

Tian Xie

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Education

PhD in Economics, University College London, 2021 – Present.

Visiting Student, Yale University, 2025.

MRes in Economics, University College London, 2021.

Bachelor in Economics, Peking University, 2020.

References

Timothy Christensen

Department of Economics
Yale University

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Raffaella Giacomini

Department of Economics
University College London

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Liyang Sun

Department of Economics
UCL & CEMFI

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Research Fields

Econometrics, Empirical Bayes, Statistical Decision Theory, Labor Economics.

Working Papers

“Automatic Inference for Value-Added Regressions” (JMP, [latest version](#)).

Abstract: It is common to use shrinkage methods such as empirical Bayes to improve estimates of teacher value-added. However, when the goal is to perform inference on coefficients in the regression of long-term outcomes on value-added, it’s unclear whether shrinking the value-added estimators can help or hurt. In this paper, we consider a general class of value-added estimators and the properties of their corresponding regression coefficients. Our main finding is that regressing long-term outcomes on shrinkage estimates of value-added performs an automatic bias correction: the associated regression estimator is asymptotically unbiased, asymptotically normal, and efficient in the sense that it is asymptotically equivalent to regressing on the true (latent) value-added. Further, OLS standard errors from regressing on shrinkage estimates are consistent. As such, efficient inference is easy for practitioners to implement: simply regress outcomes on shrinkage estimates of value added.

“Compound Selection Decisions: An Almost SURE Approach” (with Jiafeng Chen, Lihua Lei, Timothy Sudijono and Liyang Sun). [Link](#)

Abstract: This paper proposes methods for producing *compound selection decisions* in a Gaussian sequence model. These decisions directly target the following problem: Given unknown, fixed parameters $\mu_{1:n}$ and known $\sigma_{1:n}$ with observations $Y_i \sim N(\mu_i, \sigma_i^2)$, the decision maker would like to select a subset of indices S so as to maximize utility $\frac{1}{n} \sum_{i \in S} (\mu_i - K_i)$, for some known costs K_i . Inspired by Stein’s unbiased risk estimate (SURE), we introduce an *almost* unbiased estimator, called ASSURE, for the expected utility of a proposed decision rule. ASSURE allows a user to choose a welfare-maximizing rule from a pre-specified class by optimizing the estimated welfare, thereby producing selection decisions that borrow strength across noisy estimates. We show that ASSURE produces decision rules that are asymptotically no worse than the optimal but infeasible decision rule in the pre-specified class. We apply ASSURE to the analysis of p -value decision procedures in A/B testing, selecting Census tracts for economic opportunity, and identifying discriminating firms.

Work in Progress

“Robust Empirical Bayes Under Misspecification”.

Abstract: Most of the empirical Bayes literature develops theoretical justification for shrinkage under strong parametric assumptions that may not hold in practice. This paper investigates empirical Bayes estimation when the parametric assumptions are only approximations to the truth. We investigate the performance of empirical Bayes procedures in over nonparametric neighborhoods of the parametric reference model. We propose decision-theoretic criteria for evaluating estimator performance in worst-case scenarios. For fixed-effect shrinkage estimators, we show that risk improvements relying on normality are sensitive to specification errors. To enhance robustness, we derive the Gamma-minimax optimal decision rule and develop its empirical counterpart, yielding a robust empirical Bayes estimator.

Teaching Experience

ECON0019, Econometrics (UCL, Undergraduate), 2023 – Present.

ECON566, Machine Learning for Econometric Analysis (Yale, Graduate), 2025.

ECON0002, Economics (UCL, Undergraduate), 2021 – 2022.

Research Assistant

Research Assistant, UCL, Prof. Liyang Sun, 2024 – Present.

Research Assistant, UCL, Prof. Daniel Wilhelm, 2021 – 2022.

Scholarship

Center for Microdata Methods and Practice (CeMMAP)

PhD scholarship, 2022 – Present.

Conferences and Seminars (including scheduled)

UCL Econometrics Brownbag Seminar, Yale Econometrics Lunch Talk, Cambridge Econometrics PhD Workshop

2025 IAAE Annual Conference, 2025 Bristol Econometrics Study Group, 2025 UCL-CeMMAP Ph.D. Econometrics Research Day, 2025 Midwest Econometrics Group Conference, 4th International Econometrics PhD Conference 2025 Erasmus University Rotterdam, EC² 2025 Conference, 2025 European Winter Meeting of the Econometric Society

Other Information

Languages Mandarin (native), English (fluent)

Programming Julia, R, Python