

# Targeting Effectiveness of CFPR/TUP in Scale-up Environment

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## FOREWORD

Over a quarter of Bangladesh's people live in extreme poverty, not being able to meet even the barest of the basic needs. They spend most of their meagre, unreliable earnings on food and yet fail to fulfil the minimum calorie intake needed to stave off malnutrition. They are consequently in frequent poor health causing further drain on their meagre resources due to loss of income and health expenses. More often than not, the extreme poor are invisible even in their own communities, living on other peoples' land, having no one to speak up for them or assist them in ensuring their rights. Extreme poverty also has a clear gendered face – they are mostly women who are dispossessed widows, and abandoned.

The extreme poor are thus caught in a vicious trap and the story of denial and injustices tend to continue over generations for a large majority of them. Thus, a vast majority of the extreme poor in Bangladesh are chronically so. The constraints they face in escaping extreme poverty are interlocked in ways that are different from those who are moderately poor. This challenges us to rethink our existing development strategies and interventions for the extreme poor, and come up with better ones that work for them. This is the challenge that drove BRAC to initiate an experimental programme since 2002 called, 'Challenging the Frontiers of Poverty Reduction: Targeting the Ultra Poor' programme. The idea to address the constraints that they face in asset building, in improving their health, in educating their children, in getting their voices heard, in a comprehensive manner so that they too can aspire, plan, and inch their way out of poverty.

The extreme poor have not only been bypassed by most development programmes, but also by mainstream development research. We need to know much more about their lives, struggles, and lived experiences. We need to understand better why such extreme poverty persists for so many of them for so long, often over generations. Without such knowledge, we cannot stand by their side and help in their struggles to overcome their state.

I am pleased that BRAC's Research and Evaluation Division has taken up the challenge of beginning to address some of these development knowledge gaps through serious research and reflection. In order to share the findings from research on extreme poverty, the 'CFPR/TUP Research Working Paper Series' has been initiated. This is being funded by CIDA through the 'BRAC-Aga Khan Foundation Canada Learning Partnership for CFPR/TUP' project. I thank CIDA and AKFC for supporting the dissemination of our research on extreme poverty.

I hope this working paper series will benefit development academics, researchers, and practitioners in not only gaining more knowledge but also in inspiring actions against extreme poverty in Bangladesh and elsewhere.

**Fazle Hasan Abed**  
Chairperson, BRAC



## Targeting Effectiveness of CFPR/TUP in Scale-up Environment

### ABSTRACT

Effective targeting is a hallmark of the BRAC's CFPR/TUP programme. Like many other targeted programmes, CFPR/TUP combines a number of targeting methods. Launching in 2002, this programme has scaled up in 2005. Despite this scaling up, success in targeting has been maintained. Using poverty assessment tool, developed by CGAP, it was observed that about three quarters of the beneficiaries of this programme belong to the poorest quartile. This is a commendable achievement when compared to other targeted programmes. The success was achieved not only by adopting appropriate tools of targeting but also by implementing them rigorously. Community-based wealth ranking was found to be crucial in achieving high level of aggregate accuracy.

## INTRODUCTION

Are the poorest also the hardest to reach? Emergence of this question itself tends to provide a positive answer. Experience from development interventions shows that unless the programme is designed specifically for the poorest and there is a targeting mechanism, the poorest will either be missed or they will exclude themselves (Morduch and Haley 2002). Even when they are targeted, there is a tendency of creeping towards the top of the target population (Navajas *et al.* 2000). Therefore, the poorest has the least chance of getting assistance from development programmes even though they require it the most. This fair allocation of resources is the most important conceptual issue of targeting (Wachter and Galiani 2003).

However, success in targeting is not automatic and rigorous targeting may not be optimum. Achieving success in targeting requires minimization of the extent of trade-off between leakage (inclusion error) and under-coverage (exclusion error) which is inherent in any targeting practice. On the other hand, targeting is optimum when the net social return is maximized (Weiss 2004). Simplification of this net social return would be the comparison of the managerial cost of targeting and the benefit accrued from reduction of leakage (Besley and Kanpur 1991).

This cost-benefit analysis has led to a range of targeting mechanisms that can be classified as 'broad' and 'narrow' targeting. In broadly targeted programmes wide range of people including the poor receive the benefits while the narrowly targeted programmes limit the benefits only to the poor segment (Walle 1998). When there is considerable amount of budget constraint for a particular intervention, which is almost always the case for programmes run by NGOs, the broad targeting is not feasible. In practice, different tools and their combinations are used to

reach the poorest. A comparative study of different targeting tools show that while targeting works, to varying extent, for increasing the probability of reaching the poorest and for better allocation of resources, most of the successes depend not on the targeting method applied but on the degree of implementation of the chosen method (Coady *et al.* 2002).<sup>1</sup>

However, in analyzing the efficiency of targeting one key problem is the lack of an appropriate yardstick of performance measurement. Measuring targeting performance in terms of consumption, expenditure or income of the clients is, in most of the cases, not feasible because of the high cost of data collection. CGAP tool for measuring efficiency of targeting (Zeller *et al.* 2001 and Henry *et al.* 2003) is a commendable effort in this regard. Based on principal components analysis, this tool measures the relative poverty status of the clients and non-clients using a set of indicators of poverty.

The principal objective of this paper is to investigate whether BRAC is reaching the poorest with its CFPR/TUP programme. To measure the poverty status of the clients, the CGAP tool is used. Following this introduction, the subsequent sections contain the method of data collection, descriptive statistics of the programme participants and non-participants, technical issues of constructing relative poverty index, extent of poverty outreach, implementation of selection criteria and their usefulness. Final section concludes the paper.

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*Note:* The authors express their gratitude to Marie Jo A. Cortijo for her useful suggestions.

<sup>1</sup> The targeting methods evaluated include means test, proxy means test, community assessment, geography, categorical targeting (by age) and self-selections.



## THE CFPR/TUP PROGRAMME

Considering the fact that the conventional interventions, mostly the microfinance programme, tend not to be beneficial for the poorest segment of the population, BRAC designed a few programmes for the extreme poor. Challenging the Frontier of Poverty Reduction/Targeting Ultra Poor (CFPR/TUP) is one such programme. Since the poorest population face different sorts of constraints in their effort to improve their livelihood, the programme consists of multiple components to address those constraints<sup>2</sup>. Initially the beneficiaries are given some income generating assets with training for managing the enterprise. Other elements of the programme include stipend, health care provisions, social support through community mobilization, savings and credit facilities. This wide range of supports makes per beneficiary cost of the programme very high (about 500 USD per beneficiary).

Launching in 2002 in three districts, 20,000 participants have been served in three years (5,000 each in 2002 and 2003; and 10,000 in 2004). In 2005, the programme has been scaled up by bringing in twenty-five thousand beneficiaries. Now the programme has spread over 15 districts.

Since the thrust of the programme is to reach the ultra poor and the cost of leakage is very high, considerable effort is put into the selection process. A combination of a few targeting mechanisms is used in the selection procedure. Combining different methods of targeting is not unique in CFPR/TUP as many programmes use multiple mechanisms either explicitly or implicitly (Grosh 1994). The beneficiary selection of the programme involves geographical,

community-based and proxy means testing targeting<sup>3</sup>.

As the programme is scaling up and spreading over a number of districts, geographical targeting is becoming less important. The programme operates through Area Offices (AO) usually covering a sub-district. Within the operational area of each AO, spots (usually clusters of 100-120 households) are selected where participatory wealth rankings are done. The households in the bottom group of wealth ranking are identified as ultra poor.

In the next stage of beneficiary selection, information of the ultra poor households are collected using a small structured questionnaire. Based on their compliance with five inclusion and three exclusion criteria, they are finally selected. The five inclusion criteria are i) no adult male income earner, ii) adult women selling labour outside homestead, iii) school going-aged children engaged in labour, iv) total land including homestead is less than 10 decimal, and v) have no productive asset. The three exclusion criteria are i) borrowing from NGO, ii) recipients of government development programmes, and iii) no physically able adult woman. All the ultra poor households fulfilling at least two of the inclusion criteria and no exclusion criterion are selected.

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<sup>2</sup> For analytical details of the CFPR/TUP and other programmes targeting the extreme poor see Matin (2002) and Matin and Halder (2004).

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<sup>3</sup> CFPR/TUP (2004) elaborately documents the selection process.

## THE DATA

The data for this study has been collected during July-August 2005 when the beneficiary selection has just been completed. In 2005, participants have been selected in 101 AOs from which 40 AOs were randomly selected for this study. Two spots were selected from each AO. All the beneficiary households of the selected spot were surveyed. From the list of non-participant households of each spot, one and half times of the number of beneficiaries of respective spots were randomly selected for the survey. The resulting sample was 512 participants and 820 non-participants. Among the non-participants, 160 households belonged to the ultra poor rank who

were not selected by the programme. Information from these 1,332 households has been collected using a structured questionnaire.

In the spot selection, the spots where wealth ranking has been conducted but no household has been finally selected were omitted. Moreover, the spots where the interventions have already been started were also let-out to avoid any possibility of programme impact on the households. However, since the survey was conducted right after the completion of beneficiary selection, a small number of spots in a few AOs were excluded from the sampling procedure on this ground.

## HOUSEHOLD CHARACTERISTICS

Table 1 gives an account of some of the basic household characteristics and how these differ among the three types of households surveyed in this study – ultra poor households selected by the programme (Selected Ultra Poor, or SUP for short), those who were identified as ultra poor by the community in the wealth ranking but not selected by the programme (the Not Selected Ultra Poor, or NSUP for short) and households who were not identified as the ultra poor by the community in the wealth ranking exercises ('Others' for short).

The ultra poor households in general are significantly poorer than other wealth category households in the community, suggesting that the strength of the wealth ranking exercises carried out by the programme. SUPs are poorer than NSUPs with respect to some critical variables that are known to reflect vulnerability, such as female headship and not owning homestead land, suggesting a broad level of targeting effectiveness. We further analyze the targeting effectiveness question using more sophisticated methods in subsequent sections.

It is important to note in this table that involvement of the non-participant households in microfinance activities was underreported in this survey. Effective coverage of households by microfinance institutes in the survey areas is known to be over 45% (PKSF, 2003). However, only 25% of the general population reported any NGO participation. It can be claimed that the households have not been representative of the survey area. However, incidences of misreporting were identified by checking with other sources of information. The reason for hiding the information of membership with NGOs is that most people have come to know that households having NGO membership are not selected by the programme and, thereby, denied the benefits. The programme supervisors also reported in their interviews that people tend to take different techniques to hide their NGO participation. The 3% of beneficiaries having NGO membership represent the cases whose MFI involvement was identified after the final selection.

**Table 1. Profile of different household groups**

| Variables   | SUP<br>(A) | NSUP<br>(B) | Other<br>(C) | Differences* |       |       |
|---|------------|-------------|--------------|--------------|-------|-------|
|   |            |             |              | A – B        | A – C | B – C |
| Female headed household (%)   | 47         | 26          | 7            | ✓            | ✓     | ✓     |
| Average household size  | 3.41       | 3.56        | 4.72         |              | ✓     | ✓     |
| Average number of male income earners per HH                                | 0.68       | 0.97        | 1.47         | ✓            | ✓     | ✓     |
| Number of children (<14 yrs) per HH   | 1.40       | 1.27        | 1.67         |              | ✓     | ✓     |
| Household with school going age children not attending school regularly (%) | 26         | 22          | 19           |              | ✓     |       |
| Owning the house of residence (%)   | 90         | 91          | 97           |              | ✓     | ✓     |
| Owning the land of the residence house (%)                                  | 47         | 64          | 81           | ✓            | ✓     | ✓     |
| Average land owned (decimal)  | 4.8        | 7.3         | 89.8         |              | ✓     | ✓     |
| Value of household assets (average Tk.)                                     | 706        | 1,481       | 16,130       |              | ✓     | ✓     |
| Average size of the main living room (square feet)                          | 136        | 159         | 204          | ✓            | ✓     | ✓     |
| House with hard roof (Iron sheets, cement)                                  | 83         | 86          | 100          |              | ✓     | ✓     |
| MFI membership (%)  | 3          | 22          | 30           | ✓            | ✓     | ✓     |

\*Significant at less than 5 percent level

### Poverty dynamics and the ultra poor

Many households tend to move in and out of poverty and for some households poverty is more chronic, often intergenerational. This aspect of poverty, referred in the literature as poverty dynamics, has been the focus of attention of poverty research in recent years. We attempted to explore this issue in this study. The question is whether the programme is targeting the chronic ultra poor or a more transient group of the ultra poor.

Five different trajectories were identified and the households were asked to identify their own trajectory since the formation of their household (Table 2). Improvement in overall situation over time is almost four times higher for the ‘non-ultra poor’ households, suggesting that chronicity and further descent into poverty is what distinguishes the ultra poor from other categories of the poor.

**Table 2. Trajectories of changes in the household status**

| How the household condition being changed since formation | SUP       | NSUP      | Other     | All        |
|---|-----------|-----------|-----------|------------|
| Remaining the same  | 165 (32)  | 49 (31)   | 216 (26)  | 381 (29)   |
| Has been improving  | 23 (5)    | 4 (3)     | 153 (19)  | 176 (13)   |
| Deteriorated but now improving                            | 33 (7)    | 15 (9)    | 96 (12)   | 129 (10)   |
| Improved but now worsening                                | 208 (41)  | 67 (42)   | 281 (34)  | 489 (37)   |
| Has been worsening  | 82 (16)   | 25 (16)   | 74 (9)    | 156 (12)   |
| Total   | 511 (100) | 160 (100) | 820 (100) | 1331 (100) |

Note: figures in parentheses are the percentages of each column. The total may not be 100 percent due to rounding up/down

## CONSTRUCTING A POVERTY INDEX

Though the descriptive statistics of poverty profile showed that the beneficiaries of the programme are at disadvantaged position than the general population, it does not completely address the key question of the extent to which the programme reaches the poorest. Constructing a poverty index is important for two reasons. Firstly, individual indicator is neither necessary nor sufficient for a household being the poorest. Secondly and more importantly, disadvantage at two or more spaces is not equivalent to disadvantage in one space. For example, the condition of a female-headed household with seasonal food insecurity is different from the condition of a household with only one of these attributes. Moreover, significances of particular indicators are not equal.

There are few methods of constructing composite indicator of poverty such as linear and quadratic programming (Glewwe 1992), principal component analysis (Henry *et al.* 2003), stepwise probit for best fit (Baulch 2002), etc. The CGAP tool has been used here for its simplicity and transparency.

### Robustness of benchmark indicator

Per capita clothing and footwear expenditure has been used as the benchmark indicator to construct the poverty index. In different other studies that follow the CGAP tool, this has been used as the proxy for total household expenditure and, thereby, the poverty status of the households. Therefore, the robustness of the benchmark indicator in the context of Bangladesh is a critical issue. Household Income Expenditure Survey (HIES) is the nationally representative statistics which can be used in this regard.

The correlations between the clothing (including footwear) and total consumption expenditure per month both by per household and per capita groups are found to be exceptionally high (Table 3). Since the estimates of correlations are based on per capita expenditure groups<sup>4</sup> (BBS, 2003), the degree of associations is likely to be lower at disaggregate level. However, correlations above 0.6 were also considered robust in other studies that followed Principal Component Analysis (PCA) for constructing poverty index (Ruit *et al.* 2001).

**Table 3. Robustness of benchmark indicator**

|   |        |
|---|--------|
| Pearson correlation coefficient of consumption and clothing expenditure per HH <sup>a</sup>     | 0.924* |
| Pearson correlation coefficient of consumption and clothing expenditure per capita <sup>a</sup> | 0.932* |
| Average monthly expenditure on clothing and footwear per HH (HIES)                              | 235.47 |
| Average monthly expenditure on clothing and footwear per HH (Participants)                      | 60.91  |
| Average monthly expenditure on clothing and footwear per HH (Non-participants)                  | 214.70 |
| Average monthly expenditure on clothing and footwear per HH (all)                               | 155.58 |
| Average monthly expenditure on clothing and footwear per capita (HIES)                          | 46.63  |
| Average monthly expenditure on clothing and footwear per HH (Participants)                      | 17.69  |
| Average monthly expenditure on clothing and footwear per HH (Non-participants)                  | 43.39  |
| Average monthly expenditure on clothing and footwear per HH (all)                               | 33.51  |

<sup>a</sup> Estimate based on per capita expenditure groups of HIES 2000

\* Significant at < 1 percent level

<sup>4</sup> There were 20 such groups in the aggregate data for the rural areas.

The HIES also provide an opportunity to look at the quality of data collected in this study. Average monthly expenditure on clothing and footwear per household of the non-participants (representing the general population) was Tk. 215 compared to Tk. 235 in the HIES. This difference gets reduced when compared by per capita expenditure. One of the reasons is that the average family size has decreased during the period of 2001 and 2005. The other important reason for lower per capita clothing expenditure is geographical targeting. The programme operates only in sub-districts with very high vulnerability and food insecurity.

### Indicators considered for the index

A wide range of indicators were considered for developing the poverty index. These indicators include demographic characteristics, health status, housing condition, land ownership, ownership of different kinds of household assets, extent of food security, clothing expenditure pattern and self perception of poverty (Annex 1). However, inclusion of all these indicators in the composite index is not desirable because each variable indicate different characteristics with different strength. Relatively more indicators of a particular aspect would make the index biased. A sound index should include 10 to 20 variables covering different aspects of household well-beings.

The correlations of the variables with the benchmark indicator suggest their reliability and consistency as poverty indicators. The indicators with stronger relationships with the benchmark, either positive or negative, are stronger candidates for inclusion in the composite index. Though all the correlation coefficients have expected signs (second column of Annex 1), the variations in their absolute values are subject to some analysis.

In general, the indicators related to self-perception of poverty and clothing security have relatively greater extent of association with the benchmark indicator. In the demographic characteristics, number of adult male income earners seems to be the most important indicator. Condition of dwelling is more relevant than ownership of either the house or the land of the house. However, ownership of the homestead is

more important indicator than owning house. The reason for this is that rural people usually own the house they live whether the house is on their own land or not. Per capita clothing and footwear expenditure has stronger association with the amount of cultivable land owned by the households than amount of homestead or uncultivable land. This indicates that cultivable land generates more income for the household than other types of land.

Among the different kinds of household assets, monetary value of furniture, in the form of cot or table-chair, has the highest degree of correlation with the benchmark. Value of cows or buffalos is also highly correlated. Relatively weaker relationship between the value of fowls and the benchmark indicator suggests that households tend to keep some poultry irrespective of their poverty status. In the food security related issues, indicators of sufficient food intake all the year round seems to be most relevant poverty indicators.

As expected, frequency of intake of luxury food items have positive coefficients and of inferior food items the sign is negative. However, luxury food intake has stronger relation compared to inferior food intakes. Since the luxury food items are not necessarily substitute but complementary to the inferior items, ability to consume better foods is likely to be more appropriate poverty indicator rather than taking inferior foods. This proposition is reinforced by the relatively larger absolute value of the coefficient of number of days in the last week took only rice.

Frequency in purchasing rice also has strong relation with the poverty indicator though frequency in purchasing lentil does not. The expectation was that the poor tend to buy these items more frequently. The coefficient of the number of days' gap in purchasing rice (meaning the inverse of frequency in buying) has a positive sign meeting the expectation. However, for lentil the coefficient is negative which is because of the fact that a large portion of the sample cannot afford that food item regularly resulting in less frequent purchase.

Nonetheless, all the indicators with significant relationships with the benchmark listed in Annex 1 have a possibility of being included in the poverty index.

### Principal component analysis

In using PCA model to construct poverty index, the established norms have been followed. Different combinations of items from all the household attributes (e.g. demography, food-intake, clothing, housing) listed in Annex 1 have been included in the trial versions so that the final poverty index does not bias towards any particular aspect of household well-being. In the set of combinations, fourteen to twenty indicators have been tried out. Omissions and inclusions were done to improve the explanation power of the index. The test models included only the non-participant group to avoid over emphasis of the participants due to the sample design. The indicators in the final model include fifteen variables covering different household features. The component loading of the indicators of the final model, which includes both participant and non-participant groups, is presented in Table 4. Two components were extracted meaning that these two components explain, at least partially,

why the values of indicators vary between the survey households. The two components are assumed to capture two different attributes of the households and one of the reasons of variations in the indicators among the households is their relative poverty status.

Component loadings show the degree of correlation between the components and indicators. The strength and signs of the coefficients demonstrate that the first component is the poverty index. Improvement in relative poverty status should be positively related with the number of male income earners, increased ownership of assets, greater food security, better standard of clothing and self-perception of poverty. Increased values in all the indicators except one (number of days in the last week household members took only rice) of Table 4 mean better poverty status. Correlation coefficients of all the indicators with the first component give the expected signs indicating that component 1 is the relative poverty index. The second component is likely to be explaining some of the differences in assets holding as only the household assets and land related indicators have expected signs and relation.

**Table 4. Component loadings of the indicators in the final PCA**

| Poverty attributes | Indicator                                 | Components |        |
|--------------------|---|------------|--------|
|                    |   | 1          | 2      |
| Demographic        | Number of adult male income earners       | 0.550      | -0.043 |
| Housing            | Material of the wall of main living room  | 0.582      | 0.066  |
|                    | Room size                                 | 0.569      | 0.014  |
| Land ownership     | Total land owned (decimal)                | 0.492      | 0.539  |
| Household assets   | Value of Cow/Buffalo (tk)                 | 0.640      | 0.433  |
|                    | Value of table-chair owned by the HH (tk) | 0.554      | 0.462  |
|                    | Value of total household asset            | 0.536      | 0.537  |
| Food consumption   | Number of days took only rice in one week | -0.564     | 0.400  |
|                    | Sufficiency in food intake over the year  | 0.795      | -0.355 |
|                    | Number of days fish served in one week    | 0.516      | -0.202 |
|                    | Seasonality in food intake                | 0.730      | -0.189 |
| Clothing           | Per capita annual clothing expenditure    | 0.806      | 0.151  |
|                    | Having good cloths                        | 0.761      | -0.158 |
| Self perception    | Self-perception of poverty                | 0.751      | -0.299 |
|                    | Self-perception of relative poverty       | 0.867      | -0.157 |

Note: 2 components extracted

However, it is imperative that the strengths of the poverty component should be examined before going into the interpretations using the index. Absolute value of the factor coefficients should be more than 0.300 to be considered significant at 1 percent level (Henry *et al.* 2003). The lowest absolute value of the indicators is 0.492, therefore, all the indicators are strongly reflecting the differences of households in their poverty status. The poverty component captures more than 43% of the total variations in all the poverty indicators

among the households. Moreover, the index includes different aspects of household well-being. Though highest number of indicators have been taken from food security (four indicators), it is unlikely to make the index biased towards that since clothing and self-perception of poverty have very strong relationship with the index. Finally, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy for the model is 0.933 suggesting very high degree of appropriateness of the model.



## REACHING THE POOREST GROUP: WHAT IS THE EVIDENCE?

The PCA assigns a standardized poverty score for each of the households. It is important to note that this poverty index demonstrates the *relative* poverty situation of the households. In the index, lower score reflects more severe poverty and vice versa. The individual scores have no implication unless compared with that any other household. Therefore, the values are standardized with the mean of zero and the standard deviation of one.

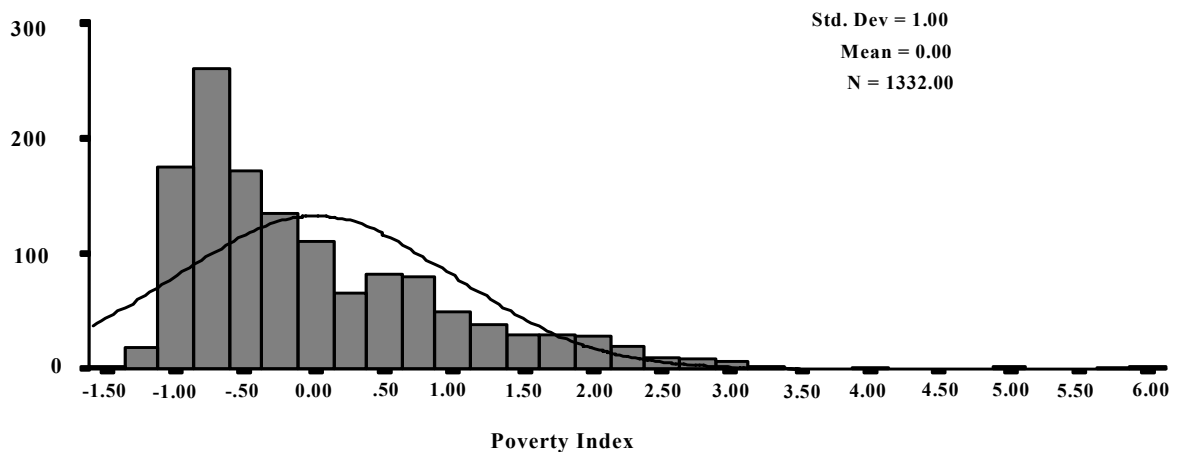
The histogram of the poverty scores (Fig. 1) shows the distribution pattern of the poverty scores. The lowest score that was assigned is -1.41 and the highest score is 6.03. However, most of the cases lie within -1.13 and 0.87 poverty score. Most of the variations is found within the relatively well-off categories compared to the poorer ones. The distribution curve has a longer tail to the right end. This is sensible, because it is likely that there would be fewer households who are extremely rich compared to the general population of a village. A box plot by participant and non-participant categories reveals such extreme cases.

The medians of the poverty scores, marked by the thick black line, are quite different (Fig. 2). The participants are much poorer than the non-participants. The boxes and the thin lines show that poverty range within the participants is much lower compared to the general population. There are a few outliers in both the cases. However, cases at the longer tail of the histogram as in Fig. 1 certainly belong to the non-participant groups.

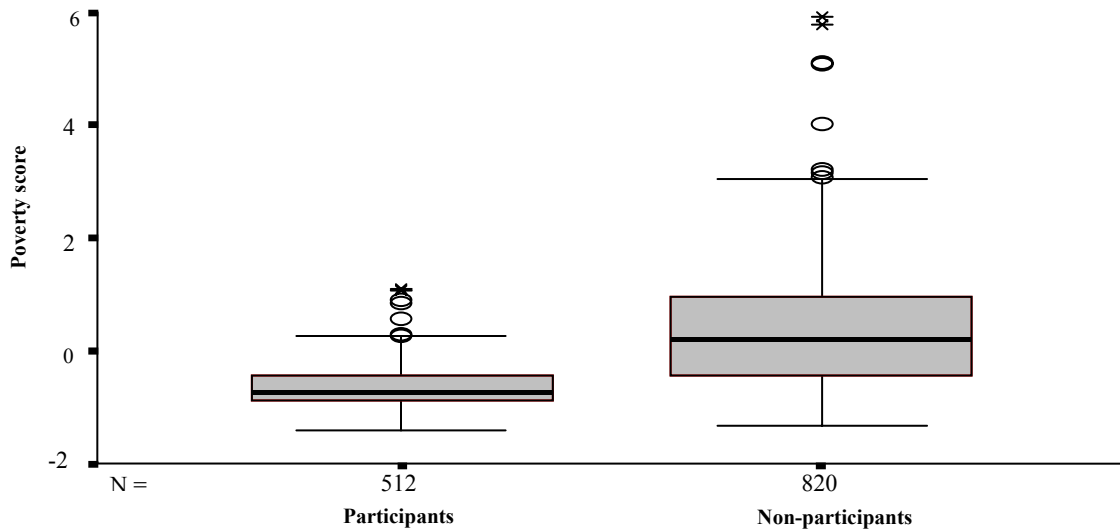
### Inclusion and exclusion errors in targeting

To compare the relative poverty situation, the participants and non-participants of the programme have been grouped into quartiles. The non-participants were first ranked into four groups based on the poverty scores. This gave us three cut-off marks. Using these cut-off points the participants have also been ranked into four groups. Figure 3 shows the groups from poorest to least poor quartiles.

**Figure 1. Histogram of poverty index**

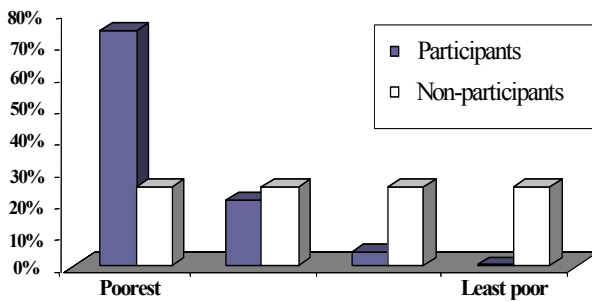


**Figure 2. Distribution of poverty scores by participants and non-participants**



According to the poverty groupings of the general population (non-participants), three quarter of the programme beneficiaries are within the poorest group. This undoubtedly demonstrates the high rate of success of the programme to reach the poorest segment of the population. Only 5% of the participants belonging to the 2nd least poor category and 0% in the least poor category are the evidence of great extent of success in avoiding inclusion error.

**Figure 3. Comparison between the participants and non-participants by quartile**



The programme has been successful in including the extreme poor in the programme areas. However, exclusion is often an issue of concern for social programme. To explore this, we assumed that the programme has a 'limit' to the number of households it can include in the programme, which is set at the total number of

SUP households in our sample, 512. We then selected the poorest 512 households from our sample based on the estimated poverty scores. Thus, we get three groups of households — (a) SUP households who belong to the poorest 512 households according to the poverty score (area A in the diagram below), (b) SUP households who do not belong to the poorest 512 households (area B in the diagram below), and (c) non programme households who belong to the poorest 512 households (area C Fig. 4).

Sixty-eight percent of the SUP households (or the 512 poorest households) belong to group A, i.e. households who belong to the group of 512 poorest households according to the poverty scores and selected by the programme. The interesting finding that emerges from exploring further into the non overlapping groups is that 57% of group C households (i.e. households that belong to the 512 poorest group according to the poverty scores but not selected by the programme) were not ranked as the poorest by the community in the participatory wealth ranking exercises. A look into the eligibility of this sub-group of households in terms of the inclusion and exclusion criteria reveals that one-third of them meet both the inclusion and exclusion criteria. As the targeting methodology followed by the programme does not consider those not ranked as the poorest in the wealth ranking exercises, it is

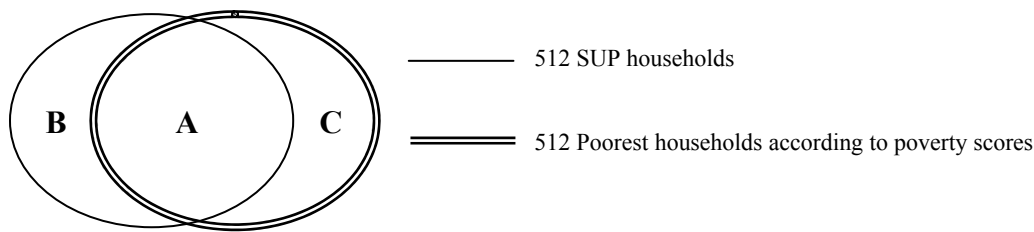
important to know the reason for their not being identified as ultra poor. Present study design does not allow us to investigate it further. Nonetheless, over 82% of the 512 poorest households according to the poverty scores were ranked as the poorest in the wealth ranking exercises, suggesting a high level of aggregate accuracy of the wealth ranking method.

**Usefulness of combination of targeting methods**

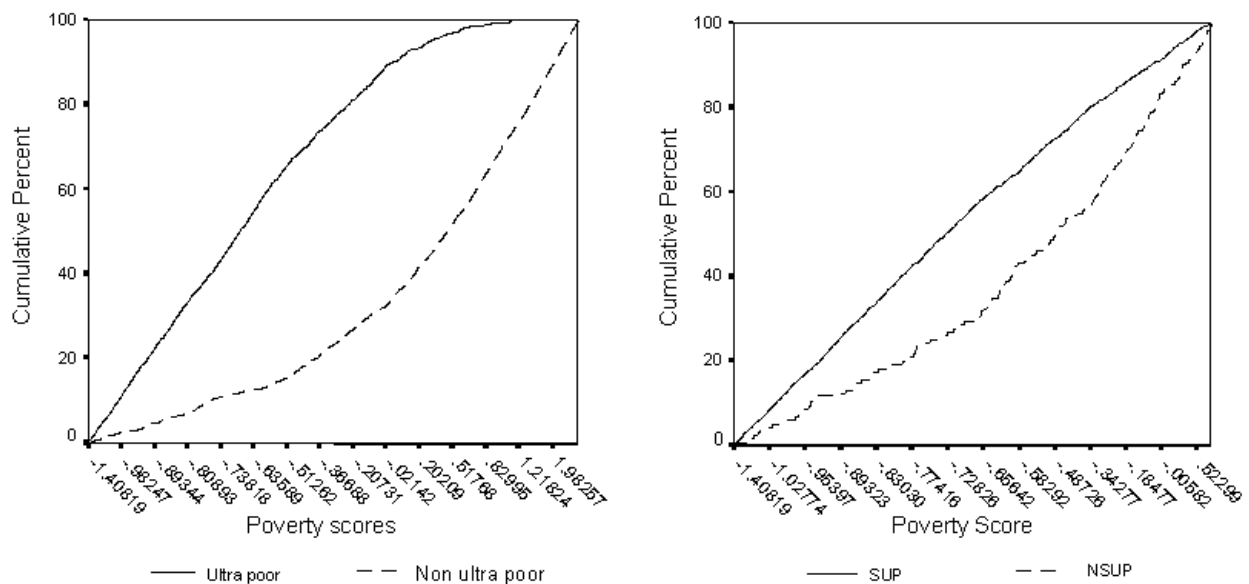
As has been noted earlier, the beneficiary selection of the programme goes through multiple stages. The extent of effectiveness of the methods in achieving the targeting outcome that has been achieved is worth looking at.

Cumulative distribution functions (CDF) of the poverty scores of the households by SUP, NSUP and other wealth ranks (non-ultra poor) are shown in Figure 5 which signify the usefulness of the targeting methods. In these graphs, the further away the line of a group is from the horizontal axis, the poorer the group is. The first graph clearly shows the effectiveness of the wealth ranking exercises in being able to distinguish the ultra poor from other wealth category households in the communities. The second graph shows the effectiveness of using inclusion and exclusion criteria in screening the poorest from those who were identified as ultra poor in the wealth ranking exercises.

**Figure 4. Exclusion of the poorest**



**Figure 5. Cumulative distribution function SUP, NSUP and other**



### Building experience of programme

If there is any externality of the whole selection procedure, there is a possibility that some differences will be observed between the AOs where the programme has started in 2005 and earlier. However, the cumulative distribution line of poverty score of the SUPs by the two categories of AOs does not show any conclusive evidence.

No clear difference between the SUPs and NSUPs in 2002 and 2005 is visible in their household characteristics (Table 5). Only significant differences found between the SUPs selected in 2002 and 2005 are in their status of school going-aged children selling labour and their ownership of homestead. Decline in child labour for both SUP and NSUPs hints a secular favourable change in this issue. The similarity suggests that despite scaling up, the success in beneficiary selection has been maintained.

**Table 5. Comparing HH characteristics between 2002 and 2005**

|   | SUP               | NSUP              | SUP  | NSUP |         | Difference (t value) |      |
|---|-------------------|-------------------|------|------|---------|----------------------|------|
|   | 2002 <sup>a</sup> | 2002 <sup>a</sup> | 2005 | 2005 |         | SUP                  | NSUP |
| <b>Marital status</b>                                 |                   |                   |      |      |         |                      |      |
| % widow   | 30                | 16                | 28   | 23   | 0.54    | 2.07*                |      |
| % Divorced/abandoned                                  | 15                | 5                 | 11   | 5    | 1.48    | 0.00                 |      |
| % Living with husband but FHH                         | 17                | 4                 | 13   | 3    | 1.18    | 0.59                 |      |
| <b>Demographics</b>                                   |                   |                   |      |      |         |                      |      |
| % of HH with no adult male income earner <sup>b</sup> | 36                | 15                | 37   | 20   | 0.25    | 1.53                 |      |
| % female HHH  | na                | na                | 47   | 26   |         |                      |      |
| % of HH with female selling labour <sup>b</sup>       | na                | na                | 34   | 26   |         |                      |      |
| % of HH without physically able husband               | 57                | 29                | 51   | 40   | 1.46    | 2.66**               |      |
| % of HH with children selling labour <sup>b</sup>     | 18                | 10                | 10   | 6    | 2.95*** | 1.56                 |      |
| <b>Assets – Land</b>                                  |                   |                   |      |      |         |                      |      |
| % of HH without cultivable land                       | 98                | 88                | 97   | 95   | 0.75    | 2.56**               |      |
| % of HH who don't own the land of their house         | 62                | 38                | 53   | 36   | 2.20*   | 0.46                 |      |
| <b>Assets - Non-land</b>                              |                   |                   |      |      |         |                      |      |
| % without any non-land asset <sup>b</sup>             | 56                | 43                | 51   | 46   | 1.21    | 0.68                 |      |

<sup>a</sup> from Matin and Halder (2004)

<sup>b</sup>Inclusion criteria

\*, \*\*, \*\*\* difference significant at 10, 5 and 1 percent level respectively

## COMPLIANCE WITH THE SELECTION CRITERIA

To be finally selected as a beneficiary of the programme, each household has to fulfill at least two of the five inclusion criteria. The extent to which this condition has been met is presented in Table 6. In terms of compliance with the inclusion-exclusion criteria, the outcome is commendable. About 95% of the SUPs were found fulfilling at least two inclusion criteria. About 70% of the SUPs meet exactly two inclusion criteria. The combinations of criteria that were most prevalent were ‘having less than 10 decimal land’ and ‘having no productive assets’; and ‘having less than 10 decimal land’ and ‘women selling labour’.

**Table 6. Compliance with the inclusion criteria**

| No. of criteria complied with | Household Category |                    |                    | Total               |
|-------------------------------|--------------------|--------------------|--------------------|---------------------|
|                               | SUP                | NSUP               | Other              |                     |
| 0                             | 3 (0.6)            | 7 (4.4)            | 304 (46.1)         | 314 (23.6)          |
| 1                             | 19 (3.7)           | 54 (33.8)          | 253 (38.3)         | 326 (24.5)          |
| 2                             | 357 (69.7)         | 70 (43.8)          | 84 (12.7)          | 511 (38.4)          |
| 3                             | 113 (22.1)         | 23 (14.4)          | 19 (2.9)           | 155 (11.6)          |
| 4                             | 13 (2.5)           | 5 (3.1)            | -                  | 18 (1.4)            |
| 5                             | 7 (1.4)            | 1 (0.6)            | -                  | 8 (0.6)             |
| <b>Total</b>                  | <b>512 (100.0)</b> | <b>160 (100.0)</b> | <b>660 (100.0)</b> | <b>1332 (100.0)</b> |

Note: Figures in parenthesis are the percentages of each column total

While only 16% of the non-ultra poor also meet at least two inclusion criteria, the figure for the NSUPs is 62%. Large portion of the NSUPs complying with the inclusion criteria suggests that the three exclusion criteria might be the deciding factors for these ultra-poor not being finally

selected. As noted earlier, one of the weaknesses of the data set is that there has been under reporting of NGO participation and receiving government services. However, a comparison of the exclusion criteria among the eligible and non-eligible (in terms of meeting at least two inclusion criteria) NSUPs can give a hint to this fact (Table 7).

Indeed, even the under reporting of the two exclusion criteria suggests that many of the NSUPs were not selected since they meet the exclusion criteria. While only 5% of the non-eligible NSUP households have outstanding loans with any NGO, the figure for the eligible NSUPs is 28%. Borrowing from NGOs seems to be the key exclusion criterion for the ultra poor meeting the inclusion conditions. The third exclusion criterion is less imposing since only a 6% of the NSUPs did not have any able-bodied adult women.

**Table 7. Exclusion criteria in operation**

| Exclusion criteria                                | Eligibility of NSUPs <sup>a</sup> |                 |
|---|-----------------------------------|-----------------|
|   | Eligible                          | Non-eligible    |
| 1. HH having outstanding loans with MFIs          | 28 (28.3)                         | 3 (4.9)         |
| 2. HHs being Beneficiary of government programmes | 14 (14.1)                         | 0 (0.0)         |
| 3. HHs having no physically able women            | 6 (6.1)                           | 4 (6.6)         |
| <b>Total</b>                                      | <b>99 (100)</b>                   | <b>61 (100)</b> |

<sup>a</sup> based on inclusion criteria

Figures in parenthesis are the percentages of each column group

## IDENTIFYING THE BEST INDICATORS: ROC CURVES

ROC (Receiver Operating Characteristics) curve is a handy tool to identify the indicator or set of indicators that minimize the error of targeting (both inclusion and exclusion). The areas under the curves show the strength of the indicators and can have values between 0 and 1. Values closer 1 or 0 mean the variable concerned is almost always right or wrong, respectively, while values near 0.5 indicate that the indicator has no better explanatory power than guessing. Here the state variable or the outcome to predict is household belonging to the group of 512 with the lowest poverty scores.

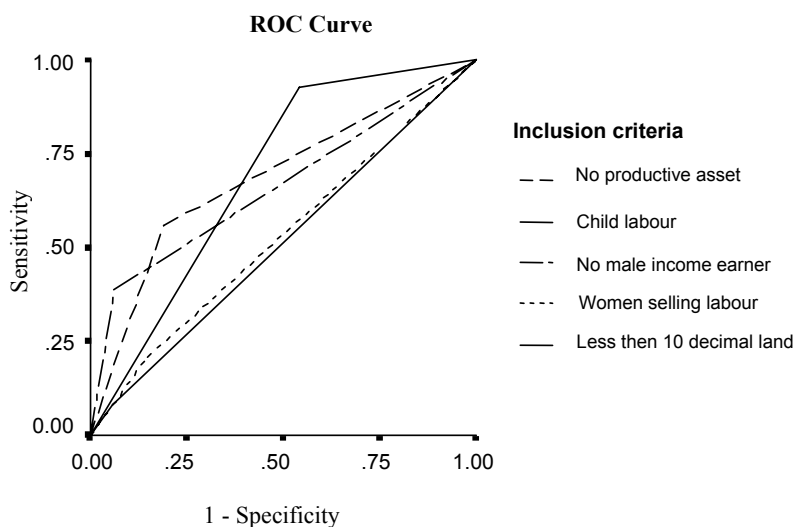
Figure 6 reinforces the notion of trade-off in inclusion and exclusion. While meeting the criteria of less than 10 decimal of land is highly sensitive to the poorest (identifying more than 95% of them), it has very low level of specificity. Not having any male income earner has high specificity (correctly identifying 95% of the non poorest group) at the cost of low sensitivity.

The ten possible combinations of two criteria from the five are tested to identify their strength (Table 8). Three of the four possible combinations involving the criterion related to land were found most useful. A number of studies also shown that despite high specificity errors, land is a strong indicator of poverty in rural areas. School going child at labour force does not seem to be a very good indicator since the area under the ROC of this indicator is lowest.

**Table 8. Area under the ROC Curve**

| Test Result Variable(s)      | Area | Sensitivity | Specificity |
|------------------------------|------|-------------|-------------|
| land and female              | .529 | 17.58%      | 88.29%      |
| Land and male                | .659 | 37.11%      | 94.63%      |
| Land and child               | .519 | 7.42%       | 96.34%      |
| Land and productive assets   | .696 | 53.71%      | 85.49%      |
| Female and male              | .514 | 3.13%       | 99.63%      |
| Female and child             | .510 | 2.54%       | 99.39%      |
| Female and productive assets | .510 | 3.91%       | 98.05%      |
| Male and child               | .516 | 3.91%       | 99.39%      |
| Male and productive assets   | .604 | 24.02%      | 96.71%      |
| Child and productive assets  | .517 | 4.69%       | 98.78%      |

**Figure 6. Sensitivity and specificity of inclusion indicators**



The most useful set of criteria is 'less than 10 decimal land and no productive asset' followed by 'less than 10 decimal land and no male income earner'. Almost all the sets of criteria has very high level of specificity which means incidences of these criteria among the non poorest very low. Use of combinations of criteria yields commendable level of specificity which can reduce the

cost of inclusion. However, large extent of variation is observed in the level of sensitivity. It is almost certain that households with female being in labour force and having no male income earner would belong in the poorest group. However, this type of household consists only 3.13% of the poorest households.

## CONCLUSION

Effective targeting of the poorest is a critical foundational step of the CFPR/TUP programme. It is important not only because the programme is a targeted intervention for the poorest, but also because good targeting creates programme credibility within the community which is important for a programme like CFPR/TUP that leverages community support for the most underprivileged in the community. It is thus important for sustainability.

Evidence suggests that the programme being able to continue successful utilization of targeting tools to reach the poorest and there has not been any fall back despite scaling up in 2005. The

success has been achieved not from mere usage of targeting tools but rigorous implementation of them. The targeting criteria used also seem very effective to correctly identifying the poorest among the ultra poor identified by wealth ranking. Evidence also suggests that chronicity and further descent into poverty is what distinguishes the ultra poor from other categories of the poor.

There is high level of convergence of community wealth ranking and objective measures of poverty. However, the little existing disparity may have been due to community ignorance of the status of some households and sympathy towards a few others.



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### Correlations of poverty indicators with the benchmark

| Indicator   | Correlation Coefficient |
|---|-------------------------|
| Household headship (1=male, 2=female)   | -0.257***               |
| number of members per male income earner  | -0.169***               |
| Number of adult income earners  | 0.417***                |
| Number of children  | -0.016                  |
| Whether any child in labour force (1=yes, 0 otherwise)                            | -0.106***               |
| Average score of health of the HH members (1=very good, ..., 5=very bad)          | -0.220***               |
| Having HH member with bad or very bad health (1=yes, 0 otherwise)                 | -0.170***               |
| Housing type  | 0.360***                |
| Material of the wall of main living room  | 0.410***                |
| Housing condition   | 0.380***                |
| Size of the main living room (sq ft)  | 0.401***                |
| Ownership of house  | 0.139***                |
| Ownership of land of the house  | 0.293***                |
| Homestead land (decimal)  | 0.416***                |
| Own cultivable land (decimal)   | 0.445***                |
| Other uncultivable land (decimal)   | 0.189***                |
| Total land owned (decimal)  | 0.443***                |
| Cow/Buffalo (tk)  | 0.487***                |
| Goat/Ram (tk)   | 0.345***                |
| Poultry (tk)  | 0.375***                |
| Rickshaw/Van (tk)   | 0.046*                  |
| Bicycle (tk)  | 0.233***                |
| Boat (tk)   | 0.059**                 |
| Shop (tk)   | 0.303***                |
| Sewing Machinre (tK)  | 0.162***                |
| Fishing net (tk)  | 0.096***                |
| Cot (tk)  | 0.500***                |
| Table chir (tk)   | 0.540***                |
| Television radio (tk)   | 0.454***                |
| Asset value   | 0.520***                |
| Whether manage to take enough food round the year (1=yes, 0 otherwise)            | 0.494***                |
| How many days in last week took eggs  | 0.479***                |
| How many days in last week took fish  | 0.399***                |
| How many days in last week took meat  | 0.443***                |
| How many days in last week took low quality rice                                  | -0.242***               |
| How many days in last week took collected vegetables                              | -0.325***               |
| How many days in last week took kachu   | -0.085***               |
| In last week how many days took only rice   | -0.422***               |
| Whether have managed the meal for tonight   | 0.375***                |
| How often in a month unsecured food for dinner                                    | -0.177***               |
| Number of days without enough food in last one month                              | -0.389***               |
| Frequency of insufficient food intake in the last year (1 = often, ..., 3= never) | 0.535***                |
| Seasonality in food intake (1 = high, ..., 3 = no)                                | 0.521***                |
| Number of days' gap in buying rice  | 0.424***                |
| Number of days' gap in buying pulse   | -0.102***               |
| Number of days in last one week depended on borrowed rice                         | -0.347***               |
| Dependency on old cloths purchase   | 0.446***                |
| having good cloths  | 0.561***                |
| dependency on jakat cloths  | 0.448***                |
| members having shoes or sandals   | 0.344***                |
| Self perception of poverty  | 0.550***                |
| Self perception of relative poverty status  | 0.661***                |
| Change over the last year   | 0.366***                |

\*, \*\*, \*\*\* indicates significance at 10, 5 and 1 percent level respectively.

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