

# Technical Efficiency of Microfinance Institutions in India

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*Study attempts to measure the efficiency level and its determinants of a sample of microfinance institutions operating in India by applying stochastic frontier approach for unbalanced panel of 40 microfinance institutions for the 2005-08. It has been found that mean efficiency level of microfinance institutions is quite low but it increases over the period of study. Age of microfinance institutions is positive determinant of efficiency level but size does not matter much. Higher outreach is associated with higher efficiency which negates the general perception of trade off between outreach and efficiency. Microfinance institutions operating in southern states are more efficient than their counterparts. It has been found that regulated microfinance institutions are less efficient.*

## 1. Introduction

Despite wide expansion of banking network in the country a sizable section of India's population still remains outside the ambit of formal banking system. Poor masses of the country still depend on Informal credit sources for credit requirement at exorbitant terms and conditions. Insufficiency of formal Banking system in providing credit to poor and exploitative terms and conditions of informal credit market paves the way for emergence of microfinance in India. Two different concepts of microfinance viz. SHG-Bank Linkage Program and Microfinance Institutions (MFIs) have been emerging in India. Though the microfinance scenario in India is dominated by SHG-Bank Linkage Program, services offered by microfinance institutions also experiences tremendous growth during recent years. Thousands of microfinance institutions are offering financial services in different part of the country but it is generally believed that only few are performing well. On the one hand some successful microfinance institutions are servicing large number of clients and making profit without any subsidy and grants most of the microfinance institutions depends heavily on donor subsidies. Efficient functioning of these microfinance institutions is

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critical for long run sustainability<sup>3</sup>. Some people argue that future outreach<sup>4</sup> critically depends on achieving financial sustainability of the micro-finance institution.

Firm performance is judged using the concept of economic efficiency. Economic efficiency of any firm (microfinance institution) has two components (i) technical efficiency (ii) allocative efficiency (Farrel, 1957). Technical efficiency refers to the ability and willingness of any firm to maximize output with a given set of inputs while allocative efficiency refers to the ability and willingness of a firm to use these inputs optimally given the input prices. Measurement of these components is useful in following ways.

- a) They facilitate comparisons (relative efficiency) across similar economic units.
- b) If measurement reveals variations in efficiencies among firms further analysis can be undertaken to identify the factors responsible for the variations.
- c) Identification of such factors is valuable for policy formulation for improvements of efficiencies.

In view of above discussion the objectives of the current study are

- I. To benchmark the best practice MFIs by assigning them ranks in order of their efficiency level.
- II. To determine the factors responsible for the variations in efficiency level. Identification of such factors will help other microfinance institutions to increase their efficiency level.

Rest of the paper is organized as follows. Second section depicts the methodological framework of the study and describes the stochastic frontier model for panel data in general. Third section gives data sources, variables included in the model and empirical model used in the study. Fourth section discusses the results of the study. Fifth section concludes the findings of the study.

## 2. Methodological Framework

Output oriented technical efficiency<sup>5</sup> shows the firms ability to obtain maximum output from a given amount of inputs. Neoclassical Economist assumes full technical efficiency while specifying the production function of firms but in reality a gap exists between theoretical assumption of full technical efficiency and empirical reality. Technical inefficiency affects allocative efficiency and a negative cumulative effect on economic efficiency operates. Hence the concept of technical efficiency is important for the better performance of the economic units. Technical efficiency is measured by the distance a particular firm is from the production frontier. A firm that sits on the production frontier is said to be technically efficient. The concept of technical

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<sup>3</sup> Sustainability implies that the institution generates enough income to at least repay the opportunity cost of all inputs and assets

<sup>4</sup> Outreach accounts for the number of clients serviced and the quality of the products provided.

<sup>5</sup> There are two different concepts of technical efficiency, output-oriented and input-oriented technical efficiency. This paper uses the first concept i.e. output oriented. Input oriented technical efficiency refers to firm's ability to minimize inputs from a given amount of output.

efficiency is important to firms because their profit depends highly upon their value of technical efficiency.

The concept of production frontier begins with the celebrated work of Farrel (1957) who provided a measure of productive efficiency as well as definition of production frontier. Two different methods for measuring production frontiers viz. deterministic frontier approach (data envelopment analysis and free disposable hull etc.) and parametric approaches (stochastic frontier approach) have been widely used in the empirical literature. Both approaches have their own merits and demerits. Superiority of one method over other is still unsettled debate in empirical literature. Stochastic frontier approach (SFA) utilized in the current study has at least two advantages over nonparametric approaches. First, nonparametric methods assume that the variations in firm performance are all attribute to inefficiency. This assumption is problematic as it ignores the measurement errors, omitted variables and exogenous shocks in the measurement. Second, hypotheses testing can be carried out for the parameters estimated by parametric methods (SFA). Main disadvantage of using parametric methods is that they impose functional form on the data and efficiency measurement highly dependent on whether or not the functional form represents the true model.

The original specification of stochastic frontier production function was given by Aigner, Lovell and Schimdt (1977) for cross sectional data which had an error term with two parts one for random effects and another for technical inefficiency. Most of the studies use two stage estimation methods, first estimating frontier production function and obtaining predictive efficiencies of firms and then estimate inefficiency effect model in the second stage in order to identify the determinants of variations in efficiencies among firms. Kumbhakar, Ghosh and McGuckin (1991) and Reifschneider and Stevenson (1991) proposed stochastic frontier model for cross sectional data that simultaneously estimate the parameters of both the stochastic frontier and the inefficiency model. Study uses the Battese and Coelli specification (1995) for panel data which may be expressed as:

$$Y_{it} = \exp ( x_{it} \beta + V_{it} - U_{it} ) \dots\dots\dots (1)$$

$x_{it}$  is a vector of (1×K) input Variables of i-th microfinance institutions at time t.

$\beta$  is a vector of (1×K) unknown parameters to be estimated.

$V_{it}$  are assumed to be independent and identically distributed random errors which have normal distribution with mean zero and unknown variance  $\sigma_v^2$  and

$U_{it}$  are non-negative random variables, associated with technical inefficiency of production, which are assumed to be independently distributed, such that  $U_{it}$  is obtained by truncation (at zero) of the normal distribution with mean  $\mu_{it}$  and variance  $\sigma^2$ . Where  $\mu_{it}$  is defined as

$$\mu_{it} = z_{it} \delta + W_{it} \quad \dots\dots\dots (2)$$

$z_{it}$  is (m × 1) vector of variables associated with technical inefficiencies of production of firm.

$\delta$  is (m × 1) vector of unknown parameters to be estimated.

$W_{it}$  are unobservable random variables, which are assumed to be independently distributed, obtained by truncation of the normal distribution with mean zero and unknown variance  $\sigma^2$  such that  $U_{it}$  is non-negative ( $W_{it} = -z_{it} \delta$ ).

We have followed Battese and Corra (1977) specification for variance parameters

$$\sigma_s^2 = \sigma_v^2 + \sigma^2$$

$$\gamma = \sigma^2 / \sigma_s^2$$

The value of  $\gamma$  lies between 0 and 1. Zero value of  $\gamma$  shows that variance of the inefficiency effects is zero and deviations from the frontier are entirely due to noise. Value  $\gamma = 1$  indicates that all deviations are due to technical inefficiency.

The technical efficiency of i-th firm at t-th time period is given by

$$TE_{it} = \exp(-U_{it}) = \exp(-z_{it} \delta - W_{it})$$

Test of hypothesis are conducted to access the significance of the parameters by imposing restriction on the model. Generalized likelihood ratio statistics ( $\lambda$ ) is used to determine the significance of the restrictions imposed upon the model. The generalized likelihood ratio statistics is defined by

$$\lambda = -2 \ln [L(H_0) / L(H_1)]$$

Where,  $L(H_0)$  and  $L(H_1)$  are the values of the likelihood function under the null and alternative hypotheses,  $H_0$  and  $H_1$ .  $\lambda$  has an approximately chi-square distribution with degrees of freedom equal to the number of restrictions. Under the null hypothesis  $\gamma = 0$ , which specifies that technical inefficiency are not present in the model and  $\gamma = \delta_i = 0$ , which specifies that inefficiency effects are not stochastic,  $\lambda$  has mixed chi-square distribution with the number of degree of freedom equal to the number of restrictions imposed (Coelli, 1995).

### 3. Data and Empirical Specification of the Model

Data used in the study is taken from Mix Market<sup>6</sup>. Unbalanced panel of 40 microfinance institutions covering period 2005-2008 is taken for the study<sup>7</sup>. List of microfinance institutions included in the study is given in table 6. Selection of microfinance institution is based upon the availability of data for the period 2005-08. 14 observations are missing hence total observation available for study are 146.

In empirical works selection of input and output for financial institutions is mainly based upon two different concepts viz. Intermediation approach and production approach. Under intermediation approach financial institutions are considered as institutions transferring resources from savers to investors. Under production approach financial institutions are producers of deposits and loans (Athanasopoulos, 1997). Microfinance institutions are also financial institutions but their approach and motive differs from other financial institutions. They target mainly poor persons often without any collateral requirements and their motive is not only to maximize profit. For output variable we have taken gross loan portfolio (measured in Rupees). Number of personnel (PRSNL) and cost per borrower (CPB) (measured in Rupees) are taken as input variables. Stochastic frontier model and technical inefficiency model are given below:

$$\ln GLP_{it} = \beta_0 + \beta_1 LPRSNL_{it} + \beta_2 LCPB_{it} + V_{it} - U_{it} \quad \dots \dots \dots (3)$$

Where,

$\ln$  natural logarithm ( i.e. logarithm to the base e).

$GLP_{it}$  represents all outstanding principals due for all outstanding client loans of i- th microfinance institutions at time period t. This includes current,

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<sup>6</sup> The MIX Market™ is a global, web-based ([www.mixmarket.org](http://www.mixmarket.org)) microfinance information platform. It provides information to sector actors and the public at large on microfinance institutions (MFIs) worldwide, public and private funds that invest in microfinance, MFI networks, raters/external evaluators, advisory firms, and governmental and regulatory agencies.

<sup>7</sup> Data accessed on 10-October-2009.

delinquent, and renegotiated loans, but not loans that have been written off. It does not include interest receivable<sup>8</sup>.

$LPRSNL_{it}$  represents logarithm of number of personnel (Total number of staff members) of  $i$ -th microfinance institutions at time period  $t$ .

$LCPB_{it}$  represents logarithm of cost per borrower (operating expense / Number of active borrowers) measured in Rupees of  $i$ -th microfinance institutions at time period  $t$ .

$\beta_i$  Parameters to be estimated.

$V_{it}$  &  $U_{it}$  are as defined above.

Technical inefficiency effect model is

$$\mu_{it} = \delta_0 + \delta_1 ASSETS_{it} + \delta_2 AGE_{it} + \delta_3 DER_{it} + \delta_4 NAB_{it} + \delta_5 D_{1it} + \delta_6 D_{2it} + W_{it} \dots (4)$$

Where,

$ASSETS_{it}$  total of all net asset account of the  $i$ -th microfinance institutions at  $t$ -th time period measured in Rupees

$AGE_{it}$  Age of the  $i$ -th microfinance institutions at  $t$ -th time period measured in number of years.

$DER_{it}$  Debt equity ratio of the  $i$ -th microfinance institutions at  $t$ -th time period.

$NAB_{it}$  represents total number of active borrowers (The number of individuals or entities who currently have an outstanding loan balance with the MFIs or are primarily responsible for repaying any portion of the loan portfolio, gross) of  $i$ -th microfinance institutions at time period  $t$ .

$D_{1it}$  is location dummy = 1, if Microfinance Institutions is located in South India<sup>9</sup>, otherwise.

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<sup>8</sup> Definitions of all variables included in the study have been from mix market glossary.

$D_{2it}$  is dummy variable = 1, if Microfinance institution is Regulated<sup>10</sup>, 0 otherwise.

$\delta_i$  parameters to be estimated.

$W_{it}$  as defined above

Variables ASSETS and AGE are included in the inefficiency model to access effect of size and experience of microfinance institutions on their efficiency. Coefficients of both variables are likely to be negative in the inefficiency effect model. Variable DER is included in the model to account for the financial management of the microfinance institutions. As the high debt equity ratio shows the poor financial management, its coefficient is expected to be positive. To test the expected trade off between efficiency and outreach, variable NAB is included in the model. Most of the studies found significant trade off between efficiency and outreach hence prior expectation is that coefficient of NAB in inefficiency effect model will be positive.

Two qualitative variables which accounts for location and regulation are also included in the model. MFIs are concentrated in the south Indian states and it is generally argued that they work more efficiently than those MFIs which operate in other part of the country. Hence a dummy variable (= 1, if MFI operates in the south Indian states) is include to check whether such regional differences exists. Another dummy (=1, if MFI is regulated) is included to access whether regulated MFIs are more efficient.

#### **4. Results and Discussion**

Table 1 contains the descriptive statistics of the variables used in the study. Huge variability has been observed in variables used in the study. Output and two input variables included in the production function shows large variability. Variables included in the inefficiency effect model are also shows much dispersion.

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<sup>9</sup> South Indian states in this study include Kerala, Tamilnadu, Andhra Pradesh and Karnataka.

<sup>10</sup> Microfinance institutions are regulated by RBI.

**Table.1. Summary Statistics**

<b>Variables</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Variance</b>	<b>C.V.</b>
GLP	5.41E+00	1.0507E+01	9.99E+00	2.815E+18	1.6790
NAB	6	0	8	9.087E10	1.58452
PRSNL	1510	1629474	190242.9	1057003.3	1.39824
CPB	19	6425	8	850121.01	1.23200
ASSETS	27	6198	735.29	4.744E18	1.71417
DER	5933127	1352376864	748.39	7908.545	2.63255
AGE	-77.52	2	1.27E9	32.605	0.57813
	1	630.16	33.7809		
		34	9.88		

The parameters of stochastic frontier production function (3) and technical inefficiency effect model (4) are simultaneously estimated by maximum likelihood method using the program FRONTIER 4.1<sup>11</sup> developed by Tim Coelli (1996). Maximum likelihood estimates of the parameters of the Cobb Douglas stochastic frontier production function and the technical inefficiency effects models are reported in table2. Table 2 also gives standard errors and t-values of the maximum likelihood estimators. Signs of the estimated parameters of the Cobb Douglas frontier production function are as expected. Estimated coefficient of both input variables, PRSNL and CPB are positive and significant at 5% level of significance. Generalized likelihood ratio tests of hypothesis are generally preferred to the asymptotic t-tests in maximum likelihood estimation. Table 3 reports the test statistics of log likelihood test for the significance of the individual coefficient and also for joint significance. Generalized likelihood ratio test also confirm the significance of the coefficients of input variables. Null hypothesis that their joint significance is zero on output variable is also rejected strongly by log likelihood test. The elasticities of frontier output with respect to PRSNL and CPB are 0.628 and 0.16 respectively. Sum of elasticities is 0.789 (less than one), which shows that decreasing returns to scale operates.

Table 2 also reports the coefficients of the inefficiency effects model and their respective standard errors and t-values. Parameters of inefficiency effect model are more important from the point of view of the objective of the study. Estimated value of the variance parameter  $\gamma$  (0.939) is close to unity which suggests that inefficiency effects are significant in the analysis output of the microfinance institutions. Some formal tests of hypotheses are conducted for inefficiency effect model. The null hypothesis,  $\beta_1 = \beta_2 = 0$  test the joint significance of input parameters. Null hypothesis

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<sup>11</sup> FRONTIER 4.1 is stand alone DOS based program developed by Tim Coelli for estimating stochastic frontier model under various specifications. It also allows users to estimate stochastic cost function besides production function.



is strongly rejected. Null hypothesis,  $\gamma = 0$  which specifies that inefficiency effects are not stochastic is strongly rejected. Rejection of the hypothesis suggests that traditional mean response function is not adequate representation for the production function of the selected microfinance institutions. Null hypothesis,  $\gamma = \delta_i = 0$  specifies that inefficiency effects are absent from the model. The hypothesis is again strongly rejected. Null hypothesis,  $\delta_i = 0$  specifies that coefficients of all the variables included in the inefficiency effect model are equal to zero. The null hypothesis is strongly rejected. Rejection of the hypothesis suggest that although individual coefficients of some variables included in the inefficiency effect model are not significant, jointly they are explaining variations in inefficiency among microfinance institutions well. As mentioned above generalized likelihood ratio tests of hypothesis are generally preferred to the asymptotic t-tests in maximum likelihood estimation, the null hypotheses that individual effects of the explanatory variables in the model for the technical inefficiency effects are zeros were tested as well. Generalized likelihood test shows that all coefficients except ASSETS are significant at 5% level of significance (table 3).

**Table.2. MLE Estimates**

Variables	Parameters	Coefficient	Standard-error	t-ratio
<b><u>Stochastic Frontier</u></b>				
Constant	$\beta_0$	16.506257	0.44927044	36.740136*
Ln(PRSNL)	$\beta_1$	0.62800101	0.040643662	15.451389*
Ln(CPB)	$\beta_2$	0.16196635	0.069101049	2.3439058*
<b><u>Inefficiency Model</u></b>				
Constant	$\delta_0$	2.5203483	0.23424543	10.759434*
ASSETS	$\delta_1$	-0.2016E-09	0.16721E-09	-1.2059384
AGE	$\delta_2$	-0.02182210	0.011697488	-1.8655379*
DER	$\delta_3$	-0.1745E-03	0.78200E-03	-0.2231877
NAB	$\delta_4$	-0.2201E-05	0.13033E-05	-1.6893636*
LOCATION	$\delta_5$	-0.8403206	0.15465586	-5.4334874*
REGULATION	$\delta_6$	0.12550426	0.14793152	0.8483943
<b><u>Variance Parameters</u></b>				
	$\sigma_u^2$	0.35217572	0.063443537	5.5510101
	$\gamma$	0.93915459	0.043072277	21.804155
<b>log likelihood function</b>	-102.50997			

Notes: \* shows the significance of variable at 5% level of significance.

Coefficient of variable ASSETS is negative which is on expected line but both t-test and generalized likelihood test shows that the estimated coefficient is not significant at 5% level of significance. Hence size of the microfinance institutions is not significant determinant of efficiency level. Estimated coefficient of variable AGE

which shows the experience of the microfinance institution is negative as expected and significant at 5 % level of significance by both t-test and generalized likelihood test. Negative coefficient of the variable AGE shows that efficiency of microfinance institutions increases as they gain experience in the industry. Significance of the estimated coefficients of ASSETS and AGE support our prior expectation that they are positive determinants of efficiency levels.

**Table.3. Generalized Log-likelihood Tests**

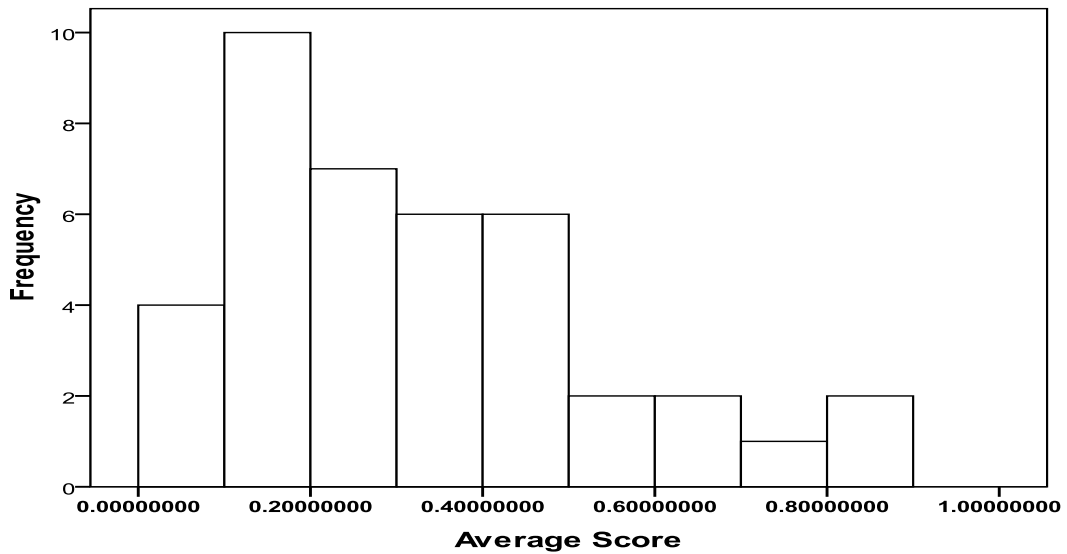
Null Hypothesis	Log likelihood	Test statistics	Critical value*	DF	Decision
$\beta_1=0$	-147.56435	90.108	3.84	1	Reject H <sub>0</sub>
$\beta_2=0$	-145.924	86.828	3.84	1	Reject H <sub>0</sub>
$\beta_1 = \beta_2 = 0$	-241.20814	277.396	5.99	2	Reject H <sub>0</sub>
$\delta_1=0$	-103.68967	2.35954	3.84	1	Accept H <sub>0</sub>
$\delta_2=0$	-104.37449	3.72918	3.84	1	Reject H <sub>0</sub>
$\delta_3=0$	-148.68963	92.3594	3.84	1	Reject H <sub>0</sub>
$\delta_4=0$	-104.22075	3.4217	3.84	1	Accept H <sub>0</sub>
$\delta_5=0$	-148.66065	92.3015	3.84	1	Reject H <sub>0</sub>
$\delta_6=0$	-148.54552	92.0712	3.84	1	Reject H <sub>0</sub>
$\gamma = 0$	-122.5497	40.0796	5.13@	2	Reject H <sub>0</sub>
$\gamma = \delta_0 = \delta_1 = \delta_2 = \delta_3 = \delta_4 = \delta_5 = \delta_6 = 0$	-162.59556	120.1713	14.85@	8	Reject H <sub>0</sub>
$\delta_1 = \delta_2 = \delta_3 = \delta_4 = \delta_5 = \delta_6 = 0$	-155.86216	106.7045	12.59	6	Reject H <sub>0</sub>

Notes: All critical values are at 5% level of significance

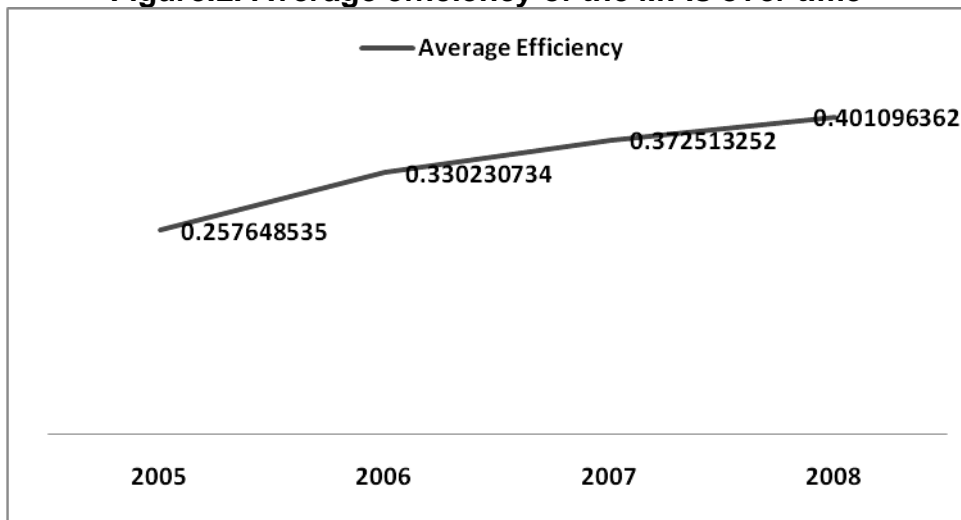
@Source: Kodde, P. A. and Palm, F.C. (1986)

Coefficient of the variable DER is negative in inefficiency effect model which invalidates our prior belief that higher debt equity ratio reduce the inefficiency level of microfinance institutions. However the coefficient is insignificant by t-test but it is significant by generalized likelihood ratio test. Estimated coefficient of NAB is negative and significant at 10 % level of significance by generalized likelihood ratio which rejects the earlier belief of trade off between efficiency and outreach. The issue of trade off between efficiency and outreach has been largely debated between two schools of thoughts. First are welfarists (Montgomery and Weiss, 2005; Hashemi and Rosenberg, 2006) which supports the goal of outreach and other are institutionalists (Rhyne, 1998; Christen, 2001; Isern and Porteous, 2006) who gives more importance to the sustainability and efficiency considerations. The finding of our study, there is no trade off between outreach and efficiency in Indian context is important.

**Figure.1. Frequency Distribution of Average Efficiency Score by MFIs**



**Figure.2. Average efficiency of the MFIs over time**



Coefficient of dummy variable LOCATION included in the inefficiency model to capture the regional differences in efficiency level of microfinance institutions is negative and highly significant. Significant negative coefficient of qualitative variable LOCATION in inefficiency effect model support our prior expectation that microfinance institutions located in southern states are more efficient. Estimated coefficient of another qualitative variable REGULATION is positive which is insignificant by t-test but significant by generalized likelihood test. Positive coefficient of variable depicts that regulated microfinance institutions are less efficient than unregulated.

Average efficiency score by the microfinance institutions over the period of study 2005-08 are reported in table 5. Spandana tops the chart with the average score of 0.89 while Nidan with average score 0.0187 is at the bottom. Only few other microfinance institutions are able to score high average efficiency score. Frequency distribution of average efficiency score by microfinance institutions (figure.1) shows

that most of the microfinance institutions included in the study are operating at very low level of efficiency. There are 14 microfinance institutions whose average efficiency level is less than 0.20 and also there are only 7 microfinance institutions which are able to score efficiency level of more than 0.50. This shows the huge amount of variations in efficiency level of sample microfinance institutions.

It is revealed from table 5 that mean efficiency of Indian microfinance institutions included in the study during the period 2005-08 is 0.34, which shows the poor efficiency level of Indian microfinance institutions. This implies that 34 percent of potential output is being realized by the microfinance institutions in India. It also indicates that microfinance institutions can increase their output level by 66% by the same amount of inputs and technology. One other important conclusion which emerges from the analysis is that average efficiency of sample microfinance institutions increases over the period 2005-08<sup>12</sup>. Figure 2 shows the average efficiency of all microfinance institutions over the period of study. Average efficiency was 0.257 in 2005 which increases to 0.401 in 2008.

**Table.5. Average Efficiency of MFIs**

Sl. No.	MFIs	Average Score	Sl. No.	MFIs	Average Score
1	SPANDANA	0.890883	21	GV	0.283126
2	SHARE	0.840136	22	KBSLAB	0.268669
3	AML	0.709916	23	KAS	0.265409
4	BFL	0.659359	24	CASHPOR	0.26323
5	SANGHAMITHRA	0.645854	25	MAHASEMAM	0.213755
6	SKDRDP	0.585973	26	NDFS	0.206674
7	SKS	0.538422	27	ESAF	0.199859
8	BANDHAN	0.492541	28	CR <sub>e</sub> SA	0.180775
9	SEWA	0.460829	29	SCNL	0.177037
10	MFI	0.450456	30	SMSS	0.17641
11	RASS	0.415137	31	ADHIKAR	0.16911
12	AWS	0.410044	32	RGVN	0.16356
13	AMMACT	0.409863	33	ASOMI	0.130278
14	KRUSHI	0.399587	34	SU	0.124232
15	BASIX	0.394677	35	NEED	0.120674
16	BSS	0.372405	36	SONATA	0.111748
17	BISWA	0.363248	37	ABCRDM	0.094708
18	GK	0.34565	38	NBJK	0.094312
19	SWAWS	0.318094	39	BAZAARI	0.073682
20	SAADHANA	0.288211	40	NIDAN	0.018719
<b>Mean Efficiency</b>		<b>0.340143</b>			

<sup>12</sup> Time trend variable is not included in the inefficiency effect model as the period of study is short.

## 5. Conclusions

The paper attempts to investigate the efficiency level of microfinance institutions in India and determinants of efficiency level. Study utilizes the method proposed by Battese and Coelli that simultaneously estimate the parameters of both the stochastic frontier and the inefficiency model. Our findings shows that mean efficiency of microfinance institutions is 0.34, which is quite low. It indicates that microfinance institutions can increase their output level by 66% by the same amount of inputs and technology. Large amount of variations have been found in the average efficiency level among microfinance institutions. In our sample only few microfinance institutions are working efficiently. Though the efficiency level of microfinance institutions is very low it increases over the period 2005-08. Experience (Age) of the microfinance institution is important determinants of efficiency level but size does not matter much. Our finding also shows that there is no trade off between efficiency and outreach in case of sample of microfinance institutions included in the study. It has been found that significant amount of regional variation exist in efficiency level of microfinance institutions. Microfinance institutions located in the southern states are more efficient than others. Estimated coefficient of another qualitative variable shows that unregulated microfinance institutions are more efficient than regulated.

**Table.6. List of MFIs Included in the study and their Address**

Sl. No	MFIs	Full Name	Address
1	ABCRDM	All Backward Class Relief and Development Mission	Kolkata, West Bengal
2	ADHIKAR	Adhikar	Bhubaneshwar, Orissa
3	AML	Asmitha Microfin Ltd.	Hyderabad, Andhra Pradesh
4	AMMACTS	Acts Mahila Mutually Aided Coop Thrift Society	Gandhi Nagar Andhra Pradesh
5	ASOMI	Asomi	Guwahati, Assam
6	AWS	Adarsha Welfare Society	Mahabubnagar, Andhra Pradesh
7	BANDHAN	Bandhan	Kolkata, West Bengal
8	BASIX	Bhartiya Samruddhi Finance Ltd.	Hyderabad, Andhra Pradesh
9	BAZAARI	Bazaari Global Finance Ltd.	Jodhpur, Rajasthan
10	BFL	BWDA Finance Ltd.	Villupuram, Tamilnadu
11	BISWA	Bharat Integrated Society Welfare Agency	Sambalpur, Orissa
12	BSS	Bharatha Swamukti Samsathe	Bangalore, Karnataka
13	CASHPOR	Cashpor Microcredit	Varanasi, Uttar Pradesh
14	CRSA	Centre for Rural Reconstruction Through Social Action	Rajamundry, Andhra Pradesh
15	ESAF	ESAF Microfinance and Investment (P) Ltd.	Trichur, Kerala
16	GK	Grameen Koota	Bangalore, Karnataka
17	GV	Gram Vidiyal	Tiruchirapalli, Tamil Nadu
18	KAS	KAS Foundation	Bhubaneshwar, Orissa
19	KBSLAB	Krishna Bhima Samruddhi Local Area Bank Limited	Mahabubnagar, Andhra Pradesh
20	KRUSHI	KRUSHI	Karimnagar , Andhra Pradesh
21	NBJK	Nav Bharat Jagriti Kendra	Hazaribag, Jharkhand
22	MAHASEMAM	Mahasemam	Madurai, Tamilnadu
23	MFI	Microcredit Foundation of India	Adyar, Chennai
24	NDFS	Nanayaturabhi Development Financial Services	Trichy, Tamilnadu
25	NEED	Network of Entrepreneurship and Economic Development	Lucknow, Uttar Pradesh
26	NIDAN	Nidan	Patna, Bihar
27	RASS	Rashtriya Seva Samithi	Tirupati, Andhra Pradesh
28	RGVN	Rashtriya Grameen Vikas Nidhi	Guwahati, Assam
29	SAADHNA	Saadhna Microfin. Society	Kurnool, Tamil Nadu
30	SANGHAMITHRA	Sanghamithra Rural Financial Services	Mysore, Karnataka
31	SPANDANA	Spandana Sphoorty Innovative Financial Services Ltd.	Hyderabad, Andhra Pradesh
32	SCNL	Satin Creditcare Network Limited	New Delhi
33	SEWA	Shri Mahila Sewa Sahakari Bank Ltd	Ahmadabad, Gujarat
34	SHARE	SHARE Microfin Ltd.	Hyderabad, Andhra Pradesh
35	SKDRDP	Shri Kshetra Dhamasthala Rural Development Project	South Canara, Karnataka
36	SKS	SKS Microfinance Private Limited	Secundrabad, Andhra Pradesh
37	SMSS	Star Microfin Service Society	Velgode, Andhra Pradesh
38	SONATA	Soanata Finance Private Ltd.	Allahabad, Uttar Pradesh
39	SU	Sahara Uttaravan	West Bengal
40	SWAWS	Sharda's Women's Association for weaker Section	Secundrabad, Andhra Pradesh

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