Abstract

In this paper, I show that continuous permanent unobserved heterogeneity is point identified in dynamic discrete choice (DDC) models. That is, DDC models with infinitely many 'types' of agents are identified. My result generalizes the canonical papers of Kasahara and Shimotsu (2009) and Hu and Shum (2012) which require the number of agent types to be finite. Relative to those papers, I exploit commonly imposed assumptions to show identification can be attained under low-level conditions. My results apply to both finite- and infinite-horizon DDC models, do not require a large support assumption, and place no parametric restriction on the distribution of unobserved heterogeneity.

The results provide a number of advantages for applied work. First, commonly used structural models can be estimated with more flexible heterogeneity. Second, my results do not require that the number of types is known *a priori*. Although there is rarely a theoretical reason for the number of types to be known, it is a common assumption in applied and theoretical work. Finally, the proposed seminonparametric estimator can be implemented using familiar parametric methods. In particular, I show consistency of a sieve M-estimator that approximates the possibly continuous distribution of unobserved heterogeneity with a discrete distribution in the fashion of Heckman and Singer (1984). I illustrate these advantages by applying my results to the labor force participation model of Altuğ and Miller (1998). In this model, permanent unobserved heterogeneity may be interpreted as individual-specific labor productivity, and my results imply that the distribution of labor productivity can be consistently estimated from the participation model.