NEW YORK UNIVERSITY
NYU STERN
LEONARD N. STERN SCHOOL OF BUSINESS

Session FB4: 11:00 – 12:30, Rm. 4-60
Panel Data and Heterogeneity
Session Chair: William Greene

A Panel Data Model with Nonparametric Time Effects
Robin Sickles, Mike Tsionas

This paper considers two models for uncovering information about technical change in large heterogeneous panels. First, we consider a panel data model with nonparametric time effects. We propose Bayesian inference techniques organized around MCMC to implement the model. Second, we consider panel data models with common factors whose number is unknown and their effects are firm-specific. We propose Bayesian inference techniques organized around MCMC to implement the models. The new techniques are applied to the data of Brynjolfsson and Hitt [Computing productivity: firm level evidence, Review of Economics and Statistics, 2003, 85(4):793-808] on the effect of computerization on productivity and output growth for 527 large U.S. firms over 1987-1994. The results are compared with the popular CSS class of estimators.

Estimation of Stochastic Frontier Models with Fixed Effects Through Monte Carlo Maximum Likelihood
Grigorios Emvalomatis, Spiro Stefanou, Alfons Oude Lansink

- Objective: Issues surrounding the estimation of stochastic frontier models with panel data continues to attract considerable attention. Most attempts still come up short on distinguishing between unobserved heterogeneity and ine_ciency, or assume independence between the group effects and the regressors. Application of the typical fixed-effects estimator in nonlinear models is confounded by the incidental parameters problem. An increasing volume of literature address solutions to the incidental parameters problem via simulation. Our paper proposes another simulation-based estimator that allows for the group effectsto be correlated with the explanatory variables. We explore the properties of this estimator in a Monte Carlo experiment.
- Methodology and Experiment Setup: The method of Simulated Maximum Likelihood comes in di_erent avors. Here we use theapproach proposed by Gelfand and Carlin (1993) which fixes a vector θ_0 in the parameter space of θ and then expresses the marginal (with respect to the group e_ects) likelihood function as an expectation that involves both θ and θ_0. The benefit from this approach is that the density of the group effects is based only on the observed data and θ_0. When sampling from this density it is possible to take into account the correlation between the e_ects and the regressors. An additional assumption is necessary however. We assume that the distribution of the effects marginally with respect to the dependent variable are independent of the specific values of the parameters. A Monte Carlo experiment is used to investigate the performance of the proposed es- timator. A stochastic frontier model with two explanatory variables is specified and the parameters are estimated in 200 samples for 3, 5, 8 and 10 time-observations per group. The estimator is compared with the "true" fixed-effects estimator, where the likelihood function is maximized with respect to θ and the nuisance parameters. Observation-specific estimates of the inefficiency component of the error term are also compared between esti- mators.
- Results: The results suggest that the proposed estimator is virtually unbiased with as few as 5 time-observations per group. It also produces relatively accurate observation-specific estimates of efficiency scores, slightly outperforming the "true" fixed-effects estimator.