Intertemporal Poverty Comparisons

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This paper deals with the problem of making general comparisons of well-being when wellbeing is measured in multiple dimensions. We note at the outset that much of the literature on the measurement of well-being incorporates multiple dimensional indicators of well-being by adding them up, such as when food and non-food expenditures are aggregated to compute total expenditures and assess monetary poverty — essentially returning to a univariate analysis. In some cases, these procedures may be perfectly appropriate. In others, however, it could be that specific aggregation rules to sum up the dimensions may be somewhat arbitrary or objectionable, especially when the dimensions cannot be considered evidently comparable or perfectly substitutable in generating overall well-being. This then leaves open the possibility that two equally admissible rules for aggregating across several dimensions of well-being could lead to contradictory findings and/or policy guidance.

One way to address this problem is through the use of general multidimensional dominance procedures, as in Atkinson and Bourguignon (1982), Bourguignon (1989), or Duclos et al. (2006). These are indeed useful procedures that make few assumptions on the nature of the procedures needed to measure well-being. First-order dominance comparisons for instance do not impose any assumption of cardinality on the dimensional indicators of well-being. Because of this, they can generate very robust multidimensional comparisons of well-being. These weak assumptions come at the cost of a limited power to order distributions of multidimensional well-being. It would seem, however, that they could be strengthened in several settings. One such setting is when the dimensional indicators have a cardinal value that can be compared across dimensions. Examples include the measurement of household poverty (using the incomes of the members of the same household as dimensions, without assuming perfect income pooling); the measurement of household child well-being (using the health or the nutritional status of children of the same household as dimensions); or the measurement of household education (using the education of the members of the same household as dimensions).

We explore this in this paper by building on the natural cardinality of multi-period incomes, which makes it possible to compare them in more specific ways than has been done until now. In contrast to some of the earlier work on multi-period poverty comparisons, this paper's objective is to develop procedures to check for whether intertemporal poverty comparisons can be made robust to aggregation procedures and to choices of multi-period poverty lines. The comparisons can then be made "poverty-measure robust," namely, valid for broad classes of aggregation rules across individuals and also for broad classes of aggregation rules across time. The comparisons can then also be "poverty-line robust," in the sense of being valid for the choice of any temporal poverty frontier over broad areas.

One of the first conceptual challenges of temporal poverty analysis is deciding who is "time poor". The literature distinguishes between intersection and union definitions of time poverty. Measuring well-being across two time periods, say, a person can be considered poor if her income falls below an income poverty line in both periods or in either period. This can be defined respectively as intersection and union definitions of temporal poverty. The procedures that we develop are valid for both definitions — and also valid for any choice of intermediate definitions for which the poverty line in one time period is a function of well-being measured in the other. This allows thinking of temporal "poverty frontiers", with the shape of that frontier determined by whether we are interested in union, intersection, or intermediate temporal poverty measures.

The paper also considers the normative effect of mobility in the measurement of poverty across time and across individuals. With the increased availability of longitudinal data sets, it is now well known that there is significant movement in and out of poverty as well as within poverty itself. Income mobility has two welfare impacts. The first is to make the distribution of "permanent" incomes more equal than the distribution of periodic incomes. Inequality averse measures of poverty would therefore tend to be lower when based on permanent incomes. Mobility also introduces temporal variability, which has the effect of increasing measures of union poverty. If individuals would prefer their incomes to be distributed as equally as possible across time (because they are risk averse), then income mobility also introduces a negative well-being effect.

This paper thus also touches upon the distinction between chronic and transient poverty. Distinguishing between these two types of poverty can be important for both descriptive and policy purposes. Indeed, not only is "permanent" or "chronic" poverty different in a normative and measurement perspective from "temporary" or "transient" poverty, but the difference between the two is also likely to call for distinct policy responses, as argued for instance in and Jalan and Ravallion (1998).

The paper is organized in the following manner. The next section elaborates on Duclos et al.'s (2006) first-order dominance criteria so as to extend the power of the dominance tests. While an increase in the power of dominance tests is traditionally obtained by emphasizing within-attributes inequalities, we propose here to make use of symmetry and asymmetry properties, that is to introduce assumptions on how permutations of a given multi-period income profile should be ranked. Since it is often supposed that individual prefer smoothed income patterns, the initial perspective is changed in the next section so as to explicitly take into account intertemporal inequalities when the inequality view is known. Section 3 reconsiders the propositions made in the previous sections so as to suggest a dominance criteria when the type of inequality preferences are unknown. The results are illustrated using the EU-SILC data.