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A Minimax Algorithm for Calculating Statistical Tests Under Generalized Moment Conditions

In decision theory, statistical tests subject to generalized moment conditions can be obtained as solution of two stage optimization problems of the form $\min\limits_{n,c} \sup\limits_{\pi\in\Gamma} \int\limits_{\Theta} R(n,c,\theta)d\pi(\theta)$. One of the main difficulties here is the maximization of the integral of the risk function over a set Γ of probability measures. We use the theory of linear semi-infinite optimization and exploit quasiconvexity properties of the outer minimization problem to construct a very efficient exact algorithm. Under a regularity condition, we prove the convergence of our algorithm. Numerical examples are reported.

Ref. R. Fandom Noubiap, Discussion Papers in Statistics and Quantitative Economics, Universität der Bundeswehr Hamburg, 77, 81 (1997).