

Title:

**Inference for Identifiable Parameters in Partially Identified Econometric Models**

Author(s):

**Joseph P. Romano and Azeem M. Shaikh**

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**Abstract:**

This paper considers the problem of inference for partially identified econometric models. The class of models studied are defined by a population objective function  $Q(\theta, P)$  for  $\theta \in \Theta$ . The second argument indicates the dependence of the objective function on  $P$ , the distribution of the observed data. Unlike the classical extremum estimation framework, it is not assumed that  $Q(\theta, P)$  has a unique minimizer in the parameter space  $\Theta$ . The goal may be either to draw inferences about some unknown point in the set of minimizers of the population objective function or to draw inferences about the set of minimizers itself. In this paper, the object of interest is some unknown point  $\theta \in \Theta_0(P)$ , where  $\Theta_0(P) = \arg \min_{\theta \in \Theta} Q(\theta, P)$ , and so we seek random sets that contain each  $\theta \in \Theta_0(P)$  with at least some prespecified probability asymptotically. We also consider situations where the object of interest is the image of some point  $\theta \in \Theta_0(P)$  under a known function. Computationally intensive, yet feasible procedures for constructing random sets satisfying the desired coverage property under weak assumptions are provided. We also provide conditions under which the confidence regions are uniformly consistent in level. To do this, we first derive new uniformity results about subsampling that are of independent interest.