YAN LIU

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EDUCATION

Ph.D., Economics, Boston University, Boston MA, May 2025 (expected)
Dissertation Title: *Essays in Econometrics*
Main advisor: Hiroaki Kaido
Dissertation Committee: Hiroaki Kaido, Iván Fernández-Val, and Jean-Jacques Forneron

M.A., Economics, Kyoto University, Kyoto, Japan, 2018

B.A., Economics, Peking University, Beijing, China, 2015
B.S., Statistics, Peking University, Beijing, China, 2015

FIELDS OF INTEREST

Econometrics, Applied Microeconomics

PUBLICATIONS

"Asymptotic Properties of the Maximum Likelihood Estimator in Regime-Switching Models with Time-Varying Transition Probabilities," (with Chaojun, Li) *The Econometrics Journal*, (2023) 26(1): 67-87.

WORKING PAPERS

"Robust Counterfactual Analysis for Nonlinear Panel Data Models," September 2024. Job Market paper.
"Policy Learning under Endogeneity Using Instrumental Variables," March 2024.
"Model Selection Tests for Incomplete Models," (with Hiroaki Kaido), September 2024

PRESENTATIONS

2024 Asian Meeting of the Econometric Society in China, Hangzhou, China, 2024
IAAE 2024 Annual Conference, Xiamen, China, 2024
BU-BC Joint Workshop in Econometrics, Boston, MA, 2023
Midwest Econometrics Group 2022 Conference, East Lansing, MI, 2022
Young Economist Symposium 2022, New Haven, CT, 2022
16th International Symposium on Econometric Theory and Applications (online), 2022
2022 Australasia Meeting of the Econometric Society (online), 2022
IAAE 2022 Annual Conference, London, UK, 2022
2022 North American Summer Meeting of the Econometric Society, Miami, FL, 2022
2019 Asian Meeting of the Econometric Society, Xiamen, China, 2019
2018 Asian Meeting of the Econometric Society, Seoul, Korea, 2018

FELLOWSHIPS AND AWARDS

Best Second Year Paper Award, Department of Economics, Boston University, 2022

Dean's Fellowship, Boston University, 2019-2024
Foreign Student Scholarship, Nomura Foundation, 2018-2019
Outstanding Master's Thesis Award, Graduate School of Economics, Kyoto University, 2018
Asian Future Leaders Scholarship Program, Bai Xian Asia Institute, 2016-2018
Academic Excellence Award, Peking University, 2013
Leo KoGuan Scholarship, Peking University, 2013
Merit Student, Peking University, 2012
ICBC Scholarship, Peking University, 2012

WORK EXPERIENCE

Research Assistant to Professor Hiroaki Kaido, Boston University, Fall 2021, Fall 2022, Spring 2024
Research Assistant to Professor Pierre Perron, Boston University, Summer 2023-Present
Research Fellow (DC2), Japan Society for the Promotion of Science, 2019

REFEREE EXPERIENCE

Annals of Statistics

TEACHING EXPERIENCE

Teaching Assistant, Advanced Econometrics 1 (Ph.D.), Boston University, Spring 2021, Spring 2022, Spring 2023
Teaching Assistant, Empirical Economics 1, Boston University, Fall 2021
Teaching Assistant, Elementary Mathematical Economics, Boston University, Fall 2020
Teaching Assistant, Advanced Microeconomics, Kyoto University, Spring 2019
Teaching Assistant, Advanced Econometrics, Kyoto University, Fall 2018

DEPARTMENT SERVICE

Co-Organizer, BU Econometrics Reading Group, Fall 2021-Spring 2023

LANGUAGES

Chinese (native), English (fluent), Japanese (fluent)

COMPUTER SKILLS: MATLAB, Python, R, STATA, LaTeX

CITIZENSHIP/VISA STATUS: China/F1

REFERENCES

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Robust Counterfactual Analysis for Nonlinear Panel Data Models (Job Market Paper)

This paper studies robust counterfactual analysis in a wide variety of nonlinear panel data models. I impose only mild assumptions, including time homogeneity on the distribution of unobserved heterogeneity and index separability on the structural function. I derive the sharp identified set for the distribution of the counterfactual outcome, noting that point identification is impossible in general. I also provide tractable implementation procedures that circumvent the need to directly search over latent distributions. I propose estimating sharp bounds on counterfactual probabilities based on aggregate intersection bounds and conducting inference using Bonferroni confidence intervals. I apply my approach to empirical data to predict female labor force participation rates under counterfactual values of fertility and husband's income, as well as market shares of different saltine cracker brands under counterfactual pricing schemes.

Policy Learning under Endogeneity Using Instrumental Variables

This paper studies the identification and estimation of individualized intervention policies in observational data settings characterized by endogenous treatment selection and the availability of instrumental variables. I introduce encouragement rules that manipulate an instrument. Incorporating the marginal treatment effects (MTE) as policy invariant structural parameters, I establish the identification of the social welfare criterion for the optimal encouragement rule. Focusing on binary encouragement rules, I propose to estimate the optimal policy via the Empirical Welfare Maximization (EWM) method and derive convergence rates of the regret (welfare loss). I consider extensions to accommodate multiple instruments and budget constraints. Using data from the Indonesian Family Life Survey, I apply the EWM encouragement rule to advise on the optimal tuition subsidy assignment. My framework offers interpretability regarding why a certain subpopulation is targeted.

Model Selection Tests for Incomplete Models
(with Hiroaki Kaido)

This paper expands the scope of likelihood-based model selection tests to a broad class of discrete choice models. A notable feature is that each of the competing models can make either a complete or incomplete prediction. We provide a novel cross-fitted likelihood-ratio statistic for such settings, which can be compared to a normal critical value. The proposed test does not require any information on how an outcome is chosen when multiple solutions are predicted. This allows the practitioner to compare, for example, a model that predicts a unique equilibrium to another model that allows for multiple equilibria. We examine the finite-sample properties of the test and provide guidance on the choice of tuning parameters through Monte Carlo experiments.