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CONTENTS

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   STATEMENT OF THE PROBLEM

   OBJECTIVES

   HYPOTHESES

   RESEARCH METHODOLOGY

   RESULTS & DISCUSSION

   FINDINGS

   RECOMMENDATIONS/SUGGESTIONS

   CONCLUSIONS

   SCOPE FOR FURTHER RESEARCH

   ACKNOWLEDGMENTS

   REFERENCES

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PERFORMANCE ANALYSIS THROUGH RATIO ANALYSIS OF MICROFINANCE INSTITUTIONS OF KARNATAKA, INDIA

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ABSTRACT

Measuring the performance of microfinance institutions (MFIs) is not a trivial task. Indeed, looking at the financial sustainability of an MFI only gives one feature of its performance. As many MFIs primarily exist in order to help the poorest people, one also has to include aspects of outreach in their performance. Hence, MFIs' performance can be termed multidimensional. This study examines the performance of microfinance institutions (MFIs) using financial ratios. These ratios are assessed in relation to the dual objectives of MFIs of financial sustainability and outreach. The financial ratios used are categorised as profitability, portfolio quality and productivity ratios. The profitability ratios are hypothesized to be positively related to the financial sustainability and negatively to the outreach, while the portfolio quality and productivity ratios are expected to be negatively related to the financial sustainability and positively to the outreach. Data used in this study is a balanced panel data of 17 MFIs for the period of 2009-2013 and is extracted from the MIX market. Using random effect panel data estimation, we find important ratios in context of performance measurement of MFIs and also conclude that the trade-off between the dual objectives of MFIs is present.

JEL CODE
G21

KEYWORDS
Financial ratios, Microfinance Institutions, performance.

INTRODUCTION
Microfinance is a much researched discipline. Although there is a lot of literature on microfinance, there is hardly any agreement on a universally accepted definition of microfinance. Researchers and microfinance visionaries are divided in their opinions when it comes to microfinance, its range and its targeted recipients. As Sriram and Upadhyayula put it, "It appears that what microfinance means is well understood, but not clearly articulated". (Sriram & Upadhyayula 2002, p. 1).

However, microfinance is generally an umbrella term that refers to the provision of a broad range of financial services such as deposits, loans, payment services, money transfers and insurance to poor and low-income households and their micro-enterprises (Sharma 2001, p. 1). The demand or need for microfinance comes from the disadvantaged sections of the society - who are without access to services of formal sector financial intermediaries - and are typically excluded from the formal banking system for lack of collateral, in short the poor and the very poor. The definitions of these groups vary from country to country. The clientele of the microfinance institutes are normally employed in the informal sector, with closely interlinked household and business activities and earning low income (Central Bank of Philippines 2002).

Microfinance institutions (MFIs) work similar to traditional banks as they collect money (accept deposits) and make loans, the difference is the target market, with MFIs lending to the poor in small amounts. Another point of difference is that other than deposits, MFIs also accept grants and the default rate is normally lower than traditional banks (Morduch, 1999). However, although MFIs are different from traditional banks, as they deal with others money, their performance still needs to be measured. The bodies that grant money to the MFIs, value the social aspects more than the financial aspects. So in order to undertake performance assessment of MFIs, we need to take into account both of these aspects. Their performance can be measured by using the tools that are used to measure the performance of traditional banks but they need to be adapted to the context. Moreover, MFIs are a special form of financial institutions that follow the dual objectives of financial sustainability and social outreach so their performance is measured according to these objectives (Cull, DemirgucKunt, & Morduch, 2006) that are elaborated in detail below.

MFI OBJECTIVES – OUTREACH AND FINANCIAL SUSTAINABILITY
Performance is all about success or failure in achieving corporate goals. The first goal of MFIs is outreach, and the second is financial sustainability. Outreach is about providing financial services to more poor people and financial sustainability is about covering the cost of these services. Microfinance enterprises struggle to meet the dual (but conflicting) objectives of alleviating poverty and attaining self-sustainability but meeting the full promise appears to be a challenge for most of the MFIs.

The social goal of outreach is important but at the same time self-sustainability has also emerged as a core governance and management issue. As the significance of microfinance is growing, especially among donors and commercial parties, the requirement for financial sustainability is becoming more important. Moreover, microfinance has developed different forms of organizations to meet these dual objectives (Hardy, Holden, & Prokopenko, 2003; Krauss & Walter, 2009). In the past, microfinance simply offered financial services to low income clients, but now it has broadened its scope to include all those who are usually excluded by mainstream financial services. Accordingly, performance of these institutions needs to be measured by incorporating all of the major factors that are involved in this financial sector.

Being a special type of financial institution, in terms of their objectives, there is much debate among scholars as to whether the focus should be on financial perspective or a social perspective when assessing MFIs performance. At a broader perspective these two concepts are perceived as mutually compatible (Conning, 1999; Copestake, 2007; Cull et al., 2006; Woller, Dunford, & Woodworth, 1999). Although microfinance emerged four decades ago, the question about their performance and productivity levels in terms of the dual objectives is still unanswered. This question will be addressed in this study.

LITERATURE REVIEW
Performance is recognised by microfinance practitioners as a critical success factor but only a few studies have touched the issue. This section discusses studies on the topic of performance measures of these institutions. The first part will briefly review studies on performance assessment of MFIs and the underlying

concept of performance of these institutions. The second part will review the trade-off between the dual objectives of MFIs and provide a brief review of previous studies on the topic.

MICROFINANCE INSTITUTIONS PERFORMANCE

In previous studies, different approaches have been used in performance assessment of MFIs. For example, Yaron (1994) introduces an outreach and financial sustainability approach and measures the performance of MFIs through efficiency. Farrington (2000) has applied accounting ratios such as cost per borrower, return on assets, administrative expense ratio and client per staff member to evaluate MFIs' efficiency. Arsyad (2005) while measuring the efficiency of Indonesian MFIs, take a similar approach in terms of cost per unit of currency lent, operating cost ratios and cost per loan. To understand the relation between the operational self-sustenance and financial self- sustenance, Crombrugghe et al. (2008) use regression analysis and find that there is no need for increasing the monitoring costs of loans or size in order to meet the financing costs.

In terms of self-sustainability of MFIs, Morduch (1999) argues that the high rate of recovery has somehow failed to transform the donor dependent microfinance industry into self-sustaining organizations. He contends that for financial sustainability of MFIs, along with subsidies and external stakeholder's support there is also a need to seek further financial sources. Similarly, Crabb (2008) concludes, after analysing various MFIs, that external stakeholders are important for the sustenance of these institutions. These stakeholders may include government, societies, corporate etc. Pollinger et al. (2007) also highlights the need to explore further external sources for raising new capital. Although in order to overcome the financial sustainability issues government provides different subsidies and these subsidies are not enough for long term sustenance of the MFIs. Kneiding and Tracey (2009) highlight the importance of using the same performance measurement indicators in MFIs that are used in developed nations for the community development financial institutes (CDFIs). Moxham and Boaden (2007) also find low utilization for formal financial performance indicators of MFIs.

Navajas et al. (2000) provides a theoretical framework for the outreach of Bolivian MFIs and shows that MFIs are providing loans to the richest among the poor. Kyereboah-Coleman (2007) highlights the importance of governance in the MFIs and argues that in high risk exposures the outreach of MFIs increases due to present debt to equity levels that are much higher as compared to traditional times. Moxham (2009) also tries to understand the application of performance indicators and found good acceptability of these indicators that are present in public, private and non-profit organizations. The Cull et al. (2006) study also uses the same logic of a financial sustainability and outreach trade off in MFIs. Their study demonstrates that MFIs are losing their cause of serving the poorest in order to generate the profits.

Mersland (2007) focuses on the corporate governance and performance. He uses a panel data regression analysis to find the impact of ownership type, regulation, board characteristics and competition etc. on financial measures like yield on gross portfolio, outreach and return on assets. To measure the efficiency of MFIs, Yaron (1994) suggests a framework which later on became popular for the performance assessment of MFIs. The framework is based on the dual concept of outreach and financial sustainability which will be used in this study.

TRADE-OFF BETWEEN MICROFINANCE OBJECTIVES

Due to high information and transaction costs, providing microfinance services is a costly business. At present, a large extent of microfinance program is not financially sustainable as they still depend on donor subsidies. In the 1990s, the issue of financial sustainability of MFIs gave rise to a debate between the poverty lending approach and the financial systems approach (Robinson, 2001).

According to Schreiner and Woller (2003), the poverty lending approach focuses on poverty alleviation by giving the poor access to loans on easy terms. However, the financial systems approach emphasizes the financial sustainability so that MFIs have the ability to cover the cost of lending money and to reduce operational costs as much as possible. Therefore, the goal of serving large groups of poor borrowers ultimately goes against the goal of financial sustainability. In other words, there is a trade-off between outreach and financial sustainability.

The performance of MFIs is also criticized by many scholars. For example according to Morduch (1999), initially, as the rate of recovery of MFI's loans was excellent, it was expected that they would be able to stop depending on donor subsidies and accordingly achieve self-sufficiency. However, contrary to that, microfinance industry has somehow been unsuccessful in transforming themselves from donor-dependent MFIs to independent selfsustaining organizations. Morduch (2000) shows doubt in this optimistic belief that MFI's financial sustainability also ensures poverty alleviation and depth of outreach. Navajas *et al*. (2000) say that most MFIs are only providing loans to those households who are richest among the poor. Similarly, Cull *et al*. (2006) also show that MFIs can only maintain depth of outreach and profitability, as long as they do not extend credit to the absolute poor. Hartungi (2007) studies MFIs in Indonesia and the various factors that are involved in the success of these institutions. The major activities he identifies are usage of information technology in the outreach to the people and dynamic adaption of MFIs to the local conditions. The study highlights that an increase in transparency and active involvement of the MFI employees helped in better functioning of MFIs in Indonesia.

The literature on this issue is not extensive. Cull et al. (2006) has provided one of the few academically solid studies. This study attempts to systematically examine outreach and financial performance in a large comparative study that is based on a data set of 124 microfinance institutions in 49 countries. They investigate empirically whether there is a trade-off between profitability and the depth of outreach of MFIs. The results are based on the lending methodology of MFIs and suggest that those MFIs that mainly provide individual loans perform better in terms of profitability and those institutions that mainly provide group loans are better in outreach. The study also suggests that individual-based MFIs focus on wealthier clients. Therefore, their study provides evidence for a trade-off between outreach and financial sustainability and stresses the significance of institutional design in determining the size and existence of such a trade-off. Hermes et al. (2011) using data for 435 MFIs for the period 1997-2007 provide new evidence on the existence of the trade-off between outreach and financial sustainability. In particular, to know the relationship between this trade-off they used cost efficiency as a measure of financial sustainability and average loan balance, percentage of women borrowers and average saving balance as a measure of the depth of outreach. Hermes et al. (2011) find strong evidence that efficiency is negatively related to outreach of MFIs. More specifically, those MFIs that have more women borrowers as clients and lower average loan balances are also clearly appear to be less efficient. To check the robustness, they add a long list of control variables with the results and get same findings. After having reviewed the contents of the contributions to this trade-off on microfinance objectives, the question remains what new insights of these contributions have provided regarding the impact of MFIs on the one hand and the trade-off between the objectives of these institutions i.e. outreach and financial sustainability, on the other hand.

IMPORTANCE OF THE STUDY

Based on this review of studies two conclusions can be drawn. First none of the above studies explicitly measure the performance of MFIs in terms of their objectives by using standard measures of financial ratios provided by C-GAP (2003). Although some of the existing studies used these ratios but not in relation to the dual objectives of MFIs. For example, Gutierrez-Nieto *et al*. (2007) use profitability ratios but they suggest further investigation of the risk factor also in performance assessment of MFIs. Some studies, for instance, Caudill, Gropper and Hartarska (2009) and Paxton (2007) take into account more general efficiency determinants that are related to the performance measurement in terms of efficiency analysis. While others like Arsyad (2005) has used these performance ratios just for making comparison among institutions and countries but no evidence was found that these performance ratios have ever been used in comparisons of dual objectives of MFIs.

Secondly, above mentioned studies do not use the sample of Karnataka, India region.

OBJECTIVES

1. To assess and rank the performance of MFIs in Karnataka based on Financial Sustainability and Outreach, taking 5 years average data.
2. To assess the performance of MFIs in terms of outreach and financial sustainability in relation to profitability, portfolio quality and productivity ratios over a period of five years.

CONCEPTUAL FRAMEWORK AND WORKING HYPOTHESES

The review of microfinance literature highlights the importance and limited study of the topic of the performance measurement of MFIs. So this study will assess the performance of MFIs in terms of outreach and financial sustainability in relation to profitability, portfolio quality and productivity ratios. We hypothesize that MFI financial sustainability is positively related to the profitability and inversely related to the outreach while portfolio quality and productivity ratios are positively related to outreach and negatively related to financial sustainability. The hypotheses are described below and the variables are described in detail in appendix 1.

PERFORMANCE AND PROFITABILITY

For financial viability, profitability play a key role and is important for the financial sustainability of an institution (Ledgerwood, 1999). In this study profitability is measured through Return on Equity (ROE) and Profit Margin (PM) ratios. It is expected that the higher the value of these ratios the more sustainable will be an institution and the less will be the outreach. A higher profit margin and return on equity of an institution are among the reasons that prevent formal financial institutions from providing credit services to the poor. Therefore, it can be said that if an institution is achieving high value on these indicators it is doing well on financial sustainability and at the same time not approaching the real poor.

ROE is equal to net operating income excluding all taxes divided by average equity. ROE calculates the rate of return on the average equity for the period. The ratio is also used as a proxy for commercial viability because non-operating items such as donations are not included in the numerator. Profit margin is equal to net operating income divided by operating revenue; this ratio is primarily interest cost and operational driven (Krauss & Walter, 2009).

PERFORMANCE AND PORTFOLIO QUALITY

Credit quality is an issue that has greater impact on performance so we use three measures that will provide some assessment of credit quality of MFIs. The repayment rate is the most important performance indicator and good repayment rate indicate long run self-sufficiency. For MFIs, earning high profit margin indicate their short term financial sustainability while repayment rate is a necessary condition of long term financial viability (Yaron, 1994). In this study, portfolio quality is taken into account through loan repayment and includes portfolio at risk greater than 30 days (PAR30), risk coverage and the write-off ratio (WOR) measures. PAR30 ratio captures the high risk of non-payment as these exceed 30 days overdue and shows the portion of the overdue portfolio that is at risk of not being repaid; it can be said that the older the delinquency the less likely the loan will be repaid. WOR indicates the value of loan written off divided by average gross loan portfolio.

Portfolio quality ratios are hypothesized to be inversely related to the financial sustainability, with higher ratios related to lower financial sustainability and positively related to outreach. In support of this claim it can be said that more problem loans may indicate that the institution is doing a better job with outreach, while less outreach indicates fewer loans with problems. Similarly with a small average loan size, all things being equal, problem loans will be fewer in number. These are measures that help us assess portfolio quality and loan repayment performance of MFIs clients so it is expected in this study that portfolio quality ratios are positively related to outreach and inversely related to financial sustainability.

PERFORMANCE AND PRODUCTIVITY

Productivity refers to the volume of output that is generated for a given input by using minimum per unit cost. Thus productivity is the other group of performance measures and includes cost per borrower (CPB) that captures the average cost of maintaining an active borrower. The higher cost of administering smaller loans is one of the reasons that prevent formal financial institutions from providing credit services to the poor. Therefore, a higher value of cost per borrower ratio indicates a smaller value of average loan size and better outreach.

In addition to that, productivity is measured through Balance per loan officer (BPLO) and Balance per staff member (BPSM). It is expected that a higher value of productivity ratios causes financial sustainability of MFIs to be lower and outreach to be greater. The reason behind this argument is that a higher cost of the institutions is good as they are spending to reach more poor clients. Thus it is expected in this study that productivity ratios are inversely related to financial sustainability of the institution and positively related to the outreach.

The hypotheses of this study are summarised as follows:

H1a: Profitability ratios are positively related to financial sustainability.
H1b: Profitability ratios are negatively related to outreach.
H2a: Portfolio quality ratios are negatively related to financial sustainability.
H2b: Portfolio quality ratios are positively related to outreach.
H3a: Productivity ratios are negatively related to financial sustainability.
H3b: Productivity ratios are positively related to outreach.

RESEARCH METHODOLOGY

Data was gathered from various secondary sources. Primary data on MFIs is downloaded from Microfinance Information exchange (MIX) market. Data related to financial statements and other relevant information is also gathered from MIX market. Given that MFI data is downloaded from MIX market, the definitions of the variables are also utilized from MIX given information. Monetary variables such as gross loan portfolio provided by MIX market is in current Indian Rupees.

Data used in this study comprises 15 MFIs operating in the state of Karnataka, India. All the MFIs selected are NBFCs. Financial data was collected for the year 2009-13.

The central focus of this study is to demonstrate empirical evidence that can refute the main claim that that there is no trade-off between the dual objectives of MFIs (Quayes, 2012). Since providing credit to the very poor and being self-sufficient are the primary goals for MFIs, we are using both of these indicators in the performance measurement of these institutions. The dual objectives of outreach and financial sustainability are measured by using the number of active borrowers (NAB) and an operational self-sufficiency (OSS) indicator, respectively.

Outreach generally refers to either depth of outreach or breadth of outreach. Breadth of outreach is measured by the number of active borrowers or clients of MFIs and depth of outreach is measured by the number of women borrowers as fractions of total number of borrowers. Breadth of outreach is considered as a quantity of outreach and depth of outreach is considered as a quality measure of microfinance credit (Quayes, 2012). But the depth outreach measure has a limitation due to lack of availability of data so we use breadth of outreach, i.e. number of active borrowers as measure of outreach, in our study. These individuals are those that have an outstanding loan balance with the MFI (Ahlin, Lin, & Maio, 2011; Hermes et al., 2011; Olivares-Polanco, 2005).

OSS is a financial performance indicator to measure the self-sufficiency performance of a MFI or the ability of a MFI to cover its costs through operating revenues. It is described as a ratio of annual financial revenue to annual total expense. This paper assumes that OSS could serve as an approximation of the financial performance of MFIs. Other reasons to choose this indicator are as follows: first, the OSS does not account for the level of subsidies for operating expenses but it measures the manager's ability to cover operating costs and to run the organization. Secondly, Conning (1999) observes that lenders are not concerned with profits but they surely are concerned about the credibility so OSS is appropriate, as in the case of MFIs profits may not be as much as providers of finance may want. Thirdly, the OSS is a widely used indicator for industrial accounting practice and institutional diversity.

Eight financial ratios have been chosen for use in this study, with the choice largely driven by data limitations. These ratios are divided in the following three categories: profitability, portfolio quality, and productivity ratios. Profitability is proxied by Return on Equity and Profit Margin Ratios. Portfolio quality is measured by PAR30, Risk Coverage and Write off Ratio. Productivity is measured by Cost per Borrower, Balance per Loan Officer and Balance per Staff Member. The standard criterion of financial ratios is provided by C-GAP (2003) that is used in this study for performance assessment of MFIs.

RESULTS AND DISCUSSIONS

TABLE 1: PERFORMANCE ANALYSIS BASED ON SUSTAINABILITY AND OUTREACH

			log value	log value	Rank	Rank
Name of the MFI	Operational Self Sufficiency (%)	No of Active Borrowers	Operational Self Sufficiency(%)	No. of Active Borrowers	Based on Operational Self Sufficiency	Based on Active Borrowers
BASIX	68.83	897139.75	4.23	13.71	15	5
BSS	106.29	181030.5	4.67	12.11	6	11
Chaithanya	102.42	15061.75	4.63	9.62	9	15
Equitas MF	127.7	1182386.75	4.85	13.98	2	4
Future	104.54	237416.5	4.65	12.38	7	10
GFSPL	98.67	333484.5	4.59	12.72	11	8
IDF	106.79	141330.75	4.67	11.86	5	12
JFSPL	99.2	308999	4.60	12.64	10	9
Muthoot	156.45	472794.33	5.05	13.07	1	7
NMSIL	103.75	16928.67	4.64	9.74	8	14
Samasta	96.97	45777.5	4.57	10.73	12	13
Sapandana	88.57	3419894.5	4.48	15.05	13	2
SKDRDP	114.19	1484397.75	4.74	14.21	4	3
SKS	83.28	5150578.5	4.42	15.45	14	1
Ujjivan	114.39	810013	4.74	13.60	3	6

Source: Mix market data

Table 1 shows the summary of some of the descriptive statistics. 5 years from 2009 to 2013 data average is shown in the table. The Operating Self Sufficiency and Active number of borrowers indicators are not normally distributed, so we take log of these variables to get a normal distribution. Above table shows that Muthoot Micro Finance and Eqitas Micro Finance are leading in ranking based on Operational Self Sufficiency and SKS and Spandana are leading in terms of outreach.

From the Table 1, it can be observed that the self-sufficiency performance indicator, OSS is above 100 for 9 out of 15 MFIs (60%), and its below 100 for BSFL, GFSPL, JFSPLK, Samasta, Spandana and SKS. Its below 100 is mainly due to Andhra crisis which took place in the year 2010. Indian MFIs were badly hit by the crisis and they have recovered fully and doing good in 2013 and 2014.

CORRELATION RESULTS

TABLE 2: DEPENDANT VARIABLE: OPERATIONAL SELF- SUFFICIENCY AND NUMBER OF ACTIVE BORROWERS

Correlations		
Independent Variable	Operational self-sufficiency(%)	No. of Active Borrowers
Return on Equity	.510*	-.539*
Profit Margin	.760**	-.517*
Portfolio at risk 30 days (%)	-.479*	.224
Write off ratio (%)	-.574**	.563**
Risk Coverage (%)	.361	.114
Loan officers productivity	-.387	-.260
Personnel productivity	-.339	-.172
Cost per borrower	-.345	-.193
Gross loan portfolio (GLP)	-.349	.965**
*. Correlation is significant at the 0.05 level (1-tailed).		
**. Correlation is significant at the 0.01 level (1-tailed).		

Source: Data collected from mix market

Table 2 shows correlation results for financial sustainability and outreach as dependant variables. We comment on all correlation results together. Although most of the signs of coefficients are as expected, not all of them are significant. However, there are some interesting results that warrant discussion.

Gross loan portfolio is the proxy for the size of MFIs. Gross loan portfolio has significant impact on outreach and has positive relation but no significant impact on financial sustainability which is not as expected. This means MFIs having larger portfolios have the tendency of performing more socially but not financially.

Introducing institution performance ratios in the model, profitability ratios show positive impact on financial sustainability and negative on outreach. So our first hypothesis (stipulating that the profitability ratios are positively related to the financial sustainability and negatively related to the outreach) is confirmed. Profitability is an important performance indicator of MFIs but these returns may be attained in a short time period so necessary condition for measuring the long term financial sustainability of MFIs is a high repayment rate; that is measured by portfolio quality and productivity ratios.

Profitability ratios get significant results but portfolio quality and productivity ratios are not providing additional information over and above what is recorded in profitability measures. To access the credit quality of MFIs measures PAR30, write off ratio get significant results and negative relationship on financial sustainability that is as expected but risk coverage gets insignificant results on financial sustainability. In case of outreach, only write off ratio shows a significant and positive relationship that is as expected.

Lack of significance of portfolio quality ratios suggest that MFIs, within the data analysed, are not showing good long term performance of these institutions in terms of both financial sustainability and outreach. Similarly, all productivity ratios such as loan officers productivity, personnel productivity and cost per borrower show insignificant result explaining no financial sustainability and outreach. According to these results, it can be said that, in the long run, MFIs of Karnataka, India are neither financially sustainable nor good in their outreach.

No evidence has been found that these ratios have been tested according to the dual objectives so we cannot compare the results with other studies. In general, these ratios are not providing additional information, over and above what is recorded in profitability measures. However, these regression results not only explain the dual objectives of MFIs but also show trade-off between these objectives.

CONCLUSION

This study documents the performance assessment of MFIs through financial ratios. These financial ratios are suggested by a consensus group of rating agencies, banks, donors and voluntary organizations (C-GAP, 2003) for performance measurement of MFIs. This paper has used a GLS model using a sample of 15 institution, 5 years.

Our focus of research is on both the outreach and profitability of microfinance. The eight performance ratios examine the trade-off that arises in the dual objectives of microfinance. Regression results show that profitability ratios are the best indicator for performance measurement of MFIs in terms of the dual objectives while portfolio quality and productivity ratios do not provide additional information. The empirical evidence shows the difficulty of achieving the dual objectives of MFIs simultaneously. In practice, the microfinance program often entails distinct trade-offs between maximizing the financial performance and meeting social goals and evidences suggest that the trade-off between the two is existent. These results are consistent with Hermes et al. (2011) who posit that aiming for MFIs on financial sustainability means compromising on their social goals. Similarly Cull et al. (2011) describe that transformation of MFIs into formalized banking institutions has no positive effect for the poor. This provocative message is clear for all stakeholders of MFIs. For example, it is relevant for policy makers in making decisions of microfinance subsidization. Furthermore it is relevant for commercial investors, especially those who are aiming for socially responsible investments and also for those microfinance practitioners who make decisions for improvement in the efficiency of their operations.

The overall conclusion is that few of the financial ratios describe the dual objectives of MFIs, with the exception of profitability ratios that fully explain the trade-off between them. Several elements of the study findings are puzzling that motivate for future research work. We suggest the following. Firstly, the present study is a basic study for performance measurement of MFIs, more sophisticated techniques such as data envelopment analysis (DEA) and stochastic frontier analysis (SFA) are required to check the robustness of these results. We intend to further investigate these regression results with these sophisticated techniques. Secondly, the assessment of performance is required in terms of current legal structure of these institutions in detail. For example which type of institution is most efficient in terms of outreach and financial sustainability, what type of lending methodology is most appropriate and what are the other success factors that can be used as a benchmark in microfinance industry.

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APPENDIX

APPENDIX 1: NUMBER OF INDEPENDENT AND DEPENDENT VARIABLES

DEPENDENT VARIABLES

Sl. No.	Variable Name	Dependent Variable	
1	Sustainability	Operational Self-sufficiency	It measures how well MFI can cover its operating cost through its operating revenues (operating revenues/(financial expenses + loan loss provisions + operating expenses)
2	Outreach	Number of Active Borrowers	The number of credit clients at the end of each period

INDEPENDENT VARIABLES

Sl. No.	Variable Name	Independent Variable	
	Profitability	Return on Equity (ROE %)	(Net operating income - taxes) divided by average equity. ROE calculate the rate of return on the average equity for the period.
		Profit Margin (%)	Net operating income divided by operating revenue
2	Portfolio quality	Portfolio at risk 30 days (%)	Portfolio at risk > 30 days divided by gross loan portfolio. The ratio shows the value of outstanding loans that are due more than 30 days.
		Write off ratio (%)	Value of loan written off divided by average gross loan portfolio
		Risk coverage (%)	Risk coverage ratio is equal to loan loss reserves divided by portfolio at risk. According to MIX market this ratio is named as risk coverage ratio that is calculated by Impairment loss allowance divided by PAR > 30 days
3	Efficiency or productivity ratio	Loan officers productivity	This common ratio measures the average caseload of each loan officer of MFIs. Operating Expenses/Loan portfolio.
		Personnel productivity	This ratio measures the overall productivity of MFI human resource. It also contributes to the financial revenue of MFIs. Personnel Expenses/Loan portfolio.
		Cost per borrower	Operating expenses divided by average number of active borrowers
4	MFIs specific variables	Gross loan portfolio (GLP)	The outstanding balance of all of an MFI's outstanding loans that include current, restructured loans and delinquent but not loans that have been written off. It also does not include interest receivable.

APPENDIX 2: NAMES OF THE MFIS TAKEN FOR THE STUDY WITH THEIR SHORT FORMS USED IN THE ANALYSIS

Sl. No.	Name of the MFI
1	BASIX
2	BSS Microfinance Pvt Ltd (BSS)
3	Chaitanya Micro Credit India Pvt Ltd(Chaitanya)
4	Equitas Microfinance Pvt Ltd (Equitas)
5	Future Financial Services Ltd (Future)
6	Grameen Financial Services Pvt Ltd (GFSPL)
7	IDF Financial Services Pvt Ltd (IDF)
8	Janalakshmi Financial Services Pvt Ltd (JFSPL)
9	Muthoot Mahila Mitra (Muthoot)
10	Navachetana Microfin Services Pvt Ltd (NMSIL)
11	Samasta Microfinance Ltd (Samasta)
12	Shree Kshetre Darmastala Rural Development Project (SKDRDP)
13	SKS Microfinance (SKS)
14	Spandana Financial Services Pvt Ltd (Spandana)
15	Ujjivan Financial Services Pvt Ltd

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