

## Counting and Multidimensional Poverty Measurement

By Sabina Alkire and James Foster

**Abstract** Drawing on the capability approach advanced by Amartya Sen and others, a number of authors and institutions have begun to develop methods of comparing multidimensional poverty and deprivation. A particularly critical issue is the set of problems relating to identification: when is a person considered to be poor? If a person who is poor in *any one* of the many dimensions counts as poor, we use a union approach. This is often considered too generous. If we focus only on the set of persons who are poor in *every* dimension, we adopt the intersection approach, which is often considered too constricting. Following Sen (1976), many approaches to poverty measurement have recognized the distinction between the identification and aggregation methods. Existing multidimensional poverty measures rely on various aggregation rules in order to modify the identification of who is poor to lie between union and intersection. In contrast, the identification method itself has received significantly less attention yet it is particularly influential in multidimensional poverty measures. This paper is a first step towards addressing this oversight.

We present a simple new identification method using a dual cutoff approach, that (i) can be applied prior to any additive aggregation technique that aggregates first across persons, such as adjusted headcount, the FGT family of measures, or the Foster-Shorrocks family of decomposable measures (ii) satisfies certain basic axiomatic properties for uni- and multi-dimensional poverty measures (iii) can accommodate ordinal as well as cardinal data, although some properties are available only with ordinal data and (iv) can apply equal weights or general weights, and (v) is highly intuitive, thus useful for empirical measures, and for fostering public discussion. We generalize the new identification method for cardinal data. A brief digression demonstrates that this measure links to Pattanaik and Xu's characterizations of freedom, and a final empirical application demonstrates the usefulness of the identification method in conjunction with various multidimensional poverty measures.

The structure of the paper is as follows. First, we review standard unidimensional poverty measures and axioms, as these lay a foundation for our departure into multidimensional space. Next we clarify the issues this paper will and will not address and explain our identification strategy intuitively. The paper then traces through this identification strategy for cardinal data and the  $P_\alpha$  family of poverty measures and identifies the axioms that are satisfied. It then extends the identification strategy to the full ordinal case, and the mixed cardinal-ordinal and scrutinizes the properties of such measures. Thus far all discussion has employed equal weights for each dimension; now we demonstrate how to modify the identification strategy for general weights. The empirical application illustrates the core strategy and the modifications discussed, drawing on data from Indonesia and the USA.