COLLOQUIUM

DEPARTMENT OF MATHEMATICS AND STATISTICS
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Partial Identification of Treatment Effect in Binary Outcome Models: Bivariate Probit, Mis-specification and an Application to Health Insurance and Dental Service Utilisation

Abstract

Recent developments in the literature of partial identification have significant implications for the econometric estimation of important policy effects. In empirical economics, it is often of interest to estimate the effect of a binary policy treatment variable on a binary outcome variable where the treatment allocation is not random and both may be driven by common observable and unobservable factors. A common approach is to assume a parametric model, such as a bivariate probit, to achieve point identification. However such approach is often termed "identification by functional form" and there is often confusion regarding the identification without instrumental variables. Partial identification analysis of such problems allows for less restrictive assumptions for the underlying data generating process (DGP) in empirical applications, and the estimated bounds offer more robust measures for policy impacts. This talk presents Monte Carlo results on finite sample performance of average treatment effect (ATE) estimates from correct and mis-specified models, and the role played by the strength of the instrumental variables. We also graphically illustrate how both the correct- and mis-specified model estimates can all be sitting within the ATE bounds. Finally we apply the partial identification approach to a health economics application. We estimate the bounds for ATE of private health insurance status on dental service utilisation, using data from the Australian National Health Survey. Four sets of bounds from the literature under varying DGP assumptions and their 95% confidence regions are estimated. The resulted ATE confidence bounds are much wider than the confidence intervals using a conventional bivariate probit. We found that two of the bounds have reasonably narrow widths to be informative. We also estimate bounds for different sub-populations with varying widths. Performances of global parametric, local parametric, and smoothed and raw non-parametric estimators for bounds are studied using generated data.

Tuesday, October 25, 2016
1:30 – 2:30 PM
Room 386 MSC

(Refreshments at 1-1:30 PM in the kitchen area adjacent to 368 MSC)