Improving estimates from the Survey on Household Income and Wealth using administrative data with measurement error via structural equation models

M. Giovanna Ranalli

University of Perugia

The scope of this study is to estimate the value of the main residence owned by Italian households integrating survey and administrative data. The Survey on Household Income and Wealth (SHIW) gathers data on owners' value assessment, that is subject to measurement error because of the difficulty in understanding the concept, misperception, or social desirability bias. Administrative data from the Italian Real Estate Market Observatory (OMI) provide an approximation of the market value, based on average prices of transactions in specific micro-zones and on the cadastral annuity, which might not precisely reflect the actual properties' values. Since none of the two sources – SHIW and OMI – can be considered error-free and used as a benchmark, we propose to employ a structural equation model to extract the true latent value of the main residence from the two imperfect measures and model it as a function of covariates. Metadata from the fieldwork are included to model the measurement error of the survey data from SHIW, while auxiliary information on the quality of the administrative data source is also introduced into the model. The proposed approach allows to obtain an estimate of the underlying true housing value and to assess the magnitude of the measurement error in survey and administrative data. The estimate of the true housing value is used to replace original value in SHIW to produce Horvitz-Thompson type estimates of totals and means. To estimate the overall variance of the final estimates (that accounts for the complex sampling design and for model variability), we use a combined approach that uses bootstrap (for the model component) and jackknife (for the design component).

Co-authors: Roberto Benedetti, Andrea Neri and Eleonora Porreca