Zhaocheng Zhang

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Education

University of Cambridge

PhD in Economics. Supervisor: Prof Oliver Linton — expected 2026

- Visiting PhD 2023/24, UC Berkeley. Host: Prof Martin Lettau

MPhil in Economic Research — 2020

London School of Economics and Political Science

MSc in Economics — 2019

Xi'an Jiaotong University

BSc in Management, Special Class for the Gifted Young — 2016

- Exchange Student 2014/15, National University of Singapore

Research Interests

Primary fields: Applied Econometrics, Financial Econometrics

Secondary fields: Empirical Industrial Organization, Big Data Analytics in Finance

References

Prof Oliver Linton
Faculty of Economics
University of Cambridge
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Dr Julius Vainora
Faculty of Economics
University of Cambridge
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Prof Martin Lettau
Haas School of Business
University of California, Berkeley
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Publications

Credit Rating Prediction Through Supply Chains: A Machine Learning Approach

with Jing Wu and Sean Zhou, 2022, ***Production and Operations Management*** *31(4): 1613-1629*

This paper studies the role of supply chain information in firm credit risk prediction. Using firm-level supplier-customer linkages and corporate credit rating data, we develop a machine learning framework of gradient boosted decision tree to examine whether and what supply chain features can significantly improve the prediction accuracy of credit ratings, and what types of supply chain links have higher information content that positively affects the predictability of the supply chain features.

Impact of Primary Care Market Mergers on Quality: Evidence from the English NHS

with Yuan Lyu, 2025, ***Journal of Health Economics****, Forthcoming*

This study provides the first empirical evidence on the quality effects of primary care mergers, using comprehensive English NHS data from 2014-2018. Employing a stacked Difference-in-Differences (DiD) approach with Propensity Score Matching (PSM), we find that while mergers may improve clinical management, they decrease patient satisfaction and fail to improve broader clinical quality.

Working Papers

Tensor Factor Analysis of Global Supply Chains (Job Market Paper)

This paper extends two-dimensional factor models to higher-dimensional data represented as tensors. I describe decompositions of tensors that generalize the standard matrix singular value decomposition and principal component analysis to higher dimensions. I estimate the model using a five-dimensional country- industry level global supply chain data set. To better understand and interpret the factors and loadings, I also propose and estimate a tensor factor model with non-parametric loadings, in which the factor betas are unknown functions of some time-varying characteristic covariates. I show that the components of the model have clear economic interpretations and discuss the implications of the estimated factors and loadings in detail.

Estimation of Tensor Factor Models with Missing Values

with Martin Lettau

This paper proposes a feasible and consistent estimator for tensor factor models (TFMs) in the presence of missing observations. We estimate a TFM on a three-dimensional stock characteristics dataset and construct latent factors that summarize information in firm characteristics across assets. These "characteristic factors" are then used to sort stocks into portfolios. We find that a parsimonious TFM explains over 90% of the variation in the dataset. Moreover, pricing factors derived from the TFM exhibit high Sharpe ratios and outperform standard benchmark models in explaining the cross-section of fund returns.

Determining the Number of Factors with Missing Observations

with Oliver Linton and Weiguang Liu

This paper proposes ratio-based estimators for determining the number of factors (R) in static approximate factor models using partially observed panel data. The missing data pattern is allowed to be general. We construct an adjusted sample second moment matrix by utilizing only the observed data pairs. We show that the eigenvalue distribution of this adjusted matrix resembles that of the standard sample second moment matrix under fully observed data: the R largest eigenvalues diverge as N increases, while the remaining eigenvalues remain bounded. Simulation results provide strong support for the proposed estimators. We illustrate the method with an application to financial data.

Detection of Weak Granulars in Large Panels

with Yinfeng Zeng

In this paper, we aim to detect pervasive units (granular) affecting a large proportion of the entire cross-section large panels, namely, weak granulars. Emerging literature relate this topic to the network theory. We can potentially show how weak granular time series possess higher empirical relevance and contribute to applied research.

Impact of Horizontal Mergers on the Value of Suppliers and Customers

This paper examines the impact of horizontal mergers on the value of merging firms' suppliers and customers using newly constructed supply chain data. I analyze both general and horizontal mergers and test for cumulative abnormal returns (CARs) to related firms. The findings show that horizontal mergers lead to significant negative announcement returns for both suppliers and customers of the merging firms. This adverse effect is likely driven by increased industry concentration following the merger. I find no evidence in support of the productive efficiency hypothesis.

Work in Progress

Non-negative Tensor Factor Models
Tensor Factor Analysis of U.S. County-County Commuting Flows *with River Chen*
Tensor Factor Analysis of Institutional Stock Holdings

Conference and Seminar Presentations

2025: EEA Congress 2025, Bordeaux, France; RES Annual Conference, Birmingham, UK; SETA 2025, Macau; IAAE 2025, Turin, Italy; Econometrics Workshop, Cambridge, UK
2024: INFORMS Annual Meeting, Seattle; PhD workshop, CUHK Business School, Hong Kong; Econometrics Workshop, Cambridge; Trade and Spatial Economics Workshop, Cambridge
2023: MSOM Annual Conference, Montreal; Neuro Tensors in Finance Conference, Cambridge; Econometrics Workshop, Cambridge
2022: POMS-HK International Conference, Hong Kong; PhD workshop, CUHK Business School, Hong Kong; Econometrics Workshop, Cambridge
2021: INFORMS Annual Meeting, Anaheim; Econometrics Workshop, Cambridge

Teaching Experience

Faculty of Economics, University of Cambridge

College Tutor, Graduate-Level Econometrics	2022 - 2023
Teaching Fellow, F400 Asset Pricing (PhD and Master's)	2021 - 2022
Teaching Fellow, R301a Advanced Econometrics: Time Series (PhD and Master's)	2021 - 2022
Teaching Fellow, E300 Econometric Methods (Master's)	2021 - 2022
Supervisor, Paper 9 Empirical Industrial Organization (Undergraduate)	2020 - 2021

Other Experience

Research Intern, CUHK Business School and Credit Suisse, Hong Kong	2019
Research Fellow, CityU College of Business, Hong Kong	2016 - 2017

Selected Scholarships and Awards

Faculty of Economics Trust Funds (Cambridge)
Cambridge International Scholarship (Cambridge), full funding for PhD
Temasek Foundation LEaRN Scholarship (NUS), full funding for exchange student
Outstanding Graduate Award (XJTU)

Skills & Others

Languages: Mandarin, English
Coding: Stata, Python, SQL, C, MATLAB, R, LaTeX, HPC, Slurm