Xin Liu

CONTACT INFORMATION

Department of Economics
University of Missouri
118 Professional Building
Columbia, MO 65211

Email: xliu@mail.missouri.edu
or xl6f6@mail.missouri.edu
Tel: +1 573-239-8232
Website: liuxinecon.weebly.com

EDUCATION

Ph.D. Candidate, Economics, University of Missouri, GPA: 4.0/4.0 2016–2021 (expected)

Dissertation : "Contributions to the Theory and Methodology of Quantile Models with Endogeneity"

Year in the Ph.D. program: 5th year

M.S. in Mathematics, University of Missouri, expected in 2021, GPA: 4.0/4.0

DESIRED RESEARCH AND TEACHING FIELDS

Primary Fields: Econometric Theory, Applied Econometrics

Secondary Field: Applied Microeconomics

PUBLICATION

1. "Smoothed GMM in Quantile Models" ***Journal of Econometrics***, 213(1), 2019: 121-144. (with Luciano de Castro, Antonio F. Galvao and David M. Kaplan)

WORKING PAPERS

2. **"Panel Quantile Regression with Time-Invariant Rank"** *Job Market Paper*

3. **"Averaging Estimation for Instrumental Variables Quantile Regression"** *Submitted*

WORK IN PROGRESS

4. **"Smoothed GMM Inference for Quantile Models"**

5. **"The k-Class Estimator for Instrumental Variables Quantile Regression"**

6. **"Partial Identification in Panel Quantile Models with Time-Invariant Rank"** (with David M. Kaplan)

7. **"IVQR Bootstrap Averaging"** (Stata command/article)

ADDITIONAL RESEARCH EXPERIENCE

Research Assistant for Professor David M. Kaplan Fall 2019

"sivqr: Smoothed IV Quantile Regression" (Stata command)

TEACHING EXPERIENCE

Recitation Instructor — Department of Mathematics, MU

Precalculus — Fall 2015 – Spring 2016
- Taught 6 laboratory classes with 20–35 students each, for math and non-math majors.

Teaching Assistant — Department of Economics, MU

Introductory Econometrics, *Online Course* (Undergraduate/MA level) — Fall 2018, Spring 2020, Fall 2020

Introductory Econometrics, *In-person Class* (Undergraduate/MA level) — Fall 2018, Spring 2019, Spring 2020

General Economics (Undergraduate level) — Fall 2016 – Spring 2018

Tutoring — Department of Mathematics, MU

Tutoring lab for College Algebra, Calculus I, and Precalculus (Undergraduate level) — Fall 2015 – Spring 2016

CONFERENCE AND SEMINAR PRESENTATIONS

New York Camp Econometrics XV, Lake Placid, NY — 2021 (scheduled)

European Winter Meetings of the Econometric Society, Virtual — 2020 (scheduled)

Southern Economic Association 90th Annual Meeting, Virtual — 2020 (scheduled)

Missouri Valley Economic Association 57th Annual Conference, Virtual — 2020

Chinese Economists Society North America Conference, Lawrence, KS — 2019

Midwest Econometrics Group, Madison, WI — 2018

Mentee at Junior Female Economist Mentoring Workshop at MEG, Madison, WI — 2018

Brown-bag Seminar, MU — 2018, 2019

FELLOWSHIPS AND HONORS

Winemiller Excellence Award, MU — 2020
Campus-wide award for excellence in data-based research.

Harry Gunnison Brown Research Fellowship, Department of Economics, MU — 2019
Best PhD dissertation research award.

Conference Presentation Travel Award, MU — 2019, 2020

Chinese Economists Society Travel Fund — 2019

Summer Research Fellowship, MU — 2018, 2019

Department Travel Fund, Department of Economics, MU — 2018, 2020

Harry Gunnison Brown Graduate Student Fellowship, Department of Economics, MU 2017
Best PhD student performance in first-year coursework and qualifying examinations.

SKILLS

R (Advanced), Stata (Advanced), SAS, Matlab, GAUSS, Mathematica, LaTeX (Advanced)

REFERENCE

David M. Kaplan (chair)
Associate Professor
Department of Economics
University of Missouri
kaplandm@missouri.edu

J. Isaac (Zack) Miller
Professor
Department of Economics
University of Missouri
millerjisaac@missouri.edu

Shawn Ni
Professor
Department of Economics
University of Missouri
nix@missouri.edu

ABSTRACTS OF WORKING PAPERS

"Panel Quantile Regression with Time-Invariant Rank" *Job Market Paper* [Link]

I propose a quantile-based random coefficient panel data framework to study heterogeneous causal effects. The heterogeneity depends on unobservables, as opposed to heterogeneity for which we can add interaction terms. This connects it to other structural quantile models. My approach uses panel data to address "endogeneity," meaning dependence between the explanatory variables and the random coefficients. The random coefficient vector depends on an unobserved, scalar, time-invariant "rank" variable, in which outcomes are monotonic at a particular point. I develop the theory first in a simplified model and then extend results to a more general model. First, I establish identification and uniformly consistent estimation. Second, I use a Dirichlet approach to establish small-n confidence sets or uniform confidence bands of the slope function. Third, I establish asymptotic normality of the slope estimator in the simplified model by applying the functional delta method to the empirical process. This facilitates a bootstrap confidence interval for the slope estimator at each specific rank. Finally, I illustrate the proposed methods by examining the causal effect of a country's oil wealth on its political violence and military defense spending.

"Averaging Estimation for Instrumental Variables Quantile Regression" *Submitted* [Link]

This paper proposes averaging estimation methods to improve the finite-sample efficiency of the instrumental variables quantile regression (IVQR) estimator. First, I apply Cheng, Liao, and Shi's (2019) averaging GMM framework to the IVQR model. I propose using the usual quantile regression moments for averaging to take advantage of cases when endogeneity is not too strong. I also propose using two-stage least squares slope moments to take advantage of cases when heterogeneity is not too strong. The empirical optimal weight formula of Cheng et al. (2019) helps optimize the bias–variance tradeoff, ensuring uniformly better (asymptotic) risk of the averaging estimator over the standard IVQR estimator under certain conditions. My implementation involves many computational considerations and builds on recent developments in the quantile literature. Second, I propose a bootstrap method that directly averages among IVQR, quantile regression, and two-stage least squares estimators. More specifically, I find the optimal weights in the bootstrap world and then apply the bootstrap-optimal weights to the original sample. The bootstrap method is simpler to compute and generally performs better in simulations, but it lacks the formal uniform dominance results of Cheng et al. (2019). Simulation results demonstrate that in the multiple-regressors/instruments case, both the GMM averaging and bootstrap estimators have uniformly smaller risk than the IVQR estimator across data-generating processes (DGPs) with all kinds of combinations of different endogeneity levels and heterogeneity levels. In DGPs with a single endogenous regressor and instrument, where averaging estimation is known to have the least opportunity for improvement, the proposed averaging estimators outperform the IVQR estimator in some cases but not others.

Last updated: November, 2020