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Minimum Distance from Independence Estimation of Nonseparable Instrumental Variables Models

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Abstract

I develop a semiparametric minimum distance from independence estimator for a nonseparable instrumental variables model. An independence condition identifies the model for many types of discrete and continuous instruments. The estimator is taken as the parameter value that most closely satisfies this independence condition. Implementing the estimator requires a quantile regression of the endogenous variables on the instrument, so the procedure is two-step, with a finite or infinite-dimensional nuisance parameter in the first step. I prove consistency and establish asymptotic normality for a parametric, but flexibly nonlinear outcome equation. The consistency of the nonparametric bootstrap is also shown. I illustrate the use of the estimator by estimating the returns to schooling using data from the 1979 National Longitudinal Survey.

JEL classification: C14; C20; C51

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