Sensitivity in Partially Identified Semiparametric Models

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Proposal Description:

This project considers inference on a finite dimensional parameter of interest in a semiparametric probability model when an infinite dimensional nuisance parameter is present. We depart from the semiparametric literature in that we do not require that the model parameters to be point identified. We construct confidence regions for the finite dimensional parameters of interest that are robust to non-point identification. This allows practitioners to examine the sensitivity of their estimates of parameter of interest to specification of nuisance function in a semiparametric likelihood setup. To construct these confidence regions, we invert a profiled sieve likelihood ratio (LR) statistic. The asymptotic null distribution of the profiled sieve LR is nonstandard when the parameter is set identified (but is Chi-squared distributed if the model parameter is happened to be point identified). We show that a weighted bootstrap procedure consistently estimates this complicated distribution's quantiles. Some old Monte Carlo studies of a semiparametric dynamic binary response panel data model indicate that our weighted bootstrap procedures performs adequately in finite samples. But we now propose two new bootstrap procedures and we would like to run additional Monte Carlo studies to access the new procedures' finite sample performance.

Requisite Skills and Qualifications:

Need excellent skills in computer programming say R or Matlab, as well as some basic statistics or econometrics background.

Award: David
Tobin Application Link: Tobin Application
Project Type: Tobin RA
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