

Abstract

## **"Bayesian Nonparametric Model for Nonseparable Instrumental Variable Regression"**

We propose a flexible Bayesian model for estimation of nonseparable instrumental variable regressions with a univariate endogenous covariate and a univariate unobservable responsible for endogeneity. Our model uses recently developed nonparametric priors for conditional distributions based on covariate dependent mixtures that deliver optimal adaptive posterior contraction rates in settings with discrete and continuous variables under possible smoothness and sparsity. We develop posterior concentration results for reduced form parameters, bounds on the identified sets for average structural functions, and a Markov chain Monte Carlo algorithm for the model. The proposed methodology provides a simple parametric baseline model that can be gradually extended to more flexible parametric models and ultimately a nonparametric one by increasing the number of mixture components or setting a prior on it. Thus, robustness to nonlinearities, nonseparability, heteroskedasticity and other deviations from the baseline can be gradually introduced in a computationally tractable way. We illustrate the model performance in simulations and applications.