Beyond Headcount: The Alkire-Foster Approach to Multidimensional Child Poverty Measurement

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Is there scope for improving child poverty measurements?

The Bristol multidimensional approach (Gordon et al. 2003) has contributed substantially to child poverty measurement, in expanding the income based approach. This model was the first measurement of the headcount of child poverty and is also aligned with the rights based approach and broad international consensus on what dimensions are essential for human development. While the measure improves upon income poverty, it does not account for the breadth, depth, or severity of dimensions of child poverty. The traditional income – FGT – measures in income poverty do account for these (see: Foster, Greer and Thorbecke, 1984). Also, the headcount cannot be broken down by dimension to uncover the components of child poverty in different regions or age groups or by gender.

A new methodology for multidimensional poverty measurement proposed by Alkire and Foster (2007) deals systematically with these issues and can be easily applied to child poverty measurement to enhance existing methodologies.

What is the new method?

Alkire and Foster's (2007) new methodology includes two steps: an **identification method** (ρk) that identifies 'who is poor' by considering the range of deprivations they suffer, and an **aggregation method** that generates an intuitive set of poverty measures ($M\alpha$) (based on traditional FGT measures) that can be broken down to target the poorest people and the dimensions in which they are most deprived.

1) The *identification method* (ρk) identifies who is poor using two cutoffs.

- *First cutoff: whether a person is deprived in each dimension*. For example, Anna, who is nine years old, is mildly malnourished, has not received a dose of measles immunization, lives in a house with adequate sanitation facilities and does not attend school. If our poverty cutoffs are to be 'nourished, have received at least one dose of measles immunization, have adequate sanitation, and be attending school' – then Anna is deprived in three out of four dimensions. If we chose a different cutoff – for example having severe malnutrition – Anna would be deprived in only two out of four dimensions.

- *Second cutoff: the range of dimensions a person must be deprived in, in order to be considered poor*. In many situations we want to identify the poorest of the poor – people deprived in several aspects at the same time. To do this we might want to identify those who are deprived in at least three dimensions simultaneously. If so, Anna would be considered multidimensionally poor, as she is deprived in three dimensions. However, if we choose a cut-off of at least four dimensions, Anna would not be identified as poor. For simplicity in this example we have considered each dimension to be equally weighted – but different weights can be incorporated easily.

2) The *aggregation method* ($M\alpha$) determines the proportion of children who are poor and the average number (or weighted sum) of deprivations that poor children experience. It goes on to generate an enhanced headcount ratio that captures the breadth of deprivation. Because the headcount ratio is adjusted by dimension, an increase in the range of deprivations experienced by a poor child is reflected in the overall level of poverty. If data are cardinal, a related measure can reflect the depth and severity, as well as the breadth, of deprivation. These measures can be broken down by subgroup of the population (e.g. region, age, gender) and by dimension (e.g. education, access to drinking water, income), allowing useful comparisons between groups and identifying who is worst off and in which dimensions they are most deprived.

How can these measures inform policy?

Decision makers need measures to identify whether multidimensional poverty is improving or worsening and how its dimensions differ among groups. The new methodology has been applied in a variety of contexts (see OPHI's Working Papers). Using the 2006 Multiple Indicator Cluster Survey in Bangladesh, Roche (2009) shows how this new methodology can improve upon previous measures of multidimensional child poverty. As this practical application illustrates, the new methodology can be used for a series of purposes including:

- Is this multidimensional measure significantly different from income and multidimensional headcount? What information does it include that others overlook? Does it add value – and if so, how? For example, Table 1 shows that the results of income poverty measures differ significantly from multidimensional measures of child poverty. Also, adjusting the headcount ratio by breadth of deprivation rearranges the ranking order of deprivation among regions. Going beyond headcount - matters.

Table 1: Ranking comparison according to different measures
(k = 2)

|	1	2	3	4	5	6	7
Regions / Urban-Rural	Ranking WI	Ranking H	Ranking Mo	Dif. in rank order WI-Mo	Dif. in rank order WI-H	Dif. in rank order H-Mo	Average deprivations among the poor
Rural Rajshahi	1	3	3	-2	-2	0	2.63
Rural Dhaka	2	2	2	0	0	0	2.71
Rural Sylhet	3	1	1	2	2	0	2.89
Urban Rajshahi	4	10	10	-6	-6	0	2.61
Rural Barisal	5	5	4	1	0	1	2.77
Rural Khulna	6	7	9	-3	-1	-2	2.44
Rural Chittagong	7	6	5	2	1	1	2.81
Urban Barisal	8	12	12	-4	-4	0	2.72
Urban Sylhet	9	8	7	2	1	1	2.70
Urban Dhaka	10	4	6	4	6	-2	2.67
Urban Khulna	11	11	11	0	0	0	2.49
Urban Chittagong	12	9	8	4	3	1	2.75

Source: Roche (2009)

Note: WI: welfare index; H: headcount ratio; M_o: adjusted headcount ratio by breath of deprivation.

- Breaking down by sub groups of population: for example, to compare deprivation by region, ethnicity, age, gender, urban versus rural areas, etc. This important property enriches understanding and facilitates targeting.

- Conducting sensitivity analysis of different cutoff decisions.

- Also, unlike the headcount, we can break down this measure by dimension. This is a powerful way to see 'at a glance' how the composition of poverty changes among groups. For example, Graph 1 shows that deprivation in access to drinking water accounts for an important percentage of child poverty in Barisal but very little in Chittagong and Rajshashi (Bangladesh), where lack of iodized salt contributes most. Therefore the same policies would not work equally well in both areas.

Graph 1: Percentage contribution of the dimension to the respective population level of M_o
(Equal weights and k = 2)
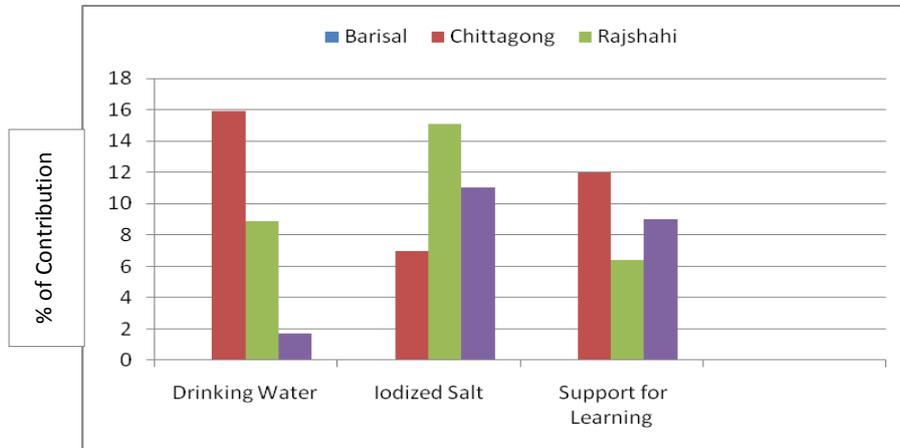
Source: Roche (2009)
Note: For simplification only few dimensions and regions are presented.

- Comparing poverty over time: analysing how dimensions change over time is a powerful way of tracking a country's progress.

In summary, this intuitive methodology builds upon and goes beyond goes beyond headcount measures of multidimensional child poverty and can be used as a flexible tool to inform policy.

Some general sources

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- www.ophi.org.uk provides more information on this topic, how it can be applied to practical use and suggested further reading.