Statistics Seminar

Department of Mathematical Sciences

DATE:	Thursday, Month 31, 2017
TIME:	1:15pm – 2:15pm
LOCATION:	WH 100E
SPEAKER:	Ruiqi Liu, Binghamton University
TITLE:	Identification and estimation in panel models with overspecified number of groups

Abstract

In this paper, we provide a simple approach to identify and estimate group structure in panel models by adapting the M-estimation method. We consider both linear and nonlinear panel models where the regression coefficients are heterogeneous across groups but homogeneous within a group and the group membership is unknown to researchers. The main result of the paper is that under certain assumptions, our approach is able to provide uniformly consistent group parameter estimator as long as the number of groups used in estimation is not smaller than the true number of groups. We also show that, with probability approaching one, our method can partition some true groups into further subgroups, but cannot mix individuals from different groups. When the true number of groups is used in estimation, all the individuals can be categorized correctly with probability approaching one, and we establish the limiting distribution for the estimates of the group parameters. In addition, we provide an information criterion to choose the number of group and established its consistency under some mild conditions. Monte Carlo simulations are conducted to examine the finite sample performance of our proposed method. Findings in the simulation confirm our theoretical results in the paper. Application to labor force participation also highlights the necessity to take into account of individual heterogeneity and group heterogeneity.