Yuan Liao

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EMPLOYMENT

- **Tippie Children Professor**, August 2025-
  University of Iowa, Tippie College of Business

- **Professor**, July 2022- 2025
  Rutgers University, Department of Economics

- **Associate Professor**, July 2016-2022
  Rutgers University, Department of Economics

- **Assistant Professor**, July 2012- 2016
  University of Maryland at College Park, Department of Mathematics

VISTING POSITIONS

- **Visiting Associate Professor**, Fall 2019
  University of Pennsylvania, Department of Economics

- **Visiting Assistant Professor**, Fall 2015
  Princeton University, Department of Operations Research and Financial Engineering

EDUCATION

- **Postdoctoral Research Associate**, July 2010-Aug 2012
  Princeton University, Department of Operations Research and Financial Engineering

- **Ph.D. in Statistics**, 2010, Northwestern University, Evanston, IL

    - Dissertation: Bayesian Analysis in Partially Identified Parametric and Nonparametric Models

    - Committee members: Wenxin Jiang, Joel Horowitz, Thomas Severini, Elie Tamer

- **B.S. in Mathematics**, 2005, Tsinghua University, Beijing

EXPERTISE

Asset Pricing, Machine Learning, Econometrics

PUBLICATIONS

1. CHOI, J. KWON, H., and LIAO, Y. (2025) Inference for low-rank completion without estimating the rank. *Journal of American Statistical Association* , forthcoming

2. LIAO, Y. and TODOROV, V. (2024) Changes in the Span of Systematic Risk Exposures. *Quantitative Economics* , 15, 817–847

3. CHOI, J. KWON, H., and LIAO, Y. (2024) Inference for low-rank completion without sample splitting with application to treatment effect estimation *Journal of Econometrics* , 240, 105682

4. CHEN, X. LIAO, Y. and WANG, W. (2024) Inference on time series nonparametric conditional moment restrictions using general sieves. *Journal of Econometrics* , conditionally accepted

5. LEE, S., LIAO, Y., SEO, M. and SHIN, Y. (2024) Fast inference for quantile regression with tens of millions of observations *Journal of Econometrics* , forthcoming

6. BAI, J., CHOI, S. and LIAO, Y. (2024) Standard errors for panel data models with unknown clusters *Journal of Econometrics,* 240,

7. CHERNOZHUKOV, V., HANSEN, C., LIAO, Y. and ZHU, Y. (2023) Inference for low rank models *Annals of Statistics,* 51, 1309- 1330.

8. LEE, S., LIAO, Y., SEO, M. and SHIN, Y. (2022) Fast and robust online inference with stochastic gradient descent via random scaling. *AAAI Conference on Artificial Intelligence* vol 36, 7381-7389.

9. CHEN, X., LEE, S., LIAO, Y., SEO, M. and SHIN, Y. (2022) SGMM: Stochastic Approximation to Generalized Method of Moments *Journal of Financial Econometrics* forthcoming

10. LEE, S., LIAO, Y., SEO, M. and SHIN, Y. (2021) Factor driven two regime regression. *Annals of Statistics,* vol 49, 1656–1678

11. LEE, S., LIAO, Y., SEO, M. and SHIN, Y. (2021) Sparse HP filter: finding kinks in the COVID-19 contact rate. *Journal of Econometrics* , vol 220, 158-180

12. FAN, J., KE, Y. AND LIAO, Y. (2021) Augmented factor models with applications to validating market risk factors and forecasting bond risk premia. *Journal of Econometrics,* 222, 269–294

13. GIGLIO, S. LIAO, Y. and XIU, D. (2021) Thousands of alpha tests. *Review of Financial Studies,* 3456–3496.

14. FAN, J. and LIAO, Y. (2021) Learning latent factors from diversified projections and its applications to over-estimated and weak factors. *Journal of the American Statistical Association*, vol 117, 909-924

15. LIAO, Y. and SIMON, A. (2019) Bayesian inference for smooth partially identified convex models. *Journal of Econometrics,* 211, 338-360

16. LEE, S., LIAO, Y., SEO, M. and SHIN, Y. (2018) Oracle estimation of a change point in high dimensional quantile regression. *Journal of the American Statistical Association,* 113, 1184-1194.

17. HANSEN, C. and LIAO, Y. (2018) The factor lasso for high dimensional inference in economic applications. *Econometric Theory,* 1-45.

18. BAI, J. and LIAO, Y. (2017) Inferences in panel data with interactive effects using large covariance matrices *Journal of Econometrics,* 200, 59-78.

19. CHERNOZHUKOV, V., HANSEN, C. and LIAO, Y. (2017) A Lava attack for the recovery of sums of sparse and dense signals. *Annals of Statistics,* 45, 39-76.

20. BAI, J. and LIAO, Y. (2016) Efficient estimation of approximate factor models via regularized maximum likelihoods. *Journal of Econometrics,* 191, 1-18.

21. FAN, J. and LIAO, Y. (2014) Endogeneity in high dimensions. *Annals of Statistics,* 42, 872-917.

22. FAN, J., LIAO, Y. and MINCHEVA, M.(2013) Large covariance estimation by thresholding principal orthogonal complements. *Journal of the Royal Statistical Society Series B (**with discussion**),* **75**, 603-680
    Reviewed by 7 screeners, 5 referees and 1 post-refereeing screener, read before Royal Statistical Society on 13 February 2013.

23. FAN, J., LIAO, Y. and MINCHEVA, M.(2011) High dimensional covariance matrix estimation in approximate factor models. *Annals of Statistics,* 39, 3320-3356.

24. FAN, J., LIAO, Y. and WANG, W.(2016) Projected principal components analysis in factor models. *Annals of Statistics,* 44, 219-254.

25. FAN, J., LIAO, Y. and SHI, X.(2015) Risks of large portfolios. *Journal of Econometrics,* 186, 367-387.

26. FAN, J., LIAO, Y. and YAO, J.(2015) Power enhancement in high-dimensional cross sectional tests. *Econometrica,* 83, 1497-1541.

27. LIAO, Y. and W. JIANG (2011) Posterior consistency of nonparametric conditional moment restricted models. *Annals of Statistics,* 39, 3003-3031.

28. LIAO, Y. and W. JIANG (2010) Bayesian analysis in moment inequality models. *Annals of Statistics.* 38, 275-316.

Book Chapters and Overviews

1. Fan, J., Li, K. and Liao, Y., (2021) Recent developments on factor models and its applications on econometric learning. *Annual Reviews of Financial Economics.* vol. 13, 401-430

2. Lee, S., Liao, Y., Seo, M. and Shin, Y. (2020) Desperate times call for desperate measures: government spending multipliers in hard times. *Economic Inquiry*

3. Fan, J., Liao, Y. and Liu, H. (2016) An overview on the estimation of large covariance and precision matrix estimation. *The Econometrics Journal* 19, C1-C32.

4. Fan, J., Liao, Y. and Liu, H. (2015) Approaches to high-dimensional covariance and precision matrix estimation. in *Financial Signal Processing and Machine Learning*, edited by A.N. Akansu, S.R. Kulkarni, D. Malioutov, I. Pollak. Wiley

5. Bai, J., Liao, Y. and Yang, J. (2014) Unbalanced panel data models with interactive effects. in *The Oxford Handbook of Panel Data*, chapter 5, edited by Badi Baltagi.

FELLOWSHIPS AND HONORS

- Henry B. Tippie Research Fellow (University of Iowa 2025)

- Fellow of Journal of Econometrics (elected in 2024)

- ICCM Best Paper Award (distinguished), 2018 (for the paper Fan, Liao and Mincheva 2013)

- Research (Council) and Scholarship Award (Maryland, 2015), (Rutgers 2017)

- US Junior Oberwolfach Fellow, 2013

- Journal of the Royal Statistical Society-B read paper, 2013

- IMS New Researchers Conference, 2013

- Dissertation Year Fellowship, Northwestern University, 2010

PRESENTATIONS

- The uncertainty of machine learning forecast in asset pricing
  (2025) *UC Riverside, UIowa*
  (2025) HKUST IAS-SBM Financial Econometrics in the Big Data Era
  (2025) Econometric Society World Congress, Seoul

- Does noise hurt economic forecasts ?
  (2025) *Montreal, UC Riverside, Rutgers, Yale, Philly Fed, Indiana, UIowa*
  (2024) *Duke, McMaster, UIowa, Philly Fed*
  (2024) FMA Annual Meeting, Dallas

- Robust market index forecast using deep learning
  (2023) NBER time series conference, Montreal
  (2023) Midwest econometric group meeting, Cleveland

- Structural deep learning for conditional asset pricing models
  (2021-22) *Northwestern, Syracuse, Univ Washington, Virginia Commonwealth, Georgia State*
  (2022) SFS Cavalcade

- Deep learning inference for semi-parametric conditional moment models
  (2022) *Harvard*
  (2020) Online Seminar on Selective Inference

- Fast inference for quantile regressions with tens of millions of observations
  (2022-2023) *Virginia Tech, Georgetown, Singapore Management Univ, Albany*

- Inference for heterogeneous effects using low rank estimation
  (2019-23) *Pittsburgh, Tsinghua, CUHK-SZ, Rochester, Rutgers, Syracuse, Duke, UPenn, Federal Reserve Bank in Philadelphia*
  (2019) 33rd New England Statistics Symposium, Hartford

- Uniform inference for conditional factor models with instrumental and idiosyncratic betas
  (2018) *Yale*
  (2018) California econometrics meeting. CA

- Learning latent factors via diversified projections with applications
  (2019) Econometric Society Asian Meeting, Xiamen

- Thousands of alpha tests
  (2019) Sofie, Shanghai

- Factor-driven two-regime regression
  (2018) *UNC, Northwestern*

- High dimensional sparse modeling in financial econometrics
  (2016) *Emory, Boston University*

- The factor-Lasso and k-step bootstrap for inference in economic applications
  (2016) *Stevens Institute of Technology, University of Toronto*

- A lava attack for sparse and dense signals
  (2016) Midwest Econometrics Group, Urbana-Champaign
  (2015) Economic and Econometric Applications of Big Data, Cambridge, UK

- Semiparametric Bayesian partially identified models
  (2014) ISBIS meeting, Durham
  (2014) Econometric Society winter meeting, Philadelphia
  (2013) Oberwolfach workshop on partial identification.
  (2013) *UIUC*

- Efficient estimation of approximate factor models
  (2013) Joint Statistical Meetings, Montreal
  (2013-14) *MIT; George Washington; Georgetown*

- Power enhancement test of high dimensional CAPM models
  (2014) Midwest Econometrics Group, Iowa City
  (2014) Econometric Society summer meeting, Minneapolis
  (2013) Stevanovich Center for Financial Mathematics, University of Chicago
  (2013) Midwest Economics Group, Columbus

- High dimensional covariance matrix estimation in approximate factor models
  (2012) Midwest Econometrics Group, Lexington, Kentucky
  (2011) *Cornell*
  (2011) 3rd Humboldt-Princeton biennial joint conference, Berlin

- Ultra high dimensional variable selection with endogenous variables
  (2012) *Princeton University*
  (2011) Meetings of the Midwest Econometrics Group, Chicago

- Bayesian analysis in moment inequality models
  (2010) Econometric Society World Congress, Shanghai
  (2010) *Tilburg University*

Keynote
(2013) *Large covariance estimation by thresholding principal orthogonal complements*
Royal Statistical Society Research Section

TEACHING

- Rutgers University, 2016-Present
  ECON 322: Introduction to Econometrics
  ECON 424: Machine Learning and Data Analytics
  ECON 606: Advanced Economic Statistics
  ECON 706: Advanced Bayesian Inference

- University of Maryland at College Park, 2012-2016
  STAT 401: Introduction to Probability and Statistics II
  STAT 440: Sampling Theory
  STAT 750: Multivariate Analysis
  Research Interactive Teams: High-dimensional statistics

- Northwestern University, 2010
  STAT 202: Introduction to Statistics

SERVICE AND OUTREACH

- Editorial Services

  Associate Editor of JASA: 2023-Present

  Associate Editor of Journal of Econometrics: 2020-2024

  Associate Editor of JBES: 2017-2021

- Econometrics Faculty Search Committee Chair, Rutgers 2024-2025

- Program Committee and Panel

  (2016) 9th Annual Conference of The Society for Financial Econometrics (SoFiE)

  (2016) National Science Foundation (NSF) panelist

- External Reviewing for Research Grants Proposals

  (2015-2019) Research Grants Council (RGC) of Hong Kong

  (2015) Natural Sciences and Engineering Research Council of Canada (NSERC)

- Reviewing Activities for Journals and Presses:

  Econometrica, Journal of Econometrics, Journal of Finance, Review of Financial Studies, Journal of Empirical Finance, Annals of Statistics, Biometrika, Electronic Journal of Statistics, The Econometrics Journal, Mathematical Finance, JASA, Management Science, Statistica Sinica, Journal of Computational and Graphical Statistics, Econometric Theory, Journal of Multivariate Analysis, JRSS-B, Psychometrika, Review of Economic Studies, Journal of Statistical Planning and Inference, Journal of Business and Economic Statistics, Statistics and Computing, Statistics and Probability Letters, Journal of Statistical Theory and Practice, Journal of Nonparametric Statistics

- University Committees

  (2025) Research Committee, Tippie College of Business, University of Iowa

  (2023-2024) Faculty Appointment and Promotion committee, Rutgers University

  (2017-present) Policy/Admission/ executive committee, Department of Economics, Rutgers University

  (2015) Policy committee, Department of Math, University of Maryland

STUDENTS ADVISING

- As PhD committee chair:

  Sung Hoon Choi (2021, tenure track position at University of Connecticut),

  Junjun Choi (2022, postdoc at Columbia University)

  Hyukjun Kwon (2024, postdoc at Princeton University)

  Before 2021: Jaeheon Jung, Wanjun Li (2020), Junjun Choi (2022), all from Rutgers.

- As committee member:

  Ph.D. students:

  (2018-Present) Sungkyung Lee, Weiqi Xiong, Mingmian Cheng, Jessica Schlossberg (Rutgers)

  (2013-2015) Lujia Su and Qi Liu (all from UMaryland)

PROFESSIONAL MEMBERSHIPS

Econometric Society, 2009-Present
American Finance Association, 2018-Present
American Statistical Association, 2010-2013
International Indian Statistical Association, 2013-2015
Institute of Mathematical Statistics, 2010-2011