Title:

Bivariate Probit Model, Partial Identification and Treatment Effect of Health Insurance on Dental Visits

Abstract:

Recent developments in the literature of partial identification have significant implications for the econometric estimation of policy eff ects. In empirical economics, it is often of interest to estimate the eff ect of a binary treatment variable on a binary outcome variable where both may be driven by common unobservable factors. A typical approach is to assume a parametric model, such as a bivariate probit (BVP), together with the use of instrumental variables to achieve point identification. Partial identification analysis allows for less restrictive assumptions for the underlying data generating process (DGP) in empirical applications, and the estimated bounds for the treatment effect estimated under this framework off er more robust measures for policy impacts. This paper examines the notion of "identification by functional form" for binary outcome and binary treatment models by providing a bridge between the literature on the recursive BVP model and that on partial identification. We evaluate the impact of functional form specification on the performance of maximum likelihood estimators and quasi maximum likelihood estimators (QMLE) based upon the recursive BVP model, and we also investigate the practical importance of available instruments. We

find a “compensating effect” so that the QMLE based upon grossly mis-specified RBVP performs reasonably well for average treatment effect (ATE) estimates. We calculate ATE bounds previously derived by Chesher (2010) and use these to demonstrate how the properties of the QMLE estimator are explicable via a link between the notion of pseudo-true parameter values and the concepts of partial identification. Finally, we apply these to the estimation of the ATE of private health insurance on dental visits by calculating four sets of bounds from the literature under varying DGP assumptions and their 95% confidence regions.