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Sustainability, market conditions and outreach: the vicious misconception of the win-win proposition in the microfinance industry

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ABSTRACT

The shift of the Microfinance Institutions (MFIs) from the poverty-lending approach to the financial system approach is likely to have two counterbalancing effects on the social mission of poverty alleviation and women empowerment. On the one hand – and as is desirable – financial sustainability could cause MFIs to increase the depth and breadth of their outreach. But on the other hand – and possibly at the cost of the social mission – financial sustainability may become the core objective of the MFIs. The aim of this paper is to investigate which of the two outcomes is most likely in MFIs following the financial system approach. For this purpose, the paper first develops a theoretical framework to deduce testable hypotheses. The hypotheses are then tested with data from 158 rated MFIs, using various panel data estimation techniques. Results obtained thus reveal that majority of the MFIs in developing countries hold some market power. Besides, we find that financial sustainability is at odds with the social mission of alleviating poverty and empowering women and does not translate into depth and breadth of outreach. The study also discusses some policy implications of the results.

1. Introduction

The arrival of microfinance institutions to alleviate human miseries in the early 1980s was revolutionary. The focus of these institutions was to provide credit, at concessionary rates and without collateral requirements, to the poor so that they could start their own tiny income generating activities (Arun, 2005; Hulme & Mosley, 1996; Morduch, 2000; Robinson, 2001). This approach, called welfarist or the poverty-lending approach, helped the rural poor to improve and sustain the lives of their children and of the whole family. But since the lifeline of the welfarist approach was donor funds and government subsidies, it was felt that such institutions are not sustainable

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in the longer run. Hence, the institutionalist approach emerged which champions self-sustained credit programs for the poor (Morduch, 2000). The institutional approach to microcredit is based on market-based lending and is presumed to be superior to the welfarist approach in meeting the ever-growing demand for microcredit.

No doubt the commercial MFIs performed much better than the welfarist ones in meeting growing demands and providing larger loans (Chahine & Tannir, 2010). But commercialisation also necessarily meant a shift from serving the poor to acquiring profits (Christen & Cook, 2000; Armendariz & Labie, 2011; Bateman, 2010; Khan, Shaorong & Ullah, 2017) as both cannot be achieved simultaneously (Robinson, 2001), a fact that is well documented in recent literature[1]. This is so because an MFI, in the absence of subsidies and donations, can only achieve the twin goals of sustainability and outreach if it earns more profits (Cull, DemirgüÇ-Kunt & Morduch, 2007; Morduch, 2000). More profits, in turn, can be appropriated by having and retaining more clients or by charging higher markup rates. An MFI would opt for higher markup rates to increase its profit if demand for microcredit is less elastic and the converse is compatible for markets where demand for microcredit is more elastic (Khan, Shaorong & Khan, 2015). The former is a characteristic of non-contestable markets while the latter is a characteristic of perfect markets. However, 'credit without collateral requirements' may still be attractive enough to counterbalance the impact of higher than the market markup rates. And given this attractiveness, an MFI may find it optimal to attract un-bankable wealthy clients[2] (Armendáriz & Labie, 2011), to concentrate their operations in urban areas (Mersland & Strøm, 2010) or to concentrate on other less risky clientele[3]. All such outcomes are definite drifts from the original mission of MFIs and are largely facilitated by the market conditions in which an MFI operates.

Since the pursuit of profit (which we call the weaker notion of sustainability) is a prime reason behind mission drift, and that more profits can be appropriated in more concentrated markets, an examination of the market conditions would better facilitate to know where mission drift is probable and where it is not. Thus, the paper first presents theoretical linkages between financial sustainability, market conditions and microfinance mission drift. The theoretical discussion is then used to develop several testable hypotheses, all related to the core objectives of the paper. The derived hypotheses are then empirically tested by utilising data on 158 rated MFIs obtained from the Mix Market. To achieve the stated objectives, the rest of the paper is organised as follows; Section 2 briefly reviews the relevant literature. Section 3 explains data and methodology employed to draw inferences regarding the presence of market power and mission drift in the microfinance markets. Section 4 present results and discussions. Section 5 concludes the paper with some policy recommendations.

2. Literature review

Economists always use the degree of competition to meter market efficiency. Competition, however, in the microfinance industry is multi-faceted and may or may not lead to efficient solutions. Before 90 s and in the old poverty-lending approach, MFIs competed for donor funds and government subsidies (Assefa, Hermes & Meesters, 2013).

Such competition is likely to cause inefficiency which is proved both in theory (see for example Rose-Ackerman, 1982 and Aldeshev & Verdier, 2006) and by empirical studies (see for example Cooley & Ron, 2002 and Ly & Mason, 2012). Competition for funding usually distorts incentives and MFIs are more likely to focus on things other than their original mission of poverty alleviation. In such case, a monopoly solution may be optimal (McIntosh & Wydick, 2005).

The nature of competition in microfinance industry somehow changed, but not entirely, in the new financial-lending approach (Assefa, Hermes & Meesters, 2013) and so does its theoretical implications. Theory and empirics have produced mixed results if competition is analyzed from investor's and MFIs perspective. For example, the theoretical results of McIntosh & Wydick (2005) views competition for external funding, even in the new wave MFIs, as inefficient while the study of Ghosh and Van Tassel (2013) views this type of competition as welfare enhancing. But from the perspective of clients, there is consensus that competition enables MFIs to provide a complete package of better financial services. Competition also helps to achieve depth of outreach. However, even this type of competition is not without disadvantages. For example, competition might cause MFIs to lower price and subsequently its profitability (McIntosh & Wydick, 2005). Competition also provides clients with multiple loan opportunities from different MFIs which may decrease client's repayment prospects and hence the financial status of MFIs. Thus, theoretically, competition has both positive and negative consequences for MFIs performance.

The switch over of MFIs from the old poverty-lending approach to the new financial system approach was incited by the well-known 'win-win' proposition (Robinson, 2001). Given the unpredictable nature of donor funds/government subsidies, MFIs following the old poverty-lending approach were neither sustainable, nor these could significantly increase the net of beneficiaries. Thus, as is believed, the commercial lending would make the MFIs financially sustainable, as well as would increase both depth and breadth of their outreach. Notwithstanding the very weak notion of sustainability, empirical studies can be classified in two groups; studies that test whether the 'win-win' proposition is a reality or a myth, and studies that identify factors leading to MFIs financial sustainability. Some of the well-known recent studies that claim the 'win-win' proposition to be a reality are; Christen & Cook (2000), Christen and Drake (2002), and Ayele (2015). However, the volume of studies claiming a trade-off between financial sustainability and outreach far outnumber the proponents of the 'win-win' proposition. These studies include; Conning (1999), Murdoch (2000), Cull et al., (2007), Hermes, Lensink & Meesters (2011), Hudon & Traca (2011), and Annim (2012).

The second strand of studies which only concerns financial sustainability of MFIs include USAID report by Christen et al., (1995) and Ayayi & Sene (2010). The first study reports that financial sustainability is possible only when interest rate controls are not in operation. According to the second study, high interest rate correlates positively while percentage of female borrows correlates negatively with MFIs financial sustainability. The joint message of these studies is that an MFI pursuing financial sustainability will have to systematically avoid female borrowers and charge higher interest rate. In effect, these results also show that the sceptics of the 'win-win'

proposition are right, and that financial sustainability is at odds with social sustainability (Jackson, 2016).

Besides the above referred studies, a number of empirical studies scales the impact of competition on MFIs performance (e.g., McIntosh and Wydicks 2005; Mersland and Strøm 2010 and Navajas, et al., 2003), but to the best of our knowledge, competition in the microfinance industry has never been linked with mission drift. Moreover, and what makes this study unique, this would be the first study to link sustainability, competition and mission drift in the microfinance industry.

3.1. Theoretical framework

In the contemporary world, a firm is sustainable if it is commercially successful, has no negative effects on the environment and operates in a sustainable society (Bocken, Short, Rana & Evans, 2014; Stubbs & Cocklin, 2008). Unfortunately, the term covers, at best, financial sustainability whenever it is used with reference to MFIs (e.g., Christen et al., 1995; and Ayayi & Sene, 2010)[4]. By connecting pieces of economic theory, it can be shown that it is this weak notion of sustainability, facilitated by market power that causes microfinance institutions to divert from their original mission of poverty alleviation and women empowerment.

To formalise things, let l be the output produced by a representative MFI[5], r be the price charged for its output l, and $c(l)$ be the cost of producing l. The weak notion of sustainability, i.e., financial sustainability, implies that our representative MFI would be sustainable if and only if profits (π) in the following equation[6] are positive (Ayayi & Sene, 2010; Christen, Rhyne & Vogel, 1995);

$$\pi = r \times l - c(l) \tag{1}$$

An MFI following the financial system approach (weak notion of sustainability), and assuming perfect markets, would choose l such that profits are maximised;

$$\underset{l \geq 0}{Max}\, \pi = r \times l - c(l) \tag{2}$$

The first order condition for an interior optimum is;

$$r - \frac{\partial c(l)}{\partial l} = 0 \tag{3}$$

or

$$r = \frac{\partial c(l)}{\partial l} \tag{4}$$

Where $\frac{\partial c(l)}{\partial l}$ is the marginal private cost (MPC) of producing l, and r is the per unit price charged for the product. In competitive markets, r equals marginal private benefits (MPB) accruing to the firm and hence the above optimality condition can be written as;

$$MPB \; = \; MPC \tag{5}$$

If the production of l carries no externalities, then the above solution is a cherished one since; (a) it maximises both producers and consumers surplus, (b) price is set at the marginal cost, (c) and production takes place at the lowest possible cost (Mas-Colell, Whinston & Green, 1995). But the production of l does carry with itself a positive externality in the form of poverty alleviation and women empowerment and hence would be under produced (Jehle & Reny, 2011). Thus, under-production is the only theoretical concern if microfinance firm operates in the ideal market structure, but a concern serious enough to make the 'win-win proposition' doubtful[7].

The situation becomes even more worrisome if we assume monopoly power, instead of competition, in the product market. The condition for equilibrium output remains the same except that, under monopoly power, a firm's MPB is given by;

$$MPB = r\left[1 + \frac{1}{\eta_r}\right] \tag{6}$$

Where η_r is the interest elasticity of micro loans. Hence the equilibrium condition under monopoly power can be written as;

$$r^m = \frac{MPB}{\left[1 + \frac{1}{\eta_r}\right]} \tag{7}$$

This last expression shows that, under monopoly power, an MFI will charge interest on its advances based on the interest elasticity of microloans. That is, if demand for microloans is interest inelastic (i.e., if $|\eta_r| < 1$), then an MFI will charge above its MPC (Khan, Shaorong & Khan, 2015). Similarly, the other two properties of competitive solution are no more guaranteed if the firm holds market power. Comparatively then, the solution under perfectly competitive markets seems best since it only involves under production of l.

The above discussion implies that providing microcredit under any assumed market structure is problematic for achieving the social mission, but monopoly power relatively taxes the already impoverished more severely than competition. Let us go back to the ideal market structure but instead consider the broader notion of sustainability. The broader notion of sustainability would require considering both private and social impact of microcredit in the above calculus. Let us model the social impact of microcredit as a positive externality (h) and let the utility of the clients is a positive function of this externality;

$$u = \theta(h) \; where \; \frac{\partial u}{\partial h} > 0 \tag{8}$$

Then an optimal solution would require producing levels of l and h such that profit net of the positive impact of microcredit is maximised. That is[8];

$$Max_{l,h\geq0} \pi = [r \times l - c(l,h)] + \theta(h) \tag{9}$$

The two first order conditions for an interior maximum are;

$$r - \frac{\partial c(l,h)}{\partial l} = 0 \tag{10}$$

and

$$\frac{\partial \theta(h)}{\partial h} - \frac{\partial c(l,h)}{\partial h} = 0 \tag{11}$$

The first condition is the same as before (i.e., MPB = MPC) but the second condition states that, in an optimum, the MPC of producing the positive externality must equal the marginal social benefit. A profit maximiser firm will never take care of equation 11, no matter what market structure the firm is operating in. But while a firm in competitive market structure ignores equation 11, the same firm practice markup pricing as well if given market power. Hence, this brief theoretical discussion implies that the problems associated with the financial system approach directly stems from the weak notion of sustainability which are further magnified by the market power. Thus, we hypothesis the following;

Hypothesis A The weak notion of sustainability will inevitably cause MFIs to focus on profit maximisation for its own sake rather than increasing depth and breadth of outreach.

Hypothesis B MFIs are more financially sustainable the more they drift from their original mission.

Hypothesis C Drift from the original mission, in turn, is facilitated by the market conditions.

3.2. Data sources

To estimate the empirical models of this study, we have taken data from the Mix Market which is a reliable source for data regarding MFIs. The Mix Market data set includes information on more than 2000 rated MFIs from all six developing regions of the world. The selection of MFIs for the present study is guided by two qualifications. First, data on all those MFIs are retrieved from the Mix Market data set which follows the financial system approach. It means that the sample will include banks, rural banks and non-banking financial intermediaries (NBFIs) while excluding Non-Government Organisations (NGOs), credit unions and others. In the second qualification, of the above stated MFIs, only those are selected for which data are available for at least ten (10) years, ranging from 2000 to 2015. Thus, a total of 158 MFIs qualifies for the analysis which are detailed in Table 1.

Table 1. Regional information of the MFIs included in the sample.

Region	Number of countries	Number of MFIS	Percent
Africa	01	07	4.43
East Asia & the Pacific	02	24	15.19
Eastern Europe & Central Asia	03	35	22.15
Latin America & the Caribbean	05	53	33.54
South Asia	04	39	24.68
Totals	15	158	100

Source: The Mix Market (2016).

3.3. Analytical methodology

Given that we have 158 cross sections and 16-time series observations[9] on each variable of interest, the appropriate estimation technique is the use of panel data techniques. Panel data estimation is usually considered an efficient method in handling economic data. A general panel data model, assuming away any heterogeneity amongst cross sections, can be specified as;

$$Y_{it} = \gamma + \theta X_{it} + \epsilon_{it} \tag{12}$$

Several panel data estimation techniques are available (e.g., pooled regression, fixed effect models and random effect models) to estimate equation (12). The choice of a particular estimation technique depends on how the error term in equation (12) is specified. For example, if it is believed that omitted variables would affect the dependent variable cross sectionally but not over time, then equation (12) becomes;

$$Y_{it} = \theta X_{it} + \mu_i + V_{it} \tag{13}$$

Alternatively, if the omitted variables affect the dependent variable over time but not cross-sectionally, then equation 12 becomes;

$$Y_{it} = \theta X_{it} + \mu_t + V_{it} \tag{14}$$

These specifications, which can also be generalised to account for both cross sectional and time effects at the same time, can be estimated as fixed effect models.

A random effect model, on the other hand, can be specified as;

$$Y_{it} = \gamma + \theta X_{it} + \delta_i + \varepsilon_{it} \tag{15}$$

Or as;

$$Y_{it} = \gamma + \theta X_{it} + \delta_t + \varepsilon_{it} \tag{16}$$

depending on whether we are assuming cross sectional variations or time series variations. Unlike fixed effect models, the random effect models can efficiently be estimated with generalised least square method. The selection of a particular panel data estimation method is usually based on the results of Hausman test. The null hypothesis of the Hausman test is that the random effect estimation is consistent and efficient. So, rejection of the null hypothesis would imply that fixed effect estimation is consistent and efficient.

Table 2. List of variables included in the analysis.

Variables	Description	Measure	Source
Mission Drift	MD	PFB and ALS	Mix Market
Female Borrowers	PFB	Percentage of women borrowers.	Mix Market
Loan Size	ALS	Average Loan Size in US dollars.	Mix Market
Assets	AS	Total Assets in US dollars.	Mix Market
Cost per borrower	CPB	Ratio of operating expense to Number of active borrower.	Mix Market
Number of active borrower	NAB	Number of active borrower who have an outstanding loan balance with MFIs.	Mix Market
Profit Margin	PM	Net operating income/ financial revenue	Mix Market
Loan Loss Rate	LLR	[Write offs-Value of loans recovered]/Average gross loan portfolio	Mix Market
Contestability Index	CI	Estimated from equation 9	Own estimation
Financial Revenue	FR	Ratio of financial revenue to total assets	Mix Market
Gross National Income Per Capita	GNIPC*	Gross national income/ midyear population	Mix Market
Unit price of labor	UPL*	Average salary	Mix Market
Unit price of capital	UPC*	Financial expenses/equity	Mix Market
Unit price of funds	UPF*	Financial expenses/borrowings	Mix Market

Note: *Variables marked (*) are not readily available in the Mix Market data set and are computed using various relations.*

As outlined in the introductory section, the purpose of this paper is to link market conditions, sustainability and mission drift in the MF industry to derive and test some meaningful hypothesis. Thus, to know whether MFIs in a specific country are operating in competitive environment or have monopoly power, we use the Panzar and Rosse (1982 & 1987) H-statistics. H-statistics has routinely been used to know competitive environments in banking industry (Matthews, Murinde & Zhao, 2007) and can be estimated as;

$$lnREV_{it} = \alpha_0 + \sum_{j=1}^{3} \sum_{i=1}^{n} \sum_{t=1}^{T} \pi_j lnZ_{it} + \sum \beta_i lnX_{it} + \mu_i + V_{it} \qquad (17)$$

Where ln REV is the revenue of the ith MFI at time t, Z is a vector of input prices (labor, capital and funds), and X is a vector of control variables. These variables are outlined and explained in Table 2. The *H*-statistics involves summing over π_j. It is customary to include unit prices of labour, capital and funds in the input price vector Z. In the *X*-vector, we control for Gross National Income per Capita (GNIPC) of the jth country and size (AS) of the ith MFI. Thus, the H-statistic is given by;

$$H = \pi_l + \pi_k + \pi_f \qquad (18)$$

Where π_l, π_k *and* π_f are the elasticity of revenue with respect to labor, capital and funds respectively. If H in equation (18) equals 1, this means that MFIs in the jth country are operating in a competitive environment. Alternatively, $H \leq 0$, implies monopoly and $0 < H < 1$ implies monopolistic competition. Once estimating the value of H, the paper then will utilise a Wald-type test to test various restrictions

imposed upon H. Since there are 15 countries considered for the analysis, equation (17) and (18) are estimated for each country separately.

Once done with estimating contestability index (CI) for all the fifteen countries, the next step would be to know various covariates of mission drift in MFIs, CI being one of these. For doing this, we will estimate variants of the following specification;

$$MD_{it} = \tau + \varphi_1 AS_{it} + \varphi_2 CPB_{it} + \varphi_3 NAB_{it} + \varphi_4 PM_{it} + \varphi_5 LLR_{it} + \varphi_6 CI_{it} + U_{it} \quad (19)$$

Variables included in equation (19) are explained in Table 2.

In both empirical and theoretical literature (e.g., see Christen, Rhyne & Vogel 1995; and Ayayi & Sene, 2010], it is claimed that financial sustainability is essential for both depth and breadth of outreach. As a next exercise, and to check the validity of this claim, we also estimate the following equation;

$$PM_{it} = \alpha + \gamma_1 AS_{it} + \gamma_2 CPB_{it} + \gamma_3 NAB_{it} + \gamma_4 LLR_{it} + \gamma_5 CI_{it} + \gamma_6 ALS_{it} + \gamma_7 PFB_{it} + U_{it}$$
$$(20)$$

Variables included in equation (20) are also detailed in Table 2. The dependent variable in equation (20) is the profit margin (PM) of the ith MFI which is considered as a proxy for financial sustainability.

This completes the econometric specifications needed for testing the three hypotheses of section 3.1. While majority of the variables in equation (17), (19) and (20) are included to serve the purpose of control, the rest of the variables are included for specific purposes. For example, if the claim of increasing depth and breadth of outreach with increasing financial sustainability is not true, and assuming that female borrowers are the poorest, then both γ_7 *and* γ_3 should be negative in equation (20) (Hypothesis A)[10]. Hypothesis B can be tested either through equation (19) or equation (20). In equation (19), the relevant parameter is φ_4. Since we are using two different measures of mission drift, i.e., ALS and PFB, hence φ_4 should be positive in equation (19) when ALS is used as a measure of mission drift, and negative when PFB is used as a measure of mission drift[11]. To test hypothesis B using equation (20), the relevant parameters are γ_6 and γ_7. If hypothesis B is true, then γ_6 should be positive and γ_7 negative in equation (20)[12]. Similarly, hypothesis C can also be tested using either equation (19) or (20). In equation (19), the relevant parameter is φ_6 and in equation (20), the parameter of interest is γ_5. Again, given the two measures of mission drift in equation (19), φ_6 should be negative when ALS is used as a measure of MD and positive when PFB is used as a measure of mission drift[13]. The descriptive statistics of variables used in equation (19) and (20) are given in Table 3 below.

4. Results and discussion

Microfinance competition can be used as an indirect evidence of mission drift. As stated earlier, a commercial MFI, in the absence of subsidies and donations, can only achieve the twin goals of sustainability and outreach if it earns more profits. But more profits can either be earned by having more clients (which is possible only by charging a lower price) or by charging a higher price for the products. Mark up pricing is a characteristic

Table 3. Descriptive Statistics of the variables.

Variables	Mean	Std. Deviation	Skewness	Kurtosis
ALS	1234.73	1681.30	4.04	28.61
PFB	0.65	0.26	0.01	−1.17
AS	153425733.3	424654846.4	6.89	62.98
PM	0.053	0.89	−11.24	257.03
CPB	187.56	227.95	5.99	76.99
NAB	179365.6	641983.75	7.29	59.63
LLR	0.02	0.03	5.01	49.29
CI	0.35	0.29	0.31	−0.89

Source: Authors calculations using Eviews 10.

of non-contestable markets and is facilitated by interest inelasticity of microloans (Khan, Shaorong & Khan, 2015). Lower prices (i.e., interest rate), on the other hand, will attract more clients (being a characteristics of contestable markets) only if demand for microloans is elastic. But as mentioned elsewhere (Khan, Shaorong & Khan, 2015), charging higher prices and retaining more clients are at odds with each other's.

The contestability results based on equation (17) and (18) are given in Table 4. The second column reports the contestability index value, which is the sum of the three elasticities. A contestability value of 1 is interpreted as evidence of perfectly competitive markets while negative values correspond to concentrated markets.

Column three and four report Wald test values. In column three, we test the null hypothesis that markets in the particular country are contestable. In column four, we do the same for markets in the particular country having monopoly power. The asterisk (*) above the t-value signifies the rejection of the particular null hypothesis at 1 percent level of significance. If both the null hypotheses are rejected, then we interpret markets as monopolistic. As the table shows, only three out of 15 countries' MFIs operate in a competitive environment. A quite significant number of the markets (i.e., 7 out of 15) can best be characterised as monopolies. Since firms are also not necessarily price takers in monopolistic competition, thus the results of this empirical study show that 80 percent of the MFIs enjoy some monopoly power and hence can set their price over and above the market. In turn, mission drift is likely to take place in most of the countries.

The results based on equation (19) and (20) are given in Table 5 and 6 respectively. Note that various specifications of equation (19) are estimated using the fixed effects methodology as recommended by the Hausman test statistics while equation (20) is estimated using the random effects methodology suggested by the same test. In Table 5, CS-FEM, PR-FEM and CS & PR-FEM stands for cross section-wise fixed effect model, period-wise fixed effect model and both cross section and period-wise fixed effects models respectively. Similarly, in Table 6, CS-REM and PR-REM stands for cross section-wise and period-wise random effects models respectively. To save space, only results related to the stated hypothesis are discussed below.

Hypothesis A The weak notion of sustainability will inevitably cause MFIs to focus on profit maximisation for its own sake rather than increasing their depth and breadth of outreach.

For this hypothesis to be true, we mentioned that both γ_7 *and* γ_3 should be negative in equation (20), Table 6. While γ_7 is negative and statistically significant in both cross section-wise and period-wise random effects specifications, γ_3 is positive in CS-REM and negative in PR-REM. These results imply that while we have

Table 4. Results of the Contestability analysis.

Country	Contestability index	Wald test (t-value)		Remarks
		$\alpha_1 + \alpha_2 + \alpha_3 = 1$	$\alpha_1 + \alpha_2 + \alpha_3 = 0$	
Pakistan	0.926981	−0.407015	5.167030*	Perfect Competition
India	0.543243	−7.295766*	8.677215*	Monopolistic Competition
Bangladesh	0.313366	−8.591947*	3.921195*	Monopolistic Competition
Nepal	0.238034	−4.717974*	1.473868	Monopoly
Kenya	−0.20542	−7.219330*	−1.230273	Monopoly
Cambodia	0.099322	−10.35848*	1.142272	Monopoly
Philippines	0.122482	−6.621465*	0.924212	Monopoly
Azerbaijan	0.58363	−3.808265*	5.338073*	Monopolistic Competition
Bosnia & Herzegovina	0.866658	−1.467701	9.539323*	Perfect Competition
Tajikistan	0.194171	−6.717903*	1.618735	Monopoly
Bolivia	0.215383	−9.068807*	2.489451*	Monopolistic Competition
Colombia	0.642366	−2.013786	3.617060*	Perfect Competition
Ecuador	0.054524	−7.442060*	0.429171	Monopoly
Nicaragua	0.593795	−2.453580*	3.586683*	Monopolistic Competition
Peru	0.105739	−7.314352*	0.864864	Monopoly

Note: Results for all countries are based on Fixed Effects Estimation and are computed by the authors using Eviews 10.

Table 5. Covariates of Mission Drift (Fixed Effects Estimation).

Variables	Dependent variables					
	ALS			PFB		
	CS-FEM	PR-FEM	CS & PR-FEM	CS-FEM	PR-FEM	CS & PR-FEM
Constant (τ)	48.952	166.875*	85.491	0.681*	0.743*	0.684*
AS (φ_1)	1.18E-06*	7.80E-07*	1.02E-06*	−3.20E-11**	−1.47E-10*	−2.15E-11
CPB (φ_2)	5.088*	5.673*	4.878*	−6.44E-05*	−0.0005*	−5.07E-05**
NAB (φ_3)	−0.0002*	−0.0002*	−0.0003*	1.15E-08	9.52E-08*	1.24E-08
PM (φ_4)	73.259*	95.722*	69.063*	−0.011**	−0.048*	−0.010**
LLR (φ_5)	563.009	−1607.52*	193.55	−0.141	−0.719*	−0.118
CI (φ_6)	300.511	−94.889	426.75	−0.049	−0.030	−0.066
R^2	0.87	0.75	0.87	0.89	0.27	0.89
F-Statistics	62.03*	241.22*	59.84*	62.85*	23.32*	58.63*
Hausman Test	34.839*				14.411**	
Pearson Correlation between ALS & PFB: 0.443*						
Durbin-Wu-Hausman test: 0.023 (0.53)						

Note: (*) and (**) implies statistical significance at 1% and 5% level respectively.
Source: The results are estimated by the authors using Eviews 10.

statistical evidence that MFIs do not use their profits to increase depth of outreach, we do not have conclusive evidence to comment on the impact of MFIs profits on the breadth of outreach.

Hypothesis B MFIs are financially sustainable if they drift from their original mission.

To test hypothesis B using results from equation (19), the relevant parameter is φ_4. As mentioned in section 3.3, and if hypothesis B is true, then φ_4 should be positive in equation (19) when ALS is used as a measure of mission drift, and negative when PFB is used as a measure of mission drift. Interestingly, the results of all the models in Table 5 returns the expected sign and φ_4 is also statically significant in all the models. Alternatively, to test hypothesis B using equation (20), the relevant parameters are γ_6 and γ_7. Again, if hypothesis B is true, then γ_6 should be positive and γ_7 negative in equation (20). And again, the results in Table 6 for all models confirm the expectations. Thus, we can safely conclude that financial sustainability/profit margins of MFIs are directly associated with drifting from their original mission.

Table 6. Covariates of Profit Margin (Random Effects Estimation).

Variables	Models	
	CS-REM	PR-REM
Constant (α)	0.38228*	0.351*
AS (γ_1)	3.72E-11	8.23E-11
ALS (γ_6)	6.09E-05*	4.96E-05*
CI (γ_5)	−0.0628	−0.041
CPB (γ_2)	−0.0006*	−0.0005*
LLR (γ_4)	−4.3746*	−4.4574*
NAB (γ_3)	1.47E-09	−3.45E-08
PFB (γ_7)	−0.292*	−0.262*
Weighted R^2	0.073	0.079
F-Statistics	15.63*	16.94*
Hausman Test:	6.589556	

Note: *(*) and (**) implies statistical significance at 1% and 5% level respectively.*
Source: The results are estimated by the authors using Eviews 10.

Hypothesis C Drift from the original mission, in turn, is facilitated by the market conditions.

To test hypothesis C, the relevant parameters are φ_6 and γ_5 in equation (19) and (20) respectively. According to the postulates of equation (19), φ_6 should be negative when ALS is used as a measure of MD and positive when PFB is used as a measure of mission drift. The results, however, are mixed and none of the estimated φ_6 in any specification is statistically significant. To test the same hypothesis using results of equation (20), the parameter of interest is γ_5, and, if hypothesis C is true, then γ_5 should be negative. Results in Table 6 confirm that γ_5 is negative in both the specification but is statistically insignificant. Thus, we do not have conclusive evidence, either from equations (19) or equation (20), to accept hypothesis C as true.

5. Conclusions and recommendations

Soon after the advent of microfinance institutions, triggered by a general dearth of subsidies and donations, MFIs around the world opted to go through a major revamp. Initially, starting as welfarist institutions, most of the MFIs got transformed into commercial entities seeking profit. A natural outcome of such a transformation was the emergence of competition for clients and a drift from their original mission of poverty alleviation. But despite such hidden repercussions, the proponents of the commercial approach advocated the transformation by highlighting the positive side in terms of financial sustainability.

The current work is an effort to test the validity of the claim that the twin goals of sustainability and poverty alleviation can be achieved simultaneously. To this end, we have collected data from the Mix Market database for a total of 158 MFIs from the five continents for a period of 15 years. To evaluate the competitive environments in various countries with respect to MFIs, we have utilised the Panzar and Rosse (1982, 1987) H-statistics. Using the panel data structure and Fixed Effect Model (FEM), the estimation results indicate that 80 percent of the MFIs hold some market power and can exert their influence on pricing. Since the theoretical discussion of section 3.1 implies that mission drift is directly associated with market power, hence it is likely

that majority of the MFIs are drifting from their original mission of poverty alleviation and women empowerment.

Moreover, the study also tested three hypotheses related to sustainability, market conditions and mission drift in the microfinance industry. For this purpose, we have utilised data on 158 MFIs for the period of 2000–2015 from the Mix Market data set. The regression techniques included a mix of fixed effects and random effects models. The results indicate that the financial sustainability of an MFI is a direct function of mission drift, and that it never translates into increasing the depth of outreach. Similarly, although the results are not conclusive, we have some evidence on how market conditions effect the incidence of mission drift.

Before any further elaborations of the findings, it would be fruitful to shed light on some of the limitations of the study. In our view, the first limitation of the study has to do with the limited number of MFIs selected for the study and the use of unbalanced panel data. This limitation has been considered seriously but there was no other alternative. We faced a trade-off between balancing the panel and the number of time series observations and hence a middle way is preferred. Secondly, the proxies used for unit price of capital (UPC) and unit price of funds (UPF) are not ideal but are the only proximate measures available in the Mix Market data set. Third and last, we have used the contestability index as one of the explanatory variables in equation (19) and (20). Since, there are only 15 countries in the sample, and that contestability index is estimated for each country separately, hence we have a total of 15 observations on CI. Thus, CI is a type of dummy variable with fifteen categories. While the use of CI in such a way is fine, it limits the use of more sophisticated econometric techniques such as Generalized Method of Moments (GMM), Vector Autoregressive Models (VEC) and cointegration techniques[14].

Having these caveats in mind, let's turn back to the results. The substantiation of the first hypothesis means that financial sustainability (i.e., the weaker notion of sustainability) does not translate into depth and breadth of outreach. This finding shed serious doubts on the 'win-win' proposition of the financial system approach. The only notable advantage of the financial system approach over the poverty-lending approach is its financial sustainability, provided that it enables MFIs to extend their depth and breadth of outreach. But our results suggest otherwise, and hence financial system approach is no better than the poverty-lending approach in terms of outreach. The verification of our second hypothesis suggests the same thing. That is, the hypothesis states that financial sustainability and the social mission of alleviating poverty and empowering women are at odds with each other. The two hypotheses jointly suggest that pronounced focus on financial sustainability may be counterproductive for achieving the social mission. Although partial, the verification of the third hypothesis suggests that the magnitude of the above two effects depends on the market conditions.

A closer look at these results imply that it is the acceptability of the weaker notion of sustainability and the presence of market power that causes MFIs to drift from their original mission. Hence, the recommendations of this study are straight forward; a shift in focus from the weaker notion of sustainability to the broader notion of sustainability. As noted in section 3.1, an MFI in any market structure will always ignore

the social impacts of its functioning but damages to the society because of this ignorance are at its minimum in perfectly competitive markets. Thus, to internalise the social side of the calculus and to remove market inefficiencies, the state and the donor agencies have a paramount role to play. Direct provision of microfinance services has problems of its own, but the state and donor agencies can correct for the ignored social impacts in the financial system approach through conditional subsidies and grants. That is, donor agencies and the state should, ideally, tie grants and subsidies with both depth and breadth of outreach of an MFI. Besides, the broader notion of sustainability also implies that future research should aim on impact of MFI on development, women empowerment and poverty reduction rather than on MFI 'lost' agenda and its sustainability.

Notes

1. For example, Rosenberg (2007) and Gonzalez (2010) reported that a good majority of the commercialized MFIs charged markup rates well above the red zone proposed by Yunus (2007).
2. Clients who are either reluctant to acquire loans against collaterals or those who lack property to be held as collaterals by the commercial banks.
3. For example, advancing loans of greater denomination to less number of clients to save on cost, or to have more male clientele than female.
4. To the best of authors' knowledge, only Bhanot & Bapat (2015) is an exception who constructed a sustainability index which covers financial as well as social sustainability.
5. Contemporary MFIs are providing a mixture of services but the focus here is on microloans only.
6. Note that specifying and accepting the objective function of an MFI in this fashion is synonymous to accepting that poverty alleviation or women empowerment is a secondary goal for an MFIs. Although it is an acceptable specification for the proponents of financial system approach, but they would also claim that more profits mean greater outreach.
7. Since underproduction in the microfinance industry has direct implication for both depth and breadth of outreach.
8. The function π in equation (9) could be interpreted as a social profit function where $r \times l - c(l,h)$ represent an MFI's profit while $\theta(h)$ represent the positive social impact of microcredit. Moreover, h is introduced in the cost function because extending microcredit to un-bankable clients involves risk of default and hence it is assumed that $\frac{\partial c(l,h)}{\partial h} > 0$.
9. Note that the panel is not balanced because we have set the minimum time series observations for an MFI to be 10 years while the maximum is sixteen years. Resultantly, the minimum and maximum time series observations for an included MFI are 10 and 16 respectively.
10. Because a negative coefficient of PFB would imply that profit margin and PFB are inversely related which would contradict profits being used for increasing depth of outreach. Similarly, a negative coefficient on NAB would imply inverse relationship between PM and NAB, contradicting the claims of profits being used for increasing breadth of outreach.
11. A positive coefficient on PM when ALS is used as a measure of MD would mean that PM and MD are directly related, and a negative coefficient on PM when PFB is used as a measure of MD would necessarily means the same thing.
12. Again, the two parameters are estimates of impact of ALS and PFB (both measures of mission drift) on PM and would definitely substantiate the hypothesis if the restrictions hold.

13. A given parameter should assume different sign with respect to the two measures of MD (i.e., ALS and PFB) because the two measures are negatively correlated as reported in table 5, and because increasing loan size and decreasing percentage of female borrowers are considered as evidence of mission drift.

14. Inserting CI as an explanatory variable in the mentioned techniques causes singularity problem.

Disclosure statement

The authors have no conflicts of interest to declare.

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