The application of a two-level model to the Dutch Business Survey

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Abstract

The Dutch Structural Business Survey (SBS) is an annual survey that measures the total production of the Dutch enterprises and describes the cost-benefit structure of the different economic sectors. The primary publication cells are given by the so-called industries that are based on the economic classification of the enterprises. The official statistics of national statistical offices are preferably based on empirical evidence and as little as possible on model assumptions. Design-based or model-assisted methods like the generalized regression estimator (GREG) are therefore preferred in general. The sample sizes of the industries, however, are too small to produce reliable figures based on the GREG. This is especially due to the influence of outliers. For this reason, a model-based approach is considered based on the theory of small area estimation (Rao, 2003). By applying a multilevel model information can be borrowed from other industries to improve the accuracy of the estimates. For the estimation of the total turnover there are some covariates available like tax-turnover, number of persons employed and age of the enterprise. Based on this information we have constructed a two-level model. By means of a case study the multilevel approach is compared with the GREG. In this talk we present the two-level model and show the results of the case study.

Keywords

Small area estimation, Multilevel models, Outliers.

References

Rao, J.N.K. (2003). *Small Area Estimation*. New York: John Wiley.