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Financial Performance of Micro-Finance Institutions in India

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ABSTRACT

Micro-finance institutions (MFIs) in most developing countries, including India, are seen as essential tools to eradicate poverty and raise the standard of living of rural poor. Therefore, the sound functioning of MFIs has a huge long-run impact on the outreach of the rural poor. However, the performance of MFIs is often measured in terms of their social impact on the rural poor, while the financial indicators are ignored. In this context, the study analysed the major determinants of the financial performance of the 20 MFIs in India using panel regression. The results of the study revealed that financial indicators such as operating self-sufficiency, return on assets, and size (assets of the MFIs) had a positive impact on increasing the performance of MFIs. Further, the active borrowers increase efficiency, while passive borrowers had a negative impact on the performance of the MFIs. Similarly, a low level of debt to equity ratio, operating expenses to assets ratio, and low percentage of women borrowers could lead to the sound financial performance of MFIs.

Keywords: Active borrowers, financial performance, micro-finance, women borrowers.

JEL Codes
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INTRODUCTION

Poverty and inequality have continued to inflict most of the developing economies of the world, including India. Lack of easy access to credit is often cited as one of the main reasons for their failure to come out of the vicious circle of poverty (Beck, Demirguc-Kunt & Martinez, 2007; Gakhar and Meetu, 2013; World Bank, 2008). The end of the last century has witnessed the emergence of micro-finance institutions (MFIs) that are seen as one of the essential tools to bring the rural poor out of poverty by providing financial services in the form of credit, saving, and insurance at their doorsteps, which in turn can create significant income and employment opportunities (Anshu & Gauba, 2013). During the period of 1960s and 1970s, most of the developing countries initiated micro-credit facilities for the rural masses but failed to achieve the

desired results due to high transaction costs associated with the micro-credit (Dutta & Das, 2015; Houseini, Khaledi, Ghorbani & Brewin, 2011; Llanto, 2004). MFIs have overcome this problem by providing group-based lending to the rural poor. In this way, most of the MFIs can increase their outreach to the downtrodden in rural areas. Several studies in India, such as Ganesh & Singh (2015); Sinha (2007); Srinivasan (2012, 2013); Thomas & Kumar (2016), have outlined the outreach of the MFIs and evaluated their social performance. However, the concept of social performance has largely overshadowed the state of the financial health of the MFIs. There exists a strong linkage between the financial sustainability of MFIs and the achievement of their social objectives (Agarwal & Sinha, 2010). The financial performance of the MFIs also plays an equally important role in maintaining the outreach and sustainability of the MFIs over time. The need to evaluate the financial performance of MFIs has also emerged from the fact that many NGOs and regional banks have entered into micro-credit, while some corporates pretend to enter as a part of corporate social responsibility. The monitoring and analyzing the financial performance of MFIs is likely to have greater value addition for such lenders and investors (Daher & Le Saout, 2013).

The roots of micro-finance can be traced back to the middle of the 19th century when Lysander Spooner suggested the need for a small credit to the farmers to combat poverty (Kannan & Panneerselvam, 2013). In India, the concept of micro-finance gained its roots with the establishment of Syndicate Bank in 1921, which concentrated on raising micro-deposits on a daily/weekly basis and sanctioned micro-credit to its clients for a shorter period (Kaur & Tanghi, 2015; Mahanta, Panda & Sreekumar, 2012). The concept of microfinance came into the limelight when Dr. Mohammad Yunus started to lend money during the famine in 1976 in Bangladesh and with the establishment of the Self-Employed Women's Association of India in 1974 (SEWA) (Bateman, 2014; Tripathi, 2014). The 1980s witnessed the emergence of various self-help groups (SHGs) and informal bodies, which provided micro-level financial facilities (credit and saving) to their clients (Tripathi, 2014). The decade of the 1990s is often referred to as the micro-finance decade. This period witnessed the growth of MFIs and a surge in their outreach (Robinson, 2001). After that, researchers also started to explore the impacts of MFIs on the rural poor. Several studies revealed that micro-finance is a helpful tool to combat poverty (Basu, 2006; Bhatt & Jhaveri, 2008; MYRADA, 2002). The researchers started to analyze the performance, growth, financial sustainability, profitability, efficiency, and capital structure of the MFIs around

the globe (Abbas, Tahir & Rahman, 2012; Ananda & Colaco, 2012; Coleman, 2007; Narwal, Pathneja & Kumar, 2015; Rai & Rai, 2012; Suberu, Aremu & Popoola, 2011). However, in the context of India, there exist only a few such studies, which explore the financial performance of the MFIs (Agarwal & Sinha, 2010; Gakhar & Meetu, 2013; Rai & Anil, 2011). Most of these studies have measured only performance indicators. None of the studies has focused on the determinants of financial performance of the MFIs using an econometric approach. The study aimed to fill this gap in the literature by carrying out a study on major determinants, which impact the financial performance of MFIs.

METHODOLOGY

The annual data on 20 MFIs (Appendix A, Table 1) were culled out from the Microfinance Information Exchange (MIX market) from 2005 to 2014. MIX market is the most reliable database currently available on MFIs in India. The description of the various financial indicators used for the study are:

Operational Self-Sufficiency (OSS): OSS measures the proportion of income covered by the operating expenses. It is used as a performance indicator of the MFIs. Its value lies between 0 and 1. A value of 1 indicated that the MFIs were fully self-sufficient and did not need outside support. Hence, by emphasizing its core expenses and revenues, OSS helped in determining whether MFI was capable of covering all the costs associated with doing business or not (Schafer & Fukasawa, 2011).

$$\text{OSS} = \frac{\text{Financial revenue}}{\text{Expenses both operational and Financial} + \text{ Depreciation}}$$

Returns on Assets (ROA): It indicated how effectively MFIs are getting returns/profits on their investment in assets. From the profit margin's point of view of MFIs, the ROA was expected to be positive; otherwise, it indicates losses (Imai, Gaiha, Thapa, Annim & Gupta, 2011).

$$\text{ROA} = \frac{\text{Net Operating Income} - \text{Taxes}}{\text{Average Assets}}$$

Debt to Equity Ratio (DER): The ratio of capital contributed by creditors to that of capital contributed by the owner. A high DER means an institution/company had high debt from commercial banks.

$$DER = \frac{\text{Total Liabilities}}{\text{Total Equity}}$$

Number of Active Borrowers (NAB): It indicated the number of borrowers with an outstanding loan balance with the MFIs. The average cost of operating MFIs would decline if the number of active borrowers was more. It would result in high profits through interest earnings.

Average Loan Balance (ALB): It revealed the average loan availed by each borrower. It was also used as a proxy for the extent of poverty among borrowers (Beg, 2016).

$$\text{ALB} = \frac{\text{Total loans}}{\text{Number of credit clients}}$$

Percentage of the Women Borrowers (PW): PW referred to the percentage of women availing micro-credit from MFIs to total borrowers. It also measured the depth of outreach. It had also been argued that the efficiency of the MFIs improved by targeting women as women were considered to have higher repayment rates than men (Abdullah & Quayes, 2016; Armendariz & Morduch, 2010; Janda & Turbat, 2013; Mosley & Hulme, 2006). Moreover, women's involvement in micro-credit programs positively impacted their standard of living (Khan & Rahman, 2016; Rahman & Khan, 2013).

$$\text{PW} = \frac{\text{Women Clients}}{\text{Total Clients}} \times 100$$

Assets (AS): Assets were the economic resources owned with the expectation of return in the future.

$$AS = Ln(Assets)$$

Operating Expenses to Assets Ratio (OEA): OEA measures the rate of operational expenses as a percentage of the assets. Operating expenses included personnel expenses, administrative expenses, depreciation, and any other expenses necessary for the operation of the MFIs.

$$\text{OEA} = \frac{\text{Operating expenses}}{\text{Assets}}$$

Total Equity to Total Assets Ratio (TETA): TETA determined the potential of the MFIs to meet the time liabilities and the risk associated with credit and the operational expenses.

$$TETA = \frac{\text{Total equity}}{\text{Total assets}}$$

The analytical tools used in assessing the performance of the MFIs in the study were illustrated as under:

Panel Unit Root Test

The panel unit root was extremely popular and widely used in the literature since its inception. The concept of homogeneity or heterogeneous specification of data was originated in the pioneering work of Levin & Lin (1992, 1993). Since then, Im, Pesaran & Shin (2003), Levin, Lin & Chu (2002), and Choi (2001) contributed to the development of theory and applications of

first-generation tests of a unit root. The present research work used Levin, Lin and Chu (2002) test to know the stationarity of the cross-sectional variables. The asymptotic distribution of the Levin, Lin & Chu (2002) was the same as the ADF test statistic, but they developed a statistical method that deals with the cross-sectional data discussed as under:

$$\Delta Y_{i,t} = \theta_i + \emptyset Y_{i,t-1} + \sum_{m=1}^{q_i} \beta_{i,m} \Delta Y_{i,t-z} + \mu_{i,t} \dots\dots(1)$$

Where, Δ is the difference parameters ($\Delta Y_1 = Y_t - Y_{t-1}$, $Y_{t-1} = Y_{t-1} - Y_{t-2}$ and $Y_n = Y_n - Y_{n-1}$). The parameter θ_i is the intercept or drift, i = 1,…, N and t = 1,…, T, while q is the number of lags length, and μ_i is the error term. The Levin and Lin test tests the null hypothesis, H_0: $\emptyset = 0$ against alternative hypothesis H_1: $\emptyset = \emptyset_i < 0$ for all i = 1,…, N.

Model Specification

The model specification was assumed by drawing the available theoretical and empirical literature. The specification was assumed with the help of domestic and cross-countries evidence regarding the determinants of MFIs which determined their performance. The identified models consisted of three equations of the random and fixed-effect model.

$$OSS_{nt} = \alpha + \beta_1 PW_{nt} + \beta_2 AVL_{nt} + \beta_3 DER_{nt} + \beta_4 TETA_{nt} + \beta_5 OEA_{nt} + \beta_6 lnNAB_{nt} + \beta_7 lnAS_{nt} + \mu_{nt} \dots\dots(2)$$

$$AS_{nt} = \alpha + \beta_1 PW_{nt} + \beta_2 AVL_{nt} + \beta_3 DER_{nt} + \beta_4 TETA_{nt} + \beta_5 OEA_{nt} + \beta_6 lnNAB_{nt} + \mu_{nt} \dots\dots(3)$$

$$ROA_{nt} = \alpha + \beta_1 PW_{nt} + \beta_2 AVL_{nt} + \beta_3 DER_{nt} + \beta_4 TETA_{nt} + \beta_5 OEA_{nt} + \beta_6 lnNAB_{nt} + \beta_7 lnAS_{nt} + \mu_{nt} \dots\dots(4)$$

Where, n = 1,…P and t = 1,…T, n is an n^{th} number of observations and t, is the time, α, is a constant and $\beta^{,s}$ (all from β_1 to β_6 in all the three equations) are the coefficients of explanatory variables (Gujarati, 2004). The three panel random and fixed effect equations were used to determine the determinants of the performance of MFIs. However, correct diagnosis about nature, structure, and factors influencing the performance of MFIs, therefore, was critical for any rational policy decision.

RESULTS AND DISCUSSION

Descriptive statistics and graphs of all the variables analyzed in this study are presented in Table 1, Appendix A, and Figure 1, respectively. A very low value of ROA revealed that all MFIs, on average, operate on low profits against the investments. A mean value of 1.1 of OSS

reveals that MFIs, on average, did not require any outside support for their financial sustainability. Further, low value for PW points to low participation of women in MFIs. Participation was consistently lower across all MFIs, as evident from the low standard deviation value and coefficient of variation. The average operating expenses to total assets ratio (OEA) was 28 per cent, which indicated that, on average, MFIs had minimized the operating costs to yield positive returns. However, the minimum value also showed that some MFIs had faced difficulties in generating positive returns. The number of active borrowers was less, as indicated by the low value of NAB, leading to high operating costs for MFIs. Total Equity to Total Assets Ratio (TETA) was calculated to be 0.56, implying that the average equity level to the asset was only 56 per cent.

Table 1. Descriptive Statistics of the Selected Variables

Variables	Number of observation	Minimum	Maximum	Mean	Standard deviation	CV
ROA	200	-0.63	0.61	0.016	0.10	6501.88
OSS	200	0.01	2.51	1.10	0.31	28.19
PW	200	0.26	1.00	0.94	0.13	13.95
ALB	200	0.05	19.18	5.47	2.42	44.23
DER	200	-122.65	21059.21	115.57	1488.73	1288.11
TETA	200	-2.21	25.56	0.56	2.58	456.93
OEA	200	0.00	6.52	0.28	0.92	329.17
AS	200	12.79	24.56	20.84	2.23	10.70
NAB	200	6.09	15.65	12.11	1.81	14.98

The results of the correlation of the various determinants of MFIs were used for the analysis in the present work. The correlation coefficient matrix was calculated to check the multicollinearity among the explanatory variables. If the value of the correlation coefficients was in the range of 0.8 to 0.9, then there existed a problem of multicollinearity. Our results satisfied the condition that none of the coefficients of explanatory variables was in the range of 0.8 to 0.9. The various coefficients were significant at both 1 and 5 per cent levels of significance, and most of the coefficients were negatively related among themselves (Table 2).

Table 2. Correlation matrix of the selected variables

Variables	OSS	PW	DER	TETA	ROA	AS	ALB	OEA	NAB
OSS	1								
PW	.168**	1							

DER	-.028	.034	1						
TETA	.013	.095	-.016	1					
ROA	.699***	.133	-.002	.018	1				
AS	.105	-.063	-.181**	-.423***	-.164**	1			
ALB	.112	-.317***	-.043	-.363***	.004	.451***	1		
OEA	-.030	.089	-.018	.090***	.003	-.520***	-.481***	1	
ONA	-.011	.024	-.045	-.096	-.148*	.631***	.101	-.11	1

******, and ** Significant at the 1 and 5 levels.***

An extensive effort was made to comprehend the performance of MFIs using the panel regression random effect model. All the variables were checked for stationarity using the Levin, Lin, and Chu t-test (2002). The results explicated that all the variables were statistically significant (p-value < .05) except OEA and AVL, which were found to be significant statistically (p-value < 0.010) (Table 3).

Table 3. Results of the Unit Root (Levin, Lin and Chu t-test) Test

Variables	t-statistics	P-value	Types of equation	Remarks
AS	-3.34237**	0.0004	Individual Intercept	Stationary
DER	-9.19789***	0.0000	No Intercept No trend	Stationary
NAB	-4.50560***	0.0000	Individual Intercept	Stationary
OEA	-1.42733*	0.0767	Individual Intercept	Stationary
OSS	-11.7921***	0.0000	Individual Intercept	Stationary
ROA	-4.00907***	0.0000	No Intercept No trend	Stationary
PW	-11.1937***	0.0000	Individual Intercept	Stationary
ALB	-1.45041*	0.0735	Individual Intercept	Stationary
TETA	-28.2982***	0.0000	Individual Intercept	Stationary

******, and ** Significant at the 1 and 10 levels.***

The perusal of Table 4 showed the OLS regression results where OSS was the dependent variable, and others were the explanatory variables. The results revealed that AVL, TETA, OEA, NAB, and AS were statistically significant in the random effect model. Moreover, the coefficients of all the explanatory variables were positively related except OEA and AS, which were negatively related to the dependent variable, OSS. The negative relation between OEA and AS explicated that the operating expenses to assets (OEA) and the size (AS) were inversely related to operational self-sufficiency (OSS) of MFIs. In other words, with the increase in operating expenses to assets ratio, operational self-sufficiency tended to reduce. In the fixed-

effect model, only OEA, TETA, and AVL were statistically significant. Moreover, most of the coefficients of the explanatory variables were positively related, but a few, such as PW and OEA, were negatively associated with the dependent variable.

Table 4. Regression Results (Random and Fixed Effect Model) of OSS as the dependent variable

Dependent Variable = OSS (random effect model)				
Variables	Coefficient	Std. Error	t-Statistic	P-Value
CONSTANT	0.803639	0.424649	1.892478*	0.0599
PW	0.239348	0.214126	1.117790	0.2651
ALB	0.012549	0.007201	1.742797*	0.0830
DER	1.910006	1.290005	1.148327	0.8822
TETA	0.035310	0.018336	1.925715*	0.0556
OEA	-0.162747	0.071746	-2.268379**	0.0244
NAB	0.127671	0.042198	3.025501***	0.0028
AS	-0.072956	0.038935	-1.873824*	0.0625
Diagnostic Statistics				
R^2	F-Statistics	P-Value	Hausman Test	P-Value
0.93	4.7779	0.0000*	171.846812***	0.0000
Dependent Variable = OSS (fixed effect model)				
CONSTANT	-0.261296	0.554756	-0.471012	0.6382
PW	-0.412491	0.270008	-1.489096	0.1383
ALB	0.034997	0.011608	3.014764***	0.0030
DER	1.170005	1.290005	0.908762	0.3647
TETA	0.050932	0.019389	2.266831***	0.0094
OEA	-0.322000	0.090706	-3.549928***	0.0005
NAB	0.088902	0.056417	1.575812	0.1169
AS	0.025947	0.053767	0.482590	0.6300
Diagnostic Statistics				
R^2		F-Statistics	p-Value	
0.43		5.033755*	0.0000	

******, **, and * Significant at the 1, 5, and 10 levels.***

The ratio of operating expense to the asset was also negatively associated with financial sustainability in a study conducted by Nyamsogorom (2010). Similarly, the percentage of women was also negatively associated with the return on assets in a study conducted by Gakhar & Meetu (2013). The size and the active number of borrowers of the MFIs (assets) were positively associated with the financial performance (Mersland & Storm, 2008, 2009; Nyamsogorom,

2010). The Hausman test was applied to find the substantial difference between random and fixed-effect models. The Hausman test checked the null hypothesis that there was no difference between the random and fixed-effect model. In our case, for all three models, the null hypotheses were rejected, indicating that the fixed effect model was more appropriate and preferable than the random effect model (Gujarati, 2004). The F-statistic that measured the overall significance of the regression analysis indicated that all models were highly significant. Table 5 showed the panel regression results of the random and fixed-effect model, where AS was the dependent variable and other explanatory variables were PW, AVL, DER TETA, OEA, and NAB. The results of the random effect model explained that all the variables were significant statistically. The coefficients of variables PW, DER, and OEA had negative and AVL, TETA, and NAB positively associated with the AS. Nevertheless, in the fixed-effect model, only AVL, OEA, and NAB were significant statistically. The coefficients of variables PW and DER were negative, and the rest were positively associated with AS.

Table 5. Regression Results (Random and Fixed Effect Model) of AS as dependent variable

AS (random effect model)				
Variables	Coefficient	Std. Error	t-Statistic	P-Value
CONSTANT	8.833318	0.299767	29.46725***	0.0000
PW	-0.543052	0.235000	-2.310864**	0.0219
ALB	0.122421	0.013515	9.058333***	0.0000
DER	-2.910006	1.750005	-1.661147*	0.0983
TETA	0.168342	0.023269	7.234519***	0.0000
OEA	-1.105995	0.074119	14.92179***	0.0000
NAB	0.995270	0.016732	59.48178***	0.0000
Diagnostic Statistics				
R2	F-Statistics	P-Value	Hausman Test	P-Value
0.93	4.7779	0.0000*	171.846812***	0.0000
AS (fixed effect model)				
C	8.898219	0.395957	22.47270***	0.0000
PW	-0.487452	0.388824	-1.253656	0.2116
ALB	0.077815	0.015268	5.096736***	0.0000
DER	-3.03005	1.80E-05	-1.684800*	0.0938
TETA	0.002657	0.027338	0.097193	0.9227
OEA	0.145901	0.127415	1.145089	0.2537
NAB	0.984725	0.027472	35.84465***	0.0000
Diagnostic Statistics				
R2	F-Statistics	P-Value		
0.977875	307.6160*	0.000000		

******, **, and * Significant at the 1, 5, and 10 levels.***

The perusal of Table 6 showed the panel regression results of the random and fixed-effect model, where ROA was the dependent variable and other explanatory variables were PW, AVL, DER TETA, OEA, NAB, and AS. The results of the random effect model explained that all the variables were significant statistically except DER. The coefficients of variables DER, OEA, and AS were negatively, and AVL, TETA, NAB, and AS were positively associated with the ROA. Nevertheless, in the fixed-effect model, only AVL, OEA, and NAB were significant statistically. The coefficients of variables PW and OEA were negatively, and the rest were positively associated with ROA. The percentage of women (PW) was also negatively associated with the return on assets. These findings were in consonance with Gakhar and Meetu (2013); Mia (2014).

Table 6. Regression results (Random and Fixed Effect Model) of ROA as a dependent variable

Variables	**Coefficient**	**Standard error**	**t-statistic**	**P-Value**
CONSTANT	0.492878	0.125767	3.918967***	0.0001
PW	0.135135	0.053577	2.522185***	0.0125
ALB	0.007896	0.002208	3.575380***	0.0004
TETA	0.013588	0.0005969	2.276628***	0.0239
DER	-4.30000	4.21000	-1.021982	0.3081
OEA	-0.085042	0.022175	-3.835076***	0.0002
NAB	0.055661	0.012444	4.472749***	0.0000
AS	-0.063424	0.011899	-5.330308*	0.0000
Diagnostic Statistics				
R^2	F-Statistics	p-value	Hausman Test	p-value
0.14	4.591472	0.0000*	64.904856***	0.0000
C	-0.143653	0.189370	-0.758583	0.4491
PW	-0.136745	0.094559	-1.446142	0.1499
ALB	0.007026	0.003963	1.773063*	0.0780
TETA	0.025294	0.006619	3.821695***	0.0002
DER	1.77E-06	4.40E-06	0.402228	0.6880
OEA	-0.197305	0.030963	-6.372261***	0.0000
NAB	0.005607	0.019258	0.291154	0.7713
AS	0.009953	0.018354	0.542290	0.5883
Diagnostic Statistics				
R^2		F-statistics	p-value	
0.40		4.587804***	0.0000	

******, **, and * Significant at the 1, 5, and 10 levels.***

CONCLUSIONS

The present study analysed the different determinants of the financial performance of MFIs in India. The fixed-effect model, preferred over the random effect model as suggested by the Hausman test, revealed that all the coefficients of explanatory variables except OEA, PW, and DER in all three models were positively associated with the dependent variable variables (OSS, AS and ROA). Thus, it was concluded that positively associated variables were the drivers of the financial performance of MFIs. It suggested that the enhancement in the level of the explanatory variables would further enhance the performance of the MFIs as measured by the operating self-sufficiency, return on assets, and size (i.e. assets of the MFIs). For example, MFIs need to pay special attention to the number of active borrowers. The active borrowers would enhance efficiency, while passive ones would reduce the performance. The negative association of the coefficients (DER, OEA, and PW) suggested that a low level of debt to equity ratio, operating expenses to assets ratio, and low percentage of women borrowers were required for the sound financial performance of MFIs. In other words, the performance measured by OSS, AS, and ROA was reduced with an increase in debt to equity ratio, operating expenses to assets ratio, and percentage of women borrowers.

REFERENCES

Abbas, F., Tahir, M., & Rahman, M. (2012). A comparison of financial performance in the banking sector: Some evidence from Pakistani commercial banks. *Journal of Business Administration and Education*, *1*(1), 1-14.

Abdullah, S., & Quayes, S. (2016). Do women borrowers augment the financial performance of MFIs? *Applied Econometrics*, *48*(57), 5593-5604.

Agarwal, P. K., & Sinha, S. K. (2010). Financial performance of microfinance institutions of India-A cross-sectional study. *Delhi Business Review*, *11*(2), 37-46.

Ananda, S., & Colaco, X. F. (2012). Microfinance in India: An overview of performance and prospects, In *International Conference on Advances in Computing and Management*.

Anshu & Gauba, S. K. (2013). A literature review of microfinance in India. *International Journal of Management and Business Studie*s, *3*(2), 86-87.

Armendariz, B., & Morduch, J. (2010). *The economics of microfinance*. MIT press.

Basu, S. C. (2006), Micro credit: Towards a trickle-up approach. *The Indian Banker*, *1*(2), 3-6.

Bateman, M. (2014). *The rise and fall of Muhammad Yunus and the microcredit model (IDS* Working Paper No. 01). International Development Studies. Retrieved from http://www.microfinancegateway.org/sites/default/files/mfg-en-paper-the-rise-and-fall-of-muhammad-yunus-and-the-microcredit-model-jan-2014.pdf.

Beck, T., Demirguc-Kunt, A., & Martinez, P. M. S. (2007). Reaching out: Access to and use of banking services across countries. *Journal of Financial Economics*, *85*(1), 234-266.

Beg, K. (2016). Determinants of financial self-sufficiency of Andhra Pradesh microfinance institutions. *Journal of Business and Financial Affairs*, *5*(3), 1-9.

Bhatt, S., & Jhaveri, H. (2008). Microfinance: A one-stop-shop for financial services to the poor. *Management Trends*, *5*(1), 85-89.

Choi, I. (2001). Unit root tests for panel data. *Journal of International Money and Finance*, *20*(2), 249-272.

Coleman, K. A. (2007). The impact of capital structure on the performance of microfinance institutions. *Journal of Risk Finance*, *8*(1), 56–71.

Daher, L., & Le Saout, E. (2013). Microfinance and financial performance. *Strategic Change*, *22*(1-2), 31-45.

Dutta, P., & Das, D. (2015). Determinant of operating expense of microfinance institutions: A case study on select MFIs in Assam. *Microfinance Review, 7*(1), 199-211.

Gakhar, K. & Meetu (2013). Financial performance and outreach of microfinance institutions: Is there a trade-off? An empirical study of the Indian economy. *Global Management Review*, *7*(4), 1-9.

Ganesh, P., & Singh, P. (2015). Social performance of microfinance institutions in India: Developing an impact index based on firm variables. *South Asian Journal of Management*, *22*(4), 101.

Gujarati, D. N. (2004). *Basic Econometrics.* McGraw Hill.

Houseini, S. S., Khaledi, M., Ghorbani, M., & Brewin, D. G. (2011). An analysis of transaction costs of obtaining credits in rural Iran. *Journal of Agricultural Science and Technology*, *14*(2), 243-256.

Im, K. S., Pesaran, M. H., & Shin, Y. (2003). Testing for unit roots in heterogeneous panels. *Journal of Econometrics*, *115*(1), 53-74.

Imai, K. S., Gaiha, R., Thapa, G., Annim, S. K., & Gupta, A. (2011). *Performance of microfinance institutions: A macroeconomic and institutional perspective* (Discussion Paper Series). Research Institute for Economics and Business Administration, Kobe University.

Janda, K., & Turbat, B. (2013). Determinants of the financial performance of microfinance institutions in Central Asia. *Post-Communist Economies*, *25*(4), 557-568.

Kannan, M., & Panneerselvam, A. (2013). The microfinance in India-An overview. *International Journal of Current Research and Academic Review*, *1*(1), 78-83.

Kaur, H., & Tanghi, B. S. (2015). Growth of micro-financing: Trends of savings and credit extension. *Gian Jyoti E-Journal, 5*(3), 9-18.

Khan, H.T., & Rahman, M.T. (2016). Women's participation in economic and NGO activities in Bangladesh: An empirical study on the Bangladesh demographic and health survey (BDHS). *International Journal of Sociology and Social Policy*, *36*(7/8), 491-515.

Levin, A. & Lin, C. F. (1993). *Unit root tests in panel data: New results* (Discussion Paper No. Y3-56), University of California.

Levin, A. & Lin, C. F. (1992). *Unit root tests in panel data: Asymptotic and finite-sample properties* (Discussion Paper No. 92-23), University of California.

Levin, A., Lin, C. F., & Chu, C. S. J. (2002). Unit root tests in panel data: Asymptotic and finite-sample properties. *Journal of Econometrics*, *108*(1), 1-24.

Llanto, G. M. (2004). *Rural finance and developments in Philippine rural financial markets: Issues and policy research challenges* (PIDS Discussion Paper Series No. 2004-18), Philippine Institute for Development Studies.

Mahanta, P., Panda. G., & Sreekumar (2012). Status of microfinance in India: A review. *International Journal of Marketing, Financial Services and Management Research*, *1*(11), 142-155.

Mersland, R., & Strøm, R.Ø. (2008). Performance and trade-offs in microfinance organizations: Does ownership matter? *Journal of International Development*, *20*(5), 598-612.

Mersland, R., & Strøm, R.Ø. (2009). Performance and governance in microfinance institutions. *Journal of Banking and Finance*, *33*(4), 662-669.

Mia, M.A. (2014). Does lending to women affect the revenue generation of microfinance institutions (MFIs)? *Empirical Econometrics and Quantitative Economics Letters*, *3*(4), 59-65.

Mosley, P., & Hulme, D. (2006). *Finance against poverty: Volume 2: Country Case Studies*. Routledge.

MYRADA (Mysore Resettlement and Development Agency) (2002). *Impact of Self Help Groups (Group Processes) on the Social Empowerment Status of Women Members in Southern India*. Paper presented in Seminar on SHG-Bank Linkage Programme, New Delhi on 25th and 26th November.

Narwal, P. K., Pathneja, S. & Kumar Y. M. (2015). Performance analysis of banks and microfinance institutions in India. *International Journal of Management and Business Research*, *5*(1), 9-18.

Nyamsogoro, G. D. (2010). *Financial sustainability of rural microfinance institutions (MFIs) in Tanzania* (Doctoral dissertation), University of Greenwich.

Rahman, M.T., & Khan, H.T. (2013). The effectiveness of microcredit programme in Bangladesh. *Local Economy: The Journal of the Local Economy Policy Unit*, *28*(1), 85-98.

Rai, A.A., & Rai, S. (2012). Factors affecting financial sustainability of microfinance institutions. *Journal of Economics and Sustainable Development*, *3*(6), 1-10.

Rai, A., & Anil, K. (2011). Financial performance of microfinance institutions: Bank versus NBFC. *International Journal of Management and Strategy*, *2*(2), 1-14.

Robinson, M. S. (2001). *The microfinance revolution: Sustainable finance for the poor*. The World Bank.

Schafer, K., & Fukasawa, Y. (2011). Factors determining the operational self-sufficiency among microfinance institutions. *Advances in Business Research*, *2*(1), 172-178.

Sinha, F. (2007). Social performance in Indian microfinance. In P. Ghate (Ed.), *Microfinance in India: A state of the sector report, 2007* (pp. 105-118). Microfinance India.

Srinivasan, G. (2012). *Microfinance India: The social performance report 2012*. SAGE Publications India.

Srinivasan, G. (2013). *Microfinance India: The social performance report 2013*. SAGE Publications India.

Suberu, J. O., Aremu, S.O., & Popoola, G. E. (2011). The impact of microfinance institutions on the development of small-scale enterprises in Nigeria. *Journal of Research in International Business Management*, *1*(8), 251-257.

Thomas, J.R., & Kumar, J. (2016). Social performance and sustainability of Indian microfinance institutions: An interrogation. *Journal of Sustainable Finance and Investment, 6*(1), 1-13.

Tripathi, V.K. (2014). Microfinance-evolution, and microfinance-growth of India. *International Journal of Development Research, 4*(5), 1133-1153.

World Bank (2008). *Finance for all? Policies and pitfalls in expanding access*, Washington, DC: The World Bank.

Appendix 1. **Profile of the MFIs used for the analysis**

Sr. No.	Name of the MFIs	Year of the establishment	Number of active borrowers (2014)	Loan Offices (2014)	Gross loan portfolio $ million, (2014)	Average loan balance per borrower $, (2014)	Assets $ million, (2014)
1	Village Financial	2004	136839	284	17.7	129.6	21.6
2	Ujjivan	2004	2,196,261	3,867	525.2	239.1	632.1
3	Sonata	2005	406,991	861	95.5	234.6	126.1
4	Spandana	1998	2,027,769	2,684	360.3	177.7	206.5
5	Sarvodaya Nano	2001	58,346	258	6.5	111.2	7.4
6	Satin	1990	1,190,999	1,710	343.4	288.3	320.2
7	SHARE Microfin Limited	1992	2,035,671	2,143	290.2	NA	130.6
8	SKS Microfinance	1997	3,648,219	4,638	671.8	184.1	747
9	Shri Kshethra Dharmasthala Rural Development Project	1982	3,439,628	3,316	572.7	166.5	285.9
10	Sanghamitra	2000	147,722	97	22.5	152.5	23
11	RGVN	1995	226,614	293	36.8	162.2	43.1
12	Mahasemam Trust	1999	134,687	176	11.7	86.5	16.2
13	Mahashakti Foundation	2004	23,688	63	4.5	188.2	1.6
14	Madura Micro Finance Ltd	2003	317,583	771	59.1	186.2	66.1
15	Grama Vidiyal Microfinance Ltd	1993	865,784	1,512	162.4	187.6	161.2
16	ESAF Pvt Ltd	1992	566,872	1,232	163	287.5	158.3
17	Cashpor Micro Credit	1997	864,551	1,919	147.4	170.6	107.3
18	Bharatiya Samruddhi Finance Ltd	1996	279,662	732	31.4	112.3	17
19	Adhikar Microfinance Pvt Ltd	1991	39,856	69	8.2	205.7	5.0
20	Network of Entrepreneurship & Economic Development	2005	8,259	44	1.2	147.5	1.5

Source: Mix Markets

Figure 2. Graphic description of the variables selected for the study