JIN XI

University of California, San Diego
Department of Economics
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EDUCATION

University of California, San Diego, CA, US
Ph.D. in Economics — 2018 - 2024 (Expected)
Committee: James Hamilton (chair), Yixiao Sun, Allan Timmermann, Xinwei Ma, Alexis Toda, Jason Schweinsberg

University of North Carolina at Chapel Hill, NC, US
B.A. in Economics — 2018
B.A. in Mathematics — 2018

REFERENCES

James Hamilton	University of California, San Diego	jhamilton@ucsd.edu
Yixiao Sun	University of California, San Diego	yisun@ucsd.edu
Allan Timmermann	University of California, San Diego	atimmermann@ucsd.edu

FIELDS OF INTEREST

Econometrics of High-Dimensional Data, Forecasting.

JOB MARKET PAPER

"Machine Learning using Nonstationary Data"
Abstract: Machine learning offers a promising set of tools for forecasting. However, some of the well-known properties do not apply to nonstationary data. This paper uses a simple procedure to extend machine learning methods to nonstationary data that does not require the researcher to have prior knowledge of which variables are nonstationary or the nature of the nonstationarity. I illustrate theoretically that using this procedure with LASSO or adaptive LASSO generates consistent variable selection on a mix of stationary and nonstationary explanatory variables. In an empirical exercise, I examine the success of this approach at forecasting U.S. inflation rates and the industrial production index using a number of different machine learning methods. I find that the proposed method either significantly improves prediction accuracy over traditional practices or delivers comparable performance, making it a reliable choice for obtaining stationary components of high-dimensional data.

RESEARCH

"Principal Component Analysis for Nonstationary Series" (with James Hamilton)
Abstract: In this paper we develop a new approach to deal with nonstationarity in principal component analysis. We propose a unified OLS detrending procedure that provides reasonable estimates of the cyclical components and does not require us to know the nature of nonstationarity. We show that estimation of principal components using OLS detrended data is consistent and converges at $\sqrt{N}$ rate. With applications on the yields of U.S. Treasury securities and the Chicago Fed National Activity

Index, we show that our approach partials out the dynamics stem from the cyclical factors, and thereby provides cleaner estimates of factor and factor loadings.

"Strength in Numbers: Robust Mechanisms for Public Goods with Many Agents" (with Haitian Xie)
Published, Social Choice and Welfare
Abstract: This study examines the mechanism design problem for public-good provision in a large economy with n independent agents. We propose a class of dominant-strategy incentive compatible (DSIC) and ex post individual rational (EPIR) mechanisms which we call the adjusted mean-thresholding (AMT) mechanisms. We show that when the cost of provision grows slower than the $\sqrt{n}$ rate, the AMT mechanisms are both asymptotically ex ante budget balanced (AEABB) and asymptotically efficient (AE). When the cost grows faster than the $\sqrt{n}$ rate, in contrast, we show that any DSIC, EPIR, and AEABB mechanism must have provision probability converging to zero and hence cannot be AE. Lastly, the AMT mechanisms are more informationally robust when compared to, for example, the second-best mechanism. This is because the construction of AMT mechanisms depends only on the first moments of the valuation distributions.

PROFESSIONAL ACTIVITIES

Presentations

Trends in Macroeconometrics Workshop (keynote speaker), University of Illinois Urbana-Champaign	2023/11
Peking University, National School of Development, Beijing	2023/11
Macroeconomic Forecasting Seminar, International Institute of Forecasters (virtual)	2023/10
Asian Meeting of the Econometric Society, Tsinghua University, Beijing	2023/07
North American Summer Meeting of the Econometric Society, UC Los Angeles	2023/06
Midwest Econometrics Group Mentoring Workshop, *Michigan State University*	2022/10

Workshop Participation

Asian Summer School in Econometrics and Statistics, University of the Chinese Academy of Sciences, Beijing	2023/07

Referee for
IEEE Access, Economics Letters

FELLOWSHIP, HONORS, AND AWARDS

TA Excellence Award, UCSD	2022
Clive Granger Research Fellowship *for the most promising graduate student research*, UCSD	2022
Zhao Family Fellowship *for the most promising graduate student research in econometrics*, UCSD	2021
Advancement to Candidacy Fellowship, UCSD	2021
Graduate Summer Research Fellowship, UCSD	2019,2020

TEACHING EXPERIENCE

Instructor, UC San Diego

Econometrics A (undergraduate)	2022

Teaching Assistant, UC San Diego

Econometrics B (Ph.D. level)	2019

Econometrics C (Ph.D. level)	2019, 2022
Econometrics B (undergraduate)	2020, 2021, 2022
Econometrics C (undergraduate)	2020, 2021

OTHER INFORMATION

Software: MATLAB, Stata, R, LaTeX
Languages: Chinese (Native), English (Fluent)
Citizenship: China