Abstract:

The applied economist is often interested in computing an average with respect to a distribution of unobservables. Common examples are moments or distributions of individual fixed-effects, average partial effects in discrete choice models, or counterfactual policy simulations based on a structural model. We consider posterior estimators of such effects, where the average is computed conditional on the observation sample. While in various settings it is common to "shrink" individual estimates -- e.g., of teacher value-added or hospital quality -- toward a common mean and reduce estimation noise, a study of the frequentist properties of posterior average estimators is lacking. We establish two robustness properties of posterior estimators under misspecification of the assumed distribution of unobservables: they are optimal in terms of local worst-case bias, and their global bias is no larger than twice the minimum bias that can be achieved within a large class of estimators. These results provide a theoretical foundation for the use of posterior estimators. In addition, our theory suggests a simple measure of the information contained in the posterior conditioning. For illustration, we consider two empirical settings: the estimation of the distribution of neighborhood effects in the US, and the estimation of the densities of permanent and transitory components in a model of income dynamics.