The first revision of the global MPI: Empirical insights and robustness
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This paper

In 2018, five of the ten indicators of the global MPI were revised with the purpose of aligning the index to the SDG. This paper offers a three-fold analysis of this revision. First, it explores the overlap of deprivations prior to the application of the poverty cutoff. Second, it analyses the robustness of the revised global MPI to two alternative parameters – the poverty cutoffs and weighting structure. Third, it compares the revised 2018 and the original 2010 specifications of the global MPI.

The global MPI relies methodologically on the AF method. In a society with N individuals where d indicators are relevant to assess their living conditions: • A person i is deprived if they fall short of the minimum achievement level for indicator j by \( g^{-1}_j \) in this case and \( g^{-1}_j = 0 \) otherwise. • The deprivation score, \( c_i \), represents the number of weighted deprivations experienced by person i: 
\[
c_i = \sum_{j=1}^{d} w_j g^{-1}_j
\]
where \( w_j \) represents the relative importance of indicator j and \( \sum_{j=1}^{d} w_j = 1 \). • A person is multidimensionally poor if they face k or more weighted deprivations: \( k = 1 \) in that case and \( k = 0 \) otherwise. • Poverty incidence (H) is the proportion of people living in multidimensional poverty: 
\[
H = \frac{\sum q_i}{n}
\]
The Intensity of poverty (A) is the average number of weighted deprivations experienced by the poor: 
\[
A = \frac{\sum q_i (\rho^c_i)}{\sum q_i}
\]
where \( q_i \) is the number of poor people. • Then the MPI is computed as \( MPI = H \cdot A \).

Multidimensionality is important: 27% do not suffer any deprivation; 21% suffer ‘only’ one deprivation; 52% are deprived in multiple ways

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**Structure of the global MPI: the original (2010) and the revised (2018) specifications**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Weight</th>
<th>Indicator</th>
<th>2010 Specification, Deprived if…</th>
<th>2018 Specification, Deprived if…</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>1/3</td>
<td>Nutrition</td>
<td>Any teenagers or adults have low BMI or any child under 5 is underweight.</td>
<td>Any adults have low BMI or any teenagers have low BMI-for-age or any child under 5 is underweight or stunted.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Child mortality</td>
<td>Any child has died in the family.</td>
<td>Any child has died in the family in the five-year period preceding the survey.</td>
</tr>
<tr>
<td>Education</td>
<td>1/3</td>
<td>Years of schooling</td>
<td>No household member aged 10 years or older has completed five years of schooling.</td>
<td>No household member aged 10 years or older has completed six years of schooling.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>School attendance</td>
<td>Any school-aged child is not attending school up to the age at which he/she would complete class 8.</td>
<td></td>
</tr>
<tr>
<td>Living Standards</td>
<td>1/18</td>
<td>Cooking fuel</td>
<td>The household cooks with dung, wood or charcoal.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sanitation</td>
<td>The household’s sanitation facility is not improved, or it is improved but shared with other households.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Drinking water</td>
<td>The household does not have access to improved drinking water or safe drinking water is at least a 30-minute walk from home, rounded.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Electricity</td>
<td>The household has no electricity.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Housing</td>
<td>The household has a dirt, sand, dung or other unspecified type of floor.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Assets</td>
<td>The household does not own more than one radio, TV, telephone, bike, motorbike or refrigerator and does not own a car or truck.</td>
<td></td>
</tr>
</tbody>
</table>

The revised structure of the global MPI:

- The weight structure was preserved in the revision. Each dimension has an equal weight and the indicators have equal weights within dimensions
- The poverty cutoff remains 1/3. That is, a person is identified as being multidimensionally poor if they face 1/3 or more of the weighed deprivations

**Alternative specification:**
- poverty cutoff between 1/5 and 1/2

**Robustness of the revised structure of global MPI**

- A country pairwise comparison is significant at the baseline specification if one country is poorer than the other.
- A comparison is robust if the country pairwise ordering at the baseline specification is preserved under an alternative specification

We find that the revised specification of the global MPI is at least as robust as the original specification (Alkire & Santos, 2014)

**Data**
- 105 countries in the developing world
- DHS, MICS, PAPFAM & some national surveys
- 8.76 million sample

With the 2018 specification:
- H = 23.24
- A = 49.50
- MPI = 0.115

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**Comparison of the original and the revised structures of the global MPI**

Changes in H and MPI registered small, yet statistically significant. A registered considerable changes:

- The new structure avoids over-looking deprivations in nutrition, years of schooling and household.
- The new structure better tracks recent progress in child mortality
- 83.0% of the possible country pairwise comparisons are identical in both specifications
- Taking into account only significant pairwise comparisons in the revised specification, 99.15% of them are identical in the original specification.

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**Uncensored headcount ratio:** proportion of the population deprived in an indicator

**Censored headcount ratio:** proportion of the population that is poor and deprived in an indicator

**Figure:**

The q-q plot shows that the distribution of H across countries is similar in the original and the revised structures.