**Multidimensional Poverty Reduction in India 1999-2006:**
**Slower Progress for the Poorest Groups**

Sabina Alkire and Suman Seth, March 2013

Multidimensional poverty in India decreased between 1999 and 2006 faster than income poverty. Using the National Family Health Survey (NFHS) datasets, this briefing describes the extent of poverty reduction, and examines where and how it has taken place.

To measure changes rigorously, we create an adaptation of the global Multidimensional Poverty Index (MPI) proposed by Alkire and Santos (2010) and reported by UNDP’s Human Development Reports since 2010. This was done to compare poverty estimates, using the NFHS datasets for 1998/9 and 2005/6 (here on 1999 and 2006, as the data collection took place mainly in those years). We refer to this comparable MPI as the MPI, (the MPI for India). Note that data limitations in 1999 mean that the MPI estimates are lower than the global MPI estimates for India.

India’s reduction in multidimensional poverty was over 50% higher than its reduction of income poverty. This finding – which compares MPI trends with income poverty trends 1993/4 to 2004/5 as reported by the Tendulkar Committee – is true for the percentage of multidimensionally poor people, whether in absolute or in relative terms. By absolute, we mean the difference in the proportion of poor, and by relative, we mean the difference in the proportion of poor relative to the initial proportion in 1999.

Analysing MPI trends enables us to see where and how the changes in poverty have occurred, and demonstrates the range of insights dynamic multidimensional poverty analyses generate. We use the MPI, not because this particular set of indicators and cut-offs are the best parameters for India, but because it enables us to compare India’s progress with that of other countries (Alkire and Roche 2013).

Table 1 introduces the dimensions, indicators, weights and definitions of deprivation. A person is identified as poor if his or her deprivation score is equal to or larger than one third. The deprivation score of each person is calculated by summing their weighted deprivations, where each dimension is equally weighted and indicators within it are also equally weighted, as reported in Table 1. For example, if a person is deprived in nutrition, schooling, and water only, the deprivation score is $1/6 + 1/6 + 1/18 = 7/18$, which is larger than one-third, and the person is identified as poor.

The MPI, is the product of two numbers: the incidence or headcount ratio (H), (the percentage of people identified as poor), and the average intensity of deprivation (A), which reflects the share of deprivations each poor person experiences on average. So, $MPI_i = H \times A$.

Between 1999 and 2006, the MPI in India decreased by 0.050 units or by 16%, from 0.300 to 0.251 (see Table 2). This reduction is mainly due to a statistically significant reduction in $H$, the percentage of people identified as poor, which fell more than 1 percentage point per year in absolute terms. The reduction in $A$, the intensity, was smaller but still statistically significant.

The reduction in India’s MPI has been positive, but at 1.2 percentage points per year, progress has been made at less than a third of the speed of some of its neighbours, which are significantly poorer in terms of income. For example, Nepal

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**Table 1: Dimensions, Indicators, Deprivation Cut-offs and Weights for the MPI**

<table>
<thead>
<tr>
<th>Dimension (Weight)</th>
<th>Indicator (Weight)</th>
<th>A household is deprived if…</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Education (1/3)</strong></td>
<td><strong>Schooling (1/6)</strong></td>
<td>No household member has completed five years of schooling</td>
</tr>
<tr>
<td></td>
<td><strong>Attendance (1/6)</strong></td>
<td>Any school-aged child (6-14) is not attending school in the academic year of study</td>
</tr>
<tr>
<td><strong>Health (1/3)</strong></td>
<td><strong>Nutrition (1/6)</strong></td>
<td>Any ever-married woman has a BMI lower than 18.5 kg/m², or any child under 36 months of age has a weight-for-age z-score more than two standard deviations below the mean z-score</td>
</tr>
<tr>
<td></td>
<td><strong>Child Mortality (1/6)</strong></td>
<td>Any child under the age of five of an ever-married woman has died</td>
</tr>
<tr>
<td><strong>Standard of Living (1/3)</strong></td>
<td><strong>Electricity (1/18)</strong></td>
<td>The household has no access to electricity</td>
</tr>
<tr>
<td></td>
<td><strong>Sanitation (1/18)</strong></td>
<td>The sanitation facility is not improved, or it is shared with other households</td>
</tr>
<tr>
<td></td>
<td><strong>Water (1/18)</strong></td>
<td>Household members do not have access to safe drinking water, or safe water is more than a 30-minute walk, round trip</td>
</tr>
<tr>
<td></td>
<td><strong>Housing (1/18)</strong></td>
<td>Household members live in a kaccha house; or in a semi-pucca house and own less than five acres of unirrigated land or less than 2.5 acres of irrigated land¹</td>
</tr>
<tr>
<td></td>
<td><strong>Cooking fuel (1/18)</strong></td>
<td>The household mainly cooks with charcoal, crop residue, animal dung, wood, or straw/shrubs/grass</td>
</tr>
<tr>
<td></td>
<td><strong>Assets (1/18)</strong></td>
<td>The household owns no more than one of: radio, TV, telephone, bike, motorbike or refrigerator, and it does not own a car or truck</td>
</tr>
</tbody>
</table>

*Source: Alkire and Seth (2013)*
Multidimensional Poverty Reduction in India 1999-2006: Slower Progress for the Poorest Groups

Where and among which groups has poverty been reduced?
The reduction in national MPI, has not been uniform across different groups. Table 3 (next page) decomposes trends according to rural/urban areas, states, castes/tribes, religions and various household characteristics. In general, the groups that were poorer in 1999 improved least over the seven-year period.

States
Reduction in poverty varied widely across 25 states, with 17 states achieving statistically significant reductions in MPI, and H. Delhi is included in national and urban/rural analyses of MPI, in India, but it is not reported as a state because it is technically a union territory. In a stunning performance, Kerala reduced the percentage of poor people from 32.6% to 9.5% in only six years. Kerala made large improvements in all indicators except cooking fuel, with the most notable improvements taking place in sanitation, water and electricity. The reduction in overall poverty, MPI, was greatest for Andhra Pradesh, which not only reduced its headcount ratio by 15 percentage points, from 56.7% to 41.6%, but also reduced the average intensity of poverty experienced by each poor person by the equivalent of one standard-of-living indicator. Despite this good news, even India’s best-performing states – Kerala and Andhra Pradesh – progressed just over half as fast as Nepal or Bangladesh.

States that did not show statistically significant reductions in poverty include Arunachal Pradesh, Bihar, Haryana, Meghalaya, Nagaland, Rajasthan, Sikkim, and Tripura. States such as Bihar, Madhya Pradesh, Rajasthan, Uttar Pradesh, and West Bengal, where more than 60% of the population were MPI poor in 1999, showed relatively small reductions in poverty headcount ratio. West Bengal, the least poor among them in 1999, had the biggest reduction of 7.2 percentage points. In contrast, four less-poor South Indian states – Andhra Pradesh, Karnataka, Kerala, and Tamil Nadu – reduced H by more than 13 percentage points each in absolute terms.

Table 2: Change in Poverty

<table>
<thead>
<tr>
<th></th>
<th>1999</th>
<th>2006</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPI</td>
<td>0.300</td>
<td>0.251</td>
<td>-0.050*</td>
</tr>
<tr>
<td>H</td>
<td>56.8%</td>
<td>48.5%</td>
<td>-8.3%*</td>
</tr>
<tr>
<td>A</td>
<td>52.9%</td>
<td>51.7%</td>
<td>-1.2%*</td>
</tr>
</tbody>
</table>

Source: Alkire and Seth (2013)

*Statistically significant change with respect to 95% confidence intervals

How has poverty been reduced?
Multidimensional poverty has gone down nationally, but reduction patterns vary across groups. It is interesting to see: (1) the indicators that have been responsible for the overall change, and (2) whether the reduction in poverty has benefitted the poorest of the poor.

Which indicators caused the reduction in poverty?
An interesting property of the MPI, is that it can be broken down to understand which indicators are contributing to poverty. The MPI is the weighted average of what we call ‘censored headcount ratios’ (CH) of each indicator. The CH is the percentage of people who are poor and also deprived in that indicator. It can be seen from Figure 2 (see page 4) that the reductions in standard-of-living deprivations have been larger than reductions of deprivations in education and health. It is important to note at this stage that a 1% reduction in a nutritional...
impoverishment will result in a higher reduction in poverty than a 1% reduction in a living standard indicator. This is because the relative weights on health and education indicators are three times higher than on standard-of-living indicators.

**Have the poorest of the poor benefitted?**

In order to understand how the poorest of the poor have fared, we consider more stringent or ultra deprivation cut-offs for all indicators except electricity, as described in Table 4. A person is identified as deeply poor if their deprivation score based on the ultra deprivation cut-offs is one-third or more. As with the MPI, a person’s deprivation score is the weighted sum of the deprivations he or she experiences.

### Table 3: Changes in Poverty across Geographic and Social Groups and Household Characteristics

<table>
<thead>
<tr>
<th>Rural/Urban</th>
<th>1999</th>
<th>2006</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pop. Share</td>
<td>MPI</td>
<td>H</td>
</tr>
<tr>
<td>Rural</td>
<td>73.3%</td>
<td>0.368</td>
<td>68.6%</td>
</tr>
<tr>
<td>Urban</td>
<td>26.7%</td>
<td>0.116</td>
<td>24.4%</td>
</tr>
</tbody>
</table>

**States**

- Andhra Pradesh: 8.3% to 8.7%, 56.7% to 54.9%
- Arunachal Pradesh: 0.1% to 0.1%, 47.2% to 47.2%
- Assam: 2.5% to 2.7%, 65.7% to 54.9%
- Bihar: 10.4% to 10.7%, 76.1% to 72.0%
- Goa: 0.1% to 0.1%, 24.4% to 13.2%
- Gujarat: 4.9% to 4.9%, 47.9% to 36.0%
- Haryana: 2.1% to 1.9%, 40.3% to 33.1%
- Himachal Pradesh: 0.6% to 0.6%, 36.3% to 24.3%
- Jammu & Kashmir: 0.9% to 0.9%, 46.0% to 31.7%
- Karnataka: 5.3% to 5.5%, 50.8% to 37.5%
- Kerala: 3.3% to 2.6%, 136.6% to 9.5%
- Madhya Pradesh: 8.3% to 8.7%, 67.6% to 54.9%
- Maharashtra: 9.7% to 9.2%, 47.9% to 32.9%
- Manipur: 0.2% to 0.2%, 44.6% to 32.4%
- Meghalaya: 0.2% to 0.3%, 35.8% to 55.2%
- Mizoram: 0.1% to 0.1%, 155.2% to 21.1%
- Nagaland: 0.2% to 0.1%, 46.0% to 33.9%
- Orissa: 3.8% to 3.7%, 38.1% to 58.7%
- Punjab: 2.4% to 2.5%, 17.7% to 19.2%
- Rajasthan: 5.3% to 5.9%, 341.3% to 58.5%
- Sikkim: 0.0% to 0.1%, 173.6% to 28.9%
- Tamil Nadu: 6.6% to 5.4%, 195.2% to 26.4%
- Tripura: 0.4% to 0.3%, 276.5% to 46.6%
- Uttar Pradesh: 14.7% to 17.2%, 348.6% to 59.5%
- West Bengal: 8.3% to 7.9%, 339.6% to 283.3%

**Castes/Tribes**

- Scheduled Castes: 18.3% to 19.1%, 378.8% to 307.5%
- Scheduled Tribes: 8.9% to 8.5%, 458.0% to 417.0%
- Other Backward Classes: 32.6% to 40.2%, 301.5% to 258.0%
- General: 40.1% to 32.2%, 229.4% to 164.0%

**Religion**

- Hindu: 80.8% to 80.4%, 306.5% to 249.8%
- Muslim: 13.2% to 14.1%, 320.9% to 301.4%
- Christian: 2.6% to 2.3%, 196.4% to 158.3%
- Sikh: 1.8% to 1.7%, 115.2% to 70.7%
- Other Religions: 1.5% to 1.6%, 222.4% to 221.1%

**Head's Gender**

- Female: 7.6% to 10.8%, 275.2% to 278.2%
- Male: 92.4% to 89.2%, 302.5% to 247.0%

**Head's Education**

- No Education: 37.4% to 37.8%, 448.7% to 398.7%
- 1-5 Years: 22.7% to 18.9%, 310.6% to 249.0%
- 6-10 Years: 27.9% to 29.5%, 188.4% to 151.5%
- 11-12 Years: 5.3% to 6.0%, 1114.25% to 992.0%
- 12 Years or More: 6.6% to 7.9%, 555.12% to 401.4%

**Household Size**

- 1-3 Members: 10.2% to 14.6%, 248.5% to 194.1%
- 4-5 Members: 31.6% to 36.0%, 265.0% to 213.0%
- 6-7 Members: 28.4% to 26.6%, 321.59% to 285.53%
- 8-9 members: 14.2% to 12.3%, 340.62% to 318.58%
- 10 or More Members: 15.5% to 10.4%, 332.64% to 292.57%

*Statistically significant change with respect to 95% confidence intervals
Nearly half of all poor people in India were also ultra poor in 1999: 26.4% of people. The share of deeply poor decreased from 26.4% in 1999 to 19.3% in 2006. The share of MPI poor who were also deeply poor also decreased, from 46.5% in 1999 to 39.8% in 2006. Thus, the reduction in overall headcount ratio has been obtained largely by reducing the percentage of people who are deeply poor. However, nearly a fifth of the Indian population – more than 200 million people – were still deeply poor in 2006.

**Conclusion**

In sum, from 1999-2006 India reduced multidimensional poverty significantly, achieving significant reductions in each of the ten indicators, with the biggest improvements seen in access to electricity, housing conditions, access to safe drinking water and improved sanitation facilities.

Strong reductions were apparent among less-poor states, like Andhra Pradesh, but also among certain poor groups, like Scheduled Castes and households whose heads had only 1-5 years of education. However the very poorest groups – Scheduled Tribes, Muslims, female-headed households, households whose head had no education, and the poorest states – saw slower reductions in poverty. This is disturbing, and contrasts sharply with trends in income poverty reduction from 1993/4 to 2004/5 across states. Still, an analysis across the deeply poor shows that the most grinding and extreme levels of poverty reduced slightly faster than the national average.

This briefing has analysed changes in poverty in India between 1999 and 2006 using multidimensional measures. Unfortunately, it is not possible to update this briefing to celebrate more recent progress, because the NFHS survey has not been repeated; nor do the National Sample Survey datasets include the required questions. However, these data constraints are not insurmountable: the global MPI uses a fraction of the questions in most Demographic and Health Surveys, such as the NFHS; just 39 out of 365 questions, in fact.

We hope it will become possible at some point to analyse how India has reduced multidimensional poverty in the period since 2006. In the meantime, we direct interested readers to OPHI Working Paper 60, ‘Multidimensional Poverty Reduction in India between 1999 and 2006: Where and How?’

**Notes**

1. ‘Pucca’ houses are built entirely of high-quality materials; ‘semi-pucca’ houses are built partly with high-quality materials and partly with low-quality materials; and ‘kaccha’ houses are built with low-quality materials throughout.

2. We have combined Bihar with Jharkhand, Madhya Pradesh with Chhattisgarh, and Uttar Pradesh with Uttarakhand, as these three new states did not exist in 1999.

**References**


