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Personal Information:

Date of Birth: May 14, 1997
Sex: Male

Undergraduate Studies:

Jilin University, 2015-2019
B.S., Mathematics, School of Mathematics, June 2019

Masters Level Work:

Renmin University of China, 2019-2022
M.A. in Economics, School of Economics, June 2022

Graduate Studies:

Singapore Management University, 2022-2027
Thesis Title: Essays on Inference for High-Dimensional Linear Regressions
Expected Completion Date: June 2027

Thesis Committee and References:

Yichong ZHANG (advisor)
Professor of Economics, Associate Dean
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Teaching and Research Fields:

Primary fields: Econometrics

Secondary fields: High-Dimensional Statistics; Statistical Machine Learning; Causal Inference

Teaching Experience:

2024-2026 TA for ECON611 Econometrics I (Ph.D.)
2025-2026 TA for STAT102 Introduction to Statistical Theory (Undergraduate)
2024-2025 TA for ECON6006 Financial Econometrics (Master's)
2023-2024 TA for ECON601 Microeconomics I (Ph.D.)
2023-2024 TA for ECON111 Microeconomics I (Undergraduate)
Responsibilities: grading assignments and examinations; student consultations.

Research Experience:

2025-2026 RA for Prof. Yichong Zhang

Professional Activities: NA

Conference and Seminar Presentations:

20th International Symposium on Econometric Theory and Applications (SETA), 2026
Presented: An Improved Inference for IV Regressions
10th Meeting of Young Econometricians in Asian-Pacific (YEAP) Region, 2025
Presented: Cluster-Robust Inference for Quadratic Forms
19th International Symposium on Econometric Theory and Applications (SETA), 2025
Presented: Leave-Out Regression with Many Instruments and Controls
Econometric Research Workshop, Singapore Management University, 2022-2026

Honors, Scholarships, and Fellowships:

2025-2026 Presidential Doctoral Fellowship, Singapore Management University
2022-2023 Best First-year PhD Student, School of Economics, Singapore Management University
2021-2022 The Second Prize Academic Scholarship, Renmin University of China
2020-2021 The Second Prize Academic Scholarship, Renmin University of China
2019-2020 The Second Prize Academic Scholarship, Renmin University of China

Publications and Working Papers:

"Uniform Inference for Variance Components" (with Liyu Dou, Wenjie Wang, and Yichong Zhang). *Work in progress.*

"Honest Inference for High-Dimensional Linear Models" (with Dennis Lim, Jonathan H. W. Tan, and Jiezheng Wei) *Working paper*. [arXiv]

"Cluster-Robust Inference for Quadratic Forms" (with Michal Kolesár, Wenjie Wang, and Yichong Zhang) *Working Paper*. [arXiv]

"An Improved Inference for IV Regressions" (with Liyu Dou, Wenjie Wang, and Yichong Zhang) *Submitted to Quantitative Economics*. (Job Market Paper) [arXiv]

Research Papers:

An Improved Inference for IV Regressions (Job Market Paper)

with Liyu Dou, Wenjie Wang, and Yichong Zhang [arXiv]

Abstract: Empirical applications of instrumental variables (IV) regressions often involve both low-dimensional and high-dimensional sets of instruments. In Angrist and Krueger (1991), the quarter-of-birth instruments generate a much larger set that includes many interaction-based technical instruments; in shift-share designs considered in Goldsmith-Pinkham et al. (2020), a single IV aggregates many underlying base instruments. To improve inference in such settings, this paper proposes a combination test that integrates low- and high-dimensional IV specifications. The test linearly combines a cluster-robust Wald statistic based on low-dimensional IVs with leave-cluster-out Lagrange multiplier (LM) and Anderson-Rubin (AR) statistics constructed from the many IVs. We establish the joint asymptotic normality of these statistics and show that the proposed test is asymptotically optimal within a broad class of tests. The procedure yields costless efficiency improvements, automatically adapts to weak identification of the many instruments, and provides a practical rule of thumb for assessing these gains.

Keywords: Many Weak Instruments, Shift-Share Instruments, Combination Test.

Cluster-Robust Inference for Quadratic Forms

with Michal Kolesár, Wenjie Wang, and Yichong Zhang [arXiv]

Abstract: We study inference for quadratic forms of regression coefficients with many covariates. We develop a unifying framework that allows for clustering with diverging cluster sizes, and covers design-based inference on treatment effects, model-based inference on variance components, testing many linear restrictions, and instrumental variables models with many instruments and controls. We show that, in the presence of many controls, existing methods do not yield valid inference in the design-based setting. We develop a novel jackknife variance estimator that yields valid, but conservative inference, and a leave-three-cluster-out (L3CO) estimator that is more computationally involved but is asymptotically exact, up to a nonnegative heterogeneity term that cannot be avoided. For the model-based applications, we propose a different jackknife variance estimator that leads to conservative inference in general, but is asymptotically exact if the number of controls grows more slowly than the sample size. An L3CO variance estimator is asymptotically exact. We illustrate our methods in several applications.

Keywords: Many instruments, many covariates, clustered data, cross-fit, judge design, two-way fixed effects.

Honest Inference for High-Dimensional Linear Models

with Dennis Lim, Jonathan H. W. Tan, and Jiezheng Wei — Working paper [arXiv]

Abstract: We propose a heteroskedasticity-robust and dimension-adaptive test for multiple linear restrictions in sparse high-dimensional linear regression models. It combines desparsified LASSO estimation with a ridge-regularized quadratic form statistic and critical values that adapt to the restriction dimension. Under stated regularity conditions, our approach is asymptotically valid under a fixed or diverging number of restrictions without specifying the asymptotic regime in advance. Our random-design theory allows independent non-identically distributed covariate rows with marginal sub-Weibull tails and heteroskedastic errors satisfying finite polynomial moments. Monte Carlo simulations demonstrate improved finite-sample size control relative to conventional Wald tests, particularly as the number of restrictions increases.

Keywords: High-Dimensional Inference, Multiple Linear Restrictions, Desparsified LASSO, Strong Approximation, Heteroskedasticity, Heavy-Tailed Distributions.

Computer Skills:

Python, MATLAB, Stata, LaTeX

Languages:

Chinese (Native), English (Fluent)

JIEZHENG WEI (魏杰铮)
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Personal Information:

Date of Birth: October 30, 1995.
Gender: Male.
Nationality: P. R. China.

Undergraduate Studies:

B.S., Economics, China Economics and Management Academy, Central University of Finance and Economics, 2013 – 2017.

Master Level Work:

M.S., Economics, Shenzhen Finance Institute, School of Management and Economics, The Chinese University of Hong Kong, Shenzhen, 2019 – 2021.

Graduate Studies:

Singapore Management University, 2022 to present.
Thesis Title: AI Applications and High-Frequency Analysis for Policy Shocks.
Expected Completion Date: June 2027.

Thesis Committee and References:

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Teaching and Research Fields:

Primary fields: Econometrics, AI for Economics.
Secondary fields: Economic Forecasting.

Teaching Experience:

Teaching Assistant:
ECON6001: Time Series Econometrics, 2026 Spring, SMU
ECON682: Econometric Analysis, 2025 Fall, SMU
ECON207: Intermediate Econometrics, 2025 Fall, SMU
DSA305: Panel Data Analysis, 2024 Spring, SMU.
ECON212: Real Estate Economics, 2023 Fall, 2025 Spring, SMU.

DMS3002: Applied Probability and Stochastic Processes, 2022 Spring, CUHK-Shenzhen.
ECO3080: Machine Learning in Business, 2021 Spring and Fall, CUHK-Shenzhen.
ECO2121: Basic Statistics, 2021 Spring, CUHK-Shenzhen.
ECO6125: Chinese Economic Policies and Their Effects, 2021 Spring, CUHK-Shenzhen.
ECO6102: Advanced Econometrics, 2020 Fall, CUHK-Shenzhen.

Research Experience:

Research assistant for Prof. Jia Li, Singapore Management University, 2024 - 2026.

Conference and Seminar Presentations:

1. The 3rd Annual International Conference of the Greater Bay Econometrics Study Group.
2. SMU Econometrics Workshop, 2023-2026, Singapore Management University.
3. SMU Applied Micro Reading Group, 2024, Singapore Management University.
4. International Conference on Smart Finance (ICSF), School of Management and Economics, The Chinese University of Hong Kong, Shenzhen, 2021 Summer.

Honors, Scholarships, and Fellowships:

Presidential Award of Outstanding Graduate Student, CUHK-Shenzhen.
SMU-CSC Joint Scholarship.

Research Papers:

"Weak Identification in News-Jump Regressions." (Job Market Paper)
Abstract: News-jump regressions are high-frequency event-study regressions under infill asymptotics. When news-jumps in explanatory variables over narrow observation windows are of the same magnitude as diffusive background noise, the regression coefficient is weakly identified, invalidating least-squares estimation and inference. I develop identification-robust inference based on Anderson–Rubin tests and derive, in a Gaussian limit experiment arising from the jump-diffusion process, a minimal sufficient and complete statistic for jumps, thereby enabling powerful conditional inference. In applications, I invert the proposed robust tests to revisit the empirical questions of Nakamura and Steinsson (2018) using minute-by-minute data, assess the effects of oil shocks triggered by the Russia–Ukraine and Iran wars, and examine the dependence of news-driven ETF jumps on market-index jumps.

"Identifying Monetary Policy Shocks with Large Language Models," *with Sen Zhang.* Working paper.
Abstract: We use large language models to extract Federal Reserve staff expectations from pre-FOMC briefing materials and construct new controls for monetary policy shock estimation. The resulting low-dimensional LLM features capture economically meaningful information while avoiding key limitations of high-dimensional dictionary sentiment measures, including overfitting and negation errors. Our LLM-

based shocks closely track existing narrative monetary policy shocks and provide a scalable way to measure central-bank information from historical text.

"Honest Inference for High-Dimensional Linear Models," *with Dennis Lim, Pengjin Min, and Jonathan H W Tan.* Working paper.
Abstract: We propose a new inference procedure for testing multiple linear restrictions in high-dimensional linear regression models. Building on the desparsified LASSO framework of van de Geer, Buhlmann, Ritov, and Dezeure (2014), our approach accommodates a potentially diverging number of restrictions, general heteroskedasticity, and heavy-tailed covariates and errors. Under suitable regularity conditions, we establish the asymptotic validity of the proposed test, including asymptotically exact size control. Monte Carlo simulations demonstrate improved finite-sample size control relative to conventional homoskedastic and heteroskedasticity-robust Wald tests, particularly when the number of restrictions is large.

"A Fixed-*k* Bipower Jump Test," *with Jia Li, Qiyuan Li, and Andrew J. Patton.* Work-in-progress.
Abstract: We develop a jump test for Itô semimartingales observed at high frequency based on the ratio of untruncated realized variance to bipower variation within a block of k consecutive returns, where k is held fixed. Under infill-asymptotics, the limiting distribution of the proposed test is asymptotically pivotal under the null of no jumps, according to a coupling result inherited from the driving Brownian diffusion, and therefore delivers favorable statistical properties over short time windows. Monte Carlo experiments calibrated to empirical financial data show that the proposed test attains essentially nominal size for small k. The framework provides a single, tuning-free, block-localized price jump detector that plugs directly into the broader apparatus of fixed-k volatility inference in Bollerslev, Li, and Liao (2021) and the bipower jump test of Barndorff-Nielsen and Shephard (2006).

"Evaluating AI Forecasts on Future Sport Events," *with Jia Li and Andrew J. Patton.* Work-in-progress.
Abstract: We construct an ex-ante, timestamp-verified panel of one-day-ahead forecasts from frontier LLMs on live 2026 sports events. Following the econometric forecast-evaluation literature, we compare models using strictly proper scoring functions in the Bregman-loss tradition and test equal, superior, and conditional predictive ability. The evidence shows clear model separation in NBA forecasts, weaker discrimination in soccer, and informative self-reported confidence. The framework provides an auditable, continuously updating benchmark for evaluating LLM forecasts.

Computer Skills: AI (Claude Code, ChatGPT/Codex, and AI APIs), Python, R, MATLAB, *LaTeX*.

Languages: English (Fluent), Chinese (Native).