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Abstract

The objective of the present study is to examine whether household access to microfinance reduces poverty. Using national household data from India, treatment effects model is employed to estimate the poverty-reducing effects of MFIs loans for productive purposes, such as investment in agriculture or non-farm businesses on household poverty levels. These models take into account the endogenous binary treatment effects and sample selection bias associated with access to MFIs. Despite some limitations, such as those arising from potential unobservable important determinants of access to MFIs, significant positive effect of MFI productive loans on multidimensional welfare indicator has been confirmed. The significance of 'treatment effects' coefficients have been verified by both Tobit and Propensity Score Matching models. In addition, we found that loans for productive purposes were more important for poverty reduction in rural than in urban areas. However in urban areas, simple access to MFIs has larger average poverty-reducing effects than the access to loans from MFIs for productive purposes. This leads to exploring service delivery opportunities that provide an additional avenue to monitor the usage of loans to enhance the outreach.

I. Introduction

The expansion of microfinance sector is based on the concept that poor households are affected by lack of access to, and inadequate provision of financial services. This attempt to reduce the rate of financial exclusion among the poor was seen as an alternative solution for the failures in agricultural lending and rural credit assistance practices marred by substantial subsidies, urban biased credit allocation, higher transaction costs, high default rates, corrupt practices and misaligned incentives (Arun et al., 2005). Despite the exceptional growth of the microfinance sector during the last three decades in serving around 40 million clients, most parts of the developing world would still remain characterised by huge demand for micro financial services. There is a projection about the potential of this market to grow to $250-$300 billion in the near future from the existing loan portfolio of $17 billion in mid-2006 (Ehrbeck, 2006). The concept and practice of microfinance have changed dramatically over the last decade and the microfinance sector is increasingly adopting a financial systems approach, either by operating on commercial lines or by systematically reducing reliance on interest rate subsidies and/or aid agency financial support (Hulme and Arun 2009). The financial systems approach supports the argument that microfinance institutions should aim for sustainable financial services to low income people, which may risk undermining the potential of institutional innovation for poverty reduction and social empowerment. According to Cull et al. (2009), the argument that microfinance institutions should seek profits has an appealing 'win-win' resonance, admitting little trade-off between social and commercial objectives.

Irrespective of the renewed emphasis on the financial systems approach, over the years, many Micro Finance Institution (MFIs) have developed a range of services to address the

requirements of the poor, such as the Income Generation for Vulnerable Group Development (IGVGD) programme of BRAC, Bangladesh. Despite the widely held belief among policy makers that microfinance has a relatively small impact on poverty at macro level, some recent studies have shown its significant effect on poverty using household survey data. Using the panel data at both participant and household levels in Bangladesh, Khandker (2005) confirms that microfinance programmes have a sustained impact in reducing poverty among the participants, especially for female participants and a positive spill over effect at village level. This study suggests that microfinance programmes not only help the poor or redistribute income but also contribute to national economic growth. However, some studies have shown that MFIs have not reached the poorest of the poor in Asian countries (Weiss and Montgomery, 2005) or in Bolivia (Mosley 2001). The challenge in serving the poorest of the poor is to identify who might benefit from stand-alone financial services or from non-financial services with or without finance, before participating in market-oriented finance (Meyer 2002). In Bangladesh, Rutherford (2003) found that despite the widespread presence of MFIs, their share of total money management activities is relatively small. This indicates the need for microfinance institutions to move away from being product-based organizations to reflect the heterogeneity of the demand structure for financial services/products by poor.

The relationship between microfinance and poverty is still in question and this paper provides some new empirical evidence on the poverty-reducing effects of MFIs. The existing studies on the impact of microfinance provide inconclusive results ranging from a substantial positive impact in Bangladesh to 'zero' effect in northern Thailand (Cull et al., 2009). This study argues that the future innovations in the microfinance sector will be reflective to the fresh

understandings of the financial lives of the poor households. To capture the multi-dimensional aspect of poverty, such as basic needs, wealth, type of housing, job security, sanitation and food security, the current study uses Index Based Ranking[1] (IBR) Indicators based on a national-level household survey to examine the role of microfinance in poverty reduction in India.

In India, despite recent economic growth at national level[2], poverty remains a serious problem for policy-makers because the high economic growth is mainly driven by few sectors in urban areas, such as industry and service sectors[3]. The incidence of poverty in India is estimated by quinquennial large sample surveys on household consumption and expenditure and, according to the Uniform Recall Period (URP) consumption distribution data, poverty stands at 28.3 per cent in rural areas, 25.7 per cent in urban areas and 27.5 per cent for the country as a whole (Government of India, 2010). Although the proportion of persons below the poverty line has declined from around 36 per cent of the population in 1993-94 to 28 per cent in 2004-05, poverty reduction remains the country's major challenge in the 21st century.

Until the early 1990s, financial services were provided through a variety of state sponsored institutions, which resulted in impressive achievements in expanding access to credit particularly among the rural poor (Mosley and Arun 2003). Although many of these commercial bank branches in rural areas were unprofitable, they played a positive role in financial savings and

[1] In spite of well established concerns on IBR class of poverty measures such as subjectivity, substitutability and complementary issues of multi-dimensional poverty and stochastic dominance, we remain resolute on its reliability based on some earlier wealth ranking studies including Adams et al. (1997) and Pradhan and Ravillion (2000).

[2] For example, real GDP grew by 9.7 % in 2007, 9.2% in 2008, and 6.7% in 2009.

[3] The average annual output growth rates in industry and services sectors in the period 1994-2004 are 5.6% and 8.2% respectively, while that in the agricultural sector is 2.0% (based on World Bank Data in 2005 taken from http://devdata.worldbank.org/AAG/ind_aag.pdf. The poverty head count ratio has been much higher in rural areas than in urban areas (e.g. Deaton and Kozel 2005 and Sen and Himanshu 2004).

reducing poverty. This is evident from the fact that during the period 1951-1991 the financial institutions' total share in rural household debt increased from 8.8 per cent to 53.3 per cent and the role of money lenders declined significantly (Mosley and Arun 2003; Basu and Srivastava 2005). However, despite the vast network of banking and cooperative finance institutions and strong micro components in various programmes, the performance of the formal financial sector still fails to adequately reach out to, or reflect and respond to the requirements of the poor.

In the 1990s, MFIs became increasingly important in India mainly due to their better access to local knowledge and information at community level and their use of peer group monitoring. For example, microfinance programmes involving SHGs (Self-Help Groups), which are based on the existing banking network in delivering financial services to the poor, have become increasingly important in India due to their flexible nature (Mosley and Arun 2003). SHGs are built on the traditional institution of ROSCA (Rotating Savings and Credit Associations) and provide access to both savings and credit for the asset-less poor. A recent study in Pune district in Maharashtra showed that while the targeting performance of microfinance through SHGs was unsatisfactory in terms of income, it was satisfactory in terms of caste (social division based on descent or birth), landlessness and illiteracy and thus facilitated the empowerment of women (Gaiha and Nandhi 2007). This study also found that loans were used largely for children's health and education and argued against restricting the impact assessment of microfinance to conventional economic criteria alone.

Despite MFIs' increasing involvement in poverty reduction in India, there have been relatively few studies that empirically evaluate their impact at the national level. The present study aims to provide evidence on the relationship between role of MFIs and its impact on

poverty in India using a large-scale household data set which was collected with the intention of assessing the impact of microfinance. In our study, poverty is defined by the 'IBR (Indexed Based Ranking) Indicator', a composite indicator that captures various aspects of wellbeing, including land holdings, salaried income sources, livestock, transport assets, housing, and access to sanitation facilities[4]. Our broad research question is - whether access to MFIs and loans for productive purposes reduces poverty. A simple comparison of the average of the IBR indicator for households with access to MFIs and those without is not appropriate. Firstly, MFIs are not randomly distributed due to endogenous programme placement where MFIs target poor households or poor households tend to take loans from, or save at MFIs (EDA Rural Systems 2005). Furthermore, there are self-selection problems associated with participation in microfinance programmes. That is, within the area where microfinance is available, individuals with similar characteristics (e.g. education or age) might have different levels of entrepreneurial spirit or ability, which may lead to different probabilities of their participating in the scheme. Hence it is necessary to take into account self-selection problems or the endogeneity associated with participation in microfinance programmes.

To address at least partly the sample selection problem, we apply treatment effects model, a version of the Heckman sample selection model (Heckman, 1979). We have carried out robustness test by using propensity score matching (PSM).[5] We also use Tobit estimation to estimate the effect of size of productive loan on poverty. Tobit model is meant to account for left censoring associated with unobserved sample. Other robustness checks explored include (1)

[4] See Sinha (2009) for the conceptual framework of IBR indicator.

[5] For brevity, the PSM results are provided only in Appendices 2 and 3.

decomposition of the IBR index into perception of income level and food security[6] and (2) examining whether poverty reducing effects of productive loan would be observed in the case where it is replaced by total loan. In all instances, we observe that microfinance has a significant positive effect on poverty reduction.

The treatment effects model estimates the probit model with the same specification as in the first stage of PSM. In the second stage, the IBR indicator, our proxy for poverty, is estimated by OLS while sample selection is corrected by using estimates of the probability of participation in microfinance programmes. The model is fitted by a full maximum likelihood (Maddala, 1983). The merits of the treatment effects model over PSM include that (i) the degree of sample selection bias is explicitly taken into account and (ii) the determinants of the dependent variable in the second stage are identified. However, the treatment effects model imposes strong distributional assumptions for the functions in both stages and the final results are highly sensitive to the choice of explanatory variables and the instrument. The presence of unobservable variables would also affect the results as in PSM. Given these limitations, applying different models is useful as each model serves to check the robustness of the results derived by the other.

The rest of the paper is organised as follows. Section II summarises the survey design and data. Section III describes the econometric intuition underlying treatment effects and Tobit model. Section IV provides the econometric results and main findings. The concluding remarks are given in the final section.

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[6] These two components are deemed only candidates for decomposition analysis given the data limitations, e.g. insensitivity of other components in IBR, such as land-holding or household access to sanitation facilities, to microfinance access or loan amount. The choice of these proxies was also guided by the data generation process since each provides either subjective or objective view points of well-being.

II. Survey Design and Data [7]

Details of Survey

The original survey was carried out by EDA Systems for SIDBI (Small Industries Development Bank of India) in 2001 as a part of SIDBI's impact assessment study of its micro finance programme. This cross-sectional socio-economic research was undertaken to assess, on a national scale, the development impact of MFI programmes. The study covered a sample of 20 SIDBI's partner Micro Finance Institutions (MFIs) and 5260 households distributed across different and diverse regions of India, including both clients and non-clients (EDA Rural Systems 2005; SIDBI 2005). Our study is based on the cross-sectional data set for these households.

The hypothesis of our study is: (1) access to microfinance institutions (MFIs) and productive loan reduces poverty and (2) amount of productive loan has a poverty reducing effect. Five types of MFI were selected as representative of 31 MFIs in SFMC[8]'s list of current partners - representing different regions and models of microfinance (Self Help Group (SHG), Grameen, Individual Banking and sector/enterprise specific cooperatives), age, outreach to members and range of services. At each MFI, two to four sample areas (villages or urban wards) were purposefully selected to represent a typical area of the MFI in terms of the socio-economic context and range of MFI programmes. Within each sample area, a stratified random sample of clients, non-clients and dropouts was drawn using wealth ranking as a basis for stratification

[7] This section is based on EDA Rural Systems (2002, 2005), SIDBI (2005) and Sinha (2009).
[8] It stands for SIDBI (Small Industries Development Bank of India) Foundation for Micro Credit.

(EDA Rural Systems 2002, 2005). The ratio of non-client households to MFI client households was set at 1:2.75 for most of the villages. This ratio was chosen to reflect the average non-client to client ratio of the population in the village or the urban wards where microfinance programmes were in operation. For each group of clients in the programme area, an appropriate number of non-client households with similar characteristics (based on wealth, social group or female-headedness) were chosen in the same program area as a comparison group.

Index Based Ranking (IBR) Indicators

Index Based Ranking (IBR) Indicators were created to overcome any limitations of the income or consumption based poverty measures and to capture non-income or multi-dimensional dimensions of poverty, such as basic needs, wealth, type of housing, job or employment security, sanitation, and food security (Sinha 2009). A score index, such as IBR, is useful to capture various dimensions of poverty because of its higher practicality (e.g. less costly than those for expenditure surveys; based on less-sensitive /obtrusive and simpler questions) and higher reliability due to lower risk of falsification or error. Respondents are asked about their quality of life in several dimensions and then IBR indicators are created as a weighted sum of scores for different categories with a maximum score of 60.

The actual scoring is based on quantitative observations of trained researchers using common criteria. The dimensions include (i) agriculture (e.g. area in acres, value of crop sold last year in rupees, and, as a proxy for food security, the number of months the stock of crop would meet family needs); (ii) employment (e.g. regularity of income, type of employment - permanent or ad hoc, binary classification of income level, number of people employed); (iii)

animal husbandry (the number of buffalos, cows, goats, pigs, and poultry); (iv) transport and household assets (e.g. the number of bicycles, rickshaws, two or four wheelers; ownership of fridge, TV, or phone); (v) house ownership and housing type (owned, rented, or homeless; house size - large, medium, or small, electrical connection); and (vi) sanitation (with or without access to public, shared or own toilet (inside or not), with or without bath, inside or outside). The IBR indicator thus reflects income or employment or business characteristics, basic needs such as food security, the availability of sanitation facilities, housing and asset characteristics. Households are grouped into five categories, namely 'very poor' (with an IBR indicator of 8 or less; 5.1% of the total sample of 5260), 'poor' (IBR - 9-18; 23.6%), 'moderately poor or borderline' (IBR - 19-29; 33.5%), 'self-sufficient' (IBR - 30-40; 33.5%), and 'surplus' (IBR - 41-60 (Sinha, 2009). Thus, the very poor or the poor have relatively insecure agricultural income, few animal or household assets, relying on casual labour, and lower level of sanitation. Incidentally, the share of 'the poor' and 'the very poor' (28.7%) in our study matches, the poverty head count ratio for all India in 2004-5 based on the national poverty line applied to the National Sample Survey data (Himanshu, 2007).

Descriptive Statistics and Definitions of the Variables

The present study employs two different definitions of access to MFIs; (a) whether a household is a client of any MFI ("*MFI_Access*") or not, and (b) whether a household has taken a loan from MFI for a productive activity ("*MFI_Productive*"). The first definition is used to observe the

effect of simply accessing MFI on poverty.[9] The second is concerned with whether the household has taken loans for productive activities (and has an outstanding balance of those loans at the time of survey), leading to an increase in production, e.g. buying inputs for agriculture or investment in non-farm business, such as repairing a shop. This is based on borrowers' broad perception of the use of loans taken from MFIs. In this category, the loan used for self consumption or non-productive purposes is excluded. The binary classification of 'whether the household used the MFI loans for productive purposes' is based solely on the respondents' perception of the nature of their loans and thus the possibility cannot be ruled out that loans were actually used for other purposes. Thus, caution is needed in interpreting the results.

Appendix 1 provides descriptive statistics of the variables for the sample households with access to MFIs and for those without. As shown by the number of observations in two columns (third and sixth), about three quarters of the sample households have access to MFIs in both rural and urban areas. About a half of them has access to loans from MFI for productive purposes. In general, there is a relatively small difference between the descriptive statistics of each variable for the households with access to MFIs (or with access to MFI loans for productive purposes) and for those without, except in a few cases (e.g. there are higher proportions of larger households with lower dependency ratios and households with non-farm business opportunities among those receiving MFI loans than among those without). That is partly because of the design of the sample survey where households with relatively similar characteristics are chosen in each village. The higher proportion of female-headed households probably indicates that MFIs

[9] 'Being a client' means that any member of the household has either savings or loan account with MFIs at the time of survey.

use sex of the head of household for targeting female/poorer clients. For most rural households, the household head is either illiterate or 'completed primary school' only, while all of those in urban areas completed only primary school.

A household typically has about five members. About 30% of the sample households belong to a Scheduled Caste or Scheduled Tribe (population groupings based on descent or birth and are explicitly recognized by the Constitution of India). The proportion of Hindus is relatively higher in urban areas, while that of Muslims is relatively higher in rural areas. Other religions include Christianity and Sikhism. We created a variable on 'business availability', the availability of non-farm business opportunities for households. It is assumed that more business opportunities will increase the demand for microfinance. This is proxied by the proportion of households engaged in non-farm business in a village. As expected, it is higher in urban areas. The average IBR indicator of households in rural areas is lower than in urban areas, implying that poverty is more severe in rural areas. The IBR indicator is higher for those with access to MFIs (or those with access to MFI loans for productive purposes) than those without. However, this may not necessarily imply that access to MFIs reduces poverty due to the possible sample selection biases. The next section will address the methodologies by which the treatment effects and Tobit models take account of sample selection biases and censoring respectively.

III. Methodology

We use the treatment effects model for the effect of access to MFIs and productive loans on poverty reduction. While this approach addresses sample selection issues, we check for robustness using Propensity Score Matching and report its findings in Appendices 2 and 3.

Secondly, we apply Tobit regression to investigate the poverty reducing effect of productive loan amount.

(1) Treatment effects Model

Our main hypothesis is that access to microfinance institutions (MFIs) reduces poverty as defined by the IBR indicators. Because we have only cross-sectional data, we can compare IBR indicators of households with access to MFIs and those without, as long as MFIs are randomly distributed across the sample. However, we cannot simply statistically compare the average of IBR indicators for those with access to MFIs and those without because of the sample selection bias. The sample selection problem may arise from (1) self selection where the households themselves decide whether or not to participate in MFI programmes, which depends on observable and unobservable household characteristics, and/or (2) endogenous program placement where those who implement microfinance programmes select (a group of) households with specific characteristics (e.g. high poverty rates or reasonably good credit records depending on the programme specifications). Heckman Sample Selection Model could be used to compensate for sample selection bias or the endogeneity associated with household access to MFIs.

We employ the treatment effects' model version of the Heckman sample selection model (Heckman, 1979), which estimates the effect of an endogenous binary treatment. This enables us to compensate for sample selection bias associated with access to MFIs. In the first stage, access to MFI is estimated by a probit model. In the second, we estimate the IBR indicator by various household characteristics and a dummy variable on whether the household participates in the MF

programme after controlling for the inverse Mill's ratio which reflects the degree of sample selection bias. The instrument used is the availability of formal banks[10] at the village level (proxy for the level of local financial services) which determines the demand for microfinance, but would not directly affect the poverty level of the household.

The merit of the treatment effects model is that sample selection bias is explicitly estimated by using the results of the probit model. However, its weak aspects include (i) strong assumptions being imposed on distributions of the error terms in the first and the second stages, (ii) the results being sensitive to the choice of explanatory variables and instruments, and (iii) valid instruments rarely found in non-experimental data.

The selection mechanism by the probit model above can be more explicitly specified as (e.g. Greene, 2003):

$$D_i^* = \gamma X_i + u_i \qquad (3)'$$

and

$$D_i^* = 1 \quad \text{if } D_i^* = \gamma X_i + u_i > 0$$
$$D_i^* = 0 \quad \text{otherwise}$$

where

$$\Pr\{D_i = 1 | X_i\} = \Phi(\gamma' X_i)$$
$$\Pr\{D_i = 0 | X_i\} = 1 - \Phi(\gamma' X_i)$$

and

$$D_i^* = 1 \quad \text{if } D_i^* = \gamma X_i + u_i > 0$$

[10] Hausman test has been carried out to compare the coefficient estimates of treatment effects model and those of OLS to test the validity of 'availability of formal banks' as an instrument. The instrument is deemed valid on the ground that its coefficient estimate is statistically significant in the treatment effects model and the difference of coefficient estimates of these two models are also significant as shown by Hausman test.

D_i^* is a latent variable. In our case, D_i equals 1 if a household has access to MFIs and 0 otherwise, X_i is a vector of household characteristics and the instrument for the participation equation, that is, the proportion of households with access to formal banks, Φ , denotes the standard normal cumulative distribution function.

The linear outcome regression model in the second stage is specified below to examine the determinants of poverty, proxied by IBR (index based ranking) score or W_i . That is,

$$W_i = \beta' Z_i + \theta D_i + \varepsilon_i \qquad (4)$$

$$(u_i \ \varepsilon_i) \sim \text{bivariate normal}[0, 0, 1, \sigma_\varepsilon, \rho].$$

where θ is the average net wealth benefit of participating in MF programmes. Z_i is the same as X_i except that it does not include instruments for the MFI participation equation.

Using a formula for the joint density of bivariate normally distributed variables, the expected IBR indicator for those with access to MFIs (or clients) is expressed as:

$$\begin{aligned} E[W_i | D_i = 1] &= \beta' Z_i + \theta + E[\varepsilon_i | D_i = 1] \\ &= \beta' Z_i + \theta + \rho\sigma_\varepsilon \frac{\phi(\gamma' X_i)}{\Phi(\gamma' X_i)} \end{aligned} \qquad (5)$$

where ϕ is the standard normal density function. The ratio of ϕ and Φ is called the inverse Mill's ratio.

The expected IBR for non-clients is:

$$\begin{aligned} E[W_i | D_i = 0] &= \beta' Z_i + E[\varepsilon_i | D_i = 0] \\ &= \beta' Z_i - \rho\sigma_\varepsilon \frac{\phi(\gamma' X_i)}{1 - \Phi(\gamma' X_i)} \end{aligned} \qquad (6)$$

The expected effect of poverty reduction associated with MFI access is computed as (Greene, 2003, 787-789):

$$E[W_i|D_i = 1] - E[W_i|D_i = 0] = \theta + \rho\sigma_\varepsilon \frac{\phi(\gamma' X_i)}{\Phi(\gamma' X_i)[1 - \Phi(\gamma' X_i)]} \quad (7)$$

If ρ is positive (negative), the coefficient estimate θ of using OLS is biased upward (downward) and the sample selection term will correct this. Since σ_ε is positive, the sign and significance of the estimate of $\rho\sigma_\varepsilon$ (usually denoted as β_λ) will show whether any selection bias exists. To estimate the parameters of this model, the likelihood function given by Maddala (1983, 122) is used where the bivariate normal function is reduced to the univariate function and the correlation ρ. The predicted values of (5) and (6) are derived and compared by the standard t test to examine whether the average treatment effect or poverty reducing effect is significant.

(2) Tobit Model

In our bid to estimate the effect of productive loan amount on household poverty, non-zero values occur only when the former has been accessed by a household. This generates a censored sample in which Maddala (1983) and Amemiya (1984) argue that estimating least squares on the reduced sample leads to biased and inconsistent results. The other alternative of categorizing the dependent variable into a binary outcome, masks actual predictions since the use of either logit or probit reveals estimates premised on the probability that the dependent variable lies above a

certain threshold. Tobit (hybrid between probit and least squares) uses information on all observations. The model takes the form:

$$y_t = X_t\beta + \mu_t \qquad if\ X_t\beta + \mu_t > 0$$
$$= \ 0 \qquad\qquad if\ X_t\beta + \mu_t \leq 0 \qquad\qquad (8)$$
$$t = 1, 2, \ldots\ldots\ldots, N$$

where y_t is the dependent variable, X_t is the vector of independent variables, β is the vector of unknown coefficients, μ_t represents the independently distributed error term. Underlying the estimation of equation (8), is a latent variable y^* which is assumed to be linearly related to the vector of independent variables. In effect we calculate the normalized coefficients which needs to be multiplied by the standard error to ascertain the actual sort for β estimates.

IV. Results

(1) Treatment Effect Model

We first provide the probit results for the treatment effects model to investigate the impacts of access to MFIs and productive loans on poverty. Because of the fundamental differences of environment, industrial structures, household characteristics and activities between urban and rural areas, we first derive the estimations for total households and then for urban areas and rural areas separately. The results of the probit model imply the sort of characteristics which are the key determinants underlying access to, and use of, microfinance services.

The estimation results of the probit model in Table 1 are generally intuitive in the case of all households where the dependent variable is 'MFI_Access' (i.e. Case A-1). A household with an older household head is more likely to be an MFI client, but the negative coefficient of the

age square suggests a non-linear effect, which is significant for both total and rural households. Also, a household with a female head is more likely to be a client, which reflects the fact that microfinance programmes target women. Education variables are not significant. Dependency ratio has a negative and significant effect. The coefficient estimate of 'business availability' is positive and significant in Cases A-1 (total) and A-3 (rural areas). If a household deals with formal banks, it is less likely to be an MFI client. This is significant in Cases A-1 and A-3. The coefficient estimates of loans from formal banks, money lenders, friends and relatives are negative, which reflects the fact that those who cannot obtain loans, or can only obtain smaller loans[11], tend to use MFI services. The availability of formal banks is positive and significant in urban areas and negative and significant in rural areas. That is, households in areas where formal banks are not available are more (less) likely to be MFI clients in rural (urban) areas.[12]

However, in Case B-1 where 'MFI_Productive' is estimated, a few differences are observed. The coefficient estimate of 'Female' (headedness) is *negative* in Case B-1 (total) and Case B-3 (rural areas), that is, a household with a male head is more likely to take a loan for productive purposes. This may reflect the fact that, although microfinance focuses on women, male-headed households are more likely to take loans for productive purposes. The coefficient estimates of variables on 'Education' are positive and significant. Households with more educated heads are more likely to take MFI loans for productive purposes, while education does

[11] Average loan size for the current study is about USD600, compared with global average of about USD530 (MIX, 2009).

[12] We estimated the treatment effects model based on the probit without the variables on access to other financial services for both 'MFI-Access' and 'MFI-Productive' noting that these may not be exogenous. The coefficient estimates of variables show similar results in the cases without the variables on access to other financial services. The final results of the treatment effects model and PSM model are also similar. However, this has a shortcoming of not controlling for the variables on other financial services and thus we decided to present the cases with these variables.

not matter for simple access to MFI. The coefficient estimates of 'Caste_dum' (dummy for caste) are negative and significant in Case B-1 and Case B-3. That is, households which do not belong to Scheduled Castes or Scheduled Tribes are more likely to be MFI clients, suggesting the exclusion of socially disadvantaged groups from MFI loans for productive purposes. The availability of non-farm business is highly significant in all cases as this increases the demand for loans for productive purposes. In rural areas transactions with formal banks and loans from money lenders show positive and significant signs, that is, other financial services serve as complements to MFI loans for productive services. On the other hand, the coefficient estimate of loans from formal banks is negative and significant in Case B-2 for urban areas. That is, those who cannot get loans from the formal banks tend to obtain MFI loans for productive purposes in urban areas. Formal bank availability at village level is negative and significant in Case B-1 (total) and Case B-3 (rural areas). Rural households living in a village with more difficult access to formal banks are more likely to take MFI loans.

(Table 1 to be inserted around here)

Based on the regression results of the probit model in Table 1, we estimate treatment effects models and present the results in Table 2 for the total sample and for urban and rural areas, separately for the cases where whether the household had access to MFI is estimated in the probit model (Cases A-1, A-2, and A-3) and for those where the households obtained a loan for any productive purposes (Cases B-1, B-2, and B-3). The dependent variable is either aggregate Indexed Based Ranking (IBR) of a household's wellbeing, or a disaggregated component of IBR-

namely, perceived income level or food security. Note that higher value of a dependent variable reflects higher wellbeing or lower poverty. Most of the results are similar irrespective of the areas chosen or the definitions of the dependent variable in the first stage.

(Table 2 to be inserted around here)

Most of the coefficient estimates of dependent variables show the expected signs. Households with older household heads tend to have higher IBR indicators with some non-linear effects, that is, the IBR indicator first increases as the household head gets older and then decreases. Female-headed households are associated with lower IBR indicators. Both completing primary education and higher education are associated with higher IBR indicators, and thus lower poverty. Larger households tend to have higher IBR indicators, but a larger proportion of elderly people or children in a household have a counter effect. If the household belongs to a Scheduled Caste or Scheduled Tribe, it is likely to have a lower IBR. Being Hindu has a positive and significant effect and being Muslim has a negative effect in the cases for total sample and for rural areas, while their coefficient estimates are non-significant for urban areas.

The availability of non-farm business opportunities is significantly and positively associated with a higher IBR Indicator. Variables controlling for access to other sources of financial services (namely, loans from formal banks, money lenders, friends and relatives) show positive and significant coefficients. This implies that a household less financially constrained is less likely to be poor. Our results would remain the same if the variables on having access to other financial services were omitted. The positive coefficient for Θ implies that the net benefit

of having access to MFI is significant and positive in urban areas even without controlling for sample selection bias.

The last panel of Table 2 shows the treatment effects or the average poverty reducing effects in accessing MFIs or taking loans for productive purposes. In both instances (access to MFIs and productive loan) and for both urban and rural areas significant average poverty reducing effects are observed. Incidentally, the results on the size and sign of the poverty reducing effects in each case are very similar to those derived by *kernel matching* for PSM. This would support our results based on PSM with the caveat that both methodologies have their own limitations. That is, on average, having access to MFI or taking loans from MFI reduces poverty (see Appendices 2 and 3).[13] In each of the cases, the decomposed IBR indicators of perceived income level and food security show significant average poverty reducing effect.

(2) Tobit Regression Results

The sample for regressing amount of productive loan on well being was restricted only to households that had access to microfinance institutions and productive loan. The results are presented in Table 3.

(Tables 3 to be inserted around here)

Given the outcome of the effect of sample selection above, the results emerging from the Tobit estimation shows a highly significant positive relationship between productive loan amount and

[13] See Imai and Arun (2008) for details of the methodologies and results of PSM.

households poverty after controlling for socio-economic characteristics. It is noted that the coefficient estimate of amount of productive loan, though its absolute value is small, is more highly significant in urban area (at 1 % level) than in rural area (significant only at 10 % level). The results of other covariates are not much different from the second stage results of Treatment effects model in Table 2. It has been confirmed that larger amount of productive loan improves well-being, a finding consistent with the underlying thrust of microfinance evolution. It is noted that this finding supports the earlier results both from the treatment effects model PSM.

Also as a form of robustness check, we observe a significant poverty reducing effect in the case of total loans. The results are shown in Table 4.

(Tables 4 to be inserted around here)

A similar pattern of the results are obtained in the cases where we estimate the effects of amount of total loan on poverty. That is, larger amount of productive loan reduces poverty in both urban and rural areas. It is noted that coefficient estimate of total loan is significant at 1 % level in both urban and rural areas.

V. Conclusions

Drawing upon a national-level cross-sectional household data set in India in 2001, the present study analyses the impact of Micro Finance Institutions (MFIs) on household poverty, based on the Indexed Based Ranking (IBR) Indicator which reflects multi-dimensional aspects of poverty. The treatment effects model, a version of the Heckman sample selection model, and Tobit model

are employed to estimate poverty-reducing effects of access to MFIs and loans used for productive purposes, such as investment in agriculture or non-farm businesses. The propensity score matching (PSM) model has been also used to check the robustness of the results. These models compensate for endogenous binary treatment effects or sample selection bias associated with access to MFIs. Despite some limitations e.g. arising from potentially unobservable important determinants of participation in microfinance programmes, significantly both models confirmed positive effects of MFI access on the multidimensional welfare indicator, a result which suggests that MFIs play a significant role in poverty reduction. If we consider the results for rural and urban areas separately, some interesting observations emerge. For households in rural areas, a larger poverty reducing effect of MFIs is observed when access to MFIs is defined as taking loans from MFIs for productive purposes than in the case of simply having access to MFIs. In urban areas, on the contrary, simple access to MFIs has larger average poverty-reducing effects than taking loans from MFIs for productive purposes.

The finding of this study provides further impetus to the existing evidences on the impact of microfinance institutions on the household poverty. In rural areas, while significant poverty reducing effects are observed in all cases, taking loans for productive purposes has a larger impact in raising the IBR indicator for those above the poverty threshold. That is, clients' intended use of loans is important in determining poverty reduction outcomes. In the context of 'profit-making poverty reduction' era, the finding on outreach and productive use of loan for better impact warrants more policy choices. Although many microfinance institutions have moved on to reflect the heterogeneity of the demand structure for financial services/products by poor, there is yet to develop a consistent framework to monitor the usage of loan with adequate

flexibility to capture different levels of participating nature of the households. This leads to further options in the delivery of services such as the integration of non-financial services solely or in partnership with other development agencies that provides an additional avenue to monitor the usage of loans and enhance the outreach. The challenge lies in how to design an optimal mix of delivery options to enhance the impact and outreach that determines the nature and character of the microfinance institutions in the coming years.

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Table 1 Results of Probit Model on the Determinants of Access to Microfinance

Case A: Dep Variable: whether a household has access to a MFI ("MFI_access")									
	Case A-1: Total			**Case A-2: Urban**			**Case A-3: Rural**		
	Coef.	Z value	[1)]	Coef.	Z value		Coef.	Z value	
Age	0.0138	(1.80)	+	0.0008	(0.05)		0.0167	(1.90)	+
Age_square	-0.0003	(-3.22)	**	-0.0002	(-0.78)		-0.0003	(-3.12)	**
Female	0.2917	(4.09)	**	0.3445	(2.47)	*	0.2721	(3.25)	**
Primary Education	-0.0456	(-0.91)		-	-		-0.0442	(-0.86)	
Higher Education	-0.0532	(-0.40)		-	-		-0.1251	(-0.93)	
Hhsize	0.0116	(1.08)		0.0389	(1.62)		0.0054	(0.44)	
Dependency	-0.6427	(-8.03)	**	-0.7791	(-5.15)	**	-0.5695	(-5.98)	**
Caste_dum	0.0043	(0.10)		0.0937	(1.00)		-0.0629	(-1.20)	
Hindu	-0.2813	(-4.15)	**	-0.5754	(-1.13)		-0.2874	(-4.13)	**
Muslim	-0.2696	(-2.97)	**	-0.7683	(-1.46)		-0.2637	(-2.69)	**
Business Availability	0.4623	(4.99)	**	0.1259	(0.53)		0.5052	(4.91)	**
Formal banks (transaction)	-0.1729	(-4.07)	**	-0.1106	(-1.30)		-0.1965	(-3.95)	**
Formal banks (loan)	-0.7160	(-0.71)		-1.7400	(-1.44)		0.0000	(0.71)	
Money lenders (loan)	-0.1120	(-0.28)		3.1300	(1.53)		0.0000	(-0.38)	
Friends/Relatives (loan)	-1.5200	(-1.70)	+	-2.1500	(-1.16)		0.0000	(-1.45)	
Whether in urban areas	-0.0136	(-0.25)		-	-		-	-	
Formal Bank Availability	0.0305	(0.26)		0.5640	(2.49)	*	-0.2560	(-1.73)	+
Constant	1.2553	(5.86)		1.8643	(2.81)		1.2079	(4.88)	
No. of Obs.	5327			1385			3942		
Joint Significance	LR $Chi^2(11)=168.16$		**	LR $Chi^2(14)=74.11$		**	LR $Chi^2(16)=154.32$		**
Log likelihood	-2987.18			-756.52			-2216.72		
Pseudo R2	0.0325			0.0467			0.0272		

Case B: Dep Variable: whether a household has taken a loan for productive purposes ("MFI_productive")									
	Case B-1: Total			**Case B-2: Urban**			**Case B-3: Rural**		
	Coef.	Z value		Coef.	Z value		Coef.	Z value	
Age	0.0030	(0.40)		0.0047	(0.28)		0.0032	(0.36)	
Age_square	-0.0001	(-1.70)	+	-0.0002	(-0.91)		-0.0001	(-1.48)	
Female	-0.1007	(-1.53)		0.0345	(0.27)		-0.1586	(-2.06)	*
Primary Education	0.1221	(2.52)	*	-	-		0.1029	(2.08)	*
Higer Education	0.5804	(4.58)	**	-	-		0.5714	(4.45)	**
Hhsize	0.0161	(1.56)		-0.0246	(-1.10)		0.0278	(2.37)	*
Dependency	-0.8102	(-10.30)	**	-1.1665	(-7.65)	**	-0.6502	(-7.00)	**
Caste_dum	-0.1119	(-2.60)	**	-0.2173	(-2.39)	*	-0.1003	(-1.99)	*

Hindu	-0.0578	(-0.92)		-0.7196	(-1.83)	+	-0.0249	(-0.38)	
Muslim	-0.0217	(-0.25)		-0.7420	(-1.77)	+	0.0186	(0.20)	
Business Availability	1.5358	(17.01)	**	1.5476	(6.73)	**	1.4843	(14.79)	**
Formal banks (transaction)	0.1123	(2.73)	**	0.0219	(0.27)		0.1239	(2.56)	*
Formal banks (loan)	-1.3700	(-1.32)		0.0000	(-1.84)	+	0.0000	(0.63)	
Money lenders (loan)	2.0900	(4.25)	**	0.0000	(0.48)		0.0000	(4.36)	**
Friends/Relatives (loan)	1.7200	(1.84)	+	0.0000	(1.27)		0.0000	(1.25)	
Whether in urban areas	-0.7122	(-13.59)	**	-	-		-	-	
Formal Bank Availability	-0.3367	(-2.96)	**	0.0932	(0.43)		-0.5536	(-3.89)	**
Constant	0.1755	(0.85)		0.2760	(0.49)		0.0194	(0.08)	
No. of Obs.	5327			1385			3942		
Joint Significance	LR $Chi^2(17)=788.67$		**	LR $Chi^2(14)=175.90$		**	LR $Chi^2(16)=482.92$		**
Log likelihood	-3291.66			-831.14			-2445.7		
Pseudo R2	0.107			0.0957			0.0899		

Notes: 1) ** = significant at 1% level. * = significant at 5% level. + = significant at 10% level.

2) Education is dropped in case of urban areas as there is no variation in the variable.

3) District Dummy Variables are included, but not shown in this table

Table 2 The Results of Treatment effects Model for Poverty (IBR, Income and Food Security measures of well being) (The First Stage: whether a household has access to productive assets/ whether a household has loan from MFI for productive purposes is shown in Table 1)

Case A: Dep. (the first-stage probit estimates whether a household has access to a MFI ("MFI_Access"))

	Case A-1: Total			Case A-2: Urban			Case A-3: Rural		
	IBR	Income	Food Security	IBR	Income	Food Security	IBR	Income	Food Security
Age	0.2210	0.0167	0.0478	0.3728	0.0225	-0.0037	0.2077	0.0131	0.1248
	(3.95) **	(3.56)**	(1.84)	(2.93) **	(2.47)**	(-0.34)	(3.18) **	(2.58)**	(3.45)**
Age_square	-0.0009	-0.0002	-0.0002	-0.0016	-0.0002	0.0000	-0.0016	-0.0002	-0.0011
	(-1.42)	(-4.12)**	(-0.47)	(-1.05)	(-2.16)**	(0.27)	(-2.11) *	(-3.07)**	(-2.82)**
Female	4.7049	-0.1394	0.9687	-4.5313	0.0096	-0.0834	-3.5385	(-0.1434)	0.8613
	(9.54) **	(-3.49)**	(3.35)**	(-4.60) **	(0.13)	(-1.02)	(-5.72) **	(-3.21)**	(2.70)**
Primary Education	1.1642	0.1166	-1.4746	-	-	-	0.6229	0.0993	0.4781
	(3.26) **	(3.88)**	(-9.90)**	-	-	-	(1.73) +	(3.41)**	(-7.27)**
Higher Education	2.0793	0.3377	0.1414	-	-	-	1.6409	0.3373	0.0888
	(2.29) *	(4.41)**	(0.38)	-	-	-	(1.82) +	(4.63)**	(0.92)
Hhsize	0.6061	0.0184	0.0902	1.0662	0.0201	0.0064	0.4423	0.0123	-1.5068
	(8.01) **	(2.89)**	(2.88)**	(6.20) **	(1.60)	(0.44)	(5.18) **	(1.78)	(1.81)
Dependency	-0.9876	-0.3283	-1.3235	1.9087	-0.0299	-0.2880	-4.3710	-0.3307	-2.9737
	(-1.46)	(-6.62)**	(-2.30)	(1.60)	(-0.29)	(-3.01)**	(-4.53) **	(-5.85)**	(-7.26)**
Caste_dum	-3.8773	0.0676	1.4962	-4.5531	0.1180	-0.0413	-3.7885	0.0748	2.0096
	(-12.54) **	(2.59)**	(11.68)**	(-6.67) **	(2.38)**	(-0.72)	(-10.76) **	(2.63)**	(9.91)**
Hindu	1.4548	-0.2877	0.9492	-1.7161	-0.6213	0.0264	1.2874	-0.2763	0.5145
	(2.68) **	(-6.35)**	(3.67)**	(-0.60)	(-3.00)**	(0.11)	(2.26) *	(-6.27)**	(1.64)
Muslim	-1.4477	-0.4264	-0.1867	-3.0860	-0.8484	-0.1017	-1.2351	-0.3926	-0.8063
	(-2.15) *	(-7.55)**	(-0.62)	(-1.00)	(-3.79)**	(-0.40)	(-1.74) +	(-6.88)**	(-1.99)
Business Availability	6.4979	0.0947	-0.7107	9.5918	-0.4086	0.2392	7.5205	0.1525	0.3766
	(9.96) **	(1.84)+	(-1.62)	(6.21) **	(-3.55)**	(1.86)	(9.14) **	(2.79)**	(0.96)
Formal banking sector	6.2691	0.1190	0.6998	6.7404	0.1867	0.0431	4.9097	0.1070	0.5159
	(21.22) **	(4.94)**	(4.15)**	(11.56) **	(4.47)**	(0.88)	(12.42) **	(3.91)**	(2.63)**
Formal banks (loans)	36.1392	0.9283	-0.4832	32.9048	1.8732	-1.2435	55.4760	0.5865	10.4186
	(4.87) **	(1.48)	(-0.15)	(3.43) **	(2.67)**	(-1.55)	(3.98) **	(0.52)	(1.30)
Money lenders (loans)	13.5712	0.6124	-1.3035	-23.3631	-1.9671	6.6149	24.6858	1.0819	-3.1244
	(2.54) *	(1.36)	(-0.57)	(-1.75) +	(-2.02)**	(5.92)**	(4.22) **	(2.29)**	(-0.93)
Friends/Relatives(loans)	62.6509	-0.0020	-1.8516	80.0072	0.5150	-0.5091	41.7274	0.1302	-6.2080
	(8.22) **	(0.00)	(-0.54)	(5.75) **	(0.51)	(-0.44)	(4.38) **	(0.17)	(-1.16)
Whether in urban areas	10.1017	0.1301	-2.6641	-	-	-	-	-	-
	(27.24) **	(4.16)**	(-17.44)**	-	-	-	-	-	-

Θ	8.5276	-1.0189	-1.2074	15.0780	0.1351	-0.8633	-4.9649	-0.9533	-6.8136
	(5.76)**	(-35.19)**	(-0.54)	(10.45)**	(0.53)	(-25.02)**	(-1.69)+	(-30.28)**	(-17.34)**
λ	-4.0009	0.6376	0.7505	-7.1425	- 0.0562	0.8114	3.6335	0.5958	4.0938
	(-4.63)**	(41.26)**	(0.57)	(8.86)**	0.38	(44.17)**	(2.12)**	(35.52)**	(18.72)**
Constant	-6.8068	1.0151	1.1476	-10.4329	0.4351	0.8439	8.6273	1.0388	4.6300
	(-3.38)	(7.86)**	(0.54)	(-2.33)	(1.09)	(2.36)**	(2.74)	(7.35)**	(4.42)**
No. of Obs.	5076	5087	5079	1382	1381	1381	3694	3706	3698
Joint Significance	Wald χ^2 (17)=3442**	Wald χ^2 (17)=1482**	Wald χ^2 (33)=1645**	Wald χ^2 (14)=801**	Wald χ^2 (14)=81**	Wald χ^2 (14)=661**	Wald χ^2 (16)=1151**	Wald χ^2 (16)=1080**	Wald χ^2 (16)=701**
Log likelihood	-21145.74	- 7761.94	κ	-5714.69	- 2277.25	- 1961.65	-15359.73	- 5461.78	- 12784.15

Case B: Dep. Variable: Index Based Ranking
(the first-stage probit estimates whether a household has taken a loan for productive purposes ("MFI_productive"))

	Case B-1: Total			**Case B-2: Urban**			**Case B-3: Rural**		
	IBR	Income	Food Security	IBR	Income	Food Security	IBR	Income	Food Security
Age	0.2700	0.0110	0.0408	0.3770	0.0213	-0.0035	0.1751	0.0069	0.0812
	(4.69)**	(2.54)*	(1.78)+	(2.80)**	(1.95)+	(-0.30)	(2.89)**	(1.41)	(2.68)**
Age_square	-0.0021	-0.0001	0.0001	-0.0016	-0.0002	0.0000	-0.0011	-0.0001	-0.0004
	(-3.26)**	(-3.02)**	(0.20)	(-1.01)	(-1.44)	(0.17)	(-1.65)+	(-1.91)+	(-1.18)
Female	-4.0562	-0.0210	1.0344	3.2461	0.0058	-0.0117	4.0785	-0.0140	1.5676
	(-8.23)**	(-0.57)	(5.21)**	(3.15)**	(0.07)	(-0.13)	(7.56)**	(-0.33)	(5.68)**
Primary Education	- 1.3695	0.0726	-1.4096	-	-	-	- 0.7161	0.0604	-1.6155
	(-3.66)**	(2.60)**	(-8.91)**	-	-	-	(- 2.02)*	(2.16)*	(-8.81)**
Higher Education	- 3.4746	0.1343	0.5714	-	-	-	- 2.1236	0.0974	0.0213
	(- 3.58)**	(1.87)+	(1.15)	-	-	-	(- 2.19)*	(1.38)	(0.04)
Hhsize	0.6331	0.0187	0.0843	1.3532	0.0282	-0.0109	0.4566	0.0179	0.1038
	(8.02)**	(3.17)**	(2.68)**	(7.47)**	(1.92)+	(-0.71)	(5.49)**	(2.70)**	(2.47)*
Dependency	-5.2513	-0.3748	-0.3686	4.3071	0.3155	-0.4903	-3.6995	-0.3940	-1.7730
	(-7.60)**	(-7.59)**	(-0.67)	(3.32)**	(3.06)**	(-4.73)**	(-4.26)**	(-7.09)**	(-2.81)**
Caste_dum	3.9362	0.0874	1.4720	2.8163	0.0422	0.0681	3.7545	0.0665	1.9660
	(12.20)**	(3.62)**	(11.33)**	(3.89)**	(0.72)	(1.11)	(11.00)**	(2.43)*	(11.52)**
Hindu	1.3943	-0.1676	0.8821	0.2542	-0.4051	-0.1265	1.7074	-0.1435	1.0141
	(2.48)*	(-3.98)**	(3.61)**	(0.08)	(-1.64)	(-0.49)	(3.12)**	(-3.38)**	(3.37)**
Muslim	-1.2643	-0.2928	-0.3122	-2.0580	-0.6312	-0.2021	-0.8736	-0.2482	-0.4172
	(-1.80)+	(-5.58)**	(-1.01)	(-0.63)	(-2.40)*	(-0.73)	(-1.22)	(4.51)**	(-1.04)
Business Availability	11.5261	0.3885	-1.9807	3.1718	-0.9262	0.7008	7.5086	0.4787	-0.1016
	(13.92)**	(6.84)**	(-2.39)*	(1.80)+	(-6.61)**	(5.00)**	(6.56)**	(8.33)**	(-0.11)
Formal banking sector	5.9715	0.1925	0.7192	6.4710	0.1781	0.0610	5.2984	0.1958	1.0329
	(20.06)**	(8.65)**	(5.87)**	(10.51)**	(3.57)**	(1.16)	(16.08)**	(7.49)**	(6.12)**
Formal banks	30.1628	0.8948	0.8159	35.9048	2.5681	-1.5461	55.0513	0.7996	9.1825

(loans)									
	(3.90)**	(1.54)	(0.26)	(3.54)**	(3.13)**	(-1.80)+	(4.07)**	(0.74)	(1.35)
Money lenders (loans)	16.1221	0.3274	-1.6644	-16.4192	-2.1508	6.2659	23.5341	0.8363	-4.6650
	(2.91)**	(0.79)	(-0.76)	(-1.17)	(-1.88)+	(5.23)**	(4.17)**	(1.85)+	(-1.65)+
Friends/Relatives (loans)	57.8164	0.7378	-1.2549	57.9332	-0.4488	0.9112	45.1227	0.5571	-1.2425
	(7.33)**	(1.25)	(-0.40)	(3.94)**	(-0.38)	(0.73)	(5.02)**	(0.77)	(-0.27)
Whether in urban areas	8.3650	-0.0901	-2.1450	-	-	-	-	-	-
	(18.04)**	(-2.76)**	(-5.22)**	-	-	-	-	-	-
Θ	-6.6020	-0.8349	1.9543	15.4018	0.9678	-1.0519	-1.4821	-0.8986	-1.1644
	(-6.78)**	(-14.63)**	(1.36)	(12.30)**	(10.94)**	(-22.18)**	(-0.84)	(-20.11)**	(-0.69)
λ	5.4197	0.4482	- 0.8789	-8.1994	- 0.6549	0.7731	2.3222	0.4929	1.1413
	(9.41)**	(13.41)**	(1.05)	(-11.51)**	(13.02)**	(30.09)**	(2.17)	(19.26)**	(11.05)**
Constant	4.5311	0.5364	-1.0104	-3.8102	0.0187	0.5572	4.8925	0.6277	-0.9498
	(2.75)	(4.44)**	(-1.02)	(-0.84)	(0.05)	(1.46)	(2.61)**	(4.66)**	(-0.80)
No. of Obs.	5076	5078	5079	1382	1381	1381	3694	3706	3698
Joint Significance	Wald χ^2 (17)=3184**	Wald χ^2 (17)=499**	Wald χ^2 (33)=2166**	Wald χ^2 (14)=772**	Wald χ^2 (14)=176**	Wald χ^2 (14)=523**	Wald χ^2 (1)=1222**	Wald χ^2 (16)=581	Wald χ^2 (16)=567**
Log likelihood	-21370.03	- 8122.59	κ	-5791.19	- 2334.57	- 2283.85-	-15504.9	5686.04	- 12961.3

Note ** = significant at 1% level. * = significant at 5% level. + = significant at 10% level and values in parenthesis are the z-values. κ – Number of iterations was restricted to two due to non-convergence. λ - Inverse Mill's ratio derived by the probit model)

Whether a household is a client of any MFI ("MFI_access")

	Households with MFIs	Households without MFIs	Average Poverty-Reducing Effect								
			IBR	**S.E.**	**t value**	**Income**	**S.E.**	**t value**	**Food Security**	S.E.	**t value**
Total (Case A-1)	3908	1419	**1.710**	0.148	**11.56****	**0.057**	0.00	**18.23****	**0.071**	0.03	**1.77+**
Urban(Case A-2)	1025	360	**2.829**	0.275	**10.28****	**0.038**	0.01	**5.71****	**0.469**	0.00	**166.08****
Rural(Case A-3)	2883	1059	**1.273**	0.119	**10.70****	**0.051**	0.00	**14.38****	**0.104**	0.04	**2.70****

Whether a household has taken a loan from MFI or from the group for a productive activity

	Households with MFIs	Households without MFIs	Average Poverty-Reducing Effect								
			IBR	**S.E.**	**t value**	**Income**	**S.E.**	**t value**	**Food Security**	S.E.	**t value**
Total (Case B-1)	2794	2553	**2.454**	0.148	**16.59****	**- 0.087**	0.00	**- 24.47****	**0.487**	0.05	**12.40****
Urban (Case B-2)	525	860	**1.619**	0.275	**5.89****	**- 0.127**	0.01	**- 18.95****	**0.221**	0.01	**28.36****
Rural (Case B-3)	2269	1673	**2.414**	0.115	**21.07****	**- 0.07**	0.00	**- 16.49****	**0.751**	0.04	**18.82****

Note ** = significant at 1% level. * = significant at 5% level. + = significant at 10% level.

Table 3 Results of the Tobit Model - Main Covariate : Amount of Productive Loan
Dependent Variable - Poverty Measured Using Indexed Based Ranking

Explanatory Variables	**Case A-1: Total**			**Case A-2: Urban**			**Case A-3: Rural**		
	IBR	Income	Food Security	IBR	Income	Food Security	IBR	Income	Food Security
Amount of Prod. Loan	0.0001	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0001
	(7.80) **	(-2.64)**	(3.79)**	(6.56) **	(-0.03)	(0.05)	(1.81) +	(-3.63)**	(4.97)**
Age	0.2131	0.0728	0.2729	0.2510	0.0897	0.1621	0.1495	0.0588	0.2915
	(3.39) **	(2.75)**	(3.78)**	(1.98) *	(2.15)*	(0.19)	(1.98) **	(1.67)	(4.04)**
Age_square	-0.0010	-0.0007	-0.0017	-0.0005	-0.0008	0.0001	-0.0007	-0.0005	-0.0020
	(-1.41)	(-2.28)*	(-2.18)*	(-0.31)	(-1.68)	(0.02)	(-0.80)	(-1.35)	(-2.47)*
Female	3.5435	-0.3359	2.6740	2.5485	-0.0711	-7.0266	3.6331	-0.4979	3.0135
	(7.06) **	(-1.66)	(4.23)**	(2.79) **	(-0.26)	(-1.30)	(6.25) **	(-1.75)	(4.71)**
Primary Education	-0.7042	0.5849	-1.5969	--	--	--	-0.2253	0.5040	-1.5513
	(-1.81) *	(3.52)**	(-3.88)**	--	--	--	(-0.57)	(2.60)**	(-3.82)**
Higher Education	-0.7306	1.4685	1.6370	--	--	--	-0.6634	1.5131	1.9674
	(-0.73)	(3.85)**	(1.61)	--	--	--	(-0.82)	(3.47)**	(1.96)
Hhsize	0.6405	0.1086	0.2460	1.2659	0.0620	0.2941	0.4466	0.1151	0.2646
	(7.66) **	(3.25)**	(2.61)**	(7.63) **	(1.27)	(0.27)	(4.44) **	(2.51)**	(2.78)**
Dependency	-2.2994	-0.6410	-2.6835	0.4230	-0.4552	-2.9371	-3.4639	-0.9356	-2.5483
	(-3.48) **	(-2.39)*	(-3.27)**	(0.38)	(-1.31)	(-0.38)	(-4.33) **	(-2.37)*	(-3.07)**
Caste_dum	3.5655	0.4597	3.8621	3.4377	0.4368	-6.4231	3.5079	0.5372	4.1021
	(10.56) **	(3.22)**	(9.60)**	(5.28) **	(2.10)*	(-1.47)	(8.53) **	(2.72)**	(10.18)**
Hindu	1.0837	-1.1031	4.2988	-1.9028	-1.5902	38.0534	1.7622	-1.2397	4.1503
	(1.89) +	(-5.05)**	(6.27)**	(-0.77)	(-2.46)**	(0.16)	(3.03) **	(-4.72)**	(6.14)**
Muslim	-2.2786	-2.1329	1.8454	-4.6696	-2.6444	8.4982	-1.3715	-2.3771	1.6284
	(-3.17) *	(-6.98)**	(2.22)*	(-1.72) +	(-3.47)**	(0.03)	(-1.84) +	(-6.17)**	(1.98)
Business Availability	6.1135	-0.0890	-3.6678	11.1072	-1.2991	8.8028	4.9203	0.6079	-4.1004
	(9.07) **	(-0.32)	(-4.67)**	(7.36) **	(-2.72)**	(0.84)	(6.30) **	(1.65)	(-5.16)**
Formal banking sector	5.5118	1.1070	1.4880	6.1338	0.7522	3.9476	5.0338	1.3745	1.4123
	(17.57) **	(8.68)**	(4.02)**	(10.92) **	(4.29)**	(1.02)	(12.98) **	(7.55)**	(3.77)**
Formal banks (loans)	8.7894	6.6972	-14.8170	-1.7829	4.3785	-37.6282	26.3306	12.4767	-21.2820
	(1.00)	(2.45)**	(-1.11)	(-0.17)	(1.59)	(-0.42)	(1.36)	(2.14)*	(-1.41)
Money lenders (loans)	-10.8819	4.9489	-28.6145	-29.5721	-5.5225	72.5853	1.8952	11.9165	-47.1075
	(-1.76) +	(2.35)*	(-3.70)**	(-2.41) *	(-1.50)	(1.61)	(0.21)	(4.00)**	(-5.06)**
Friends/Relatives(loans)	44.1155	3.3603	-9.1064	53.0438	1.1555	-24.7174	36.01123	5.6079	-10.0227
	(5.15) **	(1.11)	(-0.94)	(3.55) **	(0.28)	(-0.23)	(2.92) **	(1.35)	(-1.02)
Whether in urban areas	10.6499	0.8184	-16.6977	--	--		--		

	(26.34) **	(5.15)**	(-18.52)**	--	--	--	--	--	--
Constant	2.4711	-4.1488	-14.8426	6.4506	-1.5415	-76.3936	5.8872	-4.1900	-15.5068
	(1.48)	(-5.79)**	(-7.20)**	(1.64)	(-1.30)	(-0.31)	(3.11) **	(-4.27)**	(-7.48)**
No. of Obs.	3718	3730	3722	1022	1022	1022	2696	2708	2700

Notes: ** = significant at 1% level. * = significant at 5% level. + = significant at 10% level and values in parenthesis are the z-values.

Table 4 Results of Tobit Model – Main Covariate: Total Amount of Loan
Dependent Variable - Poverty Measured Using Indexed Based Ranking

	Case A-1: Total			**Case A-2: Urban**			**Case A-3: Rural**		
Explanatory Variables	IBR	Income	Food Security	IBR	Income	Food Security	IBR	Income	Food Security
Total Loan Amount	0.0001	0.0000	0.0000	0.0001	0.0000	0.0000	0.0001	0.0000	0.0000
	(11.93) **	(4.78)**	(0.18)	(9.99) **	(4.59)**	(-0.03)	(6.21) **	(2.32)*	(0.65)
Age	0.1846	0.0685	0.2766	0.2511	0.0920	0.1657	0.1167	0.0526	0.2914
	(2.96) **	(2.59)**	(3.82)**	(2.04) *	(2.21)*	(0.20)	(1.62)	(1.48)	(4.00)**
Age_square	-0.0007	-0.0006	-0.0018	-0.0007	-0.0009	0.0001	-0.0003	-0.0004	-0.0020
	(-1.05)	(-2.11)*	(-2.24)*	(-0.50)	(-1.77)	(0.01)	(-0.41)	(-1.15)	(-2.46)**
Female	3.6780	-0.3226	2.6976	2.6800	-0.0614	-7.0287	3.7270	-0.4862	3.0639
	(7.41) **	(-1.60)	(4.25)**	(3.01) *	(-0.22)	(-1.30)	(6.29) **	(-1.70)	(4.77)**
Primary Education	-0.6755	0.6197	-1.6742	--	--	--	-0.1595	0.5685	-1.6631
	(-1.76) +	(3.75)**	(-4.06)**	--	--	--	(-0.40)	(2.92)**	(-4.07)**
Higher Education	-0.8692	1.5266	1.4204	--	--	--	-0.5689	1.7032	1.6472
	(-0.88)	(4.03)**	(1.39)	--	--	--	(-0.57)	(3.89)**	(1.64)
Hhsize	0.5777	0.0872	0.2512	1.1679	0.0290	0.3055	0.4013	0.1067	0.2627
	(6.97) **	(2.60)**	(2.65)**	(7.21) **	(0.60)	(0.28)	(4.18) **	(2.30)*	(2.74)**
Dependency	-2.2461	-0.5200	-2.8789	0.6284	-0.3619	-2.9594	-3.4276	-0.7555	-2.8177
	(-3.43) **	(-1.95)	(-3.50)**	(0.57)	(-1.05)	(-0.38)	(-4.27) **	(-1.92)	(-3.38)**
Caste_dum	3.2450	0.3717	3.9176	2.6776	0.2771	-6.3695	3.3492	0.4902	4.1716
	(9.67) **	(2.60)**	(9.69)**	(4.18) **	(1.34)	(-1.44)	(8.55) **	(2.47)**	(10.26)**
Hindu	1.5773	-1.0418	4.3705	-1.1923	-1.4688	50.0110	2.2076	-1.2157	4.2872
	(2.77) **	(-4.79)**	(6.340**	(-0.49)	(-2.31)*	(0.05)	(3.71) **	(-4.60)**	(6.28)**
Muslim	-1.4463	-1.9592	1.8840	-3.3724	-2.3550	8.9304	-0.6501	-2.2553	1.7533
	(-2.02) *	(-6.43)**	(2.250*	(-1.27)	(-3.14)**	(0.01)	(-0.84) **	(-5.80)**	(2.10)*
Business Availability	5.7153	-0.4414	-3.0710	11.3539	-1.4526	8.8535	4.1074	-0.0755	-3.2900
	(8.60) **	(-1.60)	(-3.85)**	(7.75) **	(-3.05)**	(0.85)	(5.24) **	(-0.20)	(-4.02)**
Formal banking sector	5.4049	1.0548	1.5617	5.9600	0.7067	3.9582	4.8994	1.3068	1.5134
	(17.40) **	(8.29)**	(4.20)**	(10.89) **	(4.07)**	(1.02)	(13.02) **	(7.16)**	(4.01)**
Formal banks (loans)	-65.6581	-8.3854	1.3260	-64.4372	-6.5335	-33.9900	-63.2617	-11.7440	-3.5300
	(-5.67) **	(-2.31)*	(0.07)	(-4.90) **	(-1.91)	(-0.33)	(-2.82) **	(-1.30)	(-0.16)
Money lenders (loans)	-84.0651	-10.1743	-16.0145	-102.9103	-16.5651	75.2041	-87.0042	-12.3734	-33.4194

	(-8.63) **	(-3.22)**	(-1.02)	(-6.98) **	(-3.79)**	(0.94)	(-4.74) **	(-1.63)	(-1.71)
Friends/Relatives(loans)	-49.8155	-11.3501	-6.6957	-21.3312	-11.1331	-19.7145	-72.8628	-14.0131	-15.2666
	(-4.10) **	(-2.75)**	(-0.38)	(-1.24)	(-2.29)*	(-0.16)	(-3.48) **	(-1.61)	(-0.74)
Whether in urban areas	10.2096	0.7404	-16.7161	--	--	--	--	--	--
	(25.45) **	(4.65)**	(-18.44)**	--	--	--	--	--	--
Constant	2.6328	-4.0342	-15.0037	5.9754	-1.5276	-88.4633	5.9426	-4.1381	-15.6778
	(1.59)	(-5.65)**	(-7.25)**	(1.56)	(-1.30)	(-0.08)	(3.07) **	(-4.20)**	(-7.52)**
No. of Obs.	3718	3730	3722	1022	1022	1022	2696	2708	2700

Note ** = significant at 1% level. * = significant at 5% level. + = significant at 10% level and values in parenthesis are the z-values.

Appendix 1: Descriptive Statistics and Definitions of the Variables

		With Access to MFI			Without Access to MFI			With Access to MFI loan for productive purposes			Without Access to MFI loan for productive purposes		
Variable	Definition	Obs	Mean	S.D.	Obs	Mean	S.D.	Obs	Mean	Std. Dev.	Obs	Mean	S.D.
Age	Age of household fead												
	(Total)	3908	39.341	12.241	1419	41.599	14.072	2794	39.377	12.296	2533	40.567	13.292
	(Urban)	1025	37.300	11.531	360	38.783	12.704	525	37.341	11.475	860	37.897	12.092
	(Rural)	2883	40.067	12.404	1059	42.556	14.388	2269	39.848	12.433	1673	41.940	13.671
Female	Whether a hh head is female												
	(Total)	3908	0.904	0.295	1419	0.929	0.257	2794	0.928	0.258	2533	0.891	0.312
	(Urban)	1025	0.898	0.303	360	0.928	0.259	525	0.914	0.280	860	0.900	0.300
	(Rural)	2883	0.906	0.291	1059	0.929	0.257	2269	0.932	0.252	1673	0.886	0.317
Primary	Education of the household head, 1= completed primary school, 0= otherwise.												
	(Total)	3908	0.552	0.497	1419	0.517	0.500	2794	0.523	0.500	2533	0.565	0.496
	(Urban)*	1025	1.000	0.000	360	1.000	0.000	525	1.000	0.000	860	1.000	0.000
	(Rural)	2883	0.393	0.489	1059	0.352	0.478	2269	0.413	0.492	1673	0.341	0.474
Higher	Education of the household head, 1= completed higher education, 0=otherwise.												
	(Total)	3908	0.022	0.146	1419	0.025	0.155	2794	0.015	0.122	2533	0.031	0.173
	(Urban)*	1025	0.000	0.000	360	0.000	0.000	525	0.000	0.000	860	0.000	0.000
	(Rural)	2883	0.029	0.169	1059	0.033	0.179	2269	0.019	0.135	1673	0.047	0.211
Hhsize	Household size: number of household members												
	(Total)	3908	5.075	2.024	1419	4.913	2.038	2794	5.253	2.053	2533	4.788	1.974
	(Urban)	1025	4.780	1.844	360	4.439	1.756	525	4.798	1.942	860	4.626	1.751
	(Rural)	2883	5.180	2.075	1059	5.075	2.102	2269	5.358	2.064	1673	4.871	2.075
Depratio	Dependency Ratio (Ratio of household members under 15 or over 60 to the total)												
(Total)		3908	0.563	0.253	1419	0.626	0.274	2794	0.536	0.240	2533	0.628	0.273
	(Urban)	1025	0.602	0.262	360	0.702	0.276	525	0.553	0.237	860	0.674	0.277
	(Rural)	2883	0.549	0.249	1059	0.600	0.269	2269	0.531	0.241	1673	0.605	0.269
Caste_dum	Whether a household belongs to scheduled caste or not												
	(Total)	3908	0.685	0.465	1419	0.693	0.462	2794	0.711	0.453	2533	0.660	0.474
	(Urban)	1025	0.748	0.434	360	0.792	0.407	525	0.819	0.385	860	0.723	0.448
	(Rural)	2883	0.663	0.473	1059	0.659	0.474	2269	0.686	0.464	1673	0.628	0.483
Hindu	Whether a household head is Hindu or not												
	(Total)	3908	0.769	0.422	1419	0.792	0.406	2794	0.758	0.429	2533	0.794	0.404
	(Urban)	1025	0.930	0.256	360	0.911	0.285	525	0.926	0.262	860	0.924	0.264
	(Rural)	2883	0.712	0.453	1059	0.752	0.432	2269	0.719	0.450	1673	0.727	0.445
Muslim	Whether a household head is Muslim or not												

	(Total)	3908	0.115	0.319	1419	0.106	0.308	2794	0.137	0.344	2533	0.085	0.279
	(Urban)	1025	0.059	0.235	360	0.086	0.281	525	0.057	0.232	860	0.071	0.257
	(Rural)	2883	0.135	0.341	1059	0.113	0.317	2269	0.156	0.363	1673	0.092	0.289
Business Availability	Whether there is a business opportunity available to the household												
	(Total)	3908	0.412	0.264	1419	0.375	0.263	2794	0.447	0.267	2533	0.353	0.252
	(Urban)	1025	0.548	0.196	360	0.529	0.196	525	0.605	0.165	860	0.505	0.204
	(Rural)	2883	0.364	0.268	1059	0.322	0.262	2269	0.411	0.272	1673	0.274	0.238
Formal Banks	Whether a household has any transaction with the formal bank												
(transaction)	(Total)	3908	0.383	0.486	1419	0.443	0.497	2794	0.419	0.494	2533	0.377	0.485
	(Urban)	1025	0.482	0.500	360	0.497	0.501	525	0.531	0.499	860	0.458	0.499
	(Rural)	2883	0.348	0.476	1059	0.424	0.494	2269	0.393	0.489	1673	0.335	0.472
Formal Banks	The balance of loan of a household from the formal bank												
(loan)	(Total)	3908	0.002	0.018	1419	0.003	0.019	2794	0.002	0.013	2533	0.003	0.022
	(Urban)	1025	0.004	0.027	360	0.006	0.035	525	0.003	0.020	860	0.005	0.034
	(Rural)	2883	0.002	0.013	1059	0.002	0.008	2269	0.002	0.011	1673	0.002	0.012
Money lenders	The balance of loan of a household from Money lenders												
(loan)	(Total)	3908	0.011	0.040	1419	0.012	0.061	2794	0.013	0.055	2533	0.009	0.035
	(Urban)	1025	0.007	0.022	360	0.006	0.016	525	0.007	0.019	860	0.007	0.022
	(Rural)	2883	0.012	0.044	1059	0.014	0.070	2269	0.014	0.060	1673	0.010	0.040
Relatives and friends	The balance of loan of a household from relatives and friends												
(loan)	(Total)	3908	0.004	0.019	1419	0.006	0.023	2794	0.005	0.023	2533	0.004	0.016
	(Urban)	1025	0.005	0.019	360	0.006	0.024	525	0.007	0.025	860	0.004	0.016
	(Rural)	2883	0.004	0.019	1059	0.006	0.023	2269	0.005	0.022	1673	0.004	0.017
Formal Bank Availability (share of the households with access to formal banks at the village level- Excluding microfinance)													
	(Total)	3908	0.398	0.200	1419	0.402	0.194	2794	0.399	0.206	2533	0.399	0.190
	(Urban)	1025	0.494	0.224	360	0.463	0.225	525	0.526	0.230	860	0.462	0.218
	(Rural)	2883	0.364	0.178	1059	0.381	0.177	2269	0.369	0.188	1673	0.367	0.164
Urban_dum	Whether a household is in urban areas or not												
	(Total)	3908	0.262	0.440	1419	0.254	0.435	2794	0.188	0.391	2533	0.340	0.474
IBR indicator	Indexed Based Ranking of a household's wellbeing												
	(Total)	3718	25.14	11.753	1358	23.52	11.88	2643	25.736	11.257	2433	23.58	12.29
	(Urban)	1022	34.057	11.229	360	30.836	12.027	523	35.987	10.529	859	31.532	11.782
	(Rural)	2696	21.757	10.057	998	20.875	10.668	2120	23.207	9.918	1574	19.245	10.211

Appendix 2: Results of Propensity Score Matching: Effects of MFIs in Reducing Poverty (Estimation using Bootstrapped Standard Errors, 100 Rps.) for Total Sample

Whether a household is a client of any MFI ("MFI_access")

	Households with MFIs	Households without MFIs	**Average Poverty-Reducing Effect**	S.E.	**t value**
Nearest Neighbour Matching					
Total (Case A-1)	3908	1059	**2.084**	0.48	**4.339****
Urban(Case A-2)	1025	275	**4.038**	0.914	**4.420****
Rural (Case A-3)	2883	772	**0.769**	0.574	**1.340**
Kernel Matching					
Total (Case A-1)	3908	1419	**1.705**	0.287	**5.932****
Urban (Case A-2)	1025	360	**3.212**	0.693	**4.635****
Rural (Case A-3)	2883	1058	**1.095**	0.364	**3.011****

Whether a household has taken a loan from MFI or from the group for a productive activity (MFI_Productive)

	Households with MFIs	Households without MFIs	**Average Poverty-Reducing Effect**	S.E.	**t value**
Nearest Neighbour Matching					
Total (Case B-1)	2794	1226	**0.182**	0.475	**3.829****
Urban (Case B-2)	525	311	**0.888**	1.088	**0.816**
Rural (Case B-3)	2269	868	**2.488**	0.501	**4.970****
Kernel Matching					
Total (Case B-1)	2794	2521	**2.29**	0.292	**7.848****
Urban (Case B-2)	525	840	**1.865**	0.525	**3.553****
Rural (Case B-3)	2269	1669	**2.489**	0.357	**6.973****

Note a ** = significant at 1% level. * = significant at 5% level. + = significant at 10% level.

Appendix 3: Results of Propensity Score Matching: Effects of MFIs in Reducing Poverty (Estimation using Bootstrapped Standard Errors, 100 Rps.) for the Poor and the Moderately Poor.

Whether a household is a client of any MFI ("MFI_access")

	Households with MFIs	Households without MFIs	**Average Poverty-Reducing Effect**	S.E.	**t value**
For the Poor					
Nearest Neighbour Matching					
Total (Case A-1)	1184	351	**0.735**	0.331	**2.119***
Urban(Case A-2)	78	24	**0.603**	1.108	**0.544**
Rural(Case A-3)	1106	324	**0.91**	0.359	**2.535***
Kernel Matching					
Total (Case A-1)	1184	495	**0.86**	0.207	**4.149****
Urban (Case A-2)	78	39	**0.682**	0.939	**0.762**
Rural (Case A-3)	1106	449	**0.863**	0.212	**4.071****
For the Moderately Poor					
Nearest Neighbour Matching					
Total (Case A-1)	2493	740	**0.767**	0.394	**1.948***
Urban(Case A-2)	397	127	**2.111**	0.739	**2.854****
Rural(Case A-3)	2096	587	**1.268**	0.428	**2.96****
Kernel Matching					
Total (Case A-1)	2493	960	**1.22**	0.24	**5.079****
Urban (Case A-2)	397	183	**1.574**	0.534	**2.950****
Rural (Case A-3)	2093	775	**1.186**	0.287	**4.125****

Whether a household has taken a loan from MFI for a productive activity (MFI_Productive)

	Households with MFIs	Households without MFIs	**Average Poverty-Reducing Effect**	S.E.	**t value**
For the Poor					
Nearest Neighbour Matching					
Total (Case A-1)	749	373	**0.869**	0.33	**2.607****
Urban(Case A-2)	11	10	**0.091**	2.501	**0.036**
Rural(Case A-3)	738	384	**0.956**	0.358	**2.667****
Kernel Matching					
Total (Case A-1)	749	914	**1.056**	0.214	**4.941****
Urban (Case A-2)	11	83	**-0.619**	2.031	**-0.305**
Rural (Case A-3)	738	805	**1.088**	0.247	**4.408****
For the Moderately Poor					
Nearest Neighbour Matching					
Total (Case B-1)	1740	794	**1.891**	0.338	**5.59****
Urban(Case B-2)	173	109	**1.827**	0.77	**2.371***
Rural(Case B-3)	1567	675	**2.172**	0.434	**5.001****
Kernel Matching					
Total (Case B-1)	1740	1695	**2.228**	0.244	**9.114****
Urban (Case B-2)	173	408	**2.046**	0.482	**4.241****
Rural (Case B-3)	1567	1303	**2.200**	0.262	**8.385****