI increase their social efforts due to their experience in many countries in the last years. The role of DFIs seems not to follow this pattern. The social performance of MFIs is negatively influenced by the stake of their equity investment. They do not seem to induce a positive role even for the financial sustainability of these institutions.

Robustness checks

The effect of owner identity in case of controlling shareholder

From the above analysis it seems that most of the hypothesis are verified. However, the role of different types of shareholder might be biased due to the stake of the controlling shareholder. That is, it is not clear how much each owner can influence the economic or social performance of MFIs if they do not control it. On this regards, in this section we check the role of each owner but only when they have more than 50% of the equity or total donations of the single MFI. We do not consider separately foreign from local ownership due to low number of firm-year observations and run separate regressions for each MFI type in order to better represent the partial effects of owner identity on their performance[7]. The outcomes of these regressions are shown in Table 6.

< insert Table 6 here>

[7] We decided to group together social investors, namely DFIs and NGOs regardless of their origin due to low number of observations.

From the regressions in column 1 and 2 it seems that the effect of bank and MIV ownership on MFI financial sustainability is confirmed. When a bank or an institutional investor controls an MFI, the latter improves its financial performance, with the exception of NBFIs. These institutions confirm their diversity when compared with NGOs or banks. As expected, the effect of Government and founders/executives is confirmed in line with the results evidence in Section 3.

The presence of banks as major shareholders does have an impact also on MFI riskiness but this effect is less stronger than before. The coefficient of D_Bank is not significant for NGOs. In NBFIs the PAR30 decreases but the write-off points at the opposite direction. In the case of banking institutions the write-off ratio is reduced but the impact on PAR30 is not significant.

With regards to the social performance, when the controlling owner is an NGO or DFI, the average outstanding loan per GNI per capita decreases and the percentage of female borrowers increases (across all types of institutions). The impact of Government ownership goes in the same direction, confirming their commitment to MFI social performance more than financial sustainability.

Endogeneity of foreign ownership

In this section we check whether the decision for foreign firms to invest in MFIs in developing countries is endogenous because it might be influenced by their performance and risk. That is, it might be possible that there is some reverse causality between the choice of foreign investors to enter in a specific market and the past performance of the institution they aim to invest. Previous studies in banking have tried to address this concern (Himmelberg et al., 1999; Gugler and Weigland, 2003; Barry et al., 2011). We test for the presence of an endogeneity bias by applying two sets of three simultaneous equation models through a three stage least squares (3SLS) model. The equations for financial sustainability are as follows:

$$ROA = f(foreign, leg.status, Gov, Other, Ln.GLP, Area, Age) \quad (4)$$

$$Foreign = f(ROA, loan.growth, Ln.GLP, Cap.asset\ ratio, PAR30\ Area, Age) \quad (5)$$

$$Ln.GLP = f(ROA, foreign, leg.status, GOV, other, Area, Age) \quad (6)$$

Foreign is a dummy indicating one when the major owner is not a local shareholder. Hence it can be a bank, an NGO/DFI, or institutional investor. Leg.status indicates whether the MFI is an NGO, an NBFI or a bank. Gov. indicates the share percentage owned by the local Government.

Ln.GLP is the natural log of the Gross Loan Portfolio. Area is one of the six regions mentioned in note 4. Capital asset ratio is the ratio of Common Equity to Total assets. We are hypothesizing that there is some cross-causality between the decision to invest, firm performance (ROA) and its size. Similarly, MFI profitability and its size may also depend on the foreign origin of the main shareholder.

The equations for social performance are as follows:

$$AVG\_outs = f(foreign, leg.status, Gov, Other, Ln.GLP, Area, Age) \quad (7)$$

$$Foreign = f(AVG\_outs, loan.growth, Ln.GLP, Cap.asset\ ratio, PAR30, Area, Age) \quad (8)$$

$$Ln.GLP = f(AVG\_outs, foreign, leg.status, GOV, other, Area, Age) \quad (9)$$

Where AVG_outs is the ratio of the average loan to the GNI per capita. The assumptions are similar to those above. The decision for foreign investors to become owners of an MFI may be influenced by its social performance and size but also influence these variables as well. The results of these regressions are evidenced in Table 7.

< insert Table 7 here>

It seems that foreign ownership, MFI profitability and firm size are somehow endogenous in these regressions. Each one of them seems to depend on the others. Foreign ownership has a strong positive effect on MFI profitability, in line with Resource Based Theory. The decision to invest depends on ROA but not on Op_self. Hence, these variable is endogenous but the magnitude is not clear as only one of the profitability variables is significant. Unfortunately, we are not able in these regressions to disentangle the effect of owner identity, so the effect could be attributed to each one of them.

Similarly, Foreign has a negative effect on Avg_outs and positive and significant on Fem_borr. It is also influenced by the former but not from the percentage of female borrowers. We conclude that there is some endogeneity even in the relationship between social performance and foreign ownership but this is not confirmed for both variables under scrutiny similar to its link with MFI profitability.

Conclusions and final remarks

This study tries to shed light on the effect of owner identity on MFI economic and social performance. As far as we know this represents the first effort in the literature aiming to understand whether this factor is important in explaining MFI performance.

Our results indicate that owners may have different and conflicting goals when they decide to invest in a microfinance institution. Banks, MIVs and private investors pursue mainly a maximizing profit objective. Governments and social investors are more focused on social indicators. We find that MFI profitability in positively influenced by the presence of the first group of investors, but only when the MFI is a NGO or a Bank.

Among social investors, only NGOs appear to fully pursue a clear social goal as their effect is significant in granting loans to the poorest and by increasing the percentage of female borrowers. The role of DFIs is not clear, they seem not to have a clear impact on social performance neither a positive impact on MFI profitability.

When the effect of foreign ownership is disentangled from local one, the results are mainly two: local banks are better positioned compared to foreign competitors to help MFI reach a better financial performance. International NGOs are more capable than local ones to enhance MFIs' focus on social performance.

This study may suffer from some endogeneity bias, as the decision of a foreign bank or NGO to invest in an MFI might be influenced by its past and current performance, let alone its size or other variables. We try to offer a view of this bias in the robustness checks. Another issue to be tackled in the future is related to the inclusion in the study of other stakeholders that appear to be important for the strategies of the single MFI. These can be creditors, employees, or local communities. An important improvement could be related to the presence of different stakeholders in the board of the MFI. Previous literature has already evidenced the goals of single shareholders are better aligned with those of the MFI when they sit in its Board where most strategic decisions are taken.

Tables

Table 1. Firm-year observations sorted by the equity stake of different owners

	Owner							
Share	Bank	MIV	NGO	DFI	GOV	Other	Total (%)	
0% - 30%	267	690	721	687	737	631	3733	35.48%
30% - 50%	106	508	514	514	507	506	2655	25.24%
higher than 50%	402	383	1514	548	368	917	4132	39.28%
Total (%)	775 7.37%	1581 15.03%	2749 26.13%	1749 16.63%	1612 15.32%	2054 19.52%	10520	100%

Notes: Owners are divided in six types, bank, MIV, NGO, DFI, GOV and Other. They are sorted in three groups depending on the stake held by each one of them (0-30%, 30-50% and higher than 50%)

Table2. Descriptive statistics for main variables

NGO

	N	Mean	Std. Dev	P1	Median	P99
ROA	3793	-1%	15%	-80%	2%	23%
Op_self	4534	111%	49%	10%	109%	334%
PAR30	4042	6%	10%	0%	3%	61%
Writeoff_ratio	3413	2%	4%	0%	0%	25%
Avg_outs	2595	30%	39%	2%	16%	228%
Fem_borr	4116	75%	25%	5%	82%	100%

NBFI

	N	Mean	Std. Dev.	P1	Median	P99
ROA	2852	0%	14%	-53%	2%	29%
Op_self	3283	117%	70%	8%	111%	338%
PAR30	3130	6%	10%	0%	3%	48%
Writeoff_ratio	2625	2%	6%	0%	0%	22%
Avg_outs	2054	92%	243%	2%	37%	352%
Fem_borr	2963	61%	26%	5%	59%	100%

Bank

Variable	N	Mean	Std. Dev.	P1	Median	P99
ROA	2793	2%	6%	-25%	2%	19%
Op_self	3404	116%	37%	22%	113%	270%
PAR30	2818	8%	11%	0%	5%	68%
Writeoff_ratio	2418	1%	3%	0%	0%	16%
Avg_outs	1911	93%	125%	3%	50%	853%
Fem_borr	2528	52%	25%	0%	50%	100%

Notes: All MFIs are divided in three groups based on their legal status, namely NGOs, NBFIs and Banks. For each group we calculate descriptive statistics for Return on Assets (ROA), Operational self-sufficiency (Op_self), Portfolio at risk 30 days (PAR30), Write-off ratio, Average outstanding balance per borrower on GNI per capita ratio (Avg_outs), percentage of female borrowers (Fem_borr).

Table 3. Pairwise correlations

	ROA	Op_self	PAR30	Writeoff_ratio	Avg_outs	Fem_borr
ROA	1					
Op_self	0.695*	1				
PAR30	-0.166*	-0.153*	1			
Writeoff_ratio	-0.215*	-0.218*	0.238*	1		
Avg_outs	0.029*	0.056*	0.009	-0.040*	1	
Fem_borr	-0.053*	-0.073*	-0.123*	-0.039*	-0.353*	1

Notes: Pairwise correlation have been calculated among the main financial and social performance variables. These are Return on Assets (ROA), Portfolio at risk 30 days (PAR30), Write-off ratio, Average outstanding balance per borrower on GNI per capita ratio (Avg_outs), percentage of female borrowers (Fem_borr).

Table 4. The effect of owner identity on MFI performance and riskiness

	Profitability		Risk		Social performance	
NGO						
	ROA	Op_self	PAR30	Writeoff_ratio	Avg_outs.	Fem_borr
Bank	0.026*	0.215***	-0.027***	-0.008*	-0.145***	-0.191***
	[1.79]	[2.86]	[-3.04]	[-1.76]	[-2.71]	[-4.92]
DFI	-0.029***	-0.106***	-0.003	0.001	0.114*	-0.065**
	[-4.07]	[-2.99]	[-0.42]	[0.46]	[1.91]	[-2.50]
NGO	-0.027***	-0.048**	-0.016***	0.002	-0.015	0.020
	[-3.54]	[-2.30]	[-3.85]	[1.13]	[-0.66]	[1.53]
MIV	0.081**	0.111	-0.055***	0.002	-0.096	0.375***
	[2.35]	[0.86]	[-3.22]	[0.31]	[-1.13]	[8.41]
GOV	-0.020**	0.055	-0.036***	-0.005	-0.092*	0.076**
	[-2.39]	[1.29]	[-3.59]	[-1.44]	[-1.90]	[2.28]
Other	0.020***	0.062*	-0.001	0.002	0.123**	-0.071***
	[2.73]	[1.91]	[-0.17]	[0.88]	[2.48]	[-3.37]
N	2503	2879	2663	2348	1890	2689
adj. R-sq	31.40%	29.40%	35.00%	32.10%	38.10%	43.80%
NBFI						
Bank	-0.029**	-0.088**	-0.014*	0.025***	0.169*	0.015
	[-2.42]	[-2.04]	[-1.81]	[4.21]	[1.69]	[0.67]
DFI	-0.056***	-0.170***	-0.009	-0.001	0.152**	-0.030
	[-4.85]	[-4.57]	[-1.34]	[-0.04]	[2.09]	[-1.35]
NGO	-0.005	-0.036	-0.030***	-0.002	-0.122**	0.030*
	[-0.74]	[-1.36]	[-7.20]	[-1.00]	[-2.17]	[1.87]
MIV	-0.014	-0.003	-0.032***	-0.003	0.001	0.062***
	[-1.25]	[-0.08]	[-5.02]	[-0.93]	[0.01]	[2.59]
GOV	-0.021**	0.115***	-0.018***	-0.010***	-0.173***	0.107***
	[-2.17]	[2.62]	[-2.83]	[-3.62]	[-2.86]	[4.88]
Other	-0.015	0.001	-0.011*	-0.003	-0.017	0.043**
	[-1.59]	[0.00]	[-1.87]	[-1.24]	[-0.26]	[2.18]
N	2057	2331	2186	1945	1541	2086
adj. R-sq	27.60%	37.60%	35.70%	46.50%	41.70%	55.30%
Bank						
Bank	0.016***	0.078***	-0.002	-0.002	0.570***	-0.113***
	[3.03]	[2.91]	[-0.28]	[-0.67]	[2.74]	[-3.95]
DFI	-0.009	-0.018	0.002	-0.001	0.370***	-0.204***
	[-1.53]	[-0.54]	[0.23]	[-0.16]	[2.86]	[-7.39]
NGO	0.004	-0.035	-0.017**	0.004	-0.16	0.042
	[0.86]	[-1.20]	[-2.52]	[1.62]	[-0.91]	[1.43]
MIV	0.013	0.106***	-0.029***	0.006	0.561**	-0.028
	[1.41]	[2.61]	[-3.24]	[1.28]	[2.11]	[-0.93]
GOV	0.012	0.012	-0.003	0.007	-0.362*	0.118***
	[1.31]	[0.20]	[-0.36]	[1.21]	[-1.70]	[2.80]
Other	-0.005	-0.016	0.022***	-0.003*	-0.154*	-0.152***
	[-1.61]	[-0.90]	[3.46]	[-1.77]	[-1.74]	[-8.08]
N	1616	1835	1606	1465	1118	1399
adj. R-sq	40.00%	35.30%	52.60%	44.00%	35.20%	26.70%

Notes: In this table we show the results of pooled OLS regressions for testing the link between owner identity and MFI performance. Dependent variables are Return on Assets (ROA) and Operational self-sufficiency (Op_self) for financial performance, Portfolio at risk 30 days (PAR30) and write-off ratio for credit risk, Average outstanding balance per borrower on GNI per capita ratio (Avg_outs), and percentage of female borrowers (Fem_borr) for social performance. Owner identity is proxied by six different types of shareholders, Bank, DFI, NGO, MIV, GOV and other. In every regression we control for MFI size, world region, MFI age and time effects. We do not exhibit the coefficients for these variables for reasons of space. The number of firm-year observations and adjusted R-squares are listed below each regression.

Table 5. The effect of local and foreign ownership on MFI performance and riskiness

	Profitability		**Risk**		**Social performance**	
	ROA	Op_self	PAR30	Writeoff_ratio	Avg_outs.	Fem_borr
NGO						
Local bank	0.028	0.263**	0.002	0.008	-0.228*	0.135**
	[0.74]	[2.10]	[0.15]	[0.77]	[-1.67]	[2.36]
Foreign bank	0.012	0.018	-0.148***	-0.074***	0.136	-1.549***
	[0.07]	[0.04]	[-3.60]	[-2.59]	[0.29]	[-8.74]
Local DFI	-0.037***	-0.107*	0.001	0.006**	0.006	-0.056*
	[-3.70]	[-1.84]	[0.10]	[2.14]	[0.11]	[-1.70]
Foreign DFI	-0.018**	-0.106***	-0.006	-0.006	0.287**	-0.077
	[-2.06]	[-2.80]	[-0.76]	[-1.61]	[2.28]	[-1.47]
Local NGO	-0.031***	-0.059**	-0.016***	0.002	-0.001	0.016
	[-3.57]	[-2.44]	[-3.60]	[1.08]	[-0.03]	[1.03]
Foreign NGO	-0.012	-0.012	-0.015**	0.001	-0.050**	0.028**
	[-1.33]	[-0.41]	[-2.16]	[0.40]	[-2.60]	[2.42]
MIV	0.078**	0.106	-0.054***	0.003	-0.090	0.378***
	[2.29]	[0.81]	[-3.14]	[0.35]	[-1.06]	[8.32]
GOV.	-0.021**	0.051	-0.037***	-0.006	-0.080*	0.066**
	[-2.45]	[1.21]	[-3.67]	[-1.58]	[-1.66]	[2.03]
Other	0.020***	0.063*	-0.001	0.002	0.122**	-0.064***
	[-8.97]	[0.44]	[3.58]	[3.76]	[-2.01]	[19.12]
N	2503	2879	2663	2348	1890	2689
adj. R-sq	31.30%	39.30%	45.00%	32.20%	38.50%	34.30%
NBFI						
Local bank	-0.044***	-0.145***	-0.013	-0.029***	0.238	-0.041*
	[-2.65]	[-2.87]	[-1.20]	[-3.72]	[1.59]	[-1.65]
Foreign bank	-0.015	-0.032	-0.0165*	-0.021**	0.084	0.102***
	[-1.19]	[-0.62]	[-1.76]	[-2.17]	[0.73]	[2.82]
Local DFI	-0.062***	-0.176***	-0.016*	-0.003	0.227**	-0.058*
	[-4.02]	[-3.60]	[-1.79]	[-0.94]	[2.35]	[-1.96]
Foreign DFI	-0.047***	-0.161***	-0.001	0.004	0.045	0.01
	[-3.03]	[-3.11]	[-0.02]	[0.71]	[0.45]	[0.35]
Local NGO	-0.004	-0.046	-0.039***	-0.006**	-0.211*	0.018
	[-0.60]	[-1.59]	[-9.31]	[-2.53]	[-1.16]	[1.01]
Foreign NGO	-0.006	-0.019	-0.013**	0.004	-0.072**	0.053**
	[-0.86]	[-0.52]	[-2.28]	[1.17]	[2.55]	[2.20]
MIV	-0.014	-0.002	-0.0323***	-0.003	-0.004	0.062***
	[-1.27]	[-0.07]	[-5.03]	[-0.96]	[-0.05]	[2.59]
GOV.	-0.021**	0.116***	-0.018***	-0.010***	-0.168***	0.107***
	[-2.21]	[2.63]	[-2.73]	[-3.54]	[-2.80]	[4.86]

Other	-0.015*	-0.001	-0.0113*	-0.003	-0.012	0.0411**
	[-5.63]	[-2.30]	[-0.53]	[0.48]	[1.61]	[21.72]
N	2057	2331	2186	1945	1541	2086
adj. R-sq	27.5%	27.6%	26.2%	26.9%	32.3%	35.6%
Bank						
Local bank	0.018**	0.173***	0.004	-0.012**	-0.496***	-0.020
	[1.99]	[4.50]	[0.42]	[-2.43]	[-4.27]	[-0.48]
Foreign bank	0.015***	0.034	-0.006	-0.007***	1.121***	-0.210***
	[2.80]	[1.14]	[-0.77]	[-3.07]	[4.39]	[-7.28]
Local DFI	-0.015**	0.004	-0.032***	0.001	1.036***	-0.211***
	[-2.04]	[0.08]	[-4.17]	[0.23]	[5.16]	[-5.49]
Foreign DFI	0.001	-0.043	0.049***	-0.003	-0.435***	-0.202***
	[0.07]	[-1.40]	[2.70]	[-1.04]	[-5.01]	[-6.40]
Local NGO	0.002	-0.065*	-0.025***	0.003	0.28	0.024
	[0.31]	[-1.94]	[-3.74]	[1.39]	[1.01]	[0.57]
Foreign NGO	0.007	0.013	-0.010	0.002	-0.389***	0.045
	[1.04]	[0.31]	[-1.02]	[0.67]	[-2.96]	[1.29]
MIV	-0.012	0.097**	-0.029***	0.005	0.672**	-0.034
	[-1.39]	[2.38]	[-3.27]	[1.04]	[2.54]	[-1.12]
GOV.	0.012	0.022	-0.005	0.006	-0.237	0.125***
	[1.28]	[0.35]	[-0.57]	[1.07]	[-1.14]	[-2.98]
Other	-0.005	-0.012	0.021***	-0.003**	-0.095	-0.156***
	[-0.23]	[5.92]	[6.88]	[1.41]	[0.95]	[15.71]
N	1616	1835	1606	1465	1118	1399
adj. R-sq	29.90%	35.60%	43.60%	45.10%	40.30%	37.20%

Notes: In this table we show the results of pooled OLS regressions for testing the link between owner identity (local vs foreign) and MFI performance. Dependent variables are Return on Assets (ROA) and Operational self-sufficiency (Op_self) for financial performance, Portfolio at risk 30 days (PAR30) and write-off ratio for credit risk, Average outstanding balance per borrower on GNI per capita ratio (Avg_outs), and percentage of female borrowers (Fem_borr) for social performance. Owner identity is proxied by six different types of shareholders, Bank (Foreign vs Local), DFI (Foreign vs. Local), NGO (Foreign vs. Local), MIV, GOV and other. MIVs have always foreign origin. GOV and other are locally based. In every regression we control for MFI size, world region, MFI age and time effects. We do not exhibit the coefficients for these variables for reasons of space. The number of firm-year observations and adjusted R-squares are listed below each regression.

Table 6. The effect of controlling owner identity on MFI riskiness and performance

	Profitability		**Risk**		**Social performance**	
	ROA	Op_self	PAR30	Writeoff_ratio	Avg_outs.	Fem_borr
NGO						
D_Bank	0.010**	0.127	0.003	-0.005	-0.079	-0.221***
	[2.37]	[1.47]	[0.24]	[-1.44]	[-1.62]	[-8.17]
D_NGO	-0.019***	-0.019	-0.015***	0.002	-0.016**	1.01***
	[-3.12]	[-1.03]	[-4.57]	[1.07]	[-1.73]	[3.87]
D_MIV	0.007	0.168*	0.031*	0.001	0.047	0.264***
	[0.31]	[1.71]	[1.89]	[0.19]	[0.73]	[8.21]

D_GOV	-0.017**	0.063	-0.017**	-0.003	-0.060	0.066**
	[-2.12]	[1.60]	[-2.07]	[-1.10]	[-1.61]	[2.48]
D_other	0.016**	0.031	0.004	0.003	0.113**	-0.083***
	[2.22]	[0.99]	[0.52]	[1.14]	[2.50]	[-4.11]
Intercept	-0.368***	0.327***	0.077***	0.037***	-0.504***	0.896***
	[-13.35]	[4.82]	[4.36]	[4.85]	[-9.35]	[15.11]
N	12.1%	5.3%	4.4%	3.3%	10.7%	4.1%
Adj. R.sq	31.5%	44.8%	33.8%	22.7%	50.1%	53.6%
NBFI						
D_Bank	-0.007	-0.054**	-0.014***	0.018***	0.255***	-0.028*
	[-1.10]	[-2.31]	[-3.11]	[4.66]	[3.99]	[-1.94]
D_NGO	0.001	-0.021	-0.008***	-0.001	-0.044**	0.005*
	[0.05]	[-1.26]	[-3.05]	[-1.22]	[2.09]	[1.89]
D_MIV	0.011*	-0.017	-0.006*	-0.005**	-0.009	0.083***
	[1.80]	[-0.82]	[-1.72]	[-2.47]	[-0.18]	[5.57]
D_GOV	-0.008*	-0.167***	0.014***	-0.011***	-0.001	-0.162***
	[-1.87]	[-6.91]	[3.96]	[-5.67]	[-0.03]	[-11.96]
D_other	0.001	0.023	0.006	-0.002	0.071	0.019
	[0.12]	[0.94]	[1.23]	[-1.24]	[1.64]	[1.22]
Intercept	-0.246***	-0.069	-0.011	-0.004	0.255*	0.908***
	[-4.89]	[-0.84]	[-0.80]	[-0.81]	[1.69]	[25.34]
N	4.4%	4.2%	4.9%	5.5%	10.5%	14.1%
Adj. R.sq	43.6%	43.5%	44.1%	44.7%	59.8%	53.3%
Bank						
D_Bank	0.010***	0.041**	0.004	-0.003*	0.417***	-0.047**
	[2.86]	[2.16]	[1.16]	[-1.79]	[3.32]	[-2.48]
D_NGO	0.001	0.001	0.001	0.001	-0.123***	0.018**
	[0.12]	[0.04]	[0.03]	[0.32]	[-3.43]	[2.02]
D_MIV	0.013**	0.071***	-0.019***	0.001	0.528***	0.019
	[2.22]	[2.75]	[-3.82]	[0.26]	[3.58]	[0.83]
D_GOV	-0.018***	-0.094**	0.008	0.003	-0.471***	0.037
	[-2.75]	[-2.38]	[1.19]	[0.86]	[-2.94]	[1.13]
D_other	-0.001	0.009	0.019***	-0.003**	-0.216***	-0.079***
	[-0.13]	[0.61]	[3.90]	[-2.26]	[-3.93]	[-5.29]
Intercept	-0.001	-0.625***	0.193***	0.012	-0.801***	0.939***
	[-0.03]	[6.43]	[5.93]	[1.39]	[-2.66]	[8.26]
N	2711	3296	2762	2394	1896	2484
Adj. R-sq	35.0%	33.1%	49.2%	43.5%	51.6%	49.5%

Notes: In this table we show the results of pooled OLS regressions for testing the link between owner of major owner and MFI performance. We assume that major owners possess more than 50% of the shares or donated capital of MFIs. Dependent variables are Return on Assets (ROA) and Operational self-sufficiency (Op_self) for financial performance, Portfolio at risk 30 days (PAR30) and write-off ratio for credit risk, Average outstanding balance per borrower on GNI per capita ratio (Avg_outs), and percentage of female borrowers (Fem_borr) for social performance. Major owner identity is proxied by six different types of shareholders, D_Bank (the major owner is a bank and it has more than 50% of the shares or donated capital), D_NGO (the major owner is a DFI or NGO and it has more than 50% of the shares or donated capital), D_MIV, D_GOV and D_Other. We do not discriminate among foreign-based owners and locally-based ones due to low number of observation. In every regression we control for MFI size, world region, MFI age and time effects. We do not exhibit the coefficients for these variables for reasons of space. The number of firm-year observations and adjusted R-squares are listed below each regression.

Table 7. Controlling for endogeneity bias of the decision to invest in an MFI in developing countries.

1) Dependent variable		**ROA** **a**	**Op_self** **b**	**Avg_outs.** **c**	**Fem.borr** **d**
	Foreign	0.466*** [9.4]	2.009*** [9.69]	-2.056*** [-7.37]	1.216*** [11.12]
	Leg_status	0.034*** [9.9]	0.109*** [6.92]	0.064** [2.3]	-0.009 [-0.72]
	GOV	0.178*** [9.57]	1.096*** [4.79]	-1.111*** [-8.47]	0.325*** [5.51]
	Other	0.067*** [4.84]	0.571*** [8.85]	-0.523*** [-5.86]	0.127*** [4.23]
	Ln.GLP	-0.033*** [-6.66]	-0.191*** [-5.36]	0.301*** [13.94]	-0.063*** [-4.07]
	Region	0.011*** [7.22]	0.056*** [6.83]	-0.205*** [-4.43]	0.054*** [9.23]
	Age	0.070*** [5.02]	0.266*** [4.46]	-0.276*** -8.51	0.064*** [4.02]
	Intercept	0.125*** [5.17]	2.453*** [3.11]	-2.253*** [-8.39]	0.988*** [5.44]
2) Dependent variable : Foreign					
	ROA	5.668* [1.72]			
	Op_self		-2.503*** [-3.97]		
	Avg.outs.			0.149*** [5.61]	
	Fem.borr				-0.026 [-0.28]
	Loan_growth	0.001 [0.54]	0.001* [1.8]	-0.001** [-2.18]	-0.001* [-1.38]
	Ln.GLP	-0.163*** [-2.75]	0.138** [2.51]	-0.113*** [-7.89]	-0.123*** [-6.78]
	Cap.asset	-0.545** [-2.3]	0.887*** [3.38]	-0.314*** [-7.04]	-0.364*** [-7.06]
	PAR30	0.464 [0.62]	-2.992*** [-5.14]	-0.779*** [-7.71]	-0.668*** [-6.01]
	Region	-0.020*** [-4.20]	-0.547*** [-3.08]	-0.055*** [-3.08]	-0.037*** [-4.99]
	Age	-0.104* [-1.49]	0.074** [2.54]	0.024* [1.57]	0.039** [2.42]
	Intercept	3.156*** [2.9]	0.642* [1.75]	2.049*** [9.64]	2.244*** [6.92]
3) Dependent variable: Ln_GLP					
	ROA	-29.77*** [-4.76]			
	Op_self		-5.231*** [-4.83]		
	Avg.outs.			3.259*** [4.95]	

	Fem.borr				37.094***
					[10.88]
	Foreign	13.876***	10.519***	7.177***	-19.506***
		[9.27]	[9.61]	[6.63]	[-9.53]
	Leg_status	1.003***	0.576***	-0.346*	3.331***
		[9.81]	[7.05]	[-1.81]	[11.7]
	GOV.	5.348***	5.734***	3.937***	-0.676
		[9.51]	[6.74]	[8.2]	[-1.13]
	Other	2.050***	2.977***	2.183***	-1.584***
		[4.87]	[8.76]	[5.97]	[-3.73]
	Region	0.340***	0.291***	0.648***	-1.368***
		[7.09]	[6.79]	[6.62]	[-8.58]
	Age	2.093***	1.396***	0.877***	0.365**
		[5.82]	[5.63]	[7.83]	[2.75]
	Intercept	3.742***	12.831***	8.126***	-2.737*
		[5.34]	[8.75]	[9.53]	[-1.83]

Notes: In this tables we show the results of a set of three simultaneous equations to control for potential endogenous variables. Three stages least squares were used. In columns a/b we check for endogeneity of Return on Assets (ROA)/Operational self-sufficiency (Op_self) , MFI foreign ownership (Foreign) and MFI size (natural log of Gross Loan Portfolio, Ln.GLP). In columns c/d, we check for endogeneity of Average outstanding balance per borrower on GNI per capita ratio (Avg_outs),/ percentage of female borrowers (Fem_borr), MFI foreign ownership (Foreign) and MFI size (Ln.GLP). In equation 1 we control for MFI legal status (NGO/NBFI/Bank), Government /local investors ownership, Ln.GLP, Region and MFI age. In equation 2 control variables are Loan_growth measured as $(GLP_t\text{-}GLP_{t-1})/GLP_{t-1}$, Ln.GLP, Capital asset ratio (Cap.asset) measured as Shareholder or donated equity/Total assets, Portfolio at risk 30 days (PAR30), Region and MFI age. In equation 3 control variables are MFI legal status (NGO/NBFI/Bank), Government /local investors ownership, Region and MFI age.

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Appendix

List of variables used in the present paper:

Return on Assets (ROA)	Net operating Income/Average Assets
Operational self-suffiency (Op_self)	Financial revenues/(Financial Expenses+ Impairment Loss + Operating Expense)
PAR30	Loans outstanding past due for more than 30 days/Gross Loan portfolio
Write-off ratio	Loans written off/Average gross loan portfolio
Average outstanding loans/GNI per capita (Av_outs)	Gross Loan portfolio/Number of loans outstanding)*1/GNI per capita
Percentage of female borrowers (Fem_borr)	Number of female borrowers/Number of active borrowers
Legal status	Dummy equal to one indicating whether the MFI is NGO, NBFI, or bank
Loan growth	$(GLP_t - GLP_{t-1})/GLP_{t-1}$
Foreign	Dummy equal to one whether the controlling owner has foreign origin