Poverty, Deprivation and Time

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Abstract

We examine the measurement of individual poverty and deprivation in an intertemporal context. Suppose we observe individual incomes in a society over several years. A dynamic individual poverty (or deprivation) index is employed to compare matrices composed of these individual income streams. Earlier approaches to the measurement of poverty with a fixed poverty line over time usually employ independence properties with respect to the order of aggregation across individuals and across time periods. These independence conditions are based on the following notion of separability.

Suppose first that, in addition to the intertemporal aggregate poverty measure, there exist per-period indices that measure, in each period t, poverty in that period. That is, in each period t, incomes are aggregated across individuals in order to arrive at aggregate poverty in period t. Once these per-period poverty values are calculated, intertemporal poverty is assumed to be obtainable in a second step by aggregating these per-period values across all periods under consideration. Thus, this two-stage method proceeds by first aggregating across individuals and then across periods by using the per-period index values obtained in the first step.

As a second possibility, consider the reverse order of aggregation. Suppose there exist individual intertemporal measures of poverty that assign, for each individual n, an individual intertemporal poverty gap as a function of the incomes of n in each period and the fixed poverty line. The second step then proceeds by aggregating these individual poverty gaps into a societal intertemporal measure of poverty.

The standard independence property imposed in this setting consists of requiring that the order in which the two aggregation steps are performed is irrelevant: no matter whether we aggregate over time periods first or over individuals first, the same index value results.

The second of the above-described procedures is limited to situations where there is a fixed poverty line and the individual poverty gaps can be calculated without reference to the incomes of others. As soon as we want to consider poverty measurement where the poverty line may depend on the income distribution under consideration, that is a relative poverty line, this aggregation of one individual's incomes across periods is no longer well-defined. The same observation applies to the measurement of deprivation: because an individual's deprivation depends on the incomes of others in the society (namely, those who are better off), it is not possible to calculate an individual intertemporal measure of deprivation based on that individual's incomes alone.

In this paper, we retain the first aggregation procedure but dispense with the second, thus making our approach more widely applicable. We focus on the phenomenon of persistence in states of poverty or deprivation in the sense that we assume consecutive periods in poverty to be worse, ceteris paribus, than the same number of periods in poverty when these are interrupted by periods of non-poverty. We characterize a class of poverty measures and of deprivation indices with this property and illustrate the difference this new approach makes by comparing the resulting poverty values when applied to EU data.

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