Identification in Static and Dynamic Semiparametric Discrete Response Panel Data Models

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Fisrt version: April 11, 2017

Abstract

We analyze identification in dynamic and static semiparametric models of discrete choice under general conditions. This class of models is increasingly important in trying to fit choice data while allowing for state dependence, dynamics, and heterogeneity. First, we characterize the sharp set for latent utilities parameters in a dynamic panel data model of binary choice under conditional exchangeability. The analysis is general in that we allow for no covariates, discrete covariates, time trends and/or time dummies and we do not require the existence of continuous regressors. The identified set can be characterized by a union of convex polyhedrons. Second, we show the assumption that the unobserved utility components are stationary and independent over time conditional on observables has no identifying power on top of conditional exchangeability condition. Third, we derive the identified set under full independence and show that this set may not coincide with the approach used in Honoré and Kyriazidou (2000). We extend our identification approach to multinomial choice models (both static and dynamic).

Keywords: Multinomial Choice, Dynamic Panel Data, Identification.

TODO:

1. $T = 3$, $t = 0, 1, 2$. Now consider the model

$$y_{it} = 1[\gamma y_{it-1} + \alpha_i + \epsilon_{it} \geq 0]$$

Consider $(\epsilon_{i1}, \epsilon_{i2})|\alpha_i$ is bivariate normal with correlation ρ