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Robust linear static panel data models using ε-contamination[☆]

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Abstract

The paper develops a general Bayesian framework for robust linear static panel data models using ε -contamination. A two-step approach is employed to derive the conditional type-II maximum likelihood (ML-II) posterior distribution of the coefficients and individual effects. The ML-II posterior means are weighted averages of the Bayes estimator under a base prior and the data-dependent empirical Bayes estimator. Two-stage and three stage hierarchy estimators are developed and their finite sample performance is investigated through a series of Monte Carlo experiments. These include standard random effects as well as Mundlak-type, Chamberlain-type and Hausman-Taylor-type models. The simulation results underscore the relatively good performance of the three-stage hierarchy estimator. Within a single theoretical framework, our Bayesian approach encompasses a variety of specifications while conventional methods require separate estimators for each case.

Keywords: ε-contamination, hyper g-priors, type-II maximum likelihood posterior density, panel data, robust Bayesian estimator, three-stage hierarchy.

JEL classification: C11, C23, C26.

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