Social and financial performance of MFIs: complementary or compromise?

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Abstract

Purpose – With the ongoing transformation of the microfinance sector, questions have been raised on the ability of microfinance institutions (MFIs) to perform financially well without compromising with their social objectives. The current study attempts to analyse the social and financial performance of Indian MFIs with an objective to find the kind of relationship between these two objectives.

Design/methodology/approach – The dynamic framework of simultaneous equations model is used to find the nature of the relationship which exists between social and financial performance of Indian MFIs.

Findings – The study finds that depth of outreach enables MFIs to achieve financial sustainability. On the other hand, financially strong MFI lend more as reflected by an increase in their average loan size.

Research limitations/implications – Many MFIs still receive subsidies to support their operations. Ideally, adjustments should be made to remove the effect of such subsidies on their cost. However, due to non-availability of data, the study fails to make any adjustment for the subsidies.

Practical implications – The presence of a complementary relationship between social and financial performance in the Indian microfinance sector is quite encouraging for the policymakers during the current time when the sector is becoming less dependent on subsidies. However, the recent upsurge in the average loan size requires attention.

Social implications – The findings suggest that MFIs can achieve financial sustainability while targeting poor clients. This indicates that MFIs can perform socially good along with their financial performance.

Originality/value – Such study is vital when the Indian microfinance sector is moving away from subsidies to become self-reliant and commercialised. Few studies have focused on this aspect of Indian microfinance sector.

Keywords Microfinance institutions, Social performance, Financial sustainability, Mission drift, Depth of outreach

Paper type Research paper

1. Introduction

The distinct feature of a microfinance institution (MFI) lies in its willingness and ability to offer financial services to those poor clients who are generally overlooked or refused by the formal financial institutions. Moreover, it has to do this job in the absence of any collateral

and often have no idea about clients' credit history [1]. Nearly all the MFIs mentions the above function as one of their main goals. They strive to achieve these objectives by applying innovative techniques such as social collateral, group lending, smaller loan size with regular repayment schedules and progressive loan structures. Earning profits while providing financial services to the poor is treated as secondary or as incidental to the cause of the problem which they are trying to resolve (Sriram, 2011).

The early microfinance in India was funded through donor and philanthropic funds (Sriram, 2010). Motivated by the success of Grameen Bank in the neighbouring country Bangladesh, the non-government organizations (henceforth NGOs) in India attempted to replicate the same success at home. Their initial success, with a promising bright future, attracted many private players and conventional financial institutions to operate in the market. Moreover, it was felt that an organisation needs to have an economic logic to survive and grow to serve the massive population of the weaker section of the society in a geographically large country like India. To keep a continuous influx of much-needed capital and attract the best talent, earning a surplus is quite indispensable. In the wake of dying donations and grants, the situation for MFIs, especially those which completely dependent on subsidies become extremely tough. Furthermore, a not-for-profit organisation often have limitations to grow beyond a specific size.

These developments led MFIs to look for commercial sources of funds to back their operations at a larger scale. At the same time, the traditional profit-seeking investors (including private equity funds and investment banks) have also shown great interest in the sector (Callaghan *et al.*, 2007; Von Pischke, 2009). However, this requires them to run on the foundation of self-sustainability and to practice the market approach to earn surplus/profit. Attempts were made to combine social impact with financial return with a promise to "do well" while "doing good" to attract new investors. Inclusion of loans to MFIs under priority sector lending for banks has poured large funds in the sector (Mishra and Tankha, 2018). Moreover, larger MFIs raised a massive amount of capital from initial public offers, and many of them have converted themselves into mainstream banks. These developments made the sector more commercialised and deeply integrated with the mainstream financial markets.

Nevertheless, there are apprehensions from the section of experts and researchers working on the microfinance sector that more focus on financial performance may affect the MFI's primary objective of providing credit loans to the poor. Organisations like MFIs that have a double bottom line are always vulnerable to tilt towards financial gains creating a situation of mission drift [2]. With the change in organisational and managerial setup, the probability of mission drifts further increases. Institutional design and orientation are very crucial factors while considering the chances of trade-off in microfinance (Cull *et al.*, 2007). Private MFIs are often blamed for charging interest rates from their poor clients as steep as those charged by moneylenders (Srivastava *et al.*, 2010). It is also found that the transformed MFIs incline to offer bigger loans in comparison to that of NGO-MFIs (Frank *et al.*, 2008).

The current study attempts to determine the possible association between social and financial performance of MFIs. The study mainly investigates the impact of MFI's depth of outreach on its financial health. Furthermore, it efforts to find the possible reasons behind the relationship between social and financial performance, keeping in view the peculiarity of the sector. Such investigation is quite essential, especially when the microfinance sector is moving away from subsidies and donor funding to become self-reliant and commercialised. This way, the study contributes to the microfinance literature by attempting to answer two crucial questions which the sector is facing:

- (1) Does targeting poor clients is financially inviable for MFIs?
- (2) Does operational sustainability contribute to targeting poor clients?

The remainder of the article is organised as follows: The next section offers an outline of the existing literature. Section 3 discusses the worth of two different sets of objectives of MFIs, outreach and financial objectives along with the hypotheses of the current study. In Sections 4 and 5, a discussion is made on the research methodology and data, respectively. Section 6 contains the empirical findings, and Section 7 provides the conclusion and policy implications of the results.

2. Literature review

With the ongoing commercialisation of the microfinance, it remains a crucial concern whether an MFI can preserve its core social objectives while achieving financial sustainability. The commercialisation entails the transformation of MFIs into profit-making, regulated entities competing in the market (Christen, 2001). Advocates of commercialisation of the sector argued that with strict supervision and checks, an MFI could accomplish both the objectives. Rhyne (1998), Christen and Drake (2002) and Annim (2012) argue that commercialised microfinance sector is better in catering the financial needs of the poor clients for their profit objectives push them to be more efficient and expand their services to untapped markets. On the other hand, opponents argue that mission drift is inevitable as the sectors become more and more commercialised because there are possible situations (high operating costs, higher risk and lower returns) when focus on profitability led institutions to push aside their social objectives (Christen, 2001). Therefore, it widely believed that social objectives and financial sustainability could not be achieved together (Paxton, 2002; Armendáriz and Morduch, 2010). Such trade-off raises a serious question on the ability of MFIs to improve the lives of the poor without any external financial support in the long run. However, with the help of a simple moral-hazard setting, Caserta *et al.* (2018) conjecture that mission drift can be avoided if borrowers are offered a blend of individual and joint liability loans. They further argue that not-for-profit MFIs never replace poor clients with the more affluent ones.

The findings of the empirical studies widely differ on the kind of the relationship between social and financial objectives of the MFIs. Many studies find a complementary relationship between the two objectives. Mosley and Hulme (1998) find that financially sound institutions have a higher positive loan impact. They argue that such institutions charge higher rates of interest and have strict and frequent loan repayment structure which screen out potential borrowers who lack financial discipline or have less profitable projects. While analysing the performance of 39 MFIs, Fernando (2004) finds that the financial health of the transformed MFIs is improved without making any compromise with their social mission. Frank *et al.* (2008) find that the transformation of MFIs enhances their outreach and product offerings. They argue that larger loan size is an outcome of the maturity of microfinance practices and the focus of MFIs on profitability reduce their reliance on donations which are highly volatile. Bédécarrats *et al.* (2012) claim that double bottom line is not impossible, and an MFI, having well-planned social performance strategy, can achieve both the objectives. In his study on 702 MFIs, Quayes (2012, 2015) finds a harmonising relationship between the depth of outreach and financial sustainability. Abdullah and Quayes (2016) find that serving more female borrowers is beneficial for the financial health of the MFIs. Various other studies on microfinance sector have found no relationship between these two objectives (Christen *et al.*, 1995; Seibel and Parhusip, 1999; Gibbons and Meehan, 2000; Bassem, 2012). In their work on Vietnamese MFIs, Lebovics *et al.* (2016) find no association between financial and social objectives. On her study on a small sample of Indian MFIs, Kulkarni (2017) finds no indication of conflict between their outreach and

efficiency objectives. On their study on Ethiopian MFIs, [Wassie *et al.* \(2019\)](#) find no evidence of conflict between social and financial performance of MFIs.

In contrary studies, it is found that social and financial performance cannot be achieved together. [Conning \(1999\)](#) finds that MFIs which lend smaller loans tend to incur higher staff costs, charge higher interest rates and are less leveraged. While analysing the outreach and financial performance of three credit unions and two village banking programs in Latin America, [Paxton and Cuevas \(2002\)](#) find that village banks have a deeper depth of outreach but less sustainable. On the other hand, credit unions are financially strong but mostly have better-off clients. Based on the findings, they argue that it is difficult to achieve financial sustainability while serving the poorest clients, mainly due to high transaction costs associated with small loan size. [Paxton \(2002\)](#) calculated the Depth of Outreach Indicator [3] (DOI) and Subsidy Dependence Index [4] (SDI) while examining the relationship between sustainability and depth of outreach. She finds an inverse relationship between the two. She argues that the extent of this inverse relationship also depends on the organisational type, scale and age of the MFI. [Schreiner \(2002\)](#) argues that reaching to the poor and achieving financial sustainability are two crucial but conflicting objectives for MFIs. [McKim and Hughart \(2005\)](#) carried a worldwide survey of MFIs and reports that the majority of the MFIs accepted that their focus on poor clients is reduced.

[Cull *et al.* \(2007\)](#) find that surplus/profit can be earned while fulfilling their social objectives. However, this complementary relationship is tough to maintain when the target clients are extremely poor. They further argue that as MFIs grow and mature, they are more inclined to lend larger loans to well-off clients. [Manos and Yaron \(2009\)](#) find that in the short run, there are chances that MFIs have to compromise with their social objectives while achieving sustainability; however, such trade-off can be removed in the long run by gaining efficiency. [Hermes and Lensink \(2011\)](#) find an adverse association between depth of outreach and efficiency. [Annim \(2012\)](#) argues that financially self-sufficient MFIs do not reach poorer clients. He further argues that institutions using their own capital mainly focus on non-poor clients. [Louis and Baensens \(2013\)](#) find that profit-seeking MFIs have less depth of outreach and women clients. [Serrano-Cinca and Gutiérrez-Nieto \(2014\)](#) argues that MFIs that are serving poorer clients face severe financial constraints, and this can lead to the situation of mission drift. They suggested that such MFIs can improve their financial health by focussing on operational efficiency. [Arrassen \(2017\)](#) finds that the ongoing commercialisation of microfinance sector neither improves the outreach of MFIs nor materially improves their financial performance. [Kittilaksanawong and Zhao \(2018\)](#) find that lending to women borrowers adversely affects the financial health of MFIs. They further argue that the national culture moderates this effect. [Blanco-Oliver and Irimia-Diéguez \(2019\)](#) examine the effect of profit orientation on social and financial outcomes of MFIs and find that efforts to surge outreach adversely affects the financial performance of non-profit MFIs. However, they argue that this adverse impact can be removed by improving productivity and loan repayments. [Zainuddin *et al.* \(2020\)](#) investigates the relationship between social and financial objectives of an MFI in the light of the cultural factors. They find that the depth of outreach and sustainability are negatively related. They further argue that the magnitude of the trade-off depends on the cultural factors.

Though there are numerous studies on the issue of mission drift of MFIs; however, only a few such studies have focused on Indian MFIs. Most of the studies are cross-country analysis. Furthermore, most of the studies have ignored the issue of reverse causality while reviewing the social and financial performance of MFIs. The current article attempts to fill the gap and contributes to the existing literature by providing vital insights about the

current state of affairs of the Indian MFIs. It has used MFI-level data for more than ten years and has employed an appropriate methodology to treat the reverse causality.

3. Social and financial objectives of MFIs

The functioning of MFIs is mainly judged on the basis of the concepts of outreach and sustainability (Yaron, 1994). This peculiarity in performance measurement differentiates MFIs from other financial institutions. A brief discussion on depth of outreach and financial performance of MFIs along with the hypotheses of the current study regarding the association between these two sets of objectives is presented in the next sub-section.

3.1 Depth of outreach

Von Pischke (1991) describes a boundary between the formal and informal financial segments. People outside the boundary are not able to access formal financial services. These people comprise a heterogeneous population who are often below the poverty line (or at the bottom line) [5]. Outreach is about providing the benefits of finance to these poor clients (Schreiner, 2002).

While measuring outreach of an MFI, it is imperative to differentiate between the breadth (the extent) and the depth of outreach. While the breadth indicates the absolute number of clients, the depth indicates how deep into the group of financially excluded, the MFI can reach (Paxton and Cuevas, 2002). With the rapid expansion of the sector, the breadth of the MFI outreach has increased. Furthermore, as the women borrowers still dominate the sector, outreach to women clients is also satisfactory. However, with the rise in the commercialisation of the sector, the primary concern is whether the loans of the MFIs are reaching to the poorer clients or not. Therefore, the depth of outreach is frequently taken as an indicator to comment on the social performance [6] of the MFIs.

According to the welfare theory, in the social-welfare function, depth is the weight of a client. When society gives priority to the poor, then poverty is an effective proxy for depth (Schreiner, 2002). For an MFI, depth of outreach indicates the access of financial services that poor clients have [7]. As it is difficult to measure depth of outreach directly, indirect proxies are used to measure it. The widely used proxy for depth of outreach is the size of the loan disbursed (Schreiner, 2002; Bhatt and Tang, 2001; Cull *et al.*, 2007; Mersland and Strøm, 2010).

Ideally, one should consider the financial condition of the clients, a variety of services offered to them and achieved outcomes (in comparison to intended ones) while measuring the depth of outreach. Moreover, this requires information about the income level of wealth possessed by the clients. However, such information is mostly not available or not shared by the MFIs at the public domain. In such a situation, the average loan size is a good proxy for measuring the depth of MFI's outreach. The main logic is that smaller the loan amount, poorer the client is. And, if such loans are repaid on time, it shows that incomes of such poor clients have increased. The current study uses the average loan size (ALS) as an indicator of MFI's social performance. ALS is calculated by dividing the gross loan portfolio (GLP) to total active borrowers (TAB).

However, the average loan size as an indicator of depth of outreach ignores the institutional scale and degree of heterogeneity of clients served by the MFIs. By serving at a larger scale, MFIs can serve more marginalised clients. The heterogeneity of the clients served reduces the risk by diversifying the portfolio and help cross-subsidize the loan provided to the poorer clients.

3.2 Financial performance

In recent times, financial performance is equally essential for the MFIs along with social performance. With a decrease in grants and subsidies, they must attain sustainability to continue and further expand their operations. Even the present donor agencies prefer those non-profit MFIs which are financially sound and efficient to ensure efficient utilization of the funds allocated to them (Quayes, 2012). For profit-making MFIs, financial sustainability is a necessary condition to sustain in the market due to mainly two reasons; first, the use of the commercial source of funding increases pressure on them to pay interest on time. Second, providing some income to private equity holders is also crucial to attract more investments. In the changed environment, MFIs' attempt to achieve social objectives along with financial sustainability with no or reduced reliance on subsidies (Robinson, 2001). It is argued that access to credit is a more critical factor than its price (Yaron, 1994). Therefore, MFIs should attempt to create sustainable financial intermediation for the poor at large scale without compromising with the financial self-sufficiency (Woller *et al.*, 1999).

There are numerous indicators to measure the financial performance of an institution. However, keeping in view the distinct feature of microfinance operations, the current study primarily defines financial performance as the extent to which MFIs can generate revenues to cover the cost of providing services to their clients (Yaron, 1992; Copestake, 2007). The study employs Operational Self-Sustainability (OSS) as an indicator to gauge the financial performance of the MFIs. Another indicator, profit margin, is used to check the robustness of the results.

3.3 Depth of outreach vs financial performance

The researchers and market practitioners have contrary views on the issue of the association between MFI's depth of outreach and financial performance. One view emphasizes that catering financial needs of the poor clients and achieving financial sustainability are broadly complementary while other rejects this complementarity between the two sets of objectives (Rhyne, 1998).

Though financial sustainability is not an essential or sufficient condition for social welfare, it aids the welfare activities of the organisations (Navajas *et al.*, 2000). For MFIs, performing financially well is always good, as it helps them to pay back their creditors on time, expand their outreach to newer locations and provide funds for their innovation projects. Financially sustainable non-profit MFIs can gain access to more grants and donations. Financially stable for-profit MFIs can give some returns to their investors, and thereby, attract fresh capital to expand their operations. On this line of thought, there seems no problem if MFIs are trying to do financially well along with their social goals. It further reveals that the primary objective is the only one that is, outreach. Sustainability helps to attain it (no way an end in itself).

Nevertheless, strategic decisions of MFIs often involve situations where MFIs have to compromise with their social objectives to achieve their financial objectives (or vice versa). Depth of outreach increases not only social value (or welfare) but also a social cost. Targeting poor for small loans with daily or weekly repayment schedules increases the operational costs, mainly when clients are scattered in the vast geographical rural region. Moreover, despite the higher repayment rates as reported by many studies, the financial position of the poor remains highly vulnerable to external shocks making them highly risky for the lender. Furthermore, the poor are more heterogeneous and less able to indicate their ability and readiness to repay the loan (Conning, 1999). All these issues make targeting the poor an expensive affair for MFIs. Charging the poor higher rate of interest is likely to increase the earnings but will hamper the current social performance, termed as poverty

penalty [Mendoza \(2011\)](#). A constant support in the form of subsidies and grants can allow an MFI to increase its operations without attaining sustainability ([Morduch, 1998](#); [Woller et al., 1999](#)). However, the failure of similar government institutions and programs to ensure repayments (often due to wilful defaults), raises questions on the existence of the MFIs. More extended outreach through sustainability supports the structures of incentives that serve to maximize social welfare ([Navajas et al., 2000](#)).

On the other hand, providing bigger loans to better-off customers, preferably in urban areas, always has a desirable option for MFIs as it helps them to reap the advantage of economies of scale and low operating costs along with low credit risk. This way, it improves the financial health of the MFIs. Improved financial performance generates funds needed for the expansion of the operations and to initiate innovation projects. Innovations which reduce the costs of providing services can result in immediate improvement in social as well as financial performance ([Mosley and Hulme, 1998](#)). However, such innovations often require huge investments which again depends on the earnings of the MFIs and, this may lower the actual social performance but will enhance the social performance in future. However, the presence of private capital increases the chances that a large share of profits are distributed among the shareholders [8]. This increases the risk that MFIs become overly focused on financial performance at the cost of serving poor clients. This situation is termed as mission drift. In the current time, when more and more MFIs are converting their legal status from NGO to NBFIs with an aspiration to become full-fledged banks in the near future and using the commercial sources of funding, the debate on the risk of mission drift has further accelerated ([Dichter and Harper, 2007](#); [Rosenberg, 2007](#)).

The trade-off situation is a problem of dual maximization. Mathematically, in such a situation, there is no single solution and, anyone objective is to be treated as a constraint while maximizing the other. This way, a curve can be derived to trace the trade-off between the objectives. However, evaluating the performance of MFIs in the light of the dual objectives, “doing good” and “doing well”, involves the problem of subjectivity in the sense that how much “good” is actually good and how “well” is actually well ([Sriram, 2011](#)). [Mosley \(1996\)](#) investigates the multitask problem of an MFI and presents the conflicting nature of the two objectives with the help of a figure. [Figure 1](#) shows the level of social performance and financial performance at different loan sizes provided by an MFI keeping other key factors constant.

Figure 1.
MFI Performance in
relation to loan size

Source: Mosley (1996)

Initially, when loan size is relatively small, it has a high impact against poverty; however, it is financially unviable. This is the time when MFI is highly dependent on subsidies. With the gradual rise in a loan size at an early stage, the MFI manages to improve its performance, socially as well as financially. However, with a further rise in loan size, financial performance improves but only at the cost of social impact (Figure 2).

Here, the management has to decide whether to go for more profit or to strengthen its determination to reduce poverty. In such a situation, it can opt a middle path by affirming that a certain level social performance must be achieved while earning a reasonable amount of returns which is crucial for the future growth of the organisation. Therefore, the commitment of the owners and management for the MFI's social mission can avoid any such trade-off situation that the institution may face sooner or later. In the Figure 1, a^* and b^* are the target levels for social and financial performance, respectively, decided by the MFI management to guide the MFI operations. The distance between X_1 and X_2 provides a feasible range for the MFI to select an optimum path. The feasible range will not allow MFI to go for any particular objective, mostly the financial one, at the cost of the other.

In the light of the discussion mentioned above on the theoretical and empirical findings on the relationship between MFI's depth of outreach and financial performance, the study proposes the following hypotheses would be tested to ascertain their relationship:

- H1. Emphasis on the depth of outreach adversely affects the financial performance of an MFI.
- H2. Improvement in financial performance impairs MFI's depth of outreach.

4. Empirical model

The study aims to find the nature of the relationship exists between social and financial performance of an MFI. The financial sustainability, a measure of the financial performance of an MFI, is measured by OSS. The OSS quantified by the following equation:

$$\ln OSS_{it} = \alpha_0 + \lambda_1 \ln ALS_{it} + \alpha_1 \ln GLP_{it} + \alpha_2 \ln Yield_{it} + \alpha_3 \ln Yield_{it}^2 + \alpha_4 \ln PAR30_{it} + Age + \varepsilon_{it} \quad (1)$$

Source: Authors' calculation based on Mix Market data

Figure 2.
Average loan size of
MFIs

MFI's depth of outreach increases with a decrease in the average loan amount granted to its clients. The following equation states the average loan size (ALS):

$$\ln ALS_{it} = \alpha_0 + \lambda_1 OSS01_{it} + \alpha_1 \ln GLP_{it} + \alpha_2 \ln Yield_{it} + \alpha_3 OCPB_{it} + \alpha_4 FCPB_{it} + \alpha_5 \ln CA_{it} + \alpha_6 \ln ROWB + AGE + \varepsilon_{it} \quad (2)$$

Where, OSS is the operational self-sufficiency ratio, ALS = average loan size, OSS01 is the dummy variable of Operational Self-Sufficiency (1 if $OSS \geq 100\%$ and 0 otherwise), GLP is the gross loan portfolio, Yield = all interest, fees and penalty charged on outstanding loan by an MFI, PAR30 = portfolio at risk for more than 30 days, AGE = age of an MFI (1 if MFI is mature otherwise 0 indicating new MFIs), OCPB and FCPB is the operational cost and financial cost per borrower, respectively. CA = equity-to-assets ratio, ROWB = ratio of women borrowers. ε_{it} is the term for stochastic disturbance, and:

$$\varepsilon_{it} = u_{it} + v_i \quad (3)$$

u_{it} = comprises unobservable i^{th} institution-specific effect.

v_i = comprises error terms which are independently and identically distributed.

While testing for the endogeneity, the endogenous nature of the relationship is found between OSS and ALS. That is, the operational self-sustainability of an MFI also depends on the loan size given to the borrowers, which in turn is influenced by its financial capability along with other explanatory variables. This reverse causality relationship violates the necessary condition of exogeneity among the explanatory variables and causes the problem of endogeneity [9] due to simultaneous bias [10] (Abdallah *et al.*, 2015). This violates one of the necessary conditions of ordinary least squares (OLS) regression method, and hence the estimates obtained by employing the OLS methods will be biased inconsistent (Wooldridge, 2002). Therefore, the simultaneous equations model (SEM) is constructed, and 3-stage least square (3SLS) estimation procedure is applied using instrument variables (IV) [11].

The static framework of SEM has extremely low Durbin-Watson indicating positive first-order autocorrelation in the residuals [12]. This indicates persistence in the dependent variables and requires to include the lag of the dependent variable to be included as an independent variable in the respective equation. Therefore, autoregressive-lag model, also known as a dynamic model, is used to estimate the equations. The set of dynamic SEM equations contain lag of the dependent variable as one of the independent variables and take the following form:

$$\ln OSS_{it} = \alpha_0 + \beta_1 \ln OSS_{i(t-1)} + \lambda_1 \ln ALS_{it} + \alpha_1 \ln GLP_{it} + \alpha_2 \ln Yield_{it} + \alpha_3 \ln Yield_{it}^2 + \alpha_4 \ln PAR30_{it} + \alpha_5 \ln CA_{it} + Age01 + \varepsilon_{it} \quad (4a)$$

$$\ln ALS_{it} = \alpha_0 + \beta_1 \ln ALS_{i(t-1)} + \lambda_1 OSS01_{it} + \alpha_1 \ln GLP_{it} + \alpha_2 \ln Yield_{it} + \alpha_3 \ln CA_{it} + \alpha_4 OCPB_{it} + \alpha_5 FCPB_{it} + \alpha_6 \ln ROWB_{it} + AGE01 + \varepsilon_{it} \quad (4b)$$

However, the introduction of the lagged dependent variable as one of the independent variables in the equation leads to the problem of dynamic endogeneity [13]. To tackle the endogeneity due to the dynamic version of the equation, the difference Generalised Methods

of Moments (GMM) estimator [14] offered by Arellano and Bond (1991) is applied. MFIs specific effects are removed by taking the first difference of the above two equations.

5. Data and variables

The study considered the sample firm-level data of 125 Indian MFIs from 2005 to 2016. The data are an unbalanced panel with 990 MFI-year observations. Suitable adjustments are made for missing values. The data source is the MIX Market database [15]. Table 1 (in appendix) provides the basic features of the data used in the estimation. The differences with respect to loan portfolio, yield, risk exposure, operating and financial cost highlight the heterogeneity among MFIs on the basis the MFI-specific factors. The description of the variables used in this study is as follows:

Average loan size granted by the MFIs indicates the depth of their outreach. OSS ratio is used to assess the financial performance [16] of MFIs.

The correlation between the independent variables is observed well below 0.8 or 80%. Therefore, there is no problem of multi-collinearity among the selected independent variables. The Unit Root test is conducted to test the stationarity [17] of the sample data. Out of all the variables, ALS, GLP, OCPB and FCPB are found non-stationary. However, the log values of these variables are found stationary. Therefore, the final estimation model contains the log value of all the variables except the dummy variables. The variables used in the study are as follows:

GLP: It is taken to measure MFI size. The size of the MFI also affects its performance. The size of the MFI will either adversely affect depth of outreach or will have no impact on it [18]. The size of the GLP also affects the financial performance of the MFI. Having the advantage of economies of scale, large MFIs can use their resource efficiently, reducing their costs and thereby increasing the profitability. However, the effect of size on financial performance could be negative due to bureaucratic and other bottlenecks.

Yield: It includes all interest, fees and penalty charged on the outstanding loan. It affects profitability and credit risk. The rise in it will improve the OSS of the MFI. However, with every additional rise in the interest rate, the credit risk also increases due to adverse selection and agency problems. The increase in bad debts adversely affects the profitability of an MFI. This change in the relationship between yield and profitability is best explained by the U-shaped patterns reflecting the quadratic effect between these two variables (Cull *et al.*, 2007). Therefore, a square of yield is used while estimating OSS. The rise in yield can reduce the loan amount keeping in view the limited repayment capacity of the poor borrowers. However, there is also a possibility that keeping in view the desperate need of

	Mean	Median	Maximum	Minimum	Std. dev.	No. of observations
OSS	1.13	1.12	3.36	0.15	0.29	990
ALS	9549.30	7753.87	119311.10	410.53	8391.41	990
YIELD	0.23	0.23	0.91	0.00	0.08	990
GLP (in millions)	371000	40200	16800000	33.688	1340000	990
OCPB	977.90	753.84	15000.00	42.79	1168.83	990
FCPB	844.77	677.06	12210.65	10.00	896.43	990
CA	0.21	0.18	1.00	-2.78	0.22	990
ROWB	0.95	1.00	1.00	0.03	0.13	990
PAR30	0.05	0.01	1.00	0.00	0.15	990

Source: Authors' calculation

Table 1.
Descriptive statistics

credit, high yield is not a problem while availing the loan facility (if it is lower than that of local moneylenders). Therefore, yield will either have a positive relation with depth of outreach (decrease in the loan size) or will have no relation at all.

PAR30: It is the credit risk. The increase in chances of loan default will hamper the financial health of the MFIs. As a result, a negative relationship is expected between PAR30 and sustainability.

OCPB and FCPB: Generally, it is found that providing smaller loans is a costly and risky affair for financial institutions. Due to this reason, formal institutions ignore the credit needs of the poor. With the decrease in subsidies, the financial cost also increases. However, by innovating the ways to deliver financial services to the poor at a lower cost, MFIs have reduced their costs. Furthermore, by adopting a standardized and rigid structure of loan repayments, they have achieved higher repayment rates (Yaron, 1994). Therefore, either a positive or negative relationship is expected between OCPB, FCPB and depth of outreach.

CA: Equity capital is one of the low-cost financing sources, and it supports the financial sustainability of MFIs (Bayai and Ikhida, 2016). Therefore, it is expected that equity to assets ratio would have a positive impact on the financial health of MFIs. As MFI mainly attempts to offer financial services, primarily small loans, to unbanked poor clients, it is expected that equity to assets ratio would also increase the depth of outreach (Hartarska and Nadolnyak, 2007). However, few studies find that MFIs which are using equity, also tend to focus more on non-poor clients (Annam, 2012).

ROWB: High female participation is often associated with small average loan size (Yaron, 1994). Keeping in view their social and economic restrictions, illiteracy and need to cope up with other roles in the family, women are likely to involve in the smaller businesses (Holt and Ribe, 1991). These businesses are termed as the “income-generating” segment, which is mainly house-hold seasonal activities. Such business activities are suitable to receive smaller loans (Frank *et al.*, 2008). Therefore, a positive relationship is expected between the high proportion of women clients and the depth of outreach.

Age: Generally, it is supposed that the performance of a firm improves as it grows old (Cull *et al.*, 2007; Ayayi and Sene, 2010; Singh and Padhi, 2019). However, younger firms may gain from the knowledge that has been created by the experienced firms during the previous decades, making them more efficient than older firms. In the current study, all the MFIs which are less than or equal to five years old, are treated as “New” MFIs. MFIs which are more than five years old, are termed as “Mature” MFIs. The dummy variable is used to measure the effect of age, where 0 indicates “New” MFIs and 1 indicates “Mature” MFIs.

6. Empirical results

The GMM estimation results of the SEM (equations 4a and 4b) are reported in Table 2. The results incorporate the dynamic nature of the dependent variables and address the endogeneity due to reverse causality. The coefficients of the lagged dependents variable in both the equations are statistically significant. This reflects the persistence in the dependent variables and justifies the use of dynamic equations. The J-test (also known as Sargan Test) is conducted to check if the overidentifying instruments are uncorrelated with the residuals [19]. The null hypothesis of the AR(2) test [20] is accepted for both the equations indicating that second order autocorrelation is insignificant. This removes the chances of inconsistency in the results.

				Social and financial performance of MFIs
Variable/Period	LN(OSS) 2005–16	Variable/Period	LN(ALS) 2005–16	
LN(OSS) (–1)	0.215*** (6.803)	LN(ALS) (–1)	0.118*** (5.377)	53
LN(ALS)	–0.220*** (–14.683)	OSS01	0.269*** (–8.235)	
LN(YIELD)	0.481*** (7.625)	LN(YIELD)	–0.246*** (–11.570)	
LN(YIELD) ²	0.085*** (6.237)	LN(GLP)	0.25*** (22.474)	
LN(GLP)	0.105*** (15.136)	LN(OCPB)	0.273*** (–9.659)	
LN(PAR30)	–0.035*** (–12.739)	LN(FCPB)	0.054*** (6.409)	
LN(CA)	–0.008* (–1.661)	LN(CA)	–0.078*** (–2.965)	
AGE01	0.053*** (4.383)	LN(ROWB)	–0.155*** (–2.966)	
		AGE01	–0.049** (–2.478)	
Prob(J-Statistic)	0.339	Prob(J-Statistic)	0.198	
AR(1)	0.005	AR(1)	0.000	
AR(2)	0.0643	AR(2)	0.828	
No. of MFIs	126	No. of MFIs	126	
No. of observations	653	No. of observations	653	

Source: Authors' calculation. The *t*-ratios are given in parenthesis below the coefficient estimates. *, ** and *** represent significance at 10%, 5% and 1%, respectively. J-Statistic is the test for over-identifying restrictions in GMM dynamic model estimation. AR(1) and AR(2) are the Arellano-Bond tests for first-order and second-order serial correlation in the residuals, respectively. The null hypothesis for AR(1) and AR(2) is that there is no autocorrelation. LN(OSS) = log of operational self-sustainability; LN(ALS) = log of average loan size

Table 2.
Depth of outreach
and OSS: GMM
estimation

On the relationship between social and financial performance of an MFI, the study finds interesting results. The ALS has a statistically significant negative impact on the OSS of MFI. As per the results, a 1% rise in the ALS results in an about 0.22% decrease in the OSS ratio. This indicates that depth of outreach, indicated by smaller loan size, positively contributes to the MFIs' strive to achieve financial sustainability. In other words, good social performance drives the financial performance of MFIs. On the other hand, as per the results, the operationally self-sufficient MFIs provide bigger loans to their clients in comparison to operationally insufficient MFIs and the related dummy variable OSS01 is statistically significant. This means with an improvement in the financial health MFIs provide bigger loans to their clients. This shows that the financial success of MFIs does not lead to deeper outreach.

The effect of yield on the financial health of an MFI is significantly positive. However, the quadratic effect of it, reflected by the coefficient of the square of yield, is quite low though remain positive. This indicates that there is still scope for MFIs to charge a higher rate of interest without increasing their credit risk exposure. The effect of yield on a loan size of an MFI is found negative, and the variable is statistically significant. This relation shows that Indian MFIs charge a higher rate of interest on smaller loans.

The variable GLP, reflecting the size effect of an MFI, is found positive and statistically significant in both the equations. The rise in GLP improves the financial performance of MFIs. However, the rise in size adversely impacts their depth of outreach. It means as the MFIs get bigger, their loan size also increases, adversely hurting the social performance. The presence of equity capital (the CA ratio), a low-cost financial source, improves the financial health of an MFI as well as its social outreach. But, the magnitude of the impact of CA on OSS is relatively small.

The dummy variable of age (AGE01) shows that the mature MFIs financially perform better in comparison to the new players. However, the social performance of new MFIs is better than that of mature MFIs.

The results show that credit risk, indicated by PAR30, hampers the financial performance of an MFI. The cost per borrower, reflected by OCPB and FCPB, also have a statistically significant positive effect on the average loan size. The high coefficient of operating cost reflects the cost of operations is one of the crucial elements (along with the default risk) in microfinance business. The coefficient of FCPB is relatively low (though significant) which might be because no adjustments are made for subsidized loans and grants given to MFIs. It implies that bigger loans are expensive for MFIs. This finding is similar to the findings of Quayes (2012). The rise in ROWB also results in improving the depth of outreach of an MFI. The finding confirms the earlier findings of Holt and Ribe (1991), Yaron (1994), Frank *et al.* (2008) and Quayes (2012).

To check the robustness of the results, profit margin is taken as an indicator of financial performance. The other variables remain the same. Table 3 depicts the estimation results. Except for the effect of age of MFI on its profit margin, all the independent variables have a similar effect on profit margin and ALS, respectively. Contrary to our earlier findings, here it is found that the profit margin of MFIs decreases as they mature. The finding is statistically significant at 1% level of significance.

7. Discussion of the results

The results of the study indicate that for MFIs granting smaller loans are profitable. Moreover, providing smaller loans are less costly. This might be due to the close proximity of borrowers with similar financial needs. In such a situation, a loan officer can serve many borrowers with a similar type of credit service in her single visit. Therefore, an MFI can achieve sustainability and efficiency while providing microcredit to poor clients. This

PROFIT_MARGIN		LN(ALS)	
Variable/Period	2005–16	Variable/Period	2005–16
PROFIT_MARGIN(–1)	0.240*** (40.473)	LN(ALS) (–1)	0.095*** (3.171)
LN(ALS)	–0.163** (–9.395)	PROFIT_MARGIN	0.037*** (2.647)
LN(YIELD)	0.254*** (6.734)	LN(YIELD)	–0.205*** (–11.464)
LN(YIELD)^2	0.028*** (2.77)	LN(GLP)	0.276*** (26.140)
LN(GLP)	0.210*** (21.037)	LN(OCPB)	0.206*** (9.668)
LN(PAR30)	–0.017*** (–10.793)	LN(FCPB)	0.066*** (7.242)
LNCA	0.038*** (3.976)	LN(CA)	–0.069*** (–7.67)
AGE01	–0.324*** (–29.456)	LN(ROWB)	–0.182*** (–4.097)
		AGE01	–0.023 (–1.468)
Prob(J-Statistic)	0.453	Prob(J-Statistic)	0.108
AR(1)	0.0470	AR(1)	0.0035
AR(2)	0.1400	AR(2)	0.9726
No. of MFIs	126	No. of MFIs	126
No. of observations	634	No. of observations	646

Table 3.
Depth of outreach
and profit margin:
GMM estimation

Source: Authors’ calculation. The *t*-ratios are given in parenthesis below the coefficient estimates. *, ** and *** represent significance at 10%, 5% and 1%, respectively. J-Statistic is the test for over-identifying restrictions in GMM dynamic model estimation. AR(1) and AR(2) are the Arellano-Bond tests for first-order and second-order serial correlation in the residuals, respectively. The null hypothesis for AR(1) and AR(2) is that there is no autocorrelation

finding is in line with the findings of [Littlefield *et al.* \(2003\)](#), [Hishigsuren \(2007\)](#), [Mersland and Strøm \(2010\)](#), [Quayes \(2012, 2015\)](#) and [Kulkarni \(2017\)](#). This finding rejects the first hypothesis of the study (that depth of outreach adversely affects MFI's financial performance).

The results further show that with the improvement in the financial health, average loan size of an MFI also rises. This is in line with [Mersland and Strøm \(2010\)](#). Nevertheless, it does not mean that depth of outreach reduces with the improvement in the financial condition of MFI. A gradual increase in the loan size with low loan default rate is a signal of improvement in clients' life. It indicates that clients can utilize the loan amount properly. Often MFIs are blamed for not being able to provide enough loan to start any sustainable business activity. Due to this very fact, MFIs loans are more suitable for women borrowers ([Holt and Ribe., 1991](#)). Therefore, before commenting on whether financial performance adversely affects social outreach, it is crucial to check the pace of growth in loan size.

[Figure 1](#) depicts the average loan size of MFIs by legal types from 2009 to 2016. During the period, the average loan size of NBFC-MFIs remained consistently higher than NGO and Credit Union (CU)/Cooperatives (Coop.). While an increase is registered in the average loan size of all types of MFIs, this rise is higher for NBFC-MFIs. Though the average loan size of different types of MFIs is well below the loan limit by the RBI, the recent rapid increase in the loan size raises fear if MFIs are reaching to the poorer clients. There is also fear of granting multiple loans to the clients. Studies have indicated that the outreach of MFIs is more toward borderline poor, rather than very poor categories ([Misra, 2016](#)). Therefore, further study is required in this direction to verify the MFIs' contribution to the financial inclusion of the poor.

8. Conclusion

The current study investigates the relationship between social and financial performance of Indian MFIs using MFI-level panel data set from 2005 to 2016. The findings of the study suggest that small loan size, a proxy of depth of outreach, facilitates MFIs to achieve financial sustainability. This indicates that MFIs can achieve financial sustainability while targeting poor clients. Furthermore, it is found financially sustainable MFIs provide bigger loans, reflected by the rise in the average loan size. Though this finding alone does not indicate a mission drift, the recent rise in the loan size of the MFIs raises the chances of multiple loans to clients and/or targeting better-off clients. Two measures of financial performance are used to check the robustness of the results. The results are found robust to both the measures.

The main limitation of the empirical analysis of the study is that no adjustment is made for the subsidies received by MFIs. Many MFIs receive grants and subsidized loans to support their operations [21]. Therefore, their cost, especially financial cost, do not reflect the actual associated costs. Ideally, adjustments should be made to remove the effect of such subsidies on cost. However, MIX database does not provide information on subsidies received by MFIs. Future research should aim at collecting information on the subsidies received to different MFIs and making proper adjustments before commenting on the relationship between social and financial objectives of MFIs.

From a policy perspective, the presence of a complementary relationship between social and financial performance in the Indian microfinance sector is quite encouraging for the policymakers during the current time when the sector is becoming less dependent on subsidies and donations. However, the recent upsurge in the average loan size requires attention as it increases the chances of MFIs targeting better-off clients of the urban market.

It also increases the risk of excessive lending. The seriousness of the issue requires further detailed research to examine the state of affairs of the microfinance sector. A detailed audit of clients' profiles of MFIs is required to check the cases of multiple loans to clients granted by MFIs, as it increases the risk of loan defaults (the main culprit behind the recent severe sectoral crisis termed as "Andhra Crisis").

It is vital for MFIs must innovate and develop their service delivery methods keeping in the view the requirements of their clientele and gain efficiency. Here, IT-enabled solutions can play a crucial role in reducing operating costs in day-to-day operations. This would help MFIs to become financially sustainable while bringing financial prosperity in the lives of their poor clients. Today, all sorts of IT solutions for delivering financial services are available. It is for the MFIs to shift and modify their strategies. E-commerce shops [22] are an excellent example in this regard. The primary question is if financial services can be delivered at a cost that is reasonable to the clients (Rhyne, 1998). The onus to answer the question lies with the service providers, the MFIs, as it is also about ability and determination, not just feasibility.

Notes

1. In their survey conducted in 13 developing countries, with the exception of Indonesia, less than 6% of the funds borrowed by the poor came from a formal source (Banerjee & Duflo, 2007).
2. Mission drift is the fear that an MFI may shift away from its primary objective with the growing commercialisation of the microfinance sector (Armendáriz de Aghion and Szafarz, 2009; Kono and Takahashi, 2010).
3. The DOI is created using the demographic variables related to the borrowers, previously excluded from the formal finance. It includes information related to their gender, literacy and rural inhabitants (Von Pischke, 1991).
4. The SDI measures the interest rate required to charge to borrowers to cover the program cost in the absence of subsidies (Yaron, 1992).
5. The level of poverty and exclusion from the financial services differs from country to country (Hulme & Mosley, 1996). In India, the exclusion is highest at the bottom of the pyramid (Misra, 2016).
6. There are other indicators which are used to measure social performance. Granting loans to women clients has been a priority almost since the inception of Grameen Bank (Dowla & Barua, 2006). Group lending in place of individual lending also indicates that financial services are reaching to the poor. The level of exposure in rural areas in comparison to urban areas also a good indicator of the social performance of an MFI, as often poverty is concentrated in rural areas.
7. Wherein, the severity of the poverty indicates the extent of the depth of outreach (Quayes, 2012).
8. Here the social investors, investors who give weightage to social impact of the organisation along with a reasonable financial return on their investment, can solve the problem.
9. An explanatory variable is endogenous when it is correlated with the error term in a regression (Roberts & Whited, 2013). This violates the assumption of zero covariance between the disturbance and explanatory variable that is $Cov. (u_i, X_i) = 0$, necessary for the application of OLS methods.
10. Endogeneity via simultaneity bias creeps in the OLS estimation when an explanatory variable of an equation is determined simultaneously by the dependent variable of the equation. In such situation, the explanatory variable gets correlated with the error term of the equation.

11. The unique variables of one equation are introduced as instruments in the other equation.
12. The correlogram further confirms the autocorrelated residuals.
13. As by construction, lagged values of dependent variable correlate with differenced error term leading to endogeneity.
14. The difference GMM removes such endogeneity problem by using lagged level of endogenous variables in the form instruments in the differenced equation (Goddard & Wilson, 2009; Olivero & Jeon, 2011).
15. www.themix.org/mixmarket/data-and-analysis
16. The Mix Market defined the OSS as total financial revenue as a percentage of the total expenses which includes financial expenses, impairment loss and operating expenses. The current study uses the OSS ratio in the same sense.
17. Levin, Lin & Chu test is conducted to test the stationarity of the variables.
18. GLP can increase with a growth in the average loan size or due to increase in the number of borrowers keeping the loan size constant.
19. The p-value of this test confirms that there is no evidence that the instruments are correlated with the error term. It indicates that the standard errors are consistent with panel-specific autocorrelation and heteroskedasticity in one step-estimation (Sinha & Sharma, 2018).
20. The AR(2) tests for the second-order serial correlation in the residuals.
21. However, their dependence on subsidies has reduced, and more and more MFIs are now getting commercialised. Therefore, it can be expected that the results would be least distorted in the absence of adjustments made for grants and subsidies received by the MFIs.
22. The business of e-commerce companies is turnover-based, serving a large number of customers and maintaining a large variety of products. This requires to reduce operating costs and improve efficiency. Here, the difference between the objectives of MFIs and such companies is not an issue. The famous Arvind eye care (which inspires many healthcare organisations all over the world) inspired by McDonald, a leader in the fast-food business, is a perfect example in this regard. The case study is available at <https://aravind.org/case-studies/>

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