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Profit status of microfinance institutions and incentives for earnings management☆

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ABSTRACT

We theorize that for-profit microfinance institutions (MFIs) have higher incentives to use earnings management techniques when compared to their not-for-profit counterparts. Indeed, we show empirically that, when facing a distress period, for-profit MFIs are more likely to recognize impairment loan loss provisions than not-for-profit ones in about 0.8% of assets. This is consistent with the notion that those institutions are employing "big bath" accounting practices. Finally, using the 2008 crisis as an exogenous shock and country-level recessions as an exogenous measure of distress, we replicate our results.

1. Introduction

There is a great deal of discussion in microfinance literature about what is the best way for Microfinance Institutions (MFIs) to be structured in order to enhance both outreach and sustainability. While some argue for the not-for-profit model (Olivares-Polanco, 2005), others offer a different perspective on the same subject by advocating for a not-for-profit alternative (Hermes et al., 2011).

While it is clear that the difference in the legal structure of an MFI changes its incentives (Leite et al., 2019), up to this point, to the best of our knowledge, no investigation has been carried out on whether or not this difference in incentives impacts earnings management practices. Hence, in this paper, we aim to the following question: Does the profit status of an MFI affect its incentives for earnings management?

This is an important question, first for research in accounting, due to the fact that the microfinance market provides an ideal setting to test the effect of profit orientation on the likelihood of adopting earnings management practices. Moreover, this question is also of importance for the fields of finance and development economics where the usage of financial information of MFIs to test several relations is widespread. However, this comes with the assumption that both for-profit and not-for-profit MFIs have the same

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incentives to provide financial statements with similar levels of earnings management, which, we argue, might not be the case.

We show that for-profit MFIs, when facing a distress period, increase more their impairment provisions when compared to their not-for-profit counterparts. We put forward two possible explanations for this behavior: for-profit MFIs are either "cleaning" the balance sheet of previously unrecognized loans that should have been impaired (Giner and Pardo, 2015), or they increase present impairment provisions to reduce future provisions and improve performance in, what they judge, will be a more favorable moment (Kirschenheiter and Melumad, 2002).

The robustness of our results is first assessed by estimating a propensity-score matching model, which presents similar results to our main estimation. Second, we use alternative measures of distress and abnormal loan loss impairment provision, and these alternative estimations produce similar results. Notwithstanding, we also use country-level recessions as an exogenous measure of distress and the 2008 financial crisis as an exogenous shock, and our results also hold in these scenarios.

Moreover, we show that the possible alternative explanation that for-profit MFIs are more impacted by distresses does not hold. Specifically, there is no consistent difference in the write-offs of for-profit and not-for-profit MFIs due to distresses. Given that impairments are provisions for loan losses, we are therefore able to refute this alternative explanation. As such, our results show there is a difference between for-profit and not-for-profit MFIs in the timing of the recognition, but not in the write-offs per se.

Theoretical definitions of "earnings management" (Schipper, 1989; Healy and Wahlen, 1999) indicate that there are incentives of earnings management by non-for-profit MFIs, since managers can intervene to obtain private gains, notwithstanding their not-for-profit status. In our paper, using several different empirical techniques, we contribute to the current literature by showing that, although managers of not-for-profit MFIs have such incentives, for-profit MFIs tend to incur more in earnings management using impairment loan loss provisions.

The other contribution is that there is a big discussion in the microfinance literature on whether or not the legal structure of an MFI changes its incentives (Leite et al., 2019; Goodell et al., 2020). We answer this question by analyzing the use of impairment provisions by for-profit and not-for-profit MFIs.

This paper is structured as follows: we first present a literature review and then a stylized model to showcase the central intuition behind our proposition. We proceed to define our empirical strategy and to present the main results while addressing a possible alternative explanation, two alternative measures of distress and abnormal impairments. Finally, we use country-level recessions as an exogenous measure of distress and the 2008 crisis as an exogenous shock. The last section concludes the paper.

2. Literature review

2.1. Microfinance institutions

Microfinance institutions (MFIs) emerged in the 1970s as a way to alleviate poverty by providing credit to small entrepreneurs aiming to promote economic growth. Moreover, these institutions promised to increase access to the financial market, improve gender equality, and strengthen communities (Armendáriz and Morduch, 2010). After the Grameen Bank of Bangladesh, several similar initiatives appeared around the world and the microfinance industry is currently estimated at $60–100 billion, with 200 million clients (The World Bank, 2015).

Such quick expansion of MFIs led some of them to increase both in size and in complexity, thus raising the discussion on whether or not these institutions are sustainable in the long-run. Roberts (2013) shows that a stronger for-profit orientation corresponds with higher interest rates for MFI clients. However, this does not contribute to an improved level of sustainability because stronger profit orientation is also associated with higher MFI costs.

In order for not-for-profit MFIs to survive, they demand subsidies from governmental institutions. As such, on the one hand, MFIs are allowed to expand their client base and fulfill their mission but, on the other hand, this is also associated with a decline in loan portfolio quality. Chakravarty and Pylypiv (2015) found that private funding is positively related to MFIs' abilities to screen borrowers and to monitor borrower repayment rates, and Karaivanov (2018) provided a theoretical foundation to this result.

In general, MFIs supply credit for individuals on the margin of the financial market who are unable to offer any assets as collateral and thus have an inelastic demand for credit (Morduch, 2000). D'Espallier et al. (2013) provide evidence that firms strategies to achieve financial self-sufficiency differ substantially across regions on, for example: interest rates, client net worth, and the share of female borrowers.

Regarding differences between for-profit and not-for-profit MFIs, a recent study (Leite et al., 2019) has demonstrated that both can be sustainable, but for-profit MFIs charge higher interest rates when compared to not-for-profit MFIs. Notwithstanding, the same study also showed that for-profit MFIs give larger loans, thus serving a different portion of the population, i.e. "the richest of the poor".

Additionally, Goodell et al. (2020) has investigated whether the difference between not-for-profit and for-profit status impacts the financial transparency of firms supplying public goods. The authors show that there is evidence for a broad sample of MFIs across many countries that financial transparency is positively associated with for-profit status.

Moreover, when compared to their for-profit counterparts, not-for-profit MFIs act more as "motivated agents" (Karaivanov, 2018). Leite and Civitarese (2019) provided evidence that in countries with lower levels of female empowerment, not-for-profit MFIs increased more their female portfolio share. Thus, not-for-profit MFIs have a different incentive scheme when compared to for-profit MFIs.

Despite its social objective, MFI (whether for profit or not) are subject to the same accounting rules which allow managing their earnings. The next subsection discusses those accounting techniques.

2.2. Earnings management

Earnings management occurs when managers use their subjective judgment in financial reporting in order to alter other stakeholders' judgments about the true company performance (Healy and Wahlen, 1999). Thus, earnings management can be defined as "non-neutral financial reporting in which managers intervene intentionally in the financial reporting process to produce some private gain" (Schipper, 1989). By manipulating discretionary accruals, without any direct cash flow consequences, managers can to engage in opportunistic behavior. On the other hand, Zang (2012) showed an empirical study that managers' trade-off decisions between real earnings manipulation and accrual-based earnings management are influenced by the relative costs and timing of such decisions.

One type of earnings management is denominated "big bath accounting". The main goal of "big bath accounting" is to reduce current earnings in favor of future earnings (Giner and Pardo, 2015). For example, when a company has low earnings in a given year and thus cannot achieve a predetermined target of earnings, a manager could take discretionary accounting decisions in order to reduce even further the current period's earnings (Healy and Wahlen, 1999; Kirschenheiter and Melumad, 2002). In such situations, companies have incentives to use "big bath accounting" for two main reasons: (i) companies are penalized relatively the same way by the market whether they miss their earnings mark by a little or by a lot (Jordan and Clark, 2004), and (ii) "big bath" increases the probability of meeting future earnings' targets (Healy and Wahlen, 1999; Kirschenheiter and Melumad, 2002).

In 2001, the Statement of Financial Accounting Standards No. 142 (SFAS 142) issued the initial adoption of goodwill impairment tests in the United States, eliminating the practice of periodic amortizations. Henceforth, "big bath" accounting theory has been used to investigate the discretionary usage of impairment provisions. For example, it has been shown that companies that had lower financial results tended to reduce goodwill at the time of the initial adoption of the standard (Beatty and Weber, 2006). Moreover, small firms experienced a significantly greater negative impact and are much more likely to use "big bath" when compared to larger firms (Sevin and Schroeder, 2005).

Hence, it is no surprise that an association between impairment usage and "big bath" is well established in the accounting literature (Elliott and Shaw, 1988; Giner and Pardo, 2015; Laskaridou et al., 2014; Riedl, 2004). Additionally, several studies regarding the usage of "big bath" accounting techniques have found a positive correlation between downward earnings management and chief executive officer (CEO) changes (Masters-Stout et al., 2008; Ramanna and Watts, 2012; Strong and Meyer, 1987). New CEOs tend to recognize losses in the first years of their management as caused by the predecessor. In this way, they avoid the perception that such losses may be related to new management and increase the probability of meeting future earnings' targets. Therefore, the literature has established a link between the management of a firm and the usage of "big bath accounting".

As discussed in the previous subsection, not-for-profit MFIs have a different incentive scheme when compared to for-profit MFIs. Thus, it stands to reason that they are reasonably expected to have different incentives to manage their earnings. While many studies have investigated earnings management in for-profit institutions, there are still few studies addressing earnings management in not-for-profit institutions (Tan, 2011; Verbruggen and Christiaens, 2012). Although it is a fact that not-for-profit institutions do not aim to maximize their profits (because they do not have shareholders who expect a profit), they are still motivated to manage their earnings, mainly due to intrinsic reasons (not extrinsic ones, such as increasing profits for redistribution for shareholders or increasing their share prices).

Hence, not-for-profit institutions could use accounting discretion to manage earnings for several reasons. Three examples among them include: (i) improving their efficiency ratios (Jones and Roberts, 2006; Tan, 2011); (ii) avoiding taxes – although most not-for-profit institutions are tax-exempt, some of their earnings can be taxable (Hofmann, 2007; Omer and Yetman, 2007; Verbruggen and Christiaens, 2012); (iii) increasing the likelihood of receiving donations or funds (Tan, 2011).

2.3. Impairments as an earning management tool of financial firms

The Jones (1991) model is one of the most commonly applied models for the assessment of earnings management (Huang et al., 2019). This model is mainly used for non-financial firms, since it relies on the use of PPE, sales and receivables (i.e., sales not paid in cash). However these accounts do not usually apply to financial firms.

Notwithstanding, Dechow and Dichev (2002) also developed a model for measuring working capital accruals quality. Later, Francis et al. (2005) provided a methodology for using the Dechow and Dichev (2002) model to separate accruals into discretionary and innate (non-discretionary), and then applying that for earnings management. However, using this model for financial firms is also unfeasible due to the same reasons as discussed in the previous paragraph.

Thus, it is not a surprise that studies using these models usually exclude financial firms from their samples. Instead, studies regarding earnings management in financial firms usually focus on "loan loss provisions since they are the most relevant accrual and the discretionary component attached to them is rather relevant" (Ceccobelli and Giosi, 2019).

An example of such approach is a study by Peetathawatchai and Acaranupong (2012) which investigates whether efficiency versus opportunism dominates accounting for impairment among firms listed in Thailand. The paper shows that "management opportunistically recognizes impairment losses to smooth earnings when earnings increase." As such, this paper provides evidence that impairment provisions are indeed used opportunistically as an earnings management technique.

Although changes in impairments are used in order to assess the earnings management of a financial institution (Cohen et al., 2014), estimating the discretionary accruals of the impairment provisions for loan loss, usually called abnormal loan losses, is also of importance for estimating the earnings management of a financial firm. The Kanagaretnam et al. (2010) model is one of the most popular models used for the estimation of the abnormal impairment losses (Hong et al., 2019). As follows, in this paper we use two metrics to compare the earnings management practices of MFIs: both estimated coefficients of the difference in impairment

provisions and the difference in abnormal impairment provisions.

The next section presents a model which showcases how the difference in incentives between for-profit and not-for-profit MFIs impacts the likelihood of using earnings management techniques, such as impairment provisions.

3. Theoretical foundation

We now present a stylized model which formalizes the concepts and intuitions proposed in Section 2. Specifically, we define a measure of distress of a microfinance institution as:

$$D: = R^P - R^T,$$

where R^P is the predicted return of an MFI and R^T is the true return and $D \in \Re$. In our model, we treat the concept of 'return' as a loose concept, which could be interpreted as the revenue of the MFI, its net income or any other relevant financial information. This loose definition enables us to generalize our results for a greater number of distress situations which an MFI could face.

Let $U(D, P)$ be the utility for an MFI to manage its earnings, and define it as the following function:

$$U(D, P): = w^I D + \mathrm{Pw}^E D - u,$$

with w^I being the weight given by the MFI to its internal pressures for reaching $R^T = R^P$, and w^E being the external pressures from shareholders. Further we assume that w^I and w^E are both being normally distributed ($w^I \sim N(\mu_I, \sigma_I^2)$ and $w^E \sim N(\mu_E, \sigma_E^2)$), with their means being strictly positive. In addition, we also include a parameter $P \in \{\varepsilon, 1\}$, for an arbitrary $\varepsilon < 1$, to denote the expected effect of the profit status of the MFI: if a MFI is a not-for-profit institution, then it faces less external pressures to reach $R^T = R^P$ since shareholders do not expect a profit, thus $P = \varepsilon$. However, if the MFI is for-profit, then $P = 1$. Finally, u is a parameter which captures the intrinsic disutility of earnings management (Zang, 2012), such that an institution which faces no distress ($R^T \geq R^P$) has a negative utility due to earnings management practice. Therefore, it is defined as normally distributed ($u \sim N(\mu_u, \sigma_u^2)$), with its mean value being strictly positive ($\mu_u > 0$).

Given that an MFI will only employ earnings management techniques if $U(D, P) > 0$, we can define a binary outcome $M \in \{0, 1\}$ as

$$\begin{cases} M = 1, \text{ if } U(D, P) > 0 \\ M = 0, \text{ if } U(D, P) \leq 0. \end{cases}$$

The propensity for an MFI to incur in earnings management is the expected value of the partial derivative of $U(D, P)$ regarding the distress D:

$$E\left(\frac{\partial U(D, P)}{\partial D}\right) = E(w^I + \mathrm{Pw}^E) = \mu_I + P\mu_E,$$

which implies:

$$E\left(\frac{\partial U(D, 1)}{\partial D}\right) > E\left(\frac{\partial U(D, \varepsilon)}{\partial D}\right).$$

Fig. 1 displays the results graphically the results. For a for-profit MFI there is a distress level D_1^* which implies $M = 1 \; \forall \; D > D_1^*$, similarly there is a D_2^* for a not-for-profit MFI which implies $M = 1 \; \forall \; D > D_2^*$. The important result is that $D_1^* < D_2^*$. Hence, a for-profit MFI has a greater propensity of releasing financial information that has been subject to earnings management practices than its not-for-profit counterpart. Therefore, we state the following proposition:

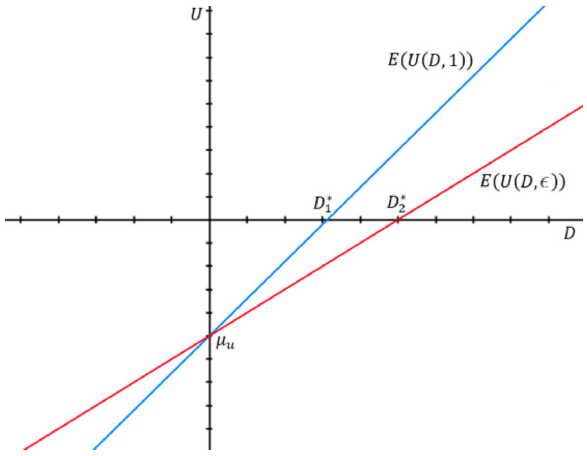

Fig. 1. Theoretical expectation.

Table 1
Variables' description.

Variable name	Description
Impairment	Loan loss impairment provisions in year t divided by total assets.
Profit status	Dummy variable (0 if not-for-profit, 1 if for-profit).
ROA	Stands for return on assets, which equals net income divided by total assets.
PAR30	Stands for portfolio at risk (30 days), which equals portfolio overdue at least 30 days plus renegotiated portfolio, all divided by gross loan portfolio.
PAR90	Stands for portfolio at risk (90 days), which equals portfolio overdue at least 90 days plus renegotiated portfolio, all divided by gross loan portfolio.
Profit margin	Net operating income divided by financial revenue.
Write off ratio	Write-offs for year t divided by average gross loan portfolio.
Alternative distress	Two additional measures: Shumway (2001) and Chava and Jarrow (2004).
Total loans outstanding	Natural logarithm of the total amount of loans outstanding, in USD.
Gross loan portfolio	Natural logarithm of the total amount of loan portfolio, in USD.
NITA	Net income divided by total assets.
TLTA	Total liabilities divided by total assets.
Size	Natural logarithm of the total assets.

Proposition. *Microfinance institutions that are structured as not-for-profit have fewer incentives to manage their earnings when compared to their for-profit counterparts.*

Hence, connecting both the above mentioned proposition and the literature review on the use of loan loss impairments as a form of earnings management in financial institutions, we present the following hypothesis:

Hypothesis. During periods of financial distress, for-profit microfinance institutions are more likely to engage in earnings management practices and recognize higher discretionary impairment losses than their for-profit counterparts.

4. Empirical approach

We test our main proposition using the Microfinance Exchange (MIX) dataset. It consists of 11,523 observations from 1996 to 2014, from 117 countries. Table 2 presents the summary statistics of the main variables used in this study.

We estimated the following panel regression using a GLS estimator:

$$\text{Impairment}_{i,t} = \beta_0 + \beta_1 P_i + \beta_2 D_{i,t} + \beta_3 P_i D_{i,t} + \text{controls} + \text{fe's} + \varepsilon_{i,t}, \quad (1)$$

where D is a measure of distress of the MFI at time t. Since we have defined D: $=R^P - R^T$, it is a straightforward job to measure R^T, but it is less obvious how to measure R^P. For simplicity, we define the "predicted result" as the previous year's result. Hence, if an MFI has a worse performance in year $t + 1$ when compared to the previous year t, it is classified as "being in distress", and it has a $D > 0$. We use both the net income before taxes normalized by the assets (ROA) and the net income before taxes as a measure of performance. Hence, if the MFI has a ROA of 0.5 in year t and 0.25 in year $t + 1$ we calculate $D = 0.5 - 0.25 = 0.25$, which means that the MFI is in distress. Likewise, a negative D means that the MFI faces no distress. All variables used in this study are defined in Table 1.

In our main estimations we use the amount of impairments over assets as our main dependent variable. However, following the

Table 2
Summary statistics.

Variable	For profit					Not for profit					Difference
	Obs	Mean	Std. dev.	Min	Max	Obs	Mean	Std. dev.	Min	Max	
Impairment provision	4817	0.02	0.04	−0.61	0.88	6706	0.02	0.03	−0.34	1.08	0.00***
ROA	4807	0.01	0.12	−2.14	0.80	6694	0.00	0.15	−3.45	1.01	0.01***
P@R 30 days	4229	0.07	0.16	0.00	7.11	5951	0.07	0.13	0.00	5.48	0.00
P@R 90 days	3599	0.05	0.13	0.00	5.13	4785	0.05	0.11	0.00	4.61	0.00
Profit margin	4780	0.00	0.92	−23.08	11.19	6657	−0.02	3.24	−50.43	243.60	0.02
Net income (million USD)	4804	2.34	14.70	−153.00	504.00	0	0.51	7.17	−399.00	120.00	1.83***
Write-off ratio	4221	0.02	0.05	−0.11	1.27	5924	0.02	0.15	−0.13	10.99	0.00
Distress: Shumway (2001)	3792	−5.23	1.10	−8.69	5.20	5237	−4.93	1.43	−42.30	16.27	−0.29***
Distress: Chava and Jarrow (2004)	4799	0.69	0.30	−0.73	4.33	6688	0.65	0.41	−10.34	6.85	0.04***
Total loans outstanding	3698	16.24	2.01	4.34	23.30	5013	15.27	1.80	3.30	22.42	0.98***
Gross loan portfolio	4801	15.95	2.14	4.22	23.30	6693	14.91	1.92	3.30	22.42	1.04***
NITA	4804	0.01	0.12	−2.14	0.80	6690	0.00	0.15	−3.45	1.01	0.01***
TLTA	4809	0.70	0.26	−0.03	2.87	6699	0.65	0.36	−10.27	6.46	0.05***
Size	4814	16.30	2.10	4.29	24.47	6701	15.22	1.87	6.79	22.49	1.08***

Significance levels from two-sample t-tests: $^{***}p < .01$, $^{**}p < .05$, $^{*}p < .10$.

Table 3
Main results.

	Dependent variable: Impairment over assets					
	Distress measure: ROA			Distress measure: Net income		
Profit	.0048***	.0052***	.0030**	.0048***	.0058***	.0036***
	(0.0012)	(0.0012)	(0.0013)	(0.0011)	(0.0012)	(0.0012)
Distress	.1017***	.1259***	.1289***	.0004***	.0004***	.0004***
	(0.0005)	(0.0061)	(0.0092)	(0.0001)	(0.0001)	(0.0001)
Interaction	.0634***	.0195**	.0153*	.0003***	.0009***	.0009***
	(0.0078)	(0.0061)	(0.0092)	(0.0001)	(0.0001)	(0.0001)
# Obs	9037	7030	7030	9028	7022	7022
# MFIs	1732	1492	1492	1731	1491	1491
R^2	0.08	0.17	0.21	0.01	0.08	0.15
Controls?	No	Yes	Yes	No	Yes	Yes
Year FE	No	Yes	Yes	No	Yes	Yes
Age FE	No	Yes	Yes	No	Yes	Yes
Country FE	No	No	Yes	No	No	Yes
Region FE	No	Yes	Yes	No	Yes	Yes

Standard errors in parentheses. Significance levels: ***$p < .01$, **$p < .05$, *$p < .10$. *Interaction* denotes *Profit* × *Distress*, which can be interpreted as how much more the distress affects the *Profit* coefficient (hence for-profit MFIs), since *Interaction* = *Distress* if, and only if, *Profit* = 1.

discussion in Section 2.3, we also analyze the abnormal impairments as a robustness measure in Section 7.

The controls are the portfolios at risk (both 30 and 90 days) and the profit margin, which function as "risk measures" that can affect the impairment for loan losses. Additionally, P is a dummy variable which has the value of 1 if an MFI is a for-profit institution, and it assumes a value of 0 if it is a not-for-profit institution.

For robustness, we use year, country (which captures the heterogeneity in accounting regulation in our sample), region (Africa, East Asia and the Pacific, Eastern Europe and Central Asia, Latin America and the Caribbean, Middle East and North Africa and South Asia) and age (1–4 years, 4–8 years, and 8+ years) fixed effects.

Overall, the results show that while the return on assets (ROA) is positive for for-profit MFIs in our sample (95% CI = [.005,.012]), it is not statistically different from zero for not-for-profit MFIs (95% CI = [−.003,.004]), which is in line with the assumption of our model that for-profit MFIs face more pressure to achieve better financial performance.

We have chosen to use the impairment provisions for loan losses, normalized by the assets, as a dependent variable due to the fact that their calculation and recognition on the balance sheet is subject to a number of subjective choices by the institutions. As such, impairment provisions become an "obvious candidate" for a variable representing an earnings management tool.

5. Results

5.1. Main results

Table 3 presents the results of the estimations. The results are in line with our proposition: the level of distress affects more for-profit MFIs than their not-for-profit counterparts, since the interaction is positive and significant in all models.

Therefore, the impact of the distress level on the recognition of impairment losses is higher for for-profit MFIs than not-for-profit-ones. In other words, for-profit MFIs recognize more losses during "bad times". This result suggests that these MFIs are using "big bath accounting" by recognizing impairment losses during "bad times" so that they can anticipate possible future losses and enhance future earnings. These results corroborate prior findings by Peetathawatchai and Acaranupong (2012) showing that when profits tend to decrease, firms have tendency to anticipate losses provisions.

We also perform the same tests while winsorizing the independent variable at both the 1st and 99th percentile and 5th and 95th percentile. In both cases, results remained similar (the interaction is significant in all models), showing that outliers are unlikely to drive our results.

5.2. Matching analysis

We proceed to test the robustness of our findings using the Abadie-Imbens nearest neighbor matching estimator (Abadie et al., 2004). We approximate $U(D, P) \sim D_{i,t}P_i$, and then we calculate the dummy variable M as described in Section 3. We can use this variable as a treatment variable, such that when $M = 1$ (i.e. it is a for-profit MFI in distress) the MFI will face more incentives to manage its earnings than when $M = 0$. Further, we used the ROA as the distress variable, so that $D_{i,t} = \text{ROA}_{i,t} - \text{ROA}_{i,t+1}$.

We match the observations using P@R 30 days, P@R 90 days and the profit margin as covariates, and we exactly match the MFI's age bracket, the observation's year and the region (or country) of the MFI. Hence, the control group for an MFI with $M = 1$ is an

Table 4
Results from matching estimations.

	DV: Impairment over assets			
ATE	.0054***	.0049***		
	[4.89]	[4.31]		
ATT			.0088***	.0079***
			[7.08]	[5.53]
N	7030	7030	7030	7030
Match	Region	Country	Region	Country

Z-scores in brackets. Significance levels: ***$p < .01$, **$p < .05$, *$p < .10$.

observation of another MFI from the same year, in the same age bracket and from the same region (or country), with similar portfolios at risk (both 30 and 90 days), and a similar profit margin. Therefore, we estimate two models: one with an exact region match, and the second with an exact country match. Table 4 shows the results for both the average treatment effects and the average treatment effects on the treated.

The results are consistent with the main analysis. The average treatment effect on the treated is around.008, thus the for-profit MFIs, when facing a distress, tended to increase its impairment losses in about 0.8% of their assets.

5.3. Addressing a possible alternative explanation

It could be the case that distress levels impact differently the ability of loan repayment of clients from for-profit MFIs when compared to clients from not-for-profit MFIs. We address this alternative explanation by changing the dependent variable from impairment losses to write-off ratios. While impairment losses can be easily reversed in future periods, this is not the case for write-offs. This fact makes the use of write-offs to manage earnings not practical. Table 5 presents the results.

The results do not support this alternative explanation. In fact, when using ROA as a distress measure, the interaction coefficient has a weak negative value. Consequently, we are able to rule out the alternative explanation that the distress levels differently impact the ability of loan repayment depending on the profit status of the MFI.

5.4. Using alternative measures of financial distress

The concept of financial distress is linked to the idea that certain firms have a higher probability of failing to meet their financial obligations. Based on this assumption, several measures of financial distress have been developed, such as accounting variables to predict the likelihood of bank failure (Shumway, 2001; Chava and Jarrow, 2004) and indexes, like Altman's Z-score (Altman, 1968) or Ohlson's O-score (Ohlson, 1980).

Since our data is comprised mostly of private firms, we do not have market data in order to estimate their financial distress. Thus

Table 5
Results from additional estimations.

	Dependent variable: Write-off ratio					
	Distress measure: ROA			Distress measure: Net income		
Profit	0.0011	0.0017	−0.0016	0.002	0.0026	−0.0006
	(0.0029)	(0.0036)	(0.004)	(0.0029)	(0.0036)	(0.004)
Distress	.0402*	0.0407	0.0424	0.0001	0.0001	0
	(0.0213)	(0.028)	(0.0282)	(0.0003)	(0.0003)	(0.0003)
Interaction	−0.0556	−.0726*	−.0722*	0.0003	0.0002	0.0002
	(0.0347)	(0.0434)	(0.0434)	(0.0004)	(0.0006)	(0.0006)
# Obs	8183	6813	6813	8172	6805	6805
# MFIs	1667	1463	1463	1666	1462	1462
R^2	0.01	0.01	0.05	0.01	0.01	0.05
Controls?	No	Yes	Yes	No	Yes	Yes
Year FE	No	Yes	Yes	No	Yes	Yes
Age FE	No	Yes	Yes	No	Yes	Yes
Country FE	No	No	Yes	No	No	Yes
Region FE	No	Yes	Yes	No	Yes	Yes

Standard errors in parentheses. Significance levels: ***$p < .01$, **$p < .05$, *$p < .10$. *Interaction* denotes *Profit* × *Distress*, which can be interpreted as how much more the distress affects the *Profit* coefficient (hence for-profit MFIs), since *Interaction* = *Distress* if, and only if, *Profit* = 1.

we have to rely on models for private firms using accounting variables. One such model is Shumway (2001), which proposes the likelihood of financial distress follows the function:

$$\text{Distress} = f(\text{NITA}, \text{TLTA}, \text{Size}, \Delta\text{Return}), \tag{2}$$

in which NITA refers to the ratio of net income to total assets and TLTA is the ratio of total liabilities to total assets. Since we do not have market data, we use the difference in the return on assets in order to estimate the return. To estimate our model, we use the same weights for each variable as proposed in the original paper.

Notwithstanding, Chava and Jarrow (2004) build upon Shumway (2001) and shows that a more parsimonious model may have a fit as good as the original model. The Chava and Jarrow model is thus simply:

$$\text{Distress} = \text{NITA} - \text{TLTA}. \tag{3}$$

Therefore, we employ both approaches using the main empirical strategy.[1] The results are presented in Table 6.

The results show the same pattern as the main ones. For-profit MFIs in distress recognize more loan loss impairment provisions when compared to their not-for-profit counterparts, regardless of the choice of the distress measure (ROA, Chava and Jarrow, or Shumway). Moreover, again there is a null effect for write-offs, providing evidence that this difference in provisions is not being driven by intrinsic differences between for-profit and not-for-profit MFIs.

5.5. Using abnormal loan loss provisions

As discussed in Section 2.3, an alternative way to measure earnings management is by estimating the discretionary impairments. This method follows an approach similar to the Jones (1991) model, in which regression estimates the non-discretionary impairments and the error is equivalent to the discretionary loan loss provisions.

We use the version of the Kanagaretnam et al. (2010) model as implemented by Hong et al. (2019). We first fit the following OLS model in the same sample that we used for testing the main hypothesis (since this research design feature allows us to better assess the robustness of our results):

$$\begin{aligned}\text{Impairment}_{i,t} = \; & \beta_0 + \beta_1 \text{Impairment}_{i,t-1} + \beta_2 \text{PAR90}_{i,t-1} + \beta_3 (\text{PAR90}_{i,t} - \text{PAR90}_{i,t-1}) \\ & + \beta_4 \text{WriteOff}_{i,t} + \beta_5 \text{Total LoansOutstanding}_{i,t} \\ & + \beta_6 (\text{Total LoansOutstanding}_{i,t} - \text{Total LoansOutstanding}_{i,t-1}) \\ & + \beta_7 \text{LoanComposition}_{i,t} + \theta_t + \varepsilon_{i,t},\end{aligned} \tag{4}$$

and then we proceed to estimate the abnormal impairment using the error of the regression:

$$\text{Abnormal\_Impairment}_{i,t} = \varepsilon_{i,t} = \text{Impairment}_{i,t} - \widehat{\text{Impairment}}_{i,t}. \tag{5}$$

The definition of the variables is presented in Table 1. Results using the three measures of distress (ROA, Chava and Jarrow, 2004; Shumway, 2001) are presented in Table 7.

The results using abnormal loan loss provisions are coherent with the main ones since the interaction is positive in all models. Additionally, the R^2 of the ROA model is much higher than in the Chava and Jarrow (2004) and Shumway (2001) models, thus providing evidence that our main measure of distress captures better the abnormal loan loss impairment provision when compared to the other measures. Taken together, these results show that the change in impairment recognition by for-profit MFIs is discretionary.

6. Robustness: Using exogenous sources of distress

We now assess the robustness of our results using two sources of exogenous variations for MFIs: recessions and the 2008 financial crisis. In the first case, we use country-level recessions as an exogenous measure of distress while in the second case we use the 2008 financial crisis as an exogenous shock by performing a difference-in-differences analysis.

6.1. Recessions as an exogenous measure of distress

We have collected country-level GDP data from the World Bank, and we use it as an exogenous measure for the distress level of MFIs. We define the dummy D_{GDP} as follows:

$$\begin{cases} D_{\text{GDP},t+1} = 1, \text{ if } \text{GDP}_{t+1} - \text{GDP}_t < 0 \\ D_{\text{GDP},t+1} = 0, \text{ if } \text{GDP}_{t+1} - \text{GDP}_t \geq 0. \end{cases}$$

Hence, $D_{\text{GDP},t} = 1$ if the country is in a recession in year t. This variation is exogenous to the MFI, and hence it is an exogenous

[1] The traditional fixed-effects approach cannot be employed when comparing profit status of MFIs, due to collinearity problems (profit status is time invariant). Since both Shumway (2001) and Chava and Jarrow (2004) models were developed using firm fixed-effects this could be an issue for the consistency of our estimation. Therefore we also estimated the multilevel hierarchical model approach used by Leite et al. (2019), which was developed to overcome the aforementioned problem. Results were similar with interactions positive and significant.

Table 6
Results from the estimations with alternative measures of financial distress.

	Impairments		Write-offs	
Profit	−.0109***	.0168***	.0057	−.0195
	(.0027)	(.0047)	(.0102)	(.0183)
Distress	.0185***	.0046***	.0294	.0068
	(.0020)	(.0005)	(.0077)	(.0020)
Interaction	.0182***	.0021**	−.0129	−.0039
	(.0033)	(.0009)	(.0132)	(.0034)
# Obs	7,022	7,022	6,784	6,784
# MFIs	1,491	1,491	1,463	1,463
R^2	.19	.18	.05	.05
Year FE	Yes	Yes	Yes	Yes
Age FE	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
Distress model	Chava and Jarrow	Shumway	Chava and Jarrow	Shumway

Standard errors in parentheses. Significance levels: $***p < .01$, $**p < .05$, $*p < .10$. *Interaction* denotes *Profit* × *Distress*, which can be interpreted as how much more the distress affects the *Profit* coefficient (hence for-profit MFIs), since *Interaction* = *Distress* if, and only if, *Profit* = 1.

Table 7
Results of estimations using abnormal loan loss provisions.

	DV: Abnormal impairments				
Profit	.0036***	.0031***	.0001	−.0096***	.0126***
	(.0008)	(.0008)	(.0001)	(.0026)	(.0045)
Distress	.1511***	.1556***	.1613***	.0109***	.0029***
	(.0066)	(.0066)	(.0066)	(.0019)	(.0005)
Interaction	.0296***	.0292***	.0261**	.0140***	.0018**
	(.0105)	(.0104)	(.0103)	(.0033)	(.0008)
# Obs	5,830	5,795	5,795	5,797	5,793
# MFIs	1,319	1,310	1,310	1,309	1,309
R^2	.15	.17	.22	.08	.08
Controls?	No	Yes	Yes	Yes	Yes
Year FE	No	Yes	Yes	Yes	Yes
Age FE	No	Yes	Yes	Yes	Yes
Country FE	No	No	Yes	Yes	Yes
Region FE	No	Yes	Yes	Yes	Yes
Distress model	ROA	ROA	ROA	Chava and Jarrow	Shumway

Standard errors in parentheses. Significance levels: $***p < .01$, $**p < .05$, $*p < .10$. *Interaction* denotes *Profit* × *Distress*, which can be interpreted as how much more the distress affects the *Profit* coefficient (hence for-profit MFIs), since *Interaction* = *Distress* if, and only if, *Profit* = 1.

measure for the distress. Therefore, we consider that MFIs in countries during a recession are more distressed than the counterfactual (i.e., MFIs in a country which is not in a recession). We then estimate the following model between the years 2004 and 2014:

$$\text{Impairment}_{i,t} = \beta_0 + \beta_1 P_i + \beta_2 D_{\text{GDP},t} + \beta_3 P_i D_{\text{GDP},t} + \text{fe}'s + \varepsilon_{i,t}. \quad (6)$$

Table 8 presents the results. We found that for-profit MFIs during recessions recognize more impairment loan loss provisions than their not-for-profit counterparts, which is in agreement with our main results. Moreover, we again show that there is no significant difference in write-offs between these MFIs.

By using recessions as an exogenous measure of distressed for MFIs, we replicate our main results showing that for-profit MFIs recognize more impairment loan loss provisions, but do not recognize more write-offs. This is evidence of the usage of earnings management techniques by for-profit MFIs.

6.2. The 2008 financial crisis as an exogenous shock

We now proceed to estimate a different robustness analysis of our results. Namely, we exploit the influence of the exogenous shock of the 2008 financial crisis on the impairment provisions. If both for-profit and not-for-profit MFIs were equally affected by the crisis, they are expected to recognize the same ratio of impairment loan losses provisions. Hence, if there is a difference in the

Table 8
Results from estimations using $D_{GDP,t}$ as an exogenous measure of distress

	Impairment				Write-off ratio			
Profit	.0029***	.0031***	.0015	.0013	.0073	.0061	.0031	−.0033
	(.0011)	(.0011)	(.0012)	(.0011)	(.0060)	(.0060)	(.0069)	(.0033)
$D_{GDP,t}$	.0032**	.0007	−.0006	−.0011	.0080	.0029	.0018	−.0018
	(.0014)	(.0015)	(.0016)	(.0017)	(.0119)	(.0131)	(.0135)	(.0065)
Interaction	.0051**	.0050**	.0050**	.0067***	−.0031	−.0019	.0012	.0078
	(.0021)	(.0022)	(.0022)	(.0023)	(.0185)	(.0186)	(.0186)	(.0089)
# Obs	11,215	11,215	11,215	8,778	10,219	10,219	10,219	8,846
# MFIs	2,071	2,071	2,071	1,780	2,033	2,033	2,033	1,790
R^2	.01	.01	.08	.14	.01	.01	.04	.04
Year FE	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Country FE	No	No	Yes	Yes	No	No	Yes	Yes
Controls	No	No	No	Yes	No	No	No	Yes

Standard errors in parentheses. Significance levels: $^{***}p < .01$, $^{**}p < .05$, $^{*}p < .10$. *Interaction* denotes *Profit* × $D_{DGP,t}$, which can be interpreted as how much more the recession affects the *Profit* coefficient (hence for-profit MFIs), since *Interaction* = 1 if, and only if, *Profit* = 1 and $D_{GDP,t} = 1$.

recognition of impairment provisions, then this fact can only be attributed to earnings management practices.

However, given that our database is composed of many countries, we first have to satisfy the assumption that the 2008 crisis was widespread across the sample used in the estimations. Fig. 2 shows that the 2008 crisis was indeed widespread across our sample of countries with 63% of the 117 countries in our database being in a recession during 2009. Thus, we can use this event as a negative shock that is exogenous to the MFIs.

We proceed to estimate a standard difference-in-differences model:

$$\text{Impairment}_{i,t} = \beta_0 + \beta_1 P_i + \beta_2 \text{Crisis}_t + \beta_3 P_i \text{Crisis}_t + \text{fe}'s + \varepsilon_{i,t}, \tag{7}$$

which is very similar to the model used for the estimation of the main results, but now the distress variable (Crisis) is an exogenous shock. Crisis is a dummy that assumes a value of zero if year ≤ 2007 and 1 if year ≥ 2008.

Fig. 3 presents graphically the impairment provisions of for-profit and not-for-profit MFIs. The assumption of parallel trends is satisfied ($p = .133$), and in the pre-crisis time frame (2001–2007) both groups recognized roughly the same level of impairment provisions. However, after the crisis (2008–2010) there is a significant difference on the recognition of impairment loan losses provisions.

This can be understood as an earnings management practice: by increasing impairment provisions during the crisis, managers can improve the financial position of the MFI in future years. Additionally, this can also be a sign that managers of for-profit MFIs had been under-recognizing the impairment provisions in previous years and now the balance sheet is being "cleaned".

Table 9 presents the results using the 2006–2009 time frame. In the crisis period (2008–2009), for-profit MFIs recognized about 0.35% more of their assets as impairment provisions than the counterfactual. Notice that this figure is robust in all specifications.

We also tested the model for its dependence on the period selection of the estimation. In all four models (2001–2007 vs. 2008–2009, 2001–2007 vs. 2008, 2006–2007 vs. 2008–2009 and 2006–2007 vs. 2008) the interaction was significant and of similar magnitude (see Table 10). Therefore we show that our results are robust to the several different specifications of time frames.

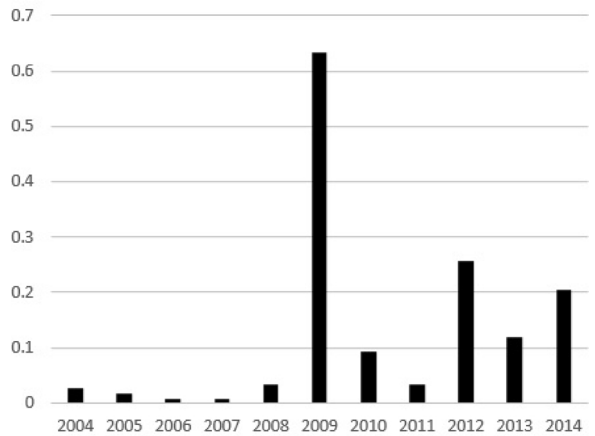

Fig. 2. Ratio of countries in database that were in recession for each year.

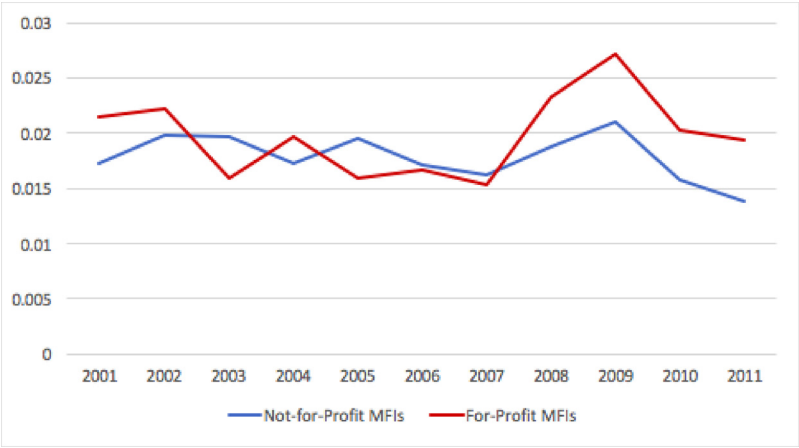

Fig. 3. Impairment provisions (FP vs. NFP MFIs) 2001–2011.

Table 9
Robustness: Main results.

Profit	.0009	.0009	.0009	.0014	−.0004
	(.0018)	(.0018)	(.0018)	(.0018)	(.0020)
Crisis	.0038***	.0018	.0049***	.0019	.0021
	(.0013)	(.0016)	(.0016)	(.0016)	(.0016)
Interaction	.0037*	.0037*	.0035*	.0037*	.0034*
	(.0020)	(.0020)	(.0020)	(.0020)	(.0020)
# Obs	4338	4338	4332	4332	4332
# MFIs	1575	1575	1569	1569	1569
R^2	.01	.01	.01	.03	.11
Year FE	No	Yes	Yes	Yes	Yes
Age FE	No	No	Yes	Yes	Yes
Region FE	No	No	No	Yes	Yes
Country FE	No	No	No	No	Yes
Time-frame	2006–2009	2006–2009	2006–2009	2006–2009	2006–2009

Standard errors in parentheses. Significance levels: ***$p < .01$, **$p < .05$, *$p < .10$. *Interaction* denotes *Profit* × *Crisis*, which can be interpreted as how much more the 2008 crisis affected the *Profit* coefficient (hence for-profit MFIs), since Interaction = 1 if, and only if, *Profit* = 1 and *Crisis* = 1. Time-Frame denotes the estimation window used in each model.

Table 10
Robustness: Alternative time frames.

Profit	.0001	−.0006	.0009	−.0001
	(.0015)	(.0013)	(.0018)	(.0017)
Crisis	.0026	.0010	.0038***	.0024
	(.0012)	(.0016)	(.0013)	(.0015)
Interaction	.0048**	.0049**	.0037*	.0043*
	(.0019)	(.0025)	(.0020)	(.0024)
# Obs	6828	5713	4338	3223
# MFIs	1721	1580	1575	1424
R^2	.01	.01	.01	.01
Pre-crisis	2001–2007	2001–2007	2006–2007	2006–2007
Crisis	2008–2009	2008	2008–2009	2008

Standard errors in parentheses. Significance levels: ***$p < .01$, **$p < .05$, *$p < .10$. *Interaction* denotes *Profit* × *Crisis*, which can be interpreted as how much more the 2008 crisis affected the *Profit* coefficient (hence for-profit MFIs), since *Interaction* = 1 if, and only if, *Profit* = 1 and *Crisis* = 1. Pre-crisis denotes the estimation window used in each model for when *Crisis* = 0, and Crisis is when *Crisis* = 1, both together implying the time-frame, i.e. the estimation window.

Table 11
Robustness: Write-offs as a DV.

Profit	.0001	⁻.0006	.0018	.0017
	(.0020)	(.0018)	(.0024)	(.0021)
Crisis	.0043***	.0006	.0056***	.0021
	(.0014)	(.0016)	(.0017)	(.0017)
Interaction	.0031	.0029	.0018	.0009
	(.0023)	(.0025)	(.0027)	(.0027)
# Obs	6194	5189	3996	2991
# MFIs	1646	1526	1496	1336
R^2	.01	.01	.01	.01
Pre-crisis	2001–2007	2001–2007	2006–2007	2006–2007
Crisis	2008–2009	2008	2008–2009	2008

Standard errors in parentheses. Significance levels: $***p < .01$, $**p < .05$, $*p < .10$. *Interaction* denotes *Profit* × *Crisis*, which can be interpreted as how much more the 2008 crisis affected the *Profit* coefficient (hence for-profit MFIs), since *Interaction* = 1 if, and only if, *Profit* = 1 and *Crisis* = 1. Pre-crisis denotes the estimation window used in each model for when *Crisis* = 0, and Crisis is when *Crisis* = 1, both together implying the time-frame, i.e. the estimation window.

One important assumption for the validity of our results is that the crisis affected equally both for-profit and not-for-profit MFIs. If this is not the case, then the results presented in this section are invalid. We test this assumption using the write-off ratio as a depended variable. Table 11 shows the results.

As in the main results, there is no evidence that for-profit MFIs wrote off more than their not-for-profit counterparts. Hence, the results suggest that both types of MFIs were equally affected by the 2008 financial crisis, which strengthens our causal claim.

7. Conclusion

In this paper, we have assessed if for-profit MFIs have more incentives to use earnings management techniques than not-for-profit MFIs. The main intuition behind the proposition is that while for-profit MFIs face more pressure to achieve a specific performance level since they have shareholders who expect a profit, not-for-profit MFIs are motivated agents.

We provide evidence that, indeed, for-profit MFIs engage in more earnings management. Based on a panel data approach and a matching analysis, we empirically demonstrated this result by showing, using both a panel data approach and a matching analysis, that the effect of a "distress" (a year with smaller profits when compared to the previous year) on the recognition of impairment losses is more significant for MFIs which are structured as for-profit institutions rather than their not-for-profit counterparts.

In addition, consistent with our main results, we find that during the 2008 crisis, for-profit MFIs, indeed, recognized more impairment provisions than their not-for-profit counterparts, without recognizing more write-offs.

The result mentioned above can be understood as the following: for-profit MFIs seem to use a "big bath accounting" approach on recognizing their impairment losses. Hence, they use the "bad times" as an opportunity to "clean" their balance sheet, and enhance future performance.

We have also addressed the alternative explanation that these distress levels differently impact the ability of loan repayment depending on the profit status of the MFI. Our results demonstrate that this is not the case since the distress level appears to have no different impact on the write-off ratio. It is also evidence that the increase in the impairments does not lead to an increase in write-offs, which is a contradiction since impairments are provisions for write-offs.

Finally, this study contributes to not only to the microfinance literature but also to the research on earnings management. Specifically, there is an extensive discussion in microfinance literature about how the profit status of an MFI changes its decision-making process, its goals, and its mission. With this paper, we show that the external pressures for profitability do indeed alter the decision of managing the earnings of for-profit MIFs such that they appear to be more profitable.

Moreover, in the fields of microfinance research and development economics, many times the financial reports of for-profit and not-for-profit MFIs are often used with the assumption that both groups present comparable information. This paper shows that this may not always be the case.

Future research could investigate whether or not other accounts are used in earnings management practices by MFIs, and if other variables, aside from their legal status, impact earnings management decisions of MFIs.

Likewise, the role of subsidies can also be explored in future studies. Not-for-profit MFIs may receive more substantial government subsidies than for-profit ones, which may be one of the causes of the results presented here. Therefore, different levels of subsidies within either for-profit and not-for-profit MFIs may cause heterogeneity in the recognition of impairment losses.

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