Wu Zhu

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Research Interests

Finance, AI (Artificial Intelligence), Big Data, Network Economics, Portfolio Management, Macroeconomics, Innovation, and Chinese Economy.
I am especially interested in topics with a combination of big data and theory.

Academic Position

Assistant Professor of Finance, Ph.D Advisor 2021-
Department of Finance, SEM Tsinghua University

Research Fellow 2023-
Research Center for Smart Audit, SEM Tsinghua University

Committee Member 2023-
Faculty Recruit Committee in SEM, Tsinghua University
The Interdisciplinary Construction Committee in SEM, Tsinghua University
The Construction Committee of Big Data in SEM,Tsinghua University
The Committee of AI and LLMs in SEM, Tsinghua University

Teaching: Advanced Empirical Corporate Finance (Ph.D. 2021,2022 Fall), Advanced Empirical Asset Pricing (Ph.D.), Analysis and Application of Financial Big Data (Graduate, 2021-2023 Fall), Deep Learning in Finance (Undergraduate), Machine Learning and its Applications in Finance(Undergraduate), Machine and Deep Learning for Central Bankers (Indonesia Central Bank)

Education

University of Pennsylvania 2021
Ph.D in Economics
Thesis Title: Networks in Finance, Macroeconomics, and Machine Learning

The Wharton School, University of Pennsylvania 2021
M.A in Statistics
Machine Learning, Portfolio Management, and Networks.

CCER, Peking University 2016
M.A Economics

University of Science and Technology, Beijing 2009
Bachelor in Material Physics

Relevant Funding

- AI in Behavior Finance and Platform, Donation from Harvest Fund (2,000,000 RMB, PI)
- State-Owned Economy and State-Owned Enterprises (Commissioned by the Prime Minister's Office)
- News, LLMs, and Macro Forecasts in the Era of GPTs (300,000 RMB, PI), Macro Department of Development Research Center of the State Council, 2023
- Innovations of Non-Public Firms - Micro and Macro Perspectives (450,000 RMB, Leading Member), National Natural Science Foundation of China (grant ID 72273071), 2023

- Tsinghua University Initiative Scientific Research Program (150,000 RMB), 2022
- Tsinghua University School of Economics and Management Research Grant (300,000 RMB), 2022
- Tsinghua University, Oversea Initiative Fund (400,000 RMB),2022

Relevant Honors and Awards

- CFRC Best Paper Award, China Financial Research Conference, 2021
- XiYue Best Paper Award, Chinese International Conference in Finance, 2021
- Finalist of the Best Ph.D. Paper, Mid-West Financial Association, 2020 (MFA, US)
- Finalist of the Best Paper in Investment, Annual Financial Management Association, 2020 (FMA, US)
- Wharton Mack Institute for Innovation Research (Machine Learning, Networks, and Asset Pricing, 2020)
- Wharton Global Initiatives Research Grant (2018, 2019)
- Meritorious Winner, Mathematical Contest Modeling, United States (2008)
- First Prize, Chinese National College Mathematical Competition of Modeling (2007)
- First Prize, the College Mathematical Olympic of China (2006, 2007)

Relevant Internship

- Jan 2019 - Feb 2019 Jane Street
- Jun 2018 - Sep 2018 International Monetary Fund (IMF)
- Jan 2014 - Jun 2014 Counsellor Office of the State Council, Central Government, China.

Skills

Python, R, Stata, SQL, Google BigQuery, Clustering Computation,AZure

Publications

1. with Cai J. Yang D. and Zhao L. "Hierarchical vintage sparse PCA. Discussion on the paper by Rohe and Zeng." **Journal of the Royal Statistical Society. Series B: Statistical Methodology, 2023.**

2. with Jeff Cai, Xian Gu, Linda Zhao."State Ownership in China: An Equity Network Perspective", **"The Arc of the Chinese Economy"**, the University of Pennsylvania, 2023, edited by, Hanming Fang and Marshall W. Mayer, **Cambridge University Press** (come out soon)

Papers

1. with Junhui Cai, Haipeng Shen, Dan Yang, Linda Zhao, "Network Regression and Supervised Centrality Estimation". **(Revise and Resubmit, Journal of the American Statistical Association(JASA))**

   - Talk: Joint Statistical Meeting (American Statistical Association), 2021.

2. with William Lin Cong, Tengyuan Liang, Xiao Zhang, "Textual Factors: A Scalable, Interpretable, and Data-driven Approach to Analyzing Unstructured Information". **(Revise and Resubmit, Management Science)**

3. with Rakesh Vohra, Yiqing Xing, "The Network Effects of Agency Conflicts" **(Reject and Resubmit, American Economics Review)**

   - *Talk: UPenn-CMU Workshop on Networks in Finance, Mar 2023, Asian Meeting of Econometric Society 2022, Winter Meeting of Econometric Society, Dec2020, NSF 6th Annual Conference in Networks, U Chicago, Mar2020.*

4. with Franklin Allen , Jeff Junhui Cai , Xian Gu, Jun Qian, Linda Zhao,"Ownership Networks and Firms Growth - What do Forty Million Firms Tell us about Chinese Economy?" **(Revise and Resubmit, Management Science)**

   - **Best Paper Award, China Financial Research Conference 2021**

- *Talk: CICF2021,AFA 2020, NBER China Meeting 2020, MFA 2020, FMA 2020 etc.*

5. with Jian Chen, Guohao Tang, Guofu Zhou, "ChatGPT, Stock Market Predictability, and Links to the Macroeconomy"(Submitted to JFE)
6. with Franklin Allen, Junhui Cai, Xian Gu, Junhui Qian, Linda Zhao, "Centralization or Decentralization ? the Evolution of State Ownership in China." (preprint) (Submitted to QJE)
   - **XiYue Best Paper Award, China International Conference for Finance**
   - *Talk: CICF 2021, UPENN 2020, Wharton China Symposium*
7. with Yu Shi, Robert Townsend, "Tiered Intermediation in Business Groups and Targeted SME Support "
   - **The Finalist of the Best Ph.D Paper, MFA 2020**
   - *Talk:PHBS-IER Special Issue Conference 2024,CICM 2022, CICF 2021, AEA 2020, MFA 2020, IMF 2019, NAMES 2019, MIT 2019 etc.*
8. with Yucheng Yang,"Networks and Business Cycles" (Job Market Paper)
   - *Talk: Princeton, UPenn*
9. with Guofu Zhou "Link Complexity and Cross-Predictability"
   - **The Finalist of the Best Paper in Investment, FMA 2020.**
10. with Lin William Cong, Yao Lu, Hanqing Shi "Automation-induced Innovation Shift."
11. with Jeff Cai, Fawan Tian,Guofu Zhou, "Pricing Novelty: A Tale of LLMs"
12. with Ran Chen, Jeff Cai, Qitao Huang, Martin Wainwright, Linda Zhao", Assortment and Pricing Via Generalized MNL Models with Novel Poisson Arrivals" (INFORMS 2023)
13. with Minghao Li, Shubo Kou, Carbon Risk Premium in Production Networks.
14. with Ran Chen, Jeff Cai, Zhao Linda, and Xian Gu, High-dimensional Reinforcement in Portfolio Management.
15. with Yuwei Cui, Yao Lu, "Innovation Networks and M&A"

In Progress

1. with Junhui Cai, Linda Zhao "Reinforcement Learning in Dynamic Networks and Return Cross-Momentum".(*In Progress*)
2. with Junhui Cai, Linda Zhao, Dan Yang, Haipeng Shen, "Common v.s. Idiosyncratic Risk". (*In Progress*)
3. with Jeff Cai, Xian Gu, Wei Xiong, and Linda Zhao, "A Tale of Two Networks - Investments Like China".
4. with Gerard Hoberg, "Sourcing Inflation: A Network Approach"
5. with Gerard Hoberg, "Sourcing Inflation: A Tale of News"
6. with Shangjin Wei, "Competiting Narratives and Business Cycles"
7. with Hanming Fang, "Talent Immigration of 100 Years"
8. with William Lin Cong, Yian Yin "SOSS Project"

Referee International Economic Review, Econometric Theory, Journal of Environmental and Economic Management, Management Science.

Other Services Management Science, Associate Editor (Guest)
Committee, 2024 ACM International Conference on AI in Finance

Media Coverage

1. "Tiered Intermediation in Business Groups", with Robert Townsend and Yu Shi, (VoxChina)
2. "Centralization or Decentralization - the Evolution of State Ownership in China", with Franklin Allen, Jeff Cai, Xian Gu, Jun Qian (QJ), Linda Zhao (VoxChina)
3. "Centralization or Decentralization - the Evolution of State Ownership in China", with Franklin Allen, Jeff Cai, Xian Gu, Jun Qian, Linda Zhao (Stanford University, Center on China's Economy and Institutions, China Briefing)

Invited Talks

- 2024 PHBS-IER Special issue Conference, JCSDS(2024, Joint Conference for Statistics and Data Science), IMS(2024), 2024 Econometric Society Interdisciplinary Frontiers Conference on Economics and AI+ML(Cornell), Asian Finance Association Annual, Summer Institute of Finance (SIF,2024), Informs Annual (2024), CCER Summer Institute, ABFER-JFDS Conference.
- 2023 IMS(2023), CUHK(ShenZhen), NYU Shanghai (Dec 2023), NSD Peking University (Nov 2023), UPENN-CMU Workshop on Networks (May 2023), China Financial Development Conference (Feb 2023), HKUST (GZ,Apr 2023), The Arc of the Chinese Economy (Apr, 2023, UPenn), Workshop on Networks in Finance (May,2023,UPenn),INFORMS (2023)
- 2022 Five Star Conference (2022),CICF(2022) CMStatistics(2022), CICM(2022) , MFA(2022), AMES(2022), CFRC(2022),FIRS(2022), ABFER (Asian Bureau for Economic and Finance Research, 2022), GSM PKU (2022)
- 2021 China Financial Research Conference, China International Conference in Finance (×3), Asian Meeting for Econometric Society, Joint Statistical Meetings (American Statistical Association), American Finance Association Annual Conference, American Economic Association Annual Conference, NSF 6th Annual Conference for Networks Economics(x4), UChicago,Booth.
- 2020 NBER Chinese Economy Meeting*, Winter Meeting for Econometric Society, Financial Management Association Annual(x2), Middle Western Finance Association (x2), American Economic Association Annual (x2)
- 2019 Summer Meeting Econometric Society, IMF(x2)*, Jane Street PhD Symposium, Asian Meeting of Econometric Society, Bank of Finland*, Penn-Wharton-GSM, Penn Econ(Macro Lunch), Penn Econ(Micro Theory Lunch), Penn Econ (Micro Lunch),
- 2018 PKU, Penn Econ (Econometric Lunch), IMF*, Wharton(MBA Talk)
- 2016 Annual American Economic Association, Alibaba, NBER-CCER Conference*.

Students

- 2024 Shuai Song (CMU), Yuchen Yu (Princeton), Xianjun Tan (Morgan Stanley), Hanjie Tian (Optiver), Zhinan Jiang (Optiver)
- 2023 Yiwen Lu (Wharton Finance, Ph.D), ZiYang Huang, Yuan Zhan (Jane Street), Boning Zhao (CICC), FaWang Tian (SAIF), Linhong Wu, Hangyu Zhou, Wendi Wu (CICC), Yue Qin (CICC),
- 2024 Jinnan Cui, Jiaxi Hu, Zhinan Jiang, Ming Yang, Yu Shao, Yile Zhang, Xiangjun Tan (J.P. Morgan), Hanjie Tian

Ph.D. Advisors Rakesh Vohra (University Professor of Economics, ESE, and CIS), Linda H. Zhao (Professor of Statistics)