MINGLI CHEN

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EDUCATION

Ph.D., Economics, Boston University, Boston MA, May 2015 (expected)
  Dissertation Title: *Research Related to High Dimensional Econometrics*
  Dissertation Committee: Pierre Perron, Iván Fernández-Val, Marc Rysman, Victor
    Chernozhukov (MIT)

B.A., Information and Computing Science, Shanghai University, Shanghai, China, July 2009

FIELDS OF INTEREST

Econometrics, Time Series Econometrics, Financial Econometrics, Empirical IO

TEACHING EXPERIENCE

Teaching Assistant, Statistics for Business and Economics, Department of Economics,
  Boston University, Spring 2011
Teaching Assistant, Introduction to Econometrics, Department of Economics, Boston
  University, Spring 2011

ACADEMIC WORK EXPERIENCE

Visiting Graduate Fellow, Federal Reserve Bank of Boston, August 2013 – present
Research Assistant, Professor Pierre Perron, Department of Economics, Boston University,
  Fall 2010, Spring 2014, Fall 2014
Research Assistant, Professor Iván Fernández-Val, Department of Economics, Boston
  University, Summer 2011-Spring 2012, Spring 2013- Fall 2013
Research Assistant, Professor Marc Rysman, Department of Economics, Boston University,
  Fall 2011, Spring 2012, Summer 2012, Fall 2012
Research Assistant, Professor Joshua Lustig, Department of Economics, Boston University,
  Summer 2011

FELLOWSHIPS, HONORS AND AWARDS

Travel Grant, Department of Economics, Boston University, June 2013
Dean's Fellowship, Boston University, Fall 2009–Spring 2011
Teaching Fellowship, Department of Economics, Boston University, Fall 2009, Spring 2010
Research Grant, Shanghai Government, China, Fall 2008 - Spring 2009
Academic Scholarship, Shanghai University, 2005-2009
Outstanding Graduate, Shanghai University, 2009
2nd prize, China Undergraduate Mathematical Contest in Modeling, October 2008

WORKING PAPERS
"Estimation of Nonlinear Panel Models with Multiple Unobserved Effects", October 2014
"Dating Structural Breaks using Lasso-Type Estimators" (with Pierre Perron), October 2013
"Interactive Fixed Effects in Nonlinear Panel Data Models with Large N, T" (with Iván Fernández-Val and Martin Weidner), May 2013
"Quantile Graph Estimation and Conditional Independence with Applications to Financial Risk Management" (with Alexandre Belloni and Victor Chernozhukov), July 2014

R-PACKAGES
"Rearrangement" (with Wesley Graybill, Victor Chernozhukov, Iván Fernández-Val and Alfred Galichon), published on the Comprehensive R Archive Network
"Counterfactual" (with Victor Chernozhukov, Iván Fernández-Val and Blaise Melly)

WORK IN PROGRESS
"Consumer Payment Choice: Heterogeneity in Transaction-Level Data" (with Marc Rysman)
"Bayesian Inference for Nonlinear Panel Data Models with Interactive Fixed Effects"

REFEREE EXPERIENCE
Journal of Econometrics, Journal of Business & Economic Statistics

CONFERENCES AND PRESENTATIONS
International Symposium on the Analysis of Panel Data, Xiamen University, June 2013
Boston University/Boston College Green Line Econometrics Meeting, Boston, MA, November 2013

LANGUAGES: English (fluent), Chinese (native)

COMPUTER SKILLS: R, Matlab, STATA, GAUSS, EViews, SPSS, SAS, Mathematica, Maple, AMPL, Lindo, Lingo, C, C++, AutoCAD, LaTeX, Microsoft Office

CITIZENSHIP/VISA: P.R. China/F1

REFERENCES

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Professor Victor Chernozhukov
Department of Economics
Massachusettes Institute of Technology
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Professor Marc Rysman
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October 1, 2014

MINGLI CHEN

Estimation of Nonlinear Panel Models with Multiple Unobserved Effects (Job Market Paper)
I propose a fixed effects expectation-maximization (EM) estimator that can be applied to a class of nonlinear panel data models with latent heterogeneity, which is modeled as individual effects and/or time effects. Of particular interest is the case of interactive effects, i.e. when the latent heterogeneity is modeled as a factor analytical structure. The estimator is obtained through an iterative two-step procedure, where the two steps have closed form solution. I show that EM-estimator is consistent in large panels and derive the asymptotic distribution for the case of the probit with interactive effects. I develop analytical bias corrections to deal with the incidental parameter problem. Monte Carlo experiments demonstrate that the proposed estimator has good finite-sample properties. I illustrate the use of proposed model and estimator with an application to international trade networks,

Dating Structural Breaks using Lasso-type Estimators (*with Pierre Perron*)
We propose using Lasso-type estimators to estimate both the number and timing of structural breaks simultaneously. In order to so, we translate the issue of estimating structural changes into one of consistent model/variable selection. We deal with the estimation of structural changes occurring at unknown dates both in the conditional mean and the conditional quantile functions, labelling the method as ℓ_1-QR for the latter. We derive the error bound and convergence rate for Lasso-type estimator under various combinations of weakly dependent and long memory regressors and errors. We also consider trend-stationary regressors. We show that as long as the break size is larger than the estimation error of the penalized estimator, Lasso and ℓ_1-QR can consistently estimate the various parameters with probability one as the sample size T increases. The method allows pure or partial structural change models as well as the case with breaks in some regressors with the number of regressors available potentially larger than T. The simulation results show that Lasso-type estimators work well in terms of correctly dating structural breaks under different data and error specifications. We provide an application to model level shifts in proxies for the volatility of S&P 500 and NASDAQ stock returns. Once the estimated level shifts are accounted for the evidence for the presence of long-memory disappears.

Interactive Fixed Effects in Nonlinear Panel Models with Large N, T (*with Iván Fernández-Val and Martin Weidner*)
Fixed effects estimator of nonlinear panel data models can be severely biased because of the well-known incidental parameter problem. We develop analytical and jackknife bias corrections for nonlinear models with unobservable interactive individual and time effects, which may be correlated with the regressors. The basis for the corrections are general asymptotic expansions of fixed effects estimators with incidental parameters in multiple dimensions under asymptotic sequences where both dimensions of the panel grow with the sample size. We apply the expansions to M-estimators with concave objective functions for panel models with interactive individual and time effects. These estimators cover fixed effects estimators of the most popular limited dependent variable models such as logit, probit, ordered probit, Tobit and Poisson models.

Quantile Graph Estimation and Conditional Independence with Applications to Financial Risk Management (*with Alexandre Belloni and Victor Chernozhukov*)
We propose using Quantile Graphical Models (QGMs) to characterize the interdependence of a set of random variables, even when the number of variables is large –possibly larger than the number of observations. In sharp contrast to the methods based on conditional mean, the approach is able to capture independence as well quantify dependence across variables in the *non-Gaussian* settings, which are ubiquitous in real applications. We estimate QGMs through a large collection of continuums of ℓ_1-penalized quantile regressions. We provide a theoretically valid choice of the penalty parameter, and establish rates of convergence. With the additional assumptions that coefficients are well-separated from zero, we can estimate consistently the graph associated with the conditional independence structure using hard thresholding. When focused on just the tail quantile indices, the QGM can be used to represent the tail interdependence of the variables. We show that the associated tail risk network can be used for measuring systemic risk contributions. We also illustrate the properties of our method through simulated and real examples, such as the study of financial contagion and hedging under a market downturn.

October 1, 2014