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Rating in Microfinance: Cross-Country Evidence

Valentina Hartarska¹

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Abstract

This paper studies whether microfinance rating agencies are able to impose market discipline by rating Microfinance Institutions' performance. Results indicate that not all rating agencies are equal as only one rater imposed market discipline by promoting better sustainability and offered credible rating reports that allowed MFIs to borrow more money.

Keywords: rating, microfinance, market discipline

JEL: Classification: F39, G28

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¹ Valentina Hartarska is an Assistant Professor in the Department of Agricultural Economics and Rural Sociology, Auburn University, 210 Comer Hall, Auburn, AL 36849-5406; email: Hartarska@auburn.edu, phone: 334-844-5666, Fax: 334-8445639

Rating in Microfinance: Cross-Country Evidence

Introduction

Recent years witnessed the emergence and growth of a number of rating agencies specializing in rating microfinance institutions (MFIs).¹ In the absence of developed equity and debt markets, donors and investors could benefit from independent evaluation of the performance of MFIs. Microfinance institutions themselves could benefit from rating if it helps them attract additional funds. To date, however, the impact of rating on MFI performance and their ability to raise funds has not been explored. This paper is the first to focus on these issues by analyzing a new database consisting of new publicly available data containing financial and outreach information of MFIs from 62 countries, and private data collected from microfinance rating agencies.

The purpose of microfinance rating agencies is to generate independent information, which could be used by existing stakeholders to improve governance, and by potential investors to make appropriate investment decisions. Rating helps impose market discipline by producing and revealing information and, thus, encouraging better management. However, rating could lead to moral hazard, at least in short term, if managers of MFIs who have received good rating and, as a consequence investor support, decide to slack off and exercise less effort. The risk of moral hazard with microfinance rating is similar to that induces by deposit insurance schemes. Deposit insurance is designed to prevent bank runs by protecting the interest of small, dispersed depositors, but it can lead to moral hazard because depositors whose savings are guaranteed may fail to monitor and influence the financial institution that has their money (Demirguc-Kunt and Huizinga, 2004).

Well run microfinance institutions make better use of scarce funds by providing better financial services and reaching more poor clients. Exploring whether microfinance rating improves MFIs' performance is important because there are few alternative mechanisms that promote MFI accountability. Recent study found that about 90% of the one billion dollars that funded microfinance initiatives has come from public money, mainly from taxpayers in developed countries (Foreign Investment In Microfinance: Debt and Equity from Quasi-Commercial Investors, CGAP Focus Note 25, January 2004). Donors and investors in microfinance are searching for effective mechanism of external control and some have focused on rating. To support rating of MFIs, in May 2001, the Consultative Group to Assist the Poor (CGAP) established a special fund with the purpose to subsidize rating of MFIs (see <http://www.ratingfund.org>). Thus, from policy perspective a study on the impact of microfinance rating agencies and their ability to serve as an effective mechanism of external control is timely and important.

Exploring the role of rating in microfinance is also important in the context of discussions on the ability of market forces to discipline banks and financial intermediaries. Specifically, this literature focuses on the consequences from interaction of regulator-imposed rules, rating agency signals and market discipline. These issues are especially relevant in microfinance, where market discipline through equity and debt prices is weak but where regulatory involvement often imposes significant distortions.

This paper develops a new database of 130 MFIs operating in 62 countries and analyses the performance of MFIs by adopting an empirical approach used in studies on the impact of market forces, rating, and regulation on performance in financial intermediaries. The main conclusions that the paper draws is that not all microfinance rating agencies are the same and

that individual raters differ in their impact on MFI performance and ability to raise funds. The evidence on the impact of subsidized rating is somewhat weak but it indicates that subsidizing may lead to moral hazard in terms of MFI outreach.

The paper is organized as follows: section two reviews the literature on rating, section three describes the empirical specifications, section four describes the data, section five discusses the results, and section six offers concluding remarks.

Review of the Relevant Literature

Credit rating agencies such as Moody's, Standard and Poor's etc. rate CDs, debentures², and commercial paper. Credit rating agencies also rate banks and other financial intermediaries often because regulators require bank rating for some types of activities. For example, in the US banks need rating to issue letters of credit (De Yong, Flannery, Lang., and Sorescu, 2001).

The purpose of credit rating agencies is to help impose market discipline. Sironi (2003) argues that markets can discipline banks and financial intermediaries if private investors *observe* and *price* the risk of these institutions so that management decisions are affected by the price signals. Credit rating influences the price of debt directly and it produces information useful to equity holder because equity studies find that investors incorporate promptly relevant rating information in bank stock prices (DeYong, Flannery, Lang., and Sorescu, 2001).

Bliss and Flannery (2001) distinguish between *market monitoring* as the process of correctly understanding and pricing changes in risk profile, and *market influence* as the impact that changes in prices have on managers' behavior. Kwast et al. (1999) argue that market influence can be in the forms of *direct market discipline* through the cost of capital as a function

of banks' risk profile, and in banking, *indirect market discipline* through the impact of supervisor's actions motivated by the yields on banks' risk sensitive sources of funds.

Rating has value if it produces information in addition to what the markets already know. In the case of banks and financial intermediaries, the ability of markets to generate price signals that correctly reflect risk is influenced by regulatory involvement through the bank supervisory authority. Specifically, if a regulator provides explicit or implicit guarantees, market signals may be distorted, and the market may fail to play disciplining role.

The predominant view in the empirical literature is that, at least in the US, regulatory interventions should co-exist with credit rating (an earlier review of the literature is Flannery, 1998). Morgan and Stiroh (2000) find virtually identical relationship between bond spreads (over Treasuries) and risk (estimated by rating agencies) between banks and non-bank firms and conclude that, in spite the information opacity of banks, rating agencies are able to value bank debt correctly and thus discipline banks as harshly they discipline non-bank firms.

Morgan (2002) finds, however, that in the US there are patterns of disagreement between different rating agencies in terms of their evaluation of various individual banks' bonds and that disagreements increased after the demise of the "too-big-to-fail" policy in 1986; that is, after the regulator curtailed its commitment to help big banks in trouble. Morgan concludes that banks are inherently opaque and regulatory involvement is warranted but that rating helps the regulator to identifying problem banks.

Berger, Davis, and Flannery (2000) find that supervisors and investors are fairly specialized regarding the information they generate. For example, supervisors and bond rating agencies are more concerned with bankruptcy risk and predict well future problem loans. In

contrast, supervisory assessment and equity market indicators are not strongly related, and equity predicts better future earnings, consistent with equity holders' focus on wealth creation.

Cross-country empirical studies are rare. For the case of European banks, Sironi (2003) finds that investors impose market discipline, to a lesser extent on banks with external subsidies, and that public sector banks benefit from significant government subsidy (through implicit guarantees) but these subsidies became weaker in time. The policy conclusions she draws are that requiring banks to issue some subordinated notes and debentures (which are rated) would likely enhance market discipline.

The theoretical literature provides only limited insights regarding the role of credit rating agencies. Nayar (1993) develops arguments in support of voluntary rating against compulsory rating. Kuhner (2001) views rating agencies as information intermediaries and studies their role in helping to overcome information asymmetries. He shows that in periods of increased systemic risk credit rating agencies have ability to distinguish between different categories of fundamental credit risk but that in general credit rating agencies are developing evidence that the market largely agrees with and that this information does not influence the decisions made by investors.

Mukhopadhyay (2003) is concerned with the moral hazard that rating agencies may create—once the firm is rated, and funds are secured, managers may not have incentives to exercise maximum effort and may slack off. He shows that incentive payments to the rating agency that are based on expected returns on debt will remove the moral hazard problem.

Boot, Milbourn, and Schmeits (2004) focus on the role of CreditWatch procedures and show that it serves as an implicit contractual relationship between a credit rating agency and a firm. They argue that information asymmetries lead to multiple equilibria because a firm can be

forced to take any level of risk. For example, if the market anticipates higher (lower) project risk by a firm it will demand higher (lower) coupon rate in the debt contract and induce the firm to take higher (lower) risk. If rating is introduced, the multiple equilibria would disappear because the information would be “equalizer” by the rating agency.

Boot, Milbourn, and Schmeits (2004) argue that the mechanism of CreditWatch allows the rating agency to interact with the firms it rates and write an implicit contract with the management of a firm that is under a threat of having its credit rating changed. This allows for a “deal” between the firm and the credit rating agency where the firm commits to take actions to mitigate possible deterioration in rating. The rating and the implicit contract are incentive compatible provided that a group (that is, possible investors) conditions its financing decision on the rating.

These conclusions have implications for microfinance rating where some rating agencies such as M-CRIL provide rating that is valid only for certain period of time. Since rating is valid for a restricted period investors are more likely to act on it, and thus make the rating agency function as information equalizer.

Empirical Specifications

The literature on rating suggests testable hypotheses for the impact of rating on MFI performance. However, the empirical methodologies used in this literature cannot directly be applied to rating in microfinance because MFIs differ substantially from banks and other financial intermediaries. For example, most MFIs are not publicly traded companies and, therefore, do not have widely held equity. Equity owners in MFIs are large (international) donors who usually do not have an exit strategy (the option of selling stakes), nevertheless, they seek and use

performance information in order to make sure that the objective of the MFI are met. MFI creditors also seek information on MFI performance to ensure that their lending is prudent.

A substantial part of the asset base of most MFIs was created through grants by donors. Although donors do not require dividends, they usually continue to monitor the MFI they created. As in other organizations, an MFI will survive if it is able to raise funds and have sufficient liquidity to meet current obligations. Therefore, the willingness of donors and creditors to provide liquidity and fund future projects is important. Donors and especially creditors, base their “good will” on information on the performance of MFIs, usually available through audited financial statements. In addition to this information, rating provided by independent market participants may affect the willingness of potential equity holders, donors and creditors to fund an MFI. Thus, rating in microfinance may play the same disciplining role as rating in banks and other financial institutions.

Yet, MFIs objectives are serving the poor and the emphasis on outreach is also important. MFI rating agencies do not rate exclusively debt; instead, microfinance rating agencies develop methodologies that focus on the overall performance of the organization in terms of both outreach and sustainability. Thus, studies on the impact of rating in microfinance should account for the impact of rating on MFI outreach.

As many MFIs are regulated, regulatory involvement may affect the ability of rating agencies to help discipline MFI managers. In banking, regulators distort market signals because of their direct or implicit guarantees that the bank can be rescued even if it does not do very well (Sironi, 2003). In microfinance, similar guarantees may be expected by donors who care about the mission of the organization and may provide implicit “guarantees” that the MFI can be recapitalized after bad performance. Therefore, all MFIs—regulated, NGO, and non-bank

financial institution—may be subject to such distortions, and thus the value of the information provided by rating agency may be diminished.

While general rating agencies rate debt on continuous basis, in microfinance rating is more spaced in time and may be expected to last longer, unless otherwise stated (as in the case of M-CRILL). In addition, unlike rating in other industries, rating of MFIs has been of a more descriptive nature. Only in 2003 a few rating agencies adopted rating which results in a letter grade, and the discussions of the pros and cons is still ongoing³. These considerations do not permit the application of empirical methods that compare changes in security prices, changes in rating and company performance to establish the impact of rating as a disciplining device.

Therefore, this paper adopts an empirical approach usually employed to study bank performance (Molyneux, Lloyd-Williams, and Thornton, 1992; Samolyk, 1994, Barth, Noelle, Phumiwasana, and Yago, 2004). The first hypothesis suggested by the literature on rating is that after being rated MFIs may perform better, if rating functions as an effective disciplining device, or slack off, if rating induces moral hazard. Thus, a positive link between rating and performance would indicate that rating imposes market discipline, and a negative link would indicate the presence of moral hazard. To test this hypothesis the following model is estimated:

$$P_{it} = constant + \alpha'B_{it} + \beta'R_t + \phi'M_t + \varepsilon_{it} \quad (1)$$

where P_{it} is a performance variable for MFI i at time t ; B_{it} is a vector of MFI specific variables which include capital ratio (*CAPITAL*), risk profile (*LOAN*, *PAR*, *DEBT*), MFI size (*SIZE*) and age (*AGE*); R_t is a vector of variables that control for rating in the current year (usually based on past year performance) and include *RATING*, *Rater1*, *Rater2*, *Rater3*, *Rater4*, *Rater5* and a dummy for received financial aid to pay for the rating (*FinAid*); M_t are macroeconomic country-specific variables.

The empirical analysis includes dummies for various raters because some studies of rating have attracted attention to the fact that credit agencies differ in their evaluation of regulated financial intermediaries (Morgan, 2002), suggesting that it is important to control for the quality of the rater. In addition, since MFIs have a dual objective—outreach and sustainability—individual microfinance raters may place different value on these performance indicators. To study the impact of rating on both outreach and sustainability, the empirical model is estimated with sustainability indicator (*OSS*) and outreach indicator (*NAB*) used as explanatory variables.

The disciplining role of rating also comes from the ability of MFI managers to use their rating to raise additional funds. The second hypothesis that is being tested is whether rated MFIs were able to raise additional funds either through increase in equity or through increase in borrowed funds. Thus, the second empirical model that is estimated is:

$$ChF_{it} = constant + \alpha'B_{it-1} + \beta'R_t + \phi'M_t + \varepsilon_{it} \quad (2)$$

where ChF_{it} is the log difference of the change in funds and the other variables are as before. In this equation all MFI specific variables are lagged one period back. Two dependent variables are used: the first one is the log difference in borrowed funds (*LiabCh*) other than deposits, in order to study the impact of rating on the ability of MFIs to attract large loans; the second dependent variable is the log difference in equity (*EqCh*), which captures the ability of MFIs to raise additional equity.

Data

Data for this study come from several sources. Individual MFI data come from the database collected by MIX MARKET information platform (www.mixmarket.org). To date, this is the

most detailed publicly available data on financial and outreach performance of microfinance institutions. At the time of data collection, it had listed the profiles of over 130 MFIs from over 62 countries for the period 1998-2002, which resulted in about 350 individual annual MFI observations.

Rating data was collected from several sources. First, the CGAP Rating Fund (www.ratingfund.org) lists MFI name, rater and the year in which rating was conducted for all MFIs who have received financial support for the rating. This database includes the following raters: ACCION, M-CRIL, Microfinanza Ltd., MicroRate, and Planet Rating. These raters were contacted and kindly provided data on what organization they rated and in what year. Their data were merged with the data profiles of individual MFIs from the MIX MARKET information exchange platform.

Rating is recorded for the year for which it was conducted but in most cases rating was based on financial statements for the preceding years. For example, if an MFI was rated in 2000 it was recorded as rated in 2000, although the rater actually used financial statements for the years up to and including 1999. All raters who provided information confirmed that in most cases previous years' financial statements were used. In cases of mid-year rating, the rater used past years as well as current mid-year indicators of performance. This recording of rating permits to study the impact of rating on performance in the immediate period after rating occurred and for which data was available.

A study of the impact of rating must rely on an appropriate control group. The data collected by MIX MARKET are very appropriate for this purpose. MFIs with listed financial and outreach profiles (and in many cases posted audited financial statements) have elected to participate usually motivated by the possibility that potential investors may review their profile

and select them for funding. Thus, all listed MFIs have identified themselves as seeking funds and as being more transparent than MFIs that did not provide profiles. Among these MFIs, not all were rated, which permits to study the impact of rating. Raters provided complete information of the MFIs they rated but only a small part of each rater's clients were part of the MIX MARKET database. Therefore, this paper assumes that the resulting database represent a relatively random sample of MFIs transparent in their transactions some of whom have experience with rating and some of whom do not.⁴

Table 1 presents definitions of the variables used in the analysis. Performance is measured in terms of sustainability and outreach. Sustainability is measured by operational self-sustainability (*OSS*), which measures how well the MFI can cover its costs through operating revenues and *OSS* is the industry's most widely used indicator of performance.⁵ MFI performance in terms of outreach is measured by the log of the number of active borrowers (*NAB*), which is the number of individuals that currently have an outstanding loan balance with the MFI.⁶ Log difference of equity (*EqCh*) and log difference of liabilities (*LiabCh*) are used to study whether rating helps MFIs raise more funds.⁷

[INSERT TABLE 1 HERE]

The core explanatory variables are measures of capital ratio (*CAPITAL*), MFI age (*AGE*) and MFIs size measured as the log of total assets (*SIZE*), loans-to-asset (*LOAN*), and savings (deposits) ratio (*SAVINGS*).⁸ Macroeconomic variables that control for the impact of general economic conditions are per capita GDP (*PCGDP*) and inflation rate (*INFLATION*), these variables are in constant 1995 US dollars. Among the variables representing MFIs' profiles (excluding age), *SIZE* is not a ratio; thus, the value of total assets entering *SIZE* is adjusted for inflation using the US CPI.

Table 2 presents summary statistics of the variables used in the empirical analysis for years when the MFIs were not rated versus years when the MFIs were rated, and by rater. This table is organized in two panels: Panel A presents the summary statistics of current year individual MFI profiles used in the estimation of (1), and Panel B presents the summary statistics of previous year individual MFI profiles used in the estimation of (2).

[INSERT TABLE 2 HERE]

During the study period, of the 139 MFIs, 37 were rated at least once. In total, the database contains 85 ratings, among which 39 ratings that received financial support from the CGAP Rating Fund. At the time of rating, MFIs had higher *OSS*, *NAB* and loan-to-assets ratios, they were older and larger. However, there is no statistically significant difference between the rated and non-rated groups in terms of their capital structure and risk profile measured by the portfolio-at-risk variable and in terms of change in equity and liability. Means by individual rater, at time of rating, show significant variations and suggests that the analysis should control for the use of a specific rater.

Discussion of the results

Results from estimation of (1) with performance measured in terms of sustainability, that is, with *OSS* as the dependent variable are presented in Table 3. Results from estimation of (1) with *NAB* as a measure the impact of rating on outreach are presented in Table 4. Breusch-Pagan tests shown at the bottom of these tables indicate that the random effect model should be used.

[INSERT TABLE 3 HERE]

Model 1 in Table 3 represents a specification where the impact of rating is captured only by *RATE*—the simple dummy variable for rating—while Model 2 adds to this specification

FinAid, which is the dummy variable for subsidized rating. These two models indicate that rating had no effect on sustainability. Not all raters are equal, however, as results from Model 3-6 of Table 3 indicate. More importantly, the impact of individual raters can be negative, as in Model 3 and Model 4, indicating that rating by this rater may induce moral hazard, and positive as in Model 5 and Model 6 indicating the presence of market discipline. As the correlation between individual raters and subsidized rating is high, these results are not robust—adding *FinAid* makes the negative coefficient on *rater4* statistically insignificant but makes the impact of *rater2* statistically significant.⁹ These results are not surprising given that individual microfinance raters employ different rating methodologies.

The economic impact of rating by various raters is also significant—MFIs rated by *Rater4* have in the period after rating *OSS* that is with 0.54-0.55 points less than MFIs that were not rated by this rater, everything else equal according to Models 3&4. On the other hand, everything else equal, MFIs rated by *Rater2* have in the period after rating *OSS* that is with 0.67 points more than MFIs that were not rated by this rater, according to Models 5&6.

Overall, the specifications in Table 3 fit the data reasonably well as indicated by the high R-squared (0.55), thus providing support for the use of this approach to study MFI performance. Results also indicate that better capitalized MFIs perform better, and there is some weak evidence that MFIs serving riskier borrowers perform slightly better (the coefficient on *PAR* is positive in Models 3 and 4). Evidence also suggests that larger and older MFIs do better but the impact of age is reversed after the 17th year.

Results in Models 3 and 4 also indicate that deposit insurance has a positive impact on *OSS*. According to results in models 3 and 4, even after controlling for country income and inflation level, MFIs operating in a country with deposit insurance scheme such as India would

have *OSS* higher by 0.23 percentage points than MFIs operating in a country without deposit insurance scheme such as Pakistan. This result is counter-intuitive but it may indicate that in developing countries enforcement of the law is more important than laws on the book. In addition, this result is significant only at 10 percent level and not significant in Models 1 and 2.

Results here show that MFIs operating in inflationary environment have learned to use it to their advantage as indicated by the positive and significant sign on the coefficient of inflation. These results are consistent with results from cross-country studies on financial intermediaries (Demirguc-Kunt, Laeven and Levine, 2004; Barth, Noelle, Phumiwasana and Yago, 2003).

While rating by a microfinance rater seems to impact outreach, individual raters do not (Table 4). Results show that in the period following rating, MFIs were able to improve their outreach. When the impact of the subsidized rating is accounted for, however, the overall impact is slightly negative; that is, rated MFIs did achieve better outreach. MFIs that received financial aid for their rating did not fare better, and in fact did slightly worse.

[INSERT TABLE 4 HERE]

As in the case of MFI sustainability, the impact of MFI capitalization and its size on outreach is positive. As expected, MFIs with higher level of loan-to-total assets ratio reach more borrowers. MFIs operating as banks reach fewer borrowers than non-bank financial institutions which indicate that MFIs registered as banks focus more on profits, than on outreach. Macroeconomic factors do not seem to influence MFI outreach.

Rating agencies also differ in terms of their impact on MFIs' ability to attract additional funding. Results from estimating Equation (2) are presented in Table 5. They indicate that only MFIs that were rated by Rater No.5 were able to borrow significantly more resources. No rater helped MFIs to raise equity, however.

[INSERT TABLE 4 HERE]

Results in Table 5 also indicate that, as expected, better capitalized MFIs were able to raise more debt, but less equity. MFIs with higher focus on lending (higher loan-to-assets ratio), and higher proportion of their liability raised from deposits also raised more debt. Smaller MFIs were able to raise more capital in terms of both debt and equity. MFIs in countries with deposit insurance raised more debt perhaps because big lenders felt that the government guarantees decrease default risk. Finally, MFI registered as banks were able to raise more equity than MFIs registered as non-bank financial intermediaries.

Overall, results indicate that microfinance rating has impact on MFI performance in terms of outreach and sustainability and on MFIs' ability to raise funds. Moreover, results indicate that not all raters are equal and while some rating methodologies may help impose market discipline and thus help MFIs raise additional debt, others may induce moral hazard. There are some weak evidence that subsidizing rating decreases its effectiveness and may actually lead to moral hazard; that is, once an MFIs finds a grant to get rated, it slacks off and in the next reaches less poor borrowers.

The results of this study should be interpreted with caution. First, data constraints do not permit to test whether the type of evaluation that an MFI received affects its performance. Specifically, it is not possible to tell whether an MFI with better rating has less incentives to improve than and MFI with worse rating. Results only indicate that after rating by a rater, an MFIs could do better or worse depending on which rater it used. Data quality is also an issue, as about 25 MFIs provide data only prior to rating but not after rating so the impact of their rating is hard to tell and it makes results more dependent on rating up to 2001. Since the industry has evolved substantially since 2001, more recent data, larger sample, and if possible latter grade of

the specific rating that and MFI received would help understand better the impact of rating in microfinance.

Conclusions

In spite of the fact that developed countries have invested about \$900 million in microfinance, very little is known about the effectiveness of the mechanisms designed to exercise control over the use of these resources. This paper focuses on the ability of microfinance rating agencies to impose market discipline on microfinance institutions and their managers by rating these organizations' performance.

Results indicate that not all rating agencies are equal as only one was able to impose market discipline by promoting better sustainability, while rating by another agency caused MFIs to slack off. In addition, while rating in general lead to better outreach, this effect was annulled if MFIs received financial aid for the rating. Only rating by one microfinance rater helped MFIs raise additional debt. These results suggest that rating has impact on MFI sustainability, outreach and fundraising and may serve as a powerful mechanism of external control. When more recent data become available, further studies on microfinance rating need to incorporate the newly introduced numerical and letter grades to identify microfinance raters and rating methodologies that are most effective in imposing market discipline.

ENDNOTES

¹ Microfinance institutions provide mainly loans but also other financial services such as deposit and payment facilities to poor people in developing countries.

² Debenture is type of bond issued to raise funds from the market.

³ This information is based on personal correspondence with two microfinance raters.

⁴ All information on time of rating comes from the raters themselves. This is important because the MIX MARKET data contains information on rating but this information is incomplete (no specific date of rating provided, failure to disclose a second rater, etc.)

⁵ The Mixmarket information platform ranks the quality of the data collected for each MFI. The data for this analysis come from MFIs ranked 4 and 5 stars, which indicates that the data are from audited financial statements, presumably with standard industry adjustment applied to it. There is no qualitative difference between 4 and 5 except that 5 have at least 3 years of financial statements report, while 4 have less than three years.

⁶ The number of active borrowers, however, represents only one dimension of outreach. To some stakeholders, the ability to reach poorer borrowers may be a better indicator of outreach than simply the number of active borrowers. The industry standard for this dimension is “depth of outreach” calculated as the ratio of average outstanding loan size divided by the per capita GNP. Regression on a smaller sample with depth of outreach as the dependent produced poor results, however.

⁷ *LaibCh* captures changes in borrowed funds from sources other than deposits.

⁸ The lending practices of some MFIs require mandatory savings from their borrowers. Only 4 MFIs in the sample explicitly indicated this but evidence suggests that there are more MFIs which use mandatory savings. Unfortunately, the data does not allow credible distinction between mandatory and voluntary savings.

⁹ The higher degree of correlation between the rating variables does not permit specifying intercept in every model.

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Table 1. Variable definition:

| Variable | Definition |
|------------------|--|
| <i>OSS</i> | Operational self-sufficiency = Operating revenue / (Financial expense + Loan Loss Provision + Operating Expense). Measures how well the MFI can cover its costs through operating revenues |
| <i>NAB</i> | Logarithm of the number of current borrowers, that is the number of individuals that currently have an outstanding loan balance with the MFI or are responsible for repaying any portion of the gross loan portfolio |
| <i>RATING</i> | 1 if rated in the current year; usually based on previous years financial statements |
| <i>FinAid</i> | 1 if rating was paid for partially or in full by CGAP Rating Fund |
| <i>Rater1</i> | Rating by Rater No.1 etc. recorded in the year it occurred |
| <i>CAPITAL</i> | Total equity to total assets |
| <i>AGE; AGE2</i> | Age of the MFI = number of years since inception; Age2=age squared |
| <i>SIZE</i> | Logarithm of the total assets of the MFI. Total assets include all assets net of contra asset accounts such as the loan loss reserve and accumulated depreciation. |
| <i>SAVINGS</i> | Ratio of saving to total assets |
| <i>LOAN</i> | Ratio of loans outstanding to total assets; measures risk exposure ^a |
| <i>DEBT</i> | Debt to Equity Ratio as a measure of risks |
| <i>PAR</i> | Portfolio at Risk > 30 days |
| <i>BANK</i> | 1 if the MFI is organized as a bank, zero otherwise |
| <i>NGO</i> | 1 if the MFI is a NGO, zero otherwise |
| <i>PCGDP</i> | Log GDP Per Capita in constant 1995 US dollars; source IMF |
| <i>INFLATION</i> | GDP per capita in constant 1995 US dollars; source: IMF |
| <i>DEPOSIT</i> | 1 if the country has deposit insurance schemes |

^a Most empirical models that study bank performance include *LOAN* as a measure of bank risk exposure. Unlike banks however, most MFIs do not engage in income generating activities other than lending, therefore, *LOAN* not only controls for risk exposure but also for MFI focus on lending because using funds for other purposes such as new buildings, cars etc, is likely to affect income generation..

Table 2. Summary statistics by non-rated, rated, and individual rater^a.

Panel A. Current Year

| <i>Variable</i> | Non-rated (mean) ^b | Rated (mean) | Rater 1 (mean) | Rater 3 (mean) | Rater 4 (mean) | Rater 5 (mean) |
|-----------------|----------------------------------|----------------------|----------------------|----------------------|-------------------|--------------------|
| <i>OSS</i> | 1.049 (0.550) ^c | 1.238*** (0.322) | 1.449 (0.501) | 1.228 (0.262) | 1.182 (0.136) | 1.470 (0.496) |
| <i>NAB</i> | 8.751 (2.124) | 9.593*** (0.928) | 9.901 (0.695) | 9.982 (0.770) | 7.833 (0.660) | 9.350 (0.638) |
| <i>LiabCh</i> | 0.392 (0.732) | 0.437 (0.540) | 0.434 (0.472) | 0.362 (0.388) | 0.316 (1.114) | 0.815 (0.793) |
| <i>EqCh</i> | 0.267 (0.484) | 0.196 (0.380) | 0.017 (0.563) | 0.170 (0.363) | 0.277 (0.225) | 0.216 (0.343) |
| <i>CAPITAL</i> | 0.486 (0.328) | 0.453 (0.264) | 0.495 (0.229) | 0.381 (0.232) | 0.667 (0.315) | 0.612 (0.198) |
| <i>LOAN</i> | 0.664 (0.202) | 0.736** (0.164) | 0.788 (0.180) | 0.750 (0.134) | 0.868 (0.094) | 0.729 (0.145) |
| <i>PAR</i> | 0.051 (0.086) | 0.045 (0.045) | 0.048 (0.038) | 0.050 (0.043) | 0.039 (0.025) | 0.012 (0.011) |
| <i>SIZE</i> | 14.801 (2.038) | 16.007*** (1.108) | 16.183 (0.465) | 16.444 (0.892) | 15.048 (0.820) | 15.325 (0.926) |
| <i>AGE</i> | 7.805 (6.544) | 10.051*** (5.246) | 11.375 (4.069) | 12.000 (4.913) | 3.500 (1.291) | 5.333 (1.506) |
| <i>AGE2</i> | 103.641 (186.260) | 128.09* (119.117) | 143.875 (122.425) | 167.355 (118.160) | 13.500 (9.110) | 30.333 (18.074) |
| <i>FinAid</i> | | 0.310 (0.467) | 0.000 (0.000) | 0.258 (0.445) | 1.000 (0.000) | 0.500 (0.548) |
| <i>Rater1</i> | | 0.138 (0.347) | | 0.032 (0.180) | 0.000 (0.000) | 0.167 (0.408) |
| <i>Rater2</i> | | 0.017 (0.131) | 0.000 (0.000) | 0.000 (0.000) | 0.000 (0.000) | 0.000 (0.000) |
| <i>Rater3</i> | | 0.517 (0.504) | 0.125 (0.354) | | 0.000 (0.000) | 0.000 (0.000) |
| <i>Rater4</i> | | 0.069 (0.255) | 0.000 (0.000) | 0.000 (0.000) | | 0.000 (0.000) |
| <i>Rater5</i> | | 0.121 (0.328) | 0.125 (0.354) | 0.000 (0.000) | 0.000 (0.000) | |
| <i>DEPOSIT</i> | 0.539 (0.499) | 0.767 (0.427) | 0.875 (0.354) | 0.750 (0.444) | 0.667 (0.577) | 0.500 (0.548) |

^a Rater 2 is not included due to the limited number of observations (2), ^b Means are estimated for the year for which rating occurred, ^c Standard errors are in the parenthesis.

*difference in means between rated and non-rated statistically significant at the 10% level, ** difference in means between rated and non-rated statistically significant at the 5% level, ***difference in means between rated and non-rated statistically significant at the 1% level

Table 2. Summary statistics by non-rated, rated, and individual rater^a.

| Panel B. Previous Year | | | | | | |
|---------------------------|----------------------------------|----------------------|-------------------|-------------------|-------------------|-------------------|
| <i>Variable</i> | Non-rated (mean) ^b | Rated (mean) | Rater 1 (mean) | Rater 3 (mean) | Rater 4 (mean) | Rater 5 (mean) |
| <i>L_OSS</i> ^c | 1.018 (0.532) ^d | 1.171** (0.294) | 1.328 (0.444) | 1.171 (0.258) | 1.050 (0.297) | 1.411 (0.496) |
| <i>L_NABb</i> | 8.549 (2.166) | 9.269*** (1.049) | 9.824 (0.767) | 9.612 (0.857) | 7.545 (0.552) | 8.893 (0.508) |
| <i>L_CAPITAL</i> | 0.498 (0.330) | 0.498 (0.291) | 0.604 (0.282) | 0.408 (0.252) | 0.709 (0.301) | 0.721 (0.206) |
| <i>L_LOAN</i> | 0.656 (0.206) | 0.723* (0.179) | 0.899 (0.053) | 0.727 (0.132) | 0.850 (0.069) | 0.692 (0.181) |
| <i>L_PAR</i> | 0.052 (0.080) | 0.045 (0.043) | 0.042 (0.038) | 0.052 (0.043) | 0.046 (0.026) | 0.032 (0.069) |
| <i>L_DEBT</i> | 1.659 (10.200) | 2.463 (2.629) | 2.090 (2.634) | 2.666 (2.170) | 0.697 (0.937) | 1.317 (2.513) |
| <i>L_SAVINGS</i> | 0.142 (0.222) | 0.144 (0.222) | 0.090 (0.239) | 0.159 (0.216) | 0.000 (0.000) | 0.052 (0.135) |
| <i>L_SIZE</i> | 14.602 (2.043) | 15.722*** (1.233) | 16.031 (0.451) | 16.198 (0.948) | 14.682 (0.889) | 14.939 (0.902) |
| <i>L_AGE</i> | 7.076 (6.387) | 9.125*** (5.312) | 10.571 (4.353) | 11.276 (4.935) | 2.500 (1.291) | 4.333 (1.506) |

^a Rater 2 is not included due to the limited number of observations (2)

^b Means are estimated for the year for which rating occurred.

^c L stands for the variable lagged one period.

^d Standard errors are in the parenthesis.

* difference in means between rated and non-rated statistically significant at the 10% level,

** difference in means between rated and non-rated statistically significant at the 5% level,

*** difference in means between rated and non-rated statistically significant at the 1% level

Table 3. Random effect estimates of rating impact on sustainability, measured by OSS

| | (1) | (2) | (3) | (4) | (5) | (6) |
|----------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| <i>RATING</i> | -0.044 (0.54) | -0.040 (0.39) | | | | |
| <i>FinAid</i> | | -0.008 (0.06) | | | -0.160 (0.98) | -0.193 (1.12) |
| <i>Rater1</i> | | | 0.089 (0.47) | 0.091 (0.47) | 0.245 (0.99) | 0.279 (1.09) |
| <i>Rater2</i> | | | 0.524 (1.51) | 0.526 (1.49) | 0.678 (1.78)* | 0.713 (1.82)* |
| <i>Rater3</i> | | | 0.004 (0.04) | 0.003 (0.02) | 0.022 (0.20) | 0.023 (0.20) |
| <i>Rater4</i> | | | -0.541 (2.37)** | -0.551 (2.36)** | -0.392 (1.43) | -0.373 (1.33) |
| <i>Rater5</i> | | | 0.133 (0.83) | 0.097 (0.54) | 0.226 (1.21) | 0.193 (0.98) |
| <i>CAPITAL</i> | 0.242 (1.77)* | 0.246 (1.79)* | 0.265 (1.98)** | 0.310 (2.15)** | 0.274 (2.04)** | 0.322 (2.23)** |
| <i>DEBT</i> | -0.006 (0.93) | -0.006 (0.92) | -0.004 (0.67) | -0.004 (0.62) | -0.004 (0.66) | -0.004 (0.60) |
| <i>PAR</i> | 0.479 (1.41) | 0.480 (1.41) | 0.545 (1.65)* | 0.646 (1.88)* | 0.553 (1.68)* | 0.653 (1.91)* |
| <i>LOAN</i> | -0.023 (0.11) | -0.025 (0.12) | -0.075 (0.37) | -0.097 (0.45) | -0.087 (0.43) | -0.115 (0.53) |
| <i>SAVINGS</i> | | | | 0.003 (0.01) | | -0.008 (0.03) |
| <i>SIZE</i> | 0.132 (4.06)*** | 0.132 (4.05)*** | 0.130 (4.04)*** | 0.138 (3.94)*** | 0.131 (4.04)*** | 0.139 (3.94)*** |
| <i>AGE</i> | 0.069 (4.10)*** | 0.069 (4.06)*** | 0.067 (3.94)*** | 0.062 (3.43)*** | 0.068 (3.98)*** | 0.064 (3.48)*** |
| <i>AGE2</i> | -0.002 (4.55)*** | -0.002 (4.51)*** | -0.002 (4.39)*** | -0.002 (3.94)*** | -0.002 (4.44)*** | -0.002 (4.01)*** |
| <i>NGO</i> | 0.212 (1.92)* | 0.212 (1.91)* | 0.206 (1.85)* | 0.229 (1.84)* | 0.208 (1.86)* | 0.234 (1.86)* |
| <i>BANK</i> | -0.145 (0.76) | -0.146 (0.76) | -0.149 (0.78) | -0.172 (0.84) | -0.151 (0.78) | -0.172 (0.84) |
| <i>DEPOSIT</i> | 0.156 (1.16) | 0.156 (1.16) | 0.236 (1.77)* | 0.264 (1.85)* | 0.233 (1.75)* | 0.261 (1.84)* |
| <i>PCDGP</i> | 0.490 (1.53) | 0.489 (1.53) | 0.575 (2.01)** | 0.610 (2.04)** | 0.574 (2.01)** | 0.611 (2.05)** |
| <i>INFLATION</i> | 1.221 (2.78)*** | 1.223 (2.78)*** | 1.271 (3.04)*** | 1.265 (2.94)*** | 1.267 (3.03)*** | 1.255 (2.93)*** |
| <i>Constant</i> | -6.302 (2.39)** | | -7.078 (2.99)*** | -7.518 (3.04)*** | | |
| <i>Year dummy</i> | yes | yes | yes | yes | yes | yes |
| <i>Country dummy</i> | yes | yes | yes | yes | yes | yes |
| <i>Observations</i> | 285 | 285 | 297 | 278 | 297 | 278 |
| <i>Groups</i> | 104 | 104 | 104 | 100 | 104 | 100 |
| <i>Overall R2</i> | 0.547 | 0.545 | 0.546 | 0.554 | 0.545 | 0.554 |
| <i>F-test</i> | 185.23 | 1242.47 | 194.64 | 174.93 | 193.88 | 1081.28 |
| <i>Rho</i> | 0.434 | 0.441 | 0.468 | 0.492 | 0.478 | 0.503 |
| <i>Breusch-Pagan</i> | 25.65 | 25.60 | 31.63 | 25.61 | 32.27 | 26.31 |

Absolute value of T statistics in parentheses * significant at 10%; ** significant at 5%; *** significant at 1%

Table 4. Random effect estimates of rating impact on outreach, measured by *NAB*

| | (1) | (2) | (3) | (3) |
|----------------------|---------------------|---------------------|---------------------|---------------------|
| <i>RATING</i> | 0.162 (1.75)* | 0.283 (2.56)** | | |
| <i>FinAid</i> | | -0.295 (1.96)** | | -0.084 (0.43) |
| <i>Rater1</i> | | | -0.071 (0.29) | 0.014 (0.04) |
| <i>Rater2</i> | | | 0.055 (0.12) | 0.139 (0.27) |
| <i>Rater3</i> | | | 0.064 (0.56) | 0.078 (0.66) |
| <i>Rater4</i> | | | -0.274 (0.92) | -0.197 (0.57) |
| <i>Rater5</i> | | | 0.052 (0.22) | 0.094 (0.37) |
| <i>CAPITAL</i> | 0.411 (2.16)** | 0.419 (2.21)** | 0.533 (2.75)*** | 0.533 (2.74)*** |
| <i>DEBT</i> | -0.010 (1.25) | -0.010 (1.23) | -0.008 (0.91) | -0.008 (0.91) |
| <i>PAR</i> | 0.459 (1.07) | 0.428 (1.01) | 0.381 (0.86) | 0.372 (0.84) |
| <i>LOAN</i> | 1.403 (5.19)*** | 1.345 (4.98)*** | 1.320 (4.76)*** | 1.308 (4.69)*** |
| <i>SAVINGS</i> | 0.291 (1.02) | 0.297 (1.05) | 0.282 (0.97) | 0.286 (0.99) |
| <i>SIZE</i> | 0.869 (15.23)*** | 0.864 (15.16)*** | 0.876 (15.43)*** | 0.874 (15.35)*** |
| <i>AGE</i> | 0.004 (0.28) | 0.005 (0.29) | 0.004 (0.28) | 0.004 (0.28) |
| <i>NGO</i> | 0.288 (1.14) | 0.289 (1.14) | 0.266 (1.11) | 0.266 (1.10) |
| <i>BANK</i> | -0.681 (1.76)* | -0.684 (1.75)* | -0.666 (1.80)* | -0.666 (1.79)* |
| <i>PCGDP</i> | 0.280 (0.75) | 0.325 (0.88) | 0.115 (0.33) | 0.118 (0.34) |
| <i>INFLATION</i> | -0.138 (0.27) | -0.086 (0.17) | -0.266 (0.51) | -0.265 (0.51) |
| <i>Constant</i> | -8.173 (2.59)*** | -9.752 (3.18)*** | | |
| <i>Year dummy</i> | yes | yes | yes | yes |
| <i>Country dummy</i> | yes | yes | yes | yes |
| <i>Observations</i> | 319 | 319 | 334 | 334 |
| <i>Groups</i> | 116 | 116 | 116 | 116 |
| <i>Overall R2</i> | 0.892 | 0.891 | 0.891 | 0.891 |
| <i>F-test</i> | 1083.02 | 1084.23 | 17382.76 | 17113.79 |
| <i>Rho</i> | 0.790 | 0.797 | 0.775 | 0.759 |
| <i>Breusch-Pagan</i> | 88.24 | 90.11 | 98.07 | 88.69 |

Absolute value of T statistics in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 5. OLS of rating impact on log changes in liability and equity.

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|------------------------|--------------------|--------------------|--------------------|--------------------|---------------------|---------------------|---------------------|---------------------|
| | LiabCh | LiabCh | LiabCh | LiabCh | EqCh | EqCh | EqCh | EqCh |
| <i>Constant</i> | -2.859 (0.46) | -2.870 (0.46) | -2.263 (0.37) | -2.198 (0.36) | 3.917 (0.69) | 3.887 (0.68) | 3.711 (0.65) | 3.692 (0.65) |
| <i>RATING</i> | -0.161 (0.88) | -0.038 (0.16) | | | 0.042 (0.38) | 0.004 (0.03) | | |
| <i>FinAid</i> | | -0.269 (0.81) | | -0.385 (1.06) | | 0.082 (0.41) | | 0.028 (0.13) |
| <i>Rater1</i> | | | -0.666 (1.45) | -0.376 (0.70) | | | 0.441 (1.56) | 0.419 (1.27) |
| <i>Rater2</i> | | | -0.927 (1.15) | -0.627 (0.73) | | | -0.453 (0.91) | -0.475 (0.90) |
| <i>Rater3</i> | | | 0.024 (0.10) | 0.084 (0.33) | | | 0.092 (0.61) | 0.088 (0.56) |
| <i>Rater4</i> | | | -0.786 (1.07) | -0.424 (0.52) | | | 0.324 (0.79) | 0.297 (0.64) |
| <i>Rater5</i> | | | 0.789 (2.06)** | 0.975 (2.31)** | | | -0.209 (0.90) | -0.223 (0.86) |
| <i>L_CAPITAL</i> | 1.042 (3.62)*** | 1.048 (3.64)*** | 0.943 (3.28)*** | 0.944 (3.28)*** | -0.423 (2.05)** | -0.428 (2.06)** | -0.436 (2.11)** | -0.437 (2.10)** |
| <i>L_DEBT</i> | -0.015 (1.06) | -0.015 (1.05) | -0.015 (1.06) | -0.016 (1.08) | 0.019 (1.41) | 0.019 (1.39) | 0.019 (1.42) | 0.019 (1.41) |
| <i>L_LOAN</i> | 0.773 (1.70)* | 0.843 (1.81)* | 0.920 (1.99)** | 0.968 (2.08)** | 0.375 (1.34) | 0.354 (1.24) | 0.313 (1.09) | 0.309 (1.07) |
| <i>L_PAR</i> | 0.404 (0.37) | 0.357 (0.33) | 0.466 (0.43) | 0.367 (0.34) | -0.705 (0.95) | -0.692 (0.93) | -0.794 (1.07) | -0.785 (1.05) |
| <i>L_SAVINGS</i> | 1.382 (3.06)*** | 1.324 (2.89)*** | 1.393 (3.12)*** | 1.359 (3.04)*** | -0.002 (0.01) | 0.014 (0.05) | -0.022 (0.08) | -0.020 (0.07) |
| <i>L_SIZE</i> | -0.132 (2.01)** | -0.133 (2.01)** | -0.150 (2.29)** | -0.146 (2.24)** | -0.148 (3.79)*** | -0.147 (3.76)*** | -0.148 (3.78)*** | -0.148 (3.77)*** |
| <i>L_AGE</i> | -0.008 (0.65) | -0.008 (0.65) | -0.010 (0.81) | -0.010 (0.82) | -0.003 (0.46) | -0.003 (0.46) | -0.002 (0.24) | -0.002 (0.24) |
| <i>NGO</i> | -0.058 (0.26) | -0.064 (0.28) | -0.097 (0.44) | -0.111 (0.50) | -0.004 (0.03) | -0.004 (0.03) | 0.021 (0.17) | 0.022 (0.18) |
| <i>BANK</i> | -0.417 (1.30) | -0.425 (1.32) | -0.393 (1.24) | -0.418 (1.31) | 0.464 (2.36)** | 0.466 (2.37)** | 0.465 (2.38)** | 0.467 (2.37)** |
| <i>L_DEPOSIT</i> | 0.897 (1.56) | 0.991 (1.69)* | 1.598 (2.20)** | 1.595 (2.20)** | -0.395 (1.29) | -0.414 (1.34) | -0.545 (1.53) | -0.544 (1.52) |
| <i>PCGDP</i> | -0.266 (0.23) | -0.292 (0.26) | -0.459 (0.41) | -0.480 (0.42) | -0.197 (0.29) | -0.191 (0.28) | -0.144 (0.21) | -0.142 (0.21) |
| <i>INFLATION</i> | 2.282 (0.85) | 2.371 (0.88) | 1.673 (0.62) | 1.621 (0.60) | -2.181 (1.41) | -2.214 (1.43) | -2.358 (1.51) | -2.355 (1.50) |
| <i>Year dummies</i> | yes | yes | yes | yes | yes | yes | yes | yes |
| <i>Country dummies</i> | yes | yes | yes | yes | yes | yes | yes | yes |
| <i>Observations</i> | 178 | 178 | 178 | 178 | 190 | 190 | 190 | 190 |
| <i>R2</i> | 0.83 | 0.83 | 0.84 | 0.84 | 0.46 | 0.46 | 0.48 | 0.48 |
| <i>Adjusted R2</i> | 0.751 | 0.751 | 0.757 | 0.757 | 0.246 | 0.241 | 0.249 | 0.243 |
| <i>F-test</i> | 11.08 | 10.86 | 10.68 | 10.52 | 2.14 | 2.09 | 2.08 | 2.01 |

Absolute value of t statistics in parentheses * significant at 10%; ** significant at 5%; *** significant at 1%