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Poverty estimation using small area estimation

Topic 2 – Learning more from what we already know

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Introduction

Having detailed and accurate information on economic and social conditions, summarised by appropriate one-dimensional, multidimensional and composite indicators, is imperative for the efficient implementation of policies. The term detailed is used to signify information that extends beyond aggregate levels into highly disaggregated geographical and other domains (e.g. demographic groups). The term accurate refers to information that is estimated with appropriate level of precision and is comparable over time and space. Simply analysing data from National sample surveys is not enough for achieving the dual target of detailed and accurate information. This is due to the reduction of the sample sizes as the level of detail required increases. For achieving this dual target one must employ appropriate methodology collectively referred to as Small Area Estimation. In our talk the focus is on model-based methods that efficiently borrow strength over space and time for attaining higher precision without the need for increasing the sample size.

Methods / Problem statement

For longer than a decade, small area methodologies have been developed independently by econometricians and statisticians working in small area estimation. Small area estimation of key economic variables, including poverty, has also been at the centre of methodological and applied work in National Statistical Institutes and international organisations. In this talk we will present an up-to-date review of model-based methodologies for small area estimation. This will include both parametric methods, based on the use of random effects models, and semi-parametric methods that relax some of the parametric assumptions. The focus of the talk will be on methods for estimating non-linear income-based indicators such the incidence of poverty and the poverty gap, inequality indicators e.g. the Gini coefficient, and the quantiles of the income distribution. Emphasis will also be placed on describing the challenges for estimating the uncertainty associated with the small area estimates. Finally, the talk will review additional practical challenges for implementing small area methodologies -primarily focusing on issues around access to and use of survey, Census and administrative micro-data- and how these might be solved.

Results / Proposed solution

Numerical examples -using real data- will be included for illustrating the methodologies and the challenges with using these methodologies.

Conclusions

The aim of this talk is to bring the audience up-to-speed with the state of the art in modelbased small area estimation of deprivation indicators. The talk will have an applied focus illustrating the methodological and data challenges and proposing possible solutions.