

Absolute poverty measurement with minimum food needs: A new inverse method for developed countries

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Abstract

Produced as part of the European Commission’s ”Measuring and monitoring absolute poverty (ABSPO)” project, this paper explores the methodological feasibility of calculating absolute poverty lines on the basis of minimum food expenditures in developed countries. It makes three main contributions along the way. First, it demonstrates that the standard statistical methods used in the developing world deliver either too low or too high poverty rates as a result of households’ low food expenditure shares. Second, it proposes a new simulation-based inverse method that focuses on non-food expenditures and uses the food reference budgets not as inputs but as targeted reference points for absolute poverty measurement. Finally, the empirical application of the new method on the 2015 wave of EU-HBS data delivers a new set of absolute poverty estimates for all (but a few) EU Member States. The proposed method is no more sensitive to the choice of food budget inputs and expenditure definition than other anchored methods in use, and can pave the way for systematic absolute poverty measurement in developed countries.

Absolute poverty lines are often calculated in relation to a predetermined food reference budgets. This is made possible by a relatively straightforward definition of individuals’ nutritional needs and reference diets, the widespread availability of food prices, and the observed regularities in household spending. While it is theoretically possible to determine households’ minimum non-food expenditures in the same bottom-up way, the practical difficulties are numerous: basic non-food needs are typically quite diverse and lack the obvious anchor (e.g. such as nutritional requirements for food) that could allow for dependable reference basket representation, while non-food prices are often considerably more variable than food prices. This is even more so in developed pluralistic societies where individual lifestyles and circumstances tend to be very heterogeneous.

Therefore, most existing methods for absolute poverty measurement are based on a pre-determined appropriate food poverty line, and statistical methods using household budget survey data to determine overall poverty lines on that basis. In most cases, the practical problem boils down to the question of how to account for households’ non-food spending and what part of it to consider for inclusion in the poverty line. An established solution is to consider, either parametrically or not, the average level of non-food expenditures of those households whose actual food expenditures are equal to the food poverty line. This so-called ”traditional” approach takes an agnostic view regarding the necessity of households’ non-food spending, based on the argument that, in complete demand systems, households ”extra” resources should be split between food and non-food spending. The alternative so-called ”austere” approach suggested

by Ravallion and Bidani (1994) focuses instead on the non-food spending of those households whose *total* expenditures equal the minimum food threshold. The underlying argument here is that if a household with barely the ability to obtain the minimum food basket chooses to divert some of its resources to non-food spending, this latter clearly needs to be essential and justifiably included in the poverty line.

Since absolute poverty measurement has traditionally been the domain of developing countries with relatively low non-food expenditure shares, the practical relevance of this choice does not matter that much. This is not the case in the context of developed countries where the non-food share of household spending is often as high as 80 percent, and the application of the "traditional" and "austere" methods lead to completely different poverty estimates. Given the renewed interest in absolute poverty measurement in high-income countries of the EU and the OECD in recent years, it is of supreme academic and policy interest to assess the conceptual validity and methodological implications of calculating poverty lines directly on the basis of minimum food expenditures outside of the developing world.

This paper sets out to deliberate these issues and makes three distinct contributions along the way. First, it demonstrates that the two standard approaches currently in use are not applicable in the context of developed countries where the food share of household expenditures is low. In particular, it shows how the "traditional" approach overstates the true extent of poverty due to its inability to differentiate between necessary and non-necessary non-food spending, and why the "austere" approach proposed by Ravallion and Bidani (1994) delivers not only inappropriately low but also unreliable poverty estimates when applied in rich societies. Second, the paper proposes a simulation-based inverse method for correctly implementing the Ravallion and Bidani (1994) method in the context of developed economies. The core of the method is to exploit the symmetry of the underlying demand system and focus on the Engel curve associated with non-food expenditures, while using the available food reference budgets not as inputs but as reference points during the estimation procedure. Among the hypothetical non-food budgets used as inputs, one chooses the one that minimises the distance between actual and predicted food budgets. Third, the paper implements an empirical application of the proposed method using EU-HBS data from 2015 and cross-country comparable food reference budgets. The resulting new absolute poverty estimates accurately identify and capture the concentration of poverty across different segments of the population. This is in contrast to the straightforward application of either the "traditional" or the "austere" method, which severely over- and underestimate the extent and within-country distribution of poverty in Italy. The empirical analysis also reveals that the proposed method is rather sensitive to the choice of food budgets and expenditure definitions used, but not more so than alternative anchored methods of its kind. Importantly, the new poverty estimates are robust not only to the regression specification and potential sampling issues, but also to inherent features of the proposed methodology (e.g. the specification of hypothetical non-food expenditure thresholds used as inputs).

JEL Classification: C10, C63, D12, E20, G50, I32

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References

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