

Financial efficiency versus social outreach of Indian microfinance institutions: mission drift or character shift?

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Abstract The efforts of microfinance institutions to improve financial profitability and attract funding from the market may not necessarily conflict with the outreach objective of empowering the poor. In fact, a better-managed financially sound institution may promise a more sustainable effort toward outreach falsifying the occurrence of the trade-off between outreach and financial profitability. The study analyzes the trends in financial indicators reflecting portfolio risk, financial efficiency, productivity and outreach for microfinance institutions in India. The objective of the study is to verify the association between financial performance and outreach. The MIX market data on 46 microfinance institutions for 2005–2014 are used for the analysis. The panel data method with fixed effect model is applied to adjust for the heterogeneity within the sector. The present study finds no evidence of the trade-off between efficiency and outreach objectives in India. The results of the study are important for the investors and policy makers as it provides evidence that increasing outreach will not adversely affect the financial health of the microfinance institutions if they are operationally efficient and productive. The present study draws attention to the fact that the character of MFIs is shifting from unprofessionally managed naïve institutions run by people for the benefit of the people. Most of the MFIs today are professionally run, investor-friendly, profit conscious, or rather profit-driven organizations. This character shift calls for reconsidering the system costs of various subsidies and concessional refinance given to these institutions on a blanket basis.

Keywords Microfinance institutions · MFIs · Financial inclusion · Panel data analysis

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Introduction

Mission drift is the term coined to reflect a tendency reviewed by numerous microfinance institutions to extend larger average loan sizes in the process of scaling-up. Being an important institutional component of the financial inclusion drive, the microfinance sector in India has seen many years of tumultuous growth. In India, the microfinance sector is at the crossroads as the microfinance institutions (MFIs) being listed at the stock market and are given the banking licenses. The question remains as to what have these entities achieved after a decade of their efforts and whether these achievements are consistent with their objectives to justify their existence.

It is often argued that in changing environment, the effort of the MFIs to improve financial efficiency and attract funding from the market may conflict with the outreach objective of empowering the poor. On the other hand, a better-managed financially sound institution promises a more sustainable effort toward outreach if the trade-off between outreach and financial profitability is proved to be a fallacy. The present study tries to verify the association between financial sustainability and outreach objectives of the microfinance institutions in India. An attempt at a formal analysis of financial performance and outreach of MFIs in India is important because the MFI sector in India is not homogeneous. The findings show that there exists a nonlinear relationship between outreach and profitability in the case of Indian MFIs.

The remainder of the study is divided into 5 sections. After the introduction in ‘[Introduction](#)’ section, ‘[Literature Survey](#)’ section discusses the extant literature on this subject, and ‘[Overview of the trends in Selected Financial Indicators in Microfinance Sector](#)’ section provides an overview of the trends in financial indicators of MFIs in India in the recent years. In ‘[Empirical Investigation](#)’ section we present the data and methodology followed by a discussion of results. The findings of the study are summarized with the concluding remarks in ‘[Conclusion](#)’ section.

Literature Survey

The concern about the trade-off between the outreach and financial performance and sustainability of MFIs became prominent with the rising scale and commercialization of MFIs (Ghosh 2013). The studies, addressing the trade-off between the outreach and financial performance, can be categorized into country-specific studies and cross-country studies. Cull et al. (2007) define ‘mission drift’ as the phenomenon where ‘microbanks moved away from serving their poorer clients in pursuit of commercial viability.’ Their study explores the issue as to whether more profitability is associated with a lower depth of outreach to the poor and whether there is a deliberate shift away from serving poor clients to wealthier clients in order to achieve financial sustainability. Their results indicate that as institutions mature and grow, they focus increasingly on clients that can absorb larger loans.

Among the cross-country studies, Mersland (2009) investigates mission drift for a multicountry data of 11 years. It uses average loan size as a main proxy for outreach and the MFIs lending methodology, main market, and gender bias as further mission drift measures. The panel data analysis shows that the average loan size has not increased in the industry as a whole, nor is there a tendency toward more individual loans or a higher proportion of lending to urban costumers. Hermes et al. (2008) focuses on the cost efficiency of microfinance institutions to find convincing evidence that outreach is negatively related to efficiency of MFIs. In various studies, cross country as well as country-specific

evidence of the trade-off between the financial sustainability of the microfinance institutions and their outreach to the poor microfinance clients is found by Hermes (Hermes et al. 2005, 2006, 2009, 2011).

Vanroose and D'Espallier (2013) demonstrates that MFIs serve poorer people in countries with well-developed financial systems. The results suggest that in countries with well-developed financial systems, the two sectors, banks and MFIs, stand in more direct competition with each other. This competition pushes MFIs down the market and makes mission drift by MFIs less likely.

The literature shows that financial performance and level of professionalism attract investments in MFI sector (Mersland and Urgeghe 2013). Armendáriz and Szafarz (2009) study MFIs in Latin America and South Asia. According to their study the mission drift is caused neither because of 'progressive lending' nor because of 'cross-subsidization' but because of the interplay between their own mission, the cost differentials between poor and unbanked wealthier clients, and region-specific characteristics pertaining the heterogeneity of their clientele.

Kar (2012, 2013) finds concerns for 'mission drift' invalid, pointing out that 'several countervailing results also emerged when scaling-up indicators of size and age are included.' However, this study largely fails to validate that the concerns for mission drift were true if it is defined as a distinctive trade-off between increased profit-motivation and depth of outreach of MFIs.

Among the country-specific studies Lafourcade et al. (2005) examine the outreach and financial framework of MFIs in Africa. Ambe Shu and Oney (2014) examine the outreach and performance of the MFIs in Cameroon. Cull et al. (2006) and Morduch (2006) use the MIX database to analyze the profitability and outreach for various countries in the world. Muriuki et al. (2015) explore the sustainability dilemma in mission drift outcome of commercialization and effect on performance of microfinance institutions in Kenya.

Cull et al. (2009a, b) show the more commercially oriented MFI focus on a better-off clientele. MFIs seem in this way to act more and more as pure commercial banks. In this process it has become increasingly unclear which MFIs are actually serving and which objectives they are pursuing. Because of this commercialization, the sector is increasingly criticized (Fernando 2006).

Augsburg and Fouillet (2013) based on the MFI crisis in India, discuss the extent to which donors influence the microfinance sector and identify the role that international organizations play in pushing microfinance institutions away from their primary objective of delivering financial services to the poor. It cautions against the overwhelming push for microfinance institutions to become financially self-sustainable, a push more often than not exerted by donor organizations leading to a mission drift and other the questionable practices employed by institutions.

The empirical studies report conflicting results on the mission drift and trade-off. Some studies indicate that the MFIs effectively financed the 'better-off' poor than the 'starkly' poor (Hulme and Mosley 1996; Coleman 2006; Copestake et al. 2005).

In contrast, Khandker (2005) analyzes poverty alleviation by MFIs in Bangladesh based on panel data analysis and finds that the extreme poor in Bangladesh benefitted more with MFIs. Most of the empirical studies on mission drift in India are based on a cross-sectional analysis for a single year (Agarwal and Sinha 2010). Some others focus on a state-specific (Ghate 2007) or institution-specific issues (Suresha 2015). Chary et al. (2014) examines the performance of selected MFIs in India it indicates a positive relation between efficiency and outreach based on a narrow sample of ten MFIs in India, while Ghatak (2000) examines the welfare effects of the joint liability lending schemes in India.

Pati (2015) finds that there is an unquestionable difference in the operations of the drifted and centered (not-drifted) MFIs and indicates that a growing number of MFIs drifted in recent years.

Sriram (2010a, b) notes that, as the activities scaled up, microfinance moved to a commercial format and questions the moral and ethical fabric on which these institutions are built. Ghosh and Tassle (2008) test the claims that due to the entry of large donors have led to a mission drift phenomenon, whereby microfinance institutions (MFIs) who were previously catering to the poorest agents have drifted toward catering to the ‘better-off’ poor. They explain how the change in the portfolio of a poverty minimizing MFI might be linked to the phenomenon of increasing commercialization through the advent of large profit-oriented donors.

The concern about the ‘mission drift’ in MFIs in India and Bangladesh is expressed by Hulme and Maitrot (2014). They state that ‘microfinance institutions (MFIs) have increasingly focused on financial performance and have neglected, in some cases abandoned, their declared social mission of poverty reduction and empowerment.’

Thus, the empirical studies on India as well as on other countries are divided on the evidence of ‘mission drift.’ As stated by Satish (2015, p 70), ‘one cannot speak of mainstream finance and microfinance, as if they were monolithic and non-differentiated sectors.’

Contributions of the present study Based on the literature survey we find that the relation between outreach, financial efficiency, portfolio risk and profitability of the MFIs is not examined for microfinance sector in India in the context of their legal status and firm type. The microfinance sector in India has been evolved into a heterogeneous sector with diversity in ownership, scale, sources of financing, target clientele, etc. There is a strong need to examine the mission drift in Indian MFIs without ignoring this heterogeneity. The diversity in the character of the MFIs calls for recognition of the firm-level differences among the MFIs instead of treating the MFI sector as a single homogeneous sector. To bridge this literature gap, the present study uses the panel data method to analyze the trade-off between the outreach and financial profitability among the MFIs in India.

The study is particularly useful in the current scenario of the MFI sector in India where the MFIs are being listed on the stock exchanges and are being converted into banking institutions. The linkages between financial performance riskiness and social outreach are relevant when we look at the MFIs from a viewpoint of the public investor.

Overview of the trends in selected financial indicators in microfinance sector

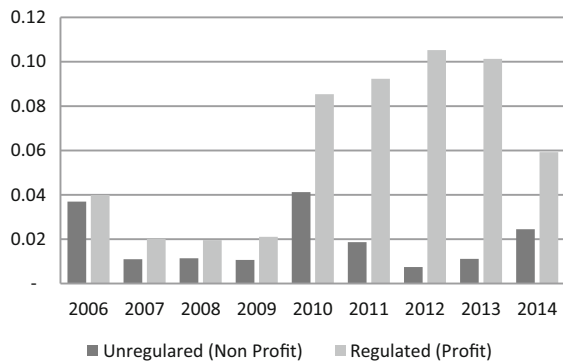
The following analysis is based on the MIX market database. After filtering out the data gaps, the data for 46 MFIs for the period 2006–2014 is used for the analysis. (Annexure 1 gives the names of the MFIs in the sample.) The selected MFIs are classified into three groups depending on the profit level, regulation, and outreach. These categories are (a) profit versus non-profit, (b) regulated versus unregulated, (c) high outreach, medium outreach, and low outreach. As reported in the data, the MFIs in the ‘for-profit’ category are also those which are regulated MFIs and all the MFIs in the category not-for-profit are unregulated MFIs. (The only exception is Asomi Microfinance Pvt. Ltd., which is reported as not-for-profit regulated.)¹ Hence, effectively we have two groups: the for-profit/regulated group and the not-for-profit/unregulated group. Most of the for-profit/regulated MFIs

¹ Annexure 2 provides the regulation status and profit/not-for-profit status of the MFIs in the sample.

Table 1 Composition of the sample

MFI type	Type of MFI (number)	Type of MFI as % of sample (%)
Bank	1	2
Credit Union/ Cooperative	1	2
NBFI	27	59
NGO	15	33
Other	1	2
Rural Bank	1	2
Total	46	100

Fig. 1 Portfolio at risk at 30 days. *Source:* Derived from MIX database on Indian MFIs



are Non Bank Financial Corporations (NBFCs), and most of the not-for-profit/unregulated MFIs are Non Government Organizations (NGOs) (Table 1).

In Figs. 5, 6, 7, and 8, the grouping is based on the outreach scale as defined by MIX database. The database provides three groups of MFIs, high outreach, medium outreach, and low outreach, based on ‘number of active borrowers.’

For each group the yearwise average of four indicators is compared. These four indicators are (1) average portfolio at risk for 30 days, (2) operating cost ratio, (3) average return on assets, (4) average loan size. The selection of these indicators is based on the literature to reflect risk, return, outreach, and cost efficiency of the MFIs.

The portfolio risk depends on the recovery effort as well as the nature of loans given. Empirical studies find evidence of peers successfully monitoring and enforcing joint-liability loans (Karlan 2007). If the loans are extended for medical, consumption purposes the repayment capacity does not increase and the recovery becomes difficult. The portfolio risk not only indicates a higher risk for MFIs, but it also indicates a failure to achieve the objective of the betterment of poor.

Successful MFIs have to be operationally efficient. They have to fully recover the cost of day-to-day operations including salaries and other administrative costs, with program revenues from interest and fees, while reaching large numbers of poor people. Such microfinance institutions have to bring their cost structure in line with spreads available in local markets, controlling loan delinquencies and increasing productivity (Satish 2005).

The set of Figs. 1, 2, 3, and 4 shows financial outreach indicators for the profit/regulated MFIs as against not-for-profit/unregulated MFIs, as per the MIX market data.

Fig. 2 Operating cost. *Source:* Derived from MIX database on Indian MFIs

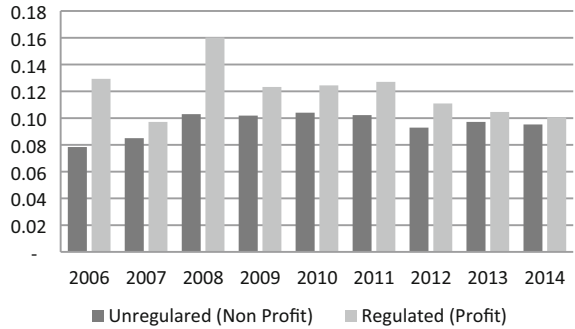


Fig. 3 Return on assets. *Source:* Derived from MIX database on Indian MFIs

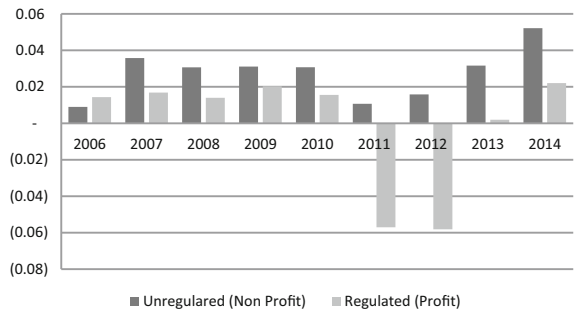


Fig. 4 Average loan size. *Source:* Derived from MIX database on Indian MFIs

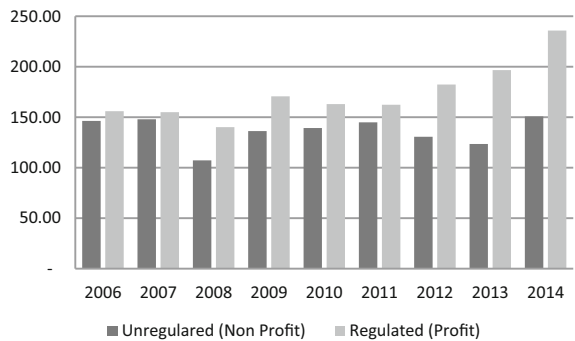


Figure 1 shows that the 30-day portfolio at risk for for-profit/regulated MFIs is higher than the ‘not-for-profit’/unregulated MFIs for all the years under the period of study.²

Figure 2 shows interesting trends in operating expense ratio of the MFIs. For the entire period under consideration, the MFIs in the category of regulated/for-profit show higher operating cost ratios as compared to the unregulated/not-for-profit MFIs. This trend reveals that a study of components of operating costs incurred by the for-profit MFIs is important. It should be noted that the MFIs in ‘for-profit’ category are not essentially booking profits. In the case of regulated MFIs showing high operating cost ratio, it should be verified whether the ease of finding public funding is the reason for laxity in financial efficiency.

² The average for the group is calculated after removing the respective outliers in case of each parameter separately.

Fig. 5 Portfolio at risk. *Source:* Derived from MIX database on Indian MFIs

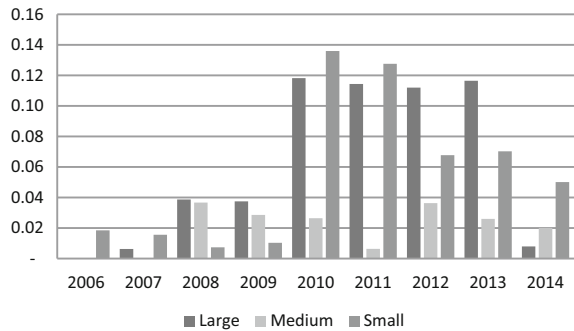
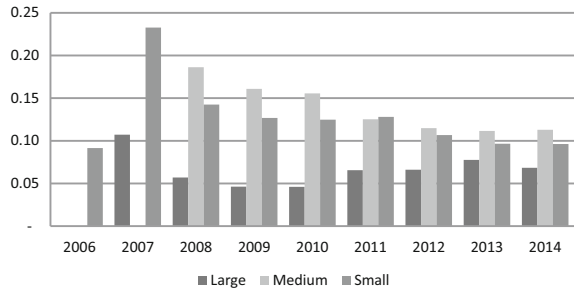


Fig. 6 Operating cost ratio. *Source:* Derived from MIX database on Indian MFIs



The data on return on assets (RoA) in Fig. 3 reveal that the regulated/for-profit MFIs are not actually booking profits in terms of average RoA. In fact, in 2011, and 2012, ‘for-profit’ MFIs have incurred losses, while the ‘not-for-profit’ MFIs have booked profits. For the entire period under the study, the average RoA of the ‘for-profit’/regulated MFIs is lower than the ‘not-for-profit’/unregulated MFIs.

Figure 4 shows that the average loan size of the ‘for-profit’ MFIs is larger than that of the ‘not-for-profit’ MFIs. This indicates lower outreach by the ‘for-profit’/regulated MFIs on an average.

It should be noted that the charts are based on the average of the respective variables for each group. Within each group, the data vary to a great extent. Nevertheless, the data show that on an average the greater outreach is not necessarily associated with lower profitability and higher cost inefficiency.

The MIX database reports the outreach classified into three categories based on outreach: small outreach, medium outreach, and large outreach. The following set of Figs. 6, 7, and 8 shows the above four financial performance and outreach parameters for this group.

The MIX database does not report any MFIs in the medium outreach group until the year 2006. The data on the portfolio at risk at 30 days for this grouping show no consistent trend across the years. Figure 5 shows that the portfolio at risk of small outreach MFIs is highest as compared to the other groups in 2010, 2011, and 2014, while the portfolio at risk of the large outreach MFIs is highest in 2008, 2009, and 2013.

As shown in Fig. 6, the operating cost ratio of the medium outreach MFIs is the highest among the group for 2008–2014, while it is lowest for the MFIs with the large outreach. The MFIs with large outreach are showing higher operational efficiency according to the data.

Fig. 7 Return on assets. *Source:* Derived from MIX database on Indian MFIs

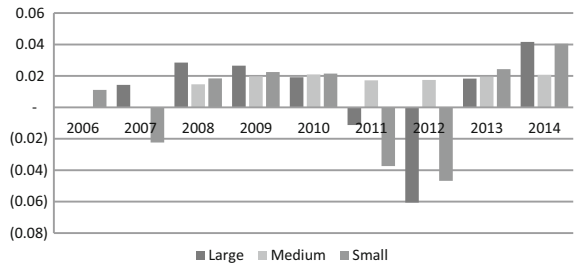


Fig. 8 Average loan size. *Source:* Derived from MIX database on Indian MFIs

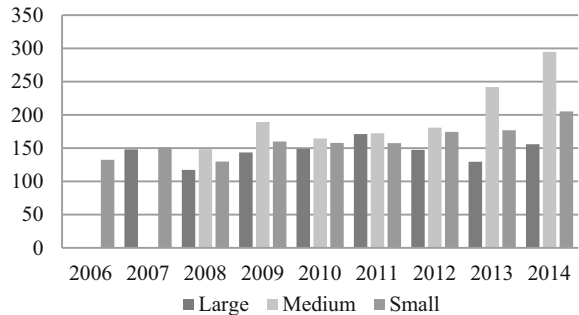


Figure 7 shows that the profits in terms of return on assets have been stable and positive for the medium outreach MFIs within the range of 10–20%, while the return on assets were volatile for the MFIs in small outreach and large outreach category.

The average loan size in Fig. 8 shows that the group average of the average loan size is higher for the medium outreach group, and it is lower for the large outreach group as expected.

The above charts on Indian MFIs give mixed signals on the trade-off between financial performance and outreach for the sample of MFIs in India. This confusing picture can be due to two important reasons. One, complexity of financial performance indicators as each of the components of financial performance is based on separate driving factors. Two, the need to take into account the heterogeneity among the MFIs instead of grouping them in broad categories. Hence, the present study further delves into the panel data analysis to verify the relation between the financial performance and outreach of the MFIs in India.

Empirical investigation

Data

The data used for the empirical analysis are sourced from the MIX market database. The present study considers the MFI sector as a whole and does not categorize it into various groups because of data inadequacy. The limitation of the data availability in the public domain is the constraint.

The data on the following indicators for the Indian Microfinance Institutions are collated from the database. The study focuses on the association between financial profitability in terms of return on assets and the outreach of MFIs. The period for the analysis is

Table 2 List of variables

Variables	Description of variables
Portfolio at risk ratio	Portfolio at risk @30 days (PaR30)
Provision expense ratio	The provision expense ratio = the loan loss provisioning expense/average gross portfolio
Write-off ratio	Value of loans written off/average gross loan portfolio
Operating expense ratio	Operating costs/gross loan portfolio
Cost per borrower	All expenses/the average number of active borrowers
Loan officer productivity	Number of active borrowers/number of loan officers
Number of active borrowers	Number of borrowers having minimum one outstanding loan
Percent of female managers	Female managers to total personnel
Yield on gross portfolio (nominal)	Cash financial revenue from loan portfolio/average gross loan portfolio not adjusted for inflation
Average loan size	Average loan size per borrower = gross loan portfolio/number of active borrowers

2004–2014. The study covers 46 MFIs in India after filtering for the data gaps. The list of MFIs that have been included is provided in [Annexure 1](#).

Methodology

The present study applies panel data method to discover the relation between financial profitability and outreach.

The dependent variables are return on assets, return on equity, and profit margin. Independent variables include a matrix of financial management variables, a matrix of cost variables, a matrix of portfolio quality variables, and three outreach variables, viz. number of active borrowers, percentage of female managers, and average loan size. The variables included in each of the models are presented in [Table 2](#).

Model specification

Measuring the performance of MFIs is a challenging task. Bruett (2005) provides a standard framework for MFI practitioners to develop financial statements and reports so that those statements and reports can be used for meaningful analysis and monitoring financial performance. A collaborative effort of Microrate, a rating agency specializing in microfinance, to invite the Inter-American Development Bank (IDB), the Consultative Group to Assist the Poorest (CGAP), the United States Agency for International Development (USAID), and two other rating agencies—MCRIL and PlaNet Rating—to agree on the names and definitions of a set of commonly used indicators has published a list of 20 definitions of performance indicators.

The present study focuses on the 10 of the most commonly used indicators published by the above group and then highlights the performance of the MFIs against the financial indicators.

These indicators can be classified into four categories, (1) portfolio quality, (2) financial efficiency, (3) productivity, and (4) outreach. The variables used are explained in the following paragraphs.

Hypothesis

The present study hypothesizes that the character of microfinance institutions in India as well as all over the world has shifted away from the social service industry heavily dependent upon the funding and subsidization to the commercial industry thriving on financial sustainability and commercial investors. The financial profitability of the MFIs is looked upon as a key to attract investors, to sustain operational feasibility, and to assure more efficient use of resources and competitiveness with the other non-bank financial institutions. Quayes (2015) and Robinson (2003) emphasize this transformation in the microcredit industry where MFIs achieve outreach and financial sustainability without requiring subsidies.

Being a social lending institution, it is important to verify that the emphasis on profitability does not compromise the portfolio quality, operational efficiency, and most importantly the social outreach. Hence, the present study tries to examine the relationship of each of these variables with the profitability of microfinance institutions.

Following discussion defines the dependent and independent variables and hypothesizes the relationship of each of the variables with the profitability.

Dependent variable is return on assets which is commonly used indicator of profitability for financial institutions. The study uses four indicators of financial sustainability and social outreach. These indicators are based on the Microrate (2011) criteria of measuring financial feasibility of microfinance institutions.

The definition of the independent variables and their relationship with the dependent variable is provided below:

- (1) *Portfolio quality* To measure the portfolio quality of MFIs three variables are used, viz. portfolio at risk at 30 days, write-off ratio and provision expense ratio.
 - (a) *Portfolio at risk for 30 days* Typically the portfolio quality for MFI is measured in terms of portfolio at risk at 30 days (PaR30). This means that the payment is more than 30 days late. This rule is much stricter than what is practiced by commercial banks, but it is justified given the lack of bankable collateral in microfinance (Microrate 2011). This measure is affected by the frequency of the loan repayment and the reporting by the MFIs as many times the restructured loan amount is not reported separately. Based on the finance theory, the portfolio at risk has a positive linear relation with the profitability.
 - (b) *Write-off ratio* The write-off ratio is the extremely important indicator of loan delinquency. Like all performance measures, portfolio at risk can be manipulated. The most common form of doing this is to write-off delinquent loans. Portfolio at risk must therefore always be analyzed together with the write-off ratio. Generally speaking, any portfolio at risk (PaR at 30 days) exceeding 10% should be cause for concern, because unlike commercial loans, most microcredits are not backed by bankable collateral (Microrate 2011). The study uses it along with the portfolio at risk to indicate the financial sustainability. As per the finance logic, higher loan write-off actually shows higher risk and return.
 - (c) *Provision expense ratio* The provision expense ratio is calculated by dividing the loan loss provisioning expense for the period (not to be confused with the

loan loss reserve in the balance sheet) by the period's average gross portfolio. Sometimes the MFIs show tendency of over-provisioning, particularly among the NGOs, in order to hide profits that could undermine access to donor subsidies. On the other hand, by simply scaling back on its provision expenses, an MFI can turn a looming loss into a profit for a year or two. The provisioning also may be resorted to for the purpose of setting-off high profits (Microrate 2011). In India, these tendencies are not observed. Since the proportion of NGOs is high in the sample, we incorporate this ratio. The provision amount is deducted from the profits, so based on the finance logic this ratio is hypothesized to have an inverse linear relation with the return on assets.

- 2) *Financial efficiency indicators* The present study uses two indicators of financial efficiency, viz. operating expense ratio and cost per borrower.
 - (a) *The operating expense ratio* is the ratio of operating costs to the gross loan portfolio. The operating expenses include the administrative and salary expenses, depreciation, and board fees. This ratio measures the institutional cost of delivering loan services. The lower operating expense ratio indicates a higher efficiency of lending. Hence, it is hypothesized that a lower operating expense ratio will lead to higher profitability in terms of ROA.
 - (b) *Cost per borrower* is the ratio of all expenses to the average number of active borrowers. This relates the costs to the outreach measure of a number of borrowers and is independent of the scale of loans. The lower the cost per borrower, the higher the profitability in terms of ROA.
- 3) *Productivity indicator* The MIX market database provides the loan officer productivity indicator. It is calculated by dividing the number of active borrowers (borrowers having at least one current outstanding loan) of an institution by the total number of loan officers. The higher the ratio, the more productive is the institution. This ratio is very high for India. The reasons can be the inclusion of consumer loans (Microrate 2011). The loan officer productivity is expected to have a positive relationship with the ROA.
- 4) *Outreach indicators* Selection of indicators of outreach based on secondary data is a challenging task. The MIX database has many data gaps in these indicators. The present study uses a number of active borrowers, percentage of female managers, and average loan size as indicators of outreach of MFIs. While the increase in the number of active borrowers and in the percentage of female managers indicates higher level of outreach, the increase in the average loan size indicates the lower outreach. Agier and Szafarz (2013) verify the optimal loan size fixed by a gender-biased lender and the loan officer's gender. The yield on portfolio is used as a control variable representing the interest rate environment in the economy.

The relationship between outreach and profitability depends on many exogenous factors and is nonlinear one according to the literature. According to Im and Sun (2015), the relation between outreach and profitability of MFIs depends on the 'institutional logic.' To specify some MFIs follow commercial logic, while others follow social welfare logic, focusing on outreach to the poor: Some rely on commercial logic. Those following commercial logic try to achieve even higher profits and meet shareholders' expectations when their profitability increases. So, they tend to invest resources in serving higher-income borrowers rather than poorer borrowers because higher-income borrowers are a

better target to increase profitability (Armendáriz de Aghion and Morduch 2005). In this case, the profitability can be negatively related to their outreach to the poor. The literature shows that the configurations of the logics of MFIs can change over time, and the change can be affected by organizational practices, individual managers, member pressure groups having conflicting logics (Im and Sun 2015; Besharov and Smith 2014; Battilana and Lee 2014). In practice, the institutional logic or the paradigm of the MFI depends on the type of funding on which they can rely and the bargaining power of the members.

The low reliance on subsidies leads to commercial logic and a higher emphasis on profitability to attract funding from investors in the market. It is expected that larger profits should enable greater outreach by providing services to poorer borrowers. However, the literature documents that higher profitability actually decreases outreach to poorer as more emphasis is placed on the high-end borrowers (Cull et al. 2007; Ashta and Hudon 2009; Yunus 2007; Mersland and Strøm 2010).

Thus, the relationship between MFIs' profitability and outreach to the poor is nonlinear because of the even distribution of different institutional logics. MFIs that pursue a moderate level of profitability will have both more motivation and higher capacity to serve the poor. It is shown by empirical studies (Im and Sun 2015), 'that the relation between profitability and outreach is inverted U-shaped, showing MFIs' likelihood of providing services for poorer borrowers will increase as profitability improves, but under the commercial logic MFIs' likelihood of providing services for poorer borrowers will decline after their profitability crosses a threshold.'

The Indian MFIs under the present study consist of both for-profit and non-profit organizations representing both social welfare and commercial logic. The present study hypothesizes this nonlinear relation between the profitability and outreach of MFIs.

The predictor variables for outreach indicator in this study are squared to account for the curvature, to represent the inverted U-shaped relation between profitability and outreach.

Thus, the model may be formally represented as follows,

$$ROA_{it} = \beta_1 + \beta_2 \text{PORTRISK}_{it} + \beta_3 \text{FINEFF}_{it} + \beta_4 \text{PRODUCTIVITY}_{it} + \beta_4 \text{OUTREACH}_{it} + \beta_5 \text{OUTREACH}_{it}^2 + \varepsilon_{it}$$

where ROA_{it} represents return on assets on MFI i in period t ; PORTRISK_{it} matrix of portfolio risk indicators for MFI i in period t ; FINEFF_{it} matrix of financial efficiency indicators for MFI i in period t ; PRODUCTIVITY_{it} matrix of productivity indicators for MFI i in period t ; OUTREACH_{it} matrix of outreach indicators for MFI i in period t .

The outreach predictor in the above equation is squared to incorporate the nonlinearity of the relation between outreach and profitability. Since the above equation is nonlinear in variables but linear in parameters, the linear regression panel data model is used for the analysis.

Model selection

The study checks for appropriateness of model/estimation procedure by testing for fixed effect versus OLS with F statistic, random effect versus OLS with Breusch-Pagan Lagrange Multiplier test, and fixed effect versus random effect estimation with Hausman test. The results obtained from each of these tests are presented in Table 3. It can be observed from the table that the fixed effects model is selected over OLS and random effects model.

The fixed effects model captures the unobserved heterogeneity among the MFIs in India by emphasizing on the institution-specific effects arising from various factors like

Table 3 Model selection

Fixed effect versus OLS (<i>F</i> test)	Decision	Random effect versus OLS (Breusch-Pagan LM test for random effect)	Decision	Fixed versus random effect (Hausman test)	Decision	Selected model
2.55***	Fixed effect	25.97***	Random effect	0.74***	Fixed effect	Fixed effect

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

geographical location, the scale of operations, nature of lending, local socioeconomic environment.

Results of the empirical analysis

Table 4 provides the summary of results for the panel data analysis.

From Table 4, we observe that

- For the Indian MFIs in the sample, the impact of the increase in portfolio risk, on the profitability in terms of return on assets, is negative and statistically significant. The indicators of portfolio risk, i.e., portfolio risk at 30 days, provision expense ratio, and the write-off ratio, show similar impact.
- The reduction in the operating expenses and a decrease in cost per borrower show the increase in efficiency. The regression coefficients for the expenses are negative and statistically significant. This result is expected, as the reduction in costs results in an increase in financial efficiency and an increase in profitability.
- The coefficient for loan officer productivity is zero implying that change in loan officer productivity has no impact on the return on assets for the sample of Indian MFIs.
- The indicators of outreach used in the model are the number of active borrowers, the percentage of female managers, and average loan size. The impact of the increase in a number of active borrowers is negligible and statistically insignificant on the profitability of MFIs. The coefficient of the percentage of female managers is negative but small and with the statistical significance of 90%. The average loan size as an indicator of outreach shows no impact on profitability. As mentioned in the earlier section on methodology, the outreach variables are converted to squares to adjust for the hypothesized inverted U shape of the relationship between outreach and profitability. The statistical analysis supports the nonlinear inverted U-shaped relation between the outreach and profitability in case of the MFIs under the study.

Conclusion

The study tries to observe the impact of outreach and financial efficiency and portfolio risk on the profitability of MFIs in India with the help of panel data approach. The empirical analysis shows that the decrease in portfolio risk leads to an increase in profitability of the MFIs. Since the lower the portfolio risk, the higher the financial sustainability, the negative relation between the change in the portfolio at risk and return on assets indicates a positive relation between financial sustainability and profitability of the MFIs. This result is consistent with the literature (Mersland 2009; Khandker 2005; Kar 2013).

Table 4 Summary of panel data regression results

Variables	(ROA)
Portfolio at risk ratio	– 0.0124*** (0.003)
Provision expense ratio	– 0.9584*** (0.33)
Write-off ratio	– 0.1903*** (0.052)
Operating expense ratio	– 0.546*** (0.042)
Cost per borrower	– 0.0002 (0.000)
Loan officer productivity	0.0000*** (0.000)
Number of active borrowers	0.0000 (0.000)
Percent of female managers	– 0.0134 (0.030)
Average loan size	0.000 (0.000)
Number of active borrowers (squared)	– 0.476*** (0.026)
Percent of female managers (squared)	– 0.0171* (0.010)
Average loan size (squared)	0.000 (0.000)
Yield on gross portfolio nominal	0.4746*** (0.026)
Constant	– 0.0128** (0.007)
Observations	322
Number of groups	46
R^2	0.92

The statistically significant negative relation between operating expenses and return on assets shows that the profitability is not affected by the outreach but by the inefficient use of funds. The study finds that there exists no statistically significant trade-off between the outreach and profitability of Indian MFIs in the sample; however, when the nonlinear relationship between outreach and profitability is taken into account, the data show a negative impact of outreach on the profitability. The results show an evidence of the nonlinear relation between outreach and profitability of the Indian MFIs. This nonlinearity can be explained in terms of the institutional discrepancies within the MFI sector; influence of sociopolitical forces, and the interests of the dominant members and commercial investors impinging on the social welfare motive of the MFIs. Recently, the MFI sector in India is changing in its character with the listing of MFIs on the stock exchanges and the bank licenses given to some of them. This shift in their character forces the MFIs to balance the outreach goal with the financial sustainability and profitability. In spite of this change, as pointed out by Satish (2015), ‘The “moral compass” of microfinance has not been lost and MFIs track their poverty alleviation performance with tools like the ‘Progress out of Poverty Index.’

Based on the findings, the MFIs, which show greater profits, may be incentivized more as they are achieving it not necessarily by curtailing outreach in initial phases, but by efficient practices. However, the empirical results of the study support the hypothesis that the inverse relation between outreach and profitability may emerge in the later stages as the MFIs focus more on the commercial motive. The sector consists of the institutions which are non-bank finance companies, non-government organizations, regulated and unregulated institutions. The average loan size differs across the MFIs. The lending decisions and 'institutional logic' of MFIs are influenced by the type of MFI as well as the ideology of the prominent group members. The behavioral character of the MFIs is steered by the 'rule of law' and overall socioeconomic conditions in the economy as well as the local socioeconomic and political factors. The financial performance is affected by all these factors. These are beyond the scope of this study.

The present study draws attention to the fact that the character of MFIs is shifting from unprofessionally managed naïve institutions run by people for the benefit of the people. Most of the MFIs today are professionally run, investor-friendly, profit conscious, or rather profit-driven organizations. This character shift calls for reconsidering the system costs of various blanket subsidies and concessional refinance provided to these institutions.

Annexure 1

See Table 5.

Table 5 List of MFIs included in the study. *Source:* MIX market database

Sr. no	Name	Sr. no	Name
1	Adhikar	24	Mahashakti
2	Arohan	25	Nav Bharat
3	Asirvad	26	NEED
4	Asmitha	27	PWMACS
5	Asomi	28	RASS
6	Bandhan	29	RGVN
7	Belghoria	30	Sanghamithra
8	BISWA	31	Sarala
9	BSFL	32	Sarvodaya Nano
10	BSS	33	Satin
11	BWDA	34	Sewa Bank
12	Cashpor	35	Share
13	Equitas	36	SKDRDP
14	ESAF	37	SKS
15	GKFSPL	38	SMILE
16	Grama Vidiyal	39	Sonata
17	GU Financial	40	Spandana
18	IASC	41	Star Microfin
19	IDF Financial	42	SU
20	Janalakshmi	43	Swadhaar
21	KBSLAB	44	SWAWS
22	Madura	45	Ujjivan
23	Mahasemam	46	Village Financial

Annexure 2

See Table 6.

Table 6 Regulated/unregulated and for-profit/not-for-profit status of the MFIs in sample based on MIX database. *Source:* MIX market database

Name	Profit/non-profit status	Regulated/unregulated
Asomi	Non-profit	Regulated
Belghoria	Non-profit	Unregulated
BISWA	Non-profit	Unregulated
BWDA	Non-profit	Unregulated
Cashpor	Non-profit	Unregulated
GU Financial	Non-profit	Unregulated
IASC	Non-profit	Unregulated
Mahasemam	Non-profit	Unregulated
Mahashakti	Non-profit	Unregulated
Nav Bharat	Non-profit	Unregulated
NEED	Non-profit	Unregulated
PWMACS	Non-profit	Unregulated
RASS	Non-profit	Unregulated
Sanghamithra	Non-profit	Unregulated
Sarala	Non-profit	Unregulated
SKDRDP	Non-profit	Unregulated
Star Microfin	Non-profit	Unregulated
SU	Non-profit	Unregulated
Adhikar	Profit	Regulated
Arohan	Profit	Regulated
Asirvad	Profit	Regulated
Asmitha	Profit	Regulated
Bandhan	Profit	Regulated
BSFL	Profit	Regulated
BSS	Profit	Regulated
Equitas	Profit	Regulated
ESAF	Profit	Regulated
GKFSPL	Profit	Regulated
Grama Vidiyal	Profit	Regulated
IDF Financial	Profit	Regulated
Janalakshmi	Profit	Regulated
KBSLAB	Profit	Regulated
Madura	Profit	Regulated
RGVN	Profit	Regulated
Sarvodaya Nano	Profit	Regulated
Satin	Profit	Regulated
Sewa Bank	Profit	Regulated
Share	Profit	Regulated
SKS	Profit	Regulated
SMILE	Profit	Regulated

Table 6 continued

Name	Profit/non-profit status	Regulated/unregulated
Sonata	Profit	Regulated
Spandana	Profit	Regulated
Swadhaar	Profit	Regulated
SWAWS	Profit	Regulated
Ujjivan	Profit	Regulated
Village Financial	Profit	Regulated

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