

# Guofu Zhou

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## Education

<i>Ph.D.</i> , Economics	Duke University, 1990 (Econ PhD program, 08/1986–05/1990) ( <i>PhD Advisor: John F. Geweke; Finance Mentor: Campbell R. Harvey</i> )
<i>M.A.</i> , Mathematics	Duke University, 1987 (Math PhD program, 08/1985–05/1986)
<i>M.S.</i> , Numerical Analysis	Academia Sinica, China, 1985 (Math MS program, 1982–1985)
<i>B.S.</i> , Mathematics	Chengdu University of Technology, China, 1982

## Experience

*Frederick Bierman* and *James E. Spears* Professor of Finance  
Olin Business School, Washington University in St. Louis, 01/01/2010–present  
Past Positions: Professor of Finance, 07/07–12/09; Associate Professor, 07/96–06/07;  
Assistant Professor, 07/91–06/96; Fossett Fellow, 07/90–06/91; all at Washington University in St. Louis.

Consultant                      Various firms (*including hedge funds*) during various time periods

Visiting Scholar                Federal Reserve Bank of Atlanta, of Minneapolis,  
and of St. Louis (respectively; on certain days in the past)

Courses Taught:                Data Analysis for Investments (MBA and MSFin),  
(*theory and implementation of quantitative/big data strategies via Python*),  
Options & Futures, Derivatives, Real Options (MBA and MSFin),  
Advanced Topics in Finance (EMBA), Corporate Finance (BA),  
Mathematical Finance (MSFin), Research in Finance (PhD),  
Financial Economics (PhD empirical, discrete-&cont.-time theory).

Research Interests:        Empirical asset pricing, big data, machine learning, portfolio optimization, anomalies,  
technical analysis, behavioral finance, Bayesian inference, Chinese financial markets.

## Awards

Reid Teaching Award (MBA)	Washington University, 1997
Marcile and James Reid Chair (for consistently outstanding teaching)	Washington University, 1998 (one-time award to junior faculty)
Special Recognition for Excellence (in mentoring graduate students)	Washington University, 2003, 2013
Reid Teaching Award (MSF-Quant)	Washington University, 2010, 2014, 2018
Reid Teaching Award (MSF-WealthAssetMgt)	Washington University, 2019, 2020
Reid Teaching Award (MSF-Corporate)	Washington University, 2020

Best Paper Award	The Chinese Finance Association, 2010
Emerald Best Paper Award	China Finance Review Int'l Conference, 2014
KFA-Mirae Best Paper Award	Asian Finance Assoc. Annual Meetings, 2015
GTA Best Paper Award	China Finance Review Int'l Conference, 2015, 2016
ASX Best Paper Award	Australasian Finance and Banking Conf., 2015
CFA Best Paper Award	FMA Asia/Pacific Conf., 2017
Inquire Best Paper Award	Inquire UK and Inquire Europe, UK, 2019
Best Paper Award	World Finance Conference, Chile, 2019
Pacific-Basin Fin J. BP Award	CIRF-CFRI Conference, China, 2020
Best Paper Award	FMA Asset Mgt Consortium, UK, 2024

### Impact Measures

- Google citations: 16,286
- SSRN downloads: 182,543 (top 59 out of 1,632,035 researchers worldwide)

### Major Research Areas and Contributions (see also <http://apps.olin.wustl.edu/faculty/zhou/sum.html>)

- Machine Learning/Big Data/Bitcoin/Textual Analysis
  - first use of Lasso cross section forecast in finance (back in 2013); first use of genetic programming for XS forecasts; first theoretical model on Bitcoin via technical analysis; propose C-Lasso, C-Enet and E-Enet; propose scaled PCA; link anomalies to future market returns; propose a manager sentiment index via textual analysis.
- Testing Asset Pricing Models/Cross Section of Stock Returns
  - first exact test for zero-beta CAPM; first Bayesian test for CAPM and APT; first comparison of beta vs SDF; first GMM test using an arbitrary weighting matrix; pricing error predictability as tests of asset pricing models.
- FOMC and Other Events
  - first novel approach to recover the ex-ante risk premium and drift.
- Predictability
  - first establish out-of-sample market predictability; first use of combination forecasts of market risk premium; propose C-Lasso, C-Enet and E-Enet; propose various predictors: tech and short interest (shown remain on top by others in 2021), sentiment, managerial, attention, anomalies; trend factor (shown by others the best cross sectional predictor).
- Technical Analysis/Trend Factor/Momentum/Anomalies

- first theoretical model on moving averages; propose a trend factor; discover market intraday momentum; discover volatility amplification on anomalies; propose enhanced anomalies.
- propose/discover a new class of risk-based momentum widely applicable across assets and trading frequency.
- Portfolio Choice under Estimation Risk
  - First explicit solutions to expected utilities; propose the first combination rule, a 3-fund rule, and a combination with  $1/N$ ; First Bayesian economic priors for portfolio choice; extend fundamental law of active portfolio management; optimality of the  $1/N$  under 1-factor model.
- Behavior Finance/Household Finance
  - propose aligned investor sentiment index, manager sentiment, employee sentiment and attention indices; links insurance to household investment decisions.
- Chinese Financial Markets and Monetary Policies
  - Establish predictability and trend momentum; propose a trend factor; first machine learning apps; studies on bond market, monetary policies and derivatives market.

#### Publications (academic journals)

- “Bayesian Inference in Asset Pricing Tests,” **Journal of Financial Economics** 26, 1990, 221–254 (with Campbell Harvey).
  - Reprinted in *Financial Econometrics* edited by Andrew Lo, 2006.
- “Small Sample Tests of Portfolio Efficiency,” **Journal of Financial Economics** 30, 1991, 165–191.
- “Algorithms for the Estimation of Possibly Nonstationary Vector Time Series,” **Journal of Time Series Analysis** 13, 1991, 171–188.
- “Asset Pricing Tests under Alternative Distributions,” **Journal of Finance** 48, 1993, 1927–1942.
- “International Asset Pricing with Alternative Distributional Specifications,” **Journal of Empirical Finance** 1, 1993, 107–131 (with Campbell Harvey).
- “Analytical GMM Tests: Asset Pricing with Time-varying Risk Premiums,” **Review of Financial Studies** 7, 1994, 687–709.
- “Small Sample Rank Tests with Applications to Asset Pricing,” **Journal of Empirical Finance** 2, 1995, 71–93.
- “Time to Build Effects and the Term Structure,” **Journal of Financial Research** 18, 1995, 115–127 (with Jack Strauss).
- “Measuring the Pricing Error of the Arbitrage Pricing Theory,” **Review of Financial Studies** 9, 1996, 553–583 (with John Geweke).

- “Temporary Components of Stock Returns: What Do the Data Tell Us?” **Review of Financial Studies** 9, 1996, 1033–1059 ([lead article](#); with Christopher Lamoureux).
- “A Critique of the Stochastic Discount Factor Methodology,” **Journal of Finance** 54, 1999, 1021–1048 ([lead article](#); with Raymond Kan).
  - Reprinted in *Asset Pricing Theory and Tests* edited by Roll and Grauer, 2003.
- “Testing Multi-beta Pricing Models,” **Journal of Empirical Finance** 6, 1999, 219–241 (with Raja Velu).
- “Security Factors as Linear Combinations of Economic Variables,” **Journal of Financial Markets** 2, 1999, 403–432.
- “Investment Horizon and the Cross Section of Expected Returns: Evidence from the Tokyo Stock Exchange,” **Annals of Economics and Finance** 1, 2000, 79–100 (with Pin-Huang Chou and Yuan-Lin Hsu).
- “On Rate of Convergence of Discrete-time Contingent Claims,” **Mathematical Finance** 10, 2000, 53–75 (with Steve Heston).
- “What Determines Expected International Asset Returns,” **Annals of Economics and Finance** 3, 2002, 83–127 (with Campbell Harvey and Bruno Solnik; also [NBER Working Paper 4660](#)).
- “Data-generating Process Uncertainty: What Difference Does It Make in Portfolio Decisions?” **Journal of Financial Economics** 72, 2004, 385–421 (with Jun Tu).
- “A New Variance Bound On the Stochastic Discount Factor,” **Journal of Business** 79, 2006, 941–961 (with Raymond Kan).
- “Portfolio Optimization under Asset Pricing Anomalies,” **Japan & The World Economy** 18, 2006, 121–142 ([lead article](#); with Pin-Huang Chou and Wen-Shen Li).
- “Using Bootstrap to Test Portfolio Efficiency,” **Annals of Economics and Finance** 7, 2006, 217–249 ([lead article](#); with Pin-Huang Chou).
- “Estimating and Testing Beta Pricing Models: Alternative Methods and Their Performance in Simulations,” **Journal of Financial Economics** 84, 2007, 40–86 (with Jay Shanken; also [NBER Working Paper 12055](#)).
- “Optimal Portfolio Choice with Parameter Uncertainty,” **Journal of Financial and Quantitative Analysis** 42, 2007, 621–656 (with Raymond Kan).
- “Asymmetries in Stock Returns: Statistical Tests and Economic Evaluation,” **Review of Financial Studies** 20, 2007, 1547–1581 (with Yongmiao Hong and Jun Tu).
- “Technical Analysis: An Asset Allocation Perspective on the Use of Moving Averages” **Journal of Financial Economics** 92, 2009, 519–544 (with Yingzi Zhu).
- “Out-of-Sample Equity Premium Prediction: Combination Forecasts and Links to the Real Economy,” **Review of Financial Studies** 23, 2010, 821–862 (with David Rapach and Jack Strauss).
  - #1 on the Mostread List of *Review of Financial Studies* (June 22, 2017).

- “Limited Participation, Consumption, and Saving Puzzles: A Simple Explanation and the Role of Insurance,” **Journal of Financial Economics** 96, 2010, 331–344 (with Todd Gormley and Hong Liu)
- “How Much Stock Return Predictability Can We Expect From an Asset Pricing Model?” **Economics Letters** 108, 2010, 184–186.
- “Incorporating Economic Objectives into Bayesian Priors: Portfolio Choice under Parameter Uncertainty,” **Journal of Financial and Quantitative Analysis** 45, 2010, 959–986 (with Jun Tu).
- “Markowitz Meets Talmud: A Combination of Sophisticated and Naive Diversification Strategies,” **Journal of Financial Economics** 99, 2011, 204–215 (with Jun Tu).
- “Volatility Trading: What Is the Role of the Long-Run Volatility Component?” **Journal of Financial and Quantitative Analysis** 47, 2012, 273–307 (with Yingzi Zhu).
- “Tests of Mean-variance Spanning” **Annals of Economics and Finance** 13, 2012, 145–193 (with Raymond Kan).
- “International Stock Return Predictability: What is the Role of the United States?” **Journal of Finance** 68, 2013, 1633–1662 (with David Rapach and Jack Strauss).
- “A New Anomaly: The Cross-Sectional Profitability of Technical Analysis” **Journal of Financial and Quantitative Analysis** 48, 2013, 1433–1461 (with Yufeng Han and Ke Yang).
  - SSRN downloads: 10,506 ([https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1656460](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1656460))
- “Forecasting the Equity Risk Premium: The Role of Technical Indicators” **Management Science** 60, 2014, 1772–1791 (with Christopher Neely, David Rapach and Jun Tu).
- “Macroeconomic Volatilities and the Long-run Risks of Asset Prices” **Management Science** 61, 2015, 413–430 (with Yingzi Zhu).
- “Investor Sentiment Aligned: A Powerful Predictor of Stock Returns” **Review of Financial Studies** 28, 2015, 791–837 (with Dashan Huang, Fuwei Jiang and Jun Tu).
  - Top 4 on the Mostread List of *Review of Financial Studies* (Aug., 2017)
- “Fama-MacBeth Two-pass Regression: Improving the Risk Premia Estimates” **Finance Research Letters** 15, 2015, 31–40 (with Jushan Bai).
- “Short Interest and Aggregate Stock Returns” **Journal of Financial Economics** 121, 2016, 46–65 (with David Rapach and Matthew Ringgenberg).
- “A Trend Factor: Any Economic Gains from Using Information over Investment Horizons?” **Journal of Financial Economics** 122, 2016, 352–375 (with Yufeng Han and Yingzi Zhu).
  - SSRN downloads: 8486 ([https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2182667](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2182667))
- “Modeling Non-normality Using Multivariate t: Implications for Asset Pricing” **China Finance Review International** 7, 2017, 2–32 (with Raymond Kan).

- “Upper Bounds on Return Predictability” **Journal of Financial and Quantitative Analysis** 52, 2017, 401–425 ([lead article](#); with Dashan Huang).
- “Market Intraday Momentum” **Journal of Financial Economics** 129, 2018, 394–414 (with Lei Gao, Yufeng Han and Sophia Zhengzi Li).
  - SSRN downloads: 10,429 ([https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2182667](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2182667))
- “Asymmetry in Stock Comovements: An Entropy Approach” **Journal of Financial and Quantitative Analysis** 53, 2018, 1479–1507 (with Lei Jiang and Ke Wu).
- “Forecasting Corporate Bond Returns: An Iterated Combination Approach” **Management Science** 64, 2018, 4218–4318 (with Hai Lin and Chunchi Wu).
- “Firm Characteristics and Chinese Stocks” **Journal of Management Science and Engineering** 3, 2018, 259–283 (with Fuwei Jiang and Guohao Tang).
- “Manager Sentiment and Stock Returns” **Journal of Financial Economics** 132, 2019, 126–149 (with Fuwei Jiang, Joshua Lee and Xiumin Martin).
- “Stock Return Asymmetry: Beyond Skewness” **Journal of Financial and Quantitative Analysis** 55, 2020, 357–386 ([lead article](#)); with Lei Jiang, Ke Wu and Yifeng Zhu).
- “Time-Series Momentum: Is It There?” **Journal of Financial Economics** 135, 2020, 774–794. (with Dashan Huang, Jiangyuan Li, and Liyao Wang).
- “The Chinese warrant bubble: A fundamental analysis” **Journal of Futures Markets** 41, 2021, 3–26 ([lead article](#); with Yintian Wang and Yingzi Zhu).
- “Bitcoin: Predictability and Profitability via Technical Analysis” **Financial Management** 50, 2021, 107–137 (with Andrew Detzel, Hong Liu, Jack Strauss and Yingzi Zhu).
- “Anomalies Enhanced: A Portfolio Rebalancing Approach” **Financial Management** 50, 2021, 371–424 (with Yufeng Han and Dayong Huang).
- “Unspanned Global Macro Risks in Bond Returns” **Management Science** 67, 2021, 7825–7843 (with Feng Zhao and Xiaoneng Zhu).
- “Anomalies and the Expected Market Return” **Journal of Finance** 77, 2022, 639–681 (with Xi Dong, Yan Li and David Rapach).
- “Scaled PCA: A New Approach to Dimension Reduction” **Management Science** 68, 2022, 1678–1695 (with Dashan Huang, Fuwei Jiang, Kumpeng Li, and Guoshi Tong)
  - special issue on data-driven prescriptive analytics
- “Optimal Portfolio Choice with Estimation Risk: No Risk-free Asset Case” **Management Science** 68, 2022, 2047–2068 (with Raymond Kan and Xiaolu Wang)
- “Investor Attention and Stock Returns” **Journal of Financial and Quantitative Analysis** 57, 2022, 455–484 (with Jian Chen, Guohao Tang and Jiaquan Yao).
- “Expected Return, Volume and Mispricing” **Journal of Financial Economics** 143, 2022, 1295–1315 (with Yufeng Han, Dashan Huang and Dayong Huang).
- “Predictive Information in Corporate Bond Yields” **Journal of Financial Markets** 59, 2022, 100687 (with Gu Xu, Hai Lin and Chunchi Wu).

- “Recovering the FOMC Risk Premium” **Journal of Financial Economics** 145, 2022, 45–68 (with Hong Liu and Xiaoxiao Tang).
- “Firm Fundamentals and the Cross Section of Implied Volatility Shapes” **Journal of Financial Markets** 63, 2023, 100771 ([lead article](#); with Ding Chen and Biao Guo).
- “Employee Sentiment and Stock Returns” **Journal of Economic Dynamics and Control** 149, 2023, 104636 (with Jian Chen, Guohao Tang and Jiaquan Yao).
- “Shrinking Factor Dimension: A Reduced-rank Approach” **Management Science** 69, 2023, 5501–5522 (with Ai He, Dashan Huang and Jiaen Li).
- “Are Bond Returns Predictable with Real-Time Macro Data?” **Journal of Econometrics** 237, 2023, 105438 (with Dashan Huang, Fuwei Jiang, Kumpeng Li and Guoshi Tong).
- “Diagnostics of Asset Pricing Models” **Financial Management** 52, 2023, 617–642 (with Ai He).
- “Winners from Winners: A Tale of Risk Factors” **Management Science** 70, 2024, 396–414 (with Siddhartha Chib and Lingxiao Zhao).
- “Why Naive  $1/N$  Diversification is Not So Naive, and How to Beat It?” **Journal of Financial and Quantitative Analysis** (with Ming Yuan, forthcoming)
- “Trend Factor in China: The Role of Large Individual Trading” **Review of Asset Pricing Studies** (with Yang Liu and Yingzi Zhu, forthcoming)

#### Publications (academic journals in Chinese)

3. “Multiple Monetary Policy Tools in China: Applicability and Reliability of the DSGE Model and the Taylor rule” **金融评论** (Chinese Review of Financial Studies) 5, 2018, 1–21 (with Hongkui Li and Wei Tu).
2. “Are There Trends in Chinese Stock Market?” **金融研究** (Journal of Financial Research; the top finance journal in China) 12, 2014, 152–163 (with Yufeng Han, Xiongjian Wang and Heng-fu Zou).
1. “How Predictable Is the Chinese Stock Market?” **金融研究** (Journal of Financial Research; the top finance journal in China) 9, 2011, 107–121 (with Jiang Fuwei, David Rapach, Jack Strauss and Tu Jun).

#### Publications (practitioner/industry journals)

14. “Volatility-Managed Portfolio: Does It Really Work?” **Journal of Portfolio Management** 2019, 46 (1), 2019, 38–51 (with Fang Liu and Xiaoxiao Tang).
13. “Industry Return Predictability: A Machine Learning Approach” **Journal of Financial Data Science** 1 (3), 2019, 9–28 ([lead article](#); with David Rapach, Jack Strauss and Jun Tu).
12. “The Chinese Bond Market: Risk, Return and Opportunities” **Journal of Portfolio Management** *Special China Issue*, 2015, 110–126 (with Longzhen Fan and Fuwei Jiang).
11. “Strategy Diversification: Combining Momentum and Carry Strategies within a Foreign Exchange Portfolio” **Journal of Derivatives and Hedge Funds** 19, 2014, 311–320 (with Francis Olszewski).

10. “The Supply Factor in the Bond Market: Implications for Bond Risk and Return” **Journal of Fixed Income** 23, 2013, 62–81 (with Longzhen Fan and Canlin Li).
9. “Asset Allocation: Can Technical Analysis Add Value?” **International Journal of Portfolio Analysis and Management** 1, 2012, 83–176 (with Sheng Qiang and Yingzi Zhu).
8. “Predicting Market Components Out of Sample: Asset Allocation Implications” **Journal of Portfolio Management** 37 (4), 2011, 29–41 (with Aiguo Kong, David Rapach and Jack Strauss).
7. “What Will the Likely Range of My Wealth Be?: Author Response” **Financial Analysts Journal** 66 (3), 2010, 12 (with Raymond Kan).
6. “Is the Recent Financial Crisis Really a ‘Once-in-a-century’ Event?” **Financial Analysts Journal** 66 (1), 2010, 24–27 (with Yingzi Zhu).
5. “Beyond Black-Litterman: Letting the Data Speak” **Journal of Portfolio Management** 36 (1), 2009, 36–45.
4. “What Will the Likely Range of My Wealth Be?” **Financial Analysts Journal** 65 (4), 2009, 68–77 (with Raymond Kan).
3. “On the Fundamental Law of Active Portfolio Management: How to Make Conditional Investments Unconditionally Optimal?” **Journal of Portfolio Management** 35 (1), 2008, 12–21 ([lead article](#)).
2. “On the Fundamental Law of Active Portfolio Management: What Happens if Our Estimates Are Wrong?” **Journal of Portfolio Management** 34 (4), 2008, 26–33.
1. “Going to Extremes: Correcting Simulation Bias in Exotic Option Valuation,” **Financial Analysts Journal** 53, 1997, 62–68 (with David Beaglehole and Philip Dybvig).

#### Publications (review papers/book chapters)

13. “Asset Pricing: Cross-section Predictability” **Oxford Research Encyclopedia of Economics and Finance**, Oxford University Press, 1–35, 2024 (with Paolo Zaffaroni).
12. “Technical Analysis in the Stock Market: A Review” in **Handbook of Investment Analysis, Portfolio Management, and Financial Derivatives**, edited by C. Lee, A. Lee, and J. Lee, World Scientific, 2022 (with Yufeng Han, Yang Liu and Yingzi Zhu; forthcoming).
11. “Asset Pricing: Time-Series Predictability” **Oxford Research Encyclopedia of Economics and Finance**, Oxford University Press, 1–34, 2022 (with David Rapach).
10. “Time-Series and Cross-Sectional Stock Return Forecasting: New Machine Learning Methods” (in **Machine Learning for Asset Management**, edited by Emmanuel Jurczenko, Wiley, 2020), 1–33 (with David Rapach).
9. “Measuring Investor Sentiment,” **Annual Review of Financial Economics** 10, 2018, 239–259.
8. “Forecasting Stock Returns,” (in **Handbook of Forecasting II**, edited by G. Elliott and A. Timmerman, North-Holland, 2013), 329–383 (with David Rapach).
7. “General Principles of Asset Pricing” (in **Encyclopedia of Financial Models**, Volume I, edited by F. Fabozzi, Wiley, 2013), 49–63 (with Frank Fabozzi).



6. “Factor Models,” (in **The Theory and Practice of Investment Management**, 2nd edition, edited by F. Fabozzi and H. Markowitz, Wiley, 2011), 103–124 (with Frank Fabozzi).
5. “Bayesian Portfolio Analysis,” **Annual Review of Financial Economics** 2, 2010, 25–47 (with Doron Avramov).
4. “On Cross-section Analysis of Stock Returns,” **Annual Review of Financial Economics** 2, 2010, 49–74 (with Ravi Jagannathan and Ernst Schaumburg).
3. “Robust Portfolios: Contributions from Operations Research and Finance,” **Annals of Operations Research** 176, 2010, 191–220 (with Frank Fabozzi and Dashan Huang).
2. “Understanding the Role of Diversification,” **Q-finance: The Ultimate Resource**, 380–381, 2009, Bloomsbury, London.
1. “Exploring the Relation Between Discrete-time Jump Processes and the Finite Difference Method,” (in **Advanced Fixed-Income Valuation Tools** edited by N. Jegadeesh and B. Tuckman, Wiley, 2000), 347–366 (with Steve Heston).

### Publications (books)

1. **An Introduction to Financial Economics** (with Frank Fabozzi and Edwin Neave; Wiley, 2011).

### Publications (earlier math papers)

#### PDE and Numerical Analysis

12. “High Order Difference Methods for the Biharmonic Equation,” *Acta Mathematica* 6, 223–230, 1986 (with Qin Lin and Tao Lu).
11. “Highly Accurate Numerical Solutions of Elliptic Boundary Value Problems on General Regions,” *Journal of Computational Mathematics* 4, 3–10, 1985.
10. “Fourth Order Finite Analogues for Poisson’s Equation,” *The Mathematics of Computations* 23, 318–322, 1985 ([lead article](#)).

#### Function Theory

9. “Some Theorems on Almost Left- and Right-Continuous Functions,” *Journal of Sichuan Teachers University* 12, 39–42, 1981 (with Wangjin Liu, Chiding Kang and Daqing Wan).

#### Number Theory

8. “On the Diophantine Equation  $x^4 - Dy^2 = 1$ ,” *Journal of Mathematical Research and Exposition* 3, 83–84, 1983 (with Chiding Kang and Daqing Wan).
7. “On the Diophantine Equation  $\sum_{k=1}^m k^n = (m+1)^n$ ,” *Journal of Mathematical Research and Exposition* 3, 47–48, 1983 (with Chiding Kang).
6. “On Giuga’s Conjecture and a Necessary and Sufficient Condition for Fermat’s Numbers to be Prime,” *Mathematical Monthly, Chinese Mathematical Society* 23, 20–22, 1983 (with Chiding Kang).

5. “On Giuga’s Conjecture and a Necessary and Sufficient Condition for Mersenne’s Numbers to be Prime,” *Mathematical Monthly, Chinese Mathematical Society* 23, 20–22, 1983 (with Chiding Kang).
4. “Remarks on Two Diophantine Equations of the Fourth Order,” *Annals of Hunan Mathematical Society* 22, 112–116, 1982 (with Chiding Kang and Daqing Wan).
3. “Remarks on the Diophantine Equation  $\prod_{i=1}^k x_i^{x_i} = z^z$ ,” *Journal of China University of Science and Technology* supplement, 19–22, 1982 (with Chiding Kang, Daqing Wan and Liren Zhao).
2. “On the Diophantine Equation  $x^4 - 2Dy^2 = 1$ ,” *Journal of China University of Science and Technology* 12, 119–121, 1982 (with Chiding Kang, Daqing Wan and Liren Zhao).
1. “On Gigua’s Conjecture,” *Journal of Chengdu College of Geology* 24, 87–92, 1980 (with Chiding Kang).

### Working Papers

- “ChatGPT, Stock Market Predictability and Links to the Macroeconomy” (with Jian Chen, Guohao Tang and Wu Zhu)
- “Unusual Financial Communication - Evidence from ChatGPT, Earnings Calls, and the Stock Market” (with Lars Beckmann, Heiner Beckmeyer, Ilias Filippou and Stefan Menze)
- “Pocket of Factor Pricing” (with Sophia Zhengzi Li and Peixuan Yuan)
- “Risk Momentum: A New Class of Price Patterns” (with Sophia Zhengzi Li and Peixuan Yuan)
- “Did Retail Traders Take Over Wall Street? A Tick-by-Tick Analysis of GameStop’s Price Surge” (with Zhaoque (Chosen) Zhou)
- “Option Hedging Demand” (with Xiaoxiao Tang and Zhaoque (Chosen) Zhou)
- “A New Option Momentum: Compensation for Risk” (with Heiner Beckmeyer and Ilias Filippou)
- “Expected Index Option Return: What Can We Learn From Macro and Anomalies” (Heiner Beckmeyer and Guoshi Tong)
- “Principal Portfolios: The Multi-Signal Case” (with Songrun He and Ming Yuan)
- “No Sparsity in Asset Pricing: Evidence from a Generic Statistical Test” (with Junnan He and Lingxiao Zhao)
- “Useful Factors Are Fewer Than You Think After Accounting for False-Discovery” (with Bin Chen and Qiyang Yu)
- “Macroeconomic Trends and Equity Risk Premium” (with Yufeng Han and Yueliang (Jacques) Lu)
- “Anomaly Returns and FOMC” (with Lin Tan and Xiaoyan Zhang)
- “Information Transmission from Corporate Bonds to the Aggregate Stock Market” (with Sophia Zhengzi Li and Peixuan Yuan)

- “Interpretable Factors of Firm Characteristics” (with Yuxiao Jiao and Yingzi Zhu)
- “Earnings Announcements: Ex-ante Risk Premia” (with Hong Liu, Yingdong Mao and Xiaoxiao Tang)
- “Unspanned Risk and Risk-Return Tradeoff” (with Huacheng Zhang)
- “Hide in the Herd: Macroeconomic Uncertainty and Analyst Forecasts Dispersion” (with Shen Zhao)
- “Anomalies as New Hedge Fund Factors: A Machine Learning Approach” (with Yong Chen, Sophia Zhengzi Li and Yushan Tang)
- “Market Risk Premium Expectation: Combining Option Theory with Traditional Predictors” (with Hong Liu, Yueliang (Jacques) Lu and Weike Xu)
- “Betting Against the Crowd: Option Trading and Market Risk Premium” (with Jie Cao, Gang Li and Xintong Zhan)
- “Investor Sentiment and Asset Returns: Actions Speak Louder than Words” (with Dat Mai and Kuntara Pukthuanthong)
- “A Model-based Commodity Risk Measure on Commodity and Stock Market Returns” (with Ai Jun Hou, Emmanouil Platanakis and Xiaoxia Ye)
- “ETFs, Anomalies and Market Efficiency (with Ilias Filippou, Songrun He and Sophia Zhengzi Li)
- “Heterogeneous Response: An Extension of the Fama-MacBeth Regression” (with Xiaoxiao Tang and Xiwei Tang)
- “Option Characteristics as Cross-Sectional Predictors” (with Andreas Neuhierl, Xiaoxiao Tang and Rasmus Tangsgaard Varneskov)
- “Cross-sectional expected returns: New Fama-MacBeth regressions in the era of machine learning” (with Yufeng Han, Ai He, and David Rapach; presented at the 2019 AFA Annual Meetings)
- “Mispricing and Market Efficiency: An Exogenous Shock to Short Selling from the Dividend Tax Law Chang” (with Yufeng Han, Yueliang (Jacques) Lu and Weike Xu; presented at SFS Cavalcade North America 2021)
- “International Corporate Bond Market: Uncovering Risks Using Machine Learning” (with Delong Li, Lei Lu and Zhen Qi)
- “ESG and the Market Return” (with Liya Chu, Kent Wang and Bohui Zhang)
- “Fundamental Extrapolation and Stock Returns” (with Dashan Huang, Huacheng Zhang and Yingzi Zhu; presented at AFA 2022)
- “Sparse Macro Factors” (with David Rapach)
- “Economic Fundamentals and Short-Run Exchange Rate Prediction: A Machine Learning Perspective” (with Ilias Filippou, David Rapach and Mark Taylor; presented at Vienna Symposium on Foreign Exchange Markets, 2021; presented 5th Workshop in Financial Markets and Nonlinear Dynamics)

- “Does Compensation Matter? Evidence from CD&A Disclosures” (Xiumin Martin and Jie Xu)
- “Seeing is Believing: Annual Report ‘Graphicity’ and Stock Returns Predictability” (with Xiahu Deng, Lei Gao and Bo Hu)
- “Maximizing the Sharpe Ratio: A Genetic Programming Approach” (with Yang Liu and Yingzi Zhu)
- “Momentum, Reversal, and the Firm Fundamental Cycle” (with Yufeng Han, Zhaodan Huang, Weidong Tian; Best Paper Award, The World Finance Conference, 2019)
- “Twin Momentum: Fundamental Trends Matter” (with Dashan Huang and Huacheng Zhang)
- “Sentiment Across Asset Markets” (with Dashan Huang, Heikki Lehkonen and Kuntara Pukthuanthong)
- “An Information Factor: Can Informed Traders Make Abnormal Profits?” (with Matthew Ma, Xiumin Martin and Matthew Ringgenberg)
- “Investor Sentiment and the Cross-Section of Corporate Bond Returns” (with Xu Guo, Hai Lin and Chunchi Wu)
- “Lottery Preference and Anomalies” (with Lei Jiang, Quan Wen, and Yifeng Zhu)
- “Forecasting Stock Returns During Good and Bad Times” (with Dashan Huang, Fuwei Jiang and Jun Tu)
- “Cost Growth and Stock Returns” (with Dashan Huang, Fuwei Jiang and Jun Tu)
- “Taming Momentum Crashes: A Simple Stop-loss Strategy” (with Yufeng Han and Yingzi Zhu)
- “Which Hedge Fund Styles Hedge Against Bad Times?” (with Charles Cao and David Rapach)
- “Forecasting Bond Risk Premia Using Technical Indicators” (with Jeremy Goh, Fuwei Jiang, and Jun Tu)
- “Hansen-Jagannathan Distance: Geometry and Exact Distribution” (with Raymond Kan)
- “Toward a Better Understanding of the Beta Method and the Stochastic Discount Factor Method” (with Raymond Kan)

## School Service

*Area/Department Chair:* July 1, 2018–June 30, 2021

## Professional Service

- Associated Editor:* Journal of Financial and Quantitative Analysis (top 4 in finance), 2000–present  
Journal of Financial Markets, 2019–present  
Journal of Empirical Finance, 2016–present  
Review of Quantitative Finance and Accounting, 2021–present
- Editorial Board:* Journal of Portfolio Management, 2008–present  
International Journal of Portfolio Analysis & Management, 2011–present  
Journal of Systematic Investing, 2020–present  
Annals of Economics and Finance, 2000–present
- Director:* Asian Finance Association, 2008–2010
- Program Chair:* Summer Institute of Finance conference, SAIF; Xi'an, China 2024
- Program Co-Chair:* China International Conference in Finance, 2007, 2008
- Prog. Asso. Chair:* Northern Finance Association Meetings, 2023, 2024  
Meetings of the Financial Intermediation Research Society, 2008  
Western Finance Association Annual Meetings, 2002
- Tracking Chair:* Midwest Finance Association Conference, 2016
- Co-Organizer:* Asset Pricing Mini-Conference at Washington University, 2007
- Program Committee:* Western Finance Association Annual Meetings, 1999–2023  
China International Conference in Finance, 2002–2016, 2024  
European Finance Association Annual Meetings, 2014–2024  
Northern Finance Association Annual Meetings, 2017–2021, 2023  
Financial Management Association Annual Meetings, 2019–2021  
World Symposium on Investment Research, 2018–2023  
Georgia State FinTech Conference, 2019–2020; 2022–2023  
Young Scholars Finance Consortium, 2019, 2022, 2023  
Asian Finance Association/Nippon Fin. Association Conference, 2008–2013  
Midwest Finance Association Annual Meetings, 2015–2016  
The Summer Institute of Finance (China), 2017, 2019, 2022–2023  
Finance Down Under, 2014–2019  
Society for Financial Studies Cavalcade, 2013  
McGill Global Asset Management Conference, 2013–2015  
FMA Latin American Conference, 2017  
The Fourth Singapore International Conference on Finance, 2010  
Meetings of the Financial Intermediation Research Society, 2009–2016  
Far Eastern Econometric Society Meetings, 2006  
Fourth Annual Conference on Corporate Finance at Washington U., 2007
- Keynote Speaker:* Hong Kong Conference for Fintech, AI and Big Data in Business,  
City University of Hong Kong, 2023  
2<sup>nd</sup> international FinTech Conference, Renmin University of China, 2021  
29<sup>th</sup> Annual Pacific Basin Finance, Economics,  
Accounting and Management Conference, USA, 2021  
Frontiers of Factor Investing Conference, UK, 2021  
FinTech Conference, Qingdao, China, 2020

Quantitative Investing Conference, USA, 2020  
China Finance Review International Conference, 2019  
Conference on Financial Predictability and Big Data, China, 2017, 2018, 2019  
North America Annual Meeting of Chinese Economists Society, USA, 2019  
International Conference for the Economic and Financial  
Challenges and Issues in the Asia-Pacific Countries, China, 2012

*Invited Speaker:* Spring 2022 Rochester Conference in Econometrics, U. of Rochester  
2020 Shanghai Financial Forefront Symposium, Shanghai Jiao Tong U.  
2017 Workshop on Advanced Econometrics, U. Kansas  
2014 Int'l Symposium on Financial Engineering and Risk Management  
2014 Q-group Conference in Charleston, SC.  
2013 International Conference of Financial Econometrics, Shandong U.  
2013 China Finance Review International Conference, Shanghai Jiao Tong U.  
3rd Annual Conference of the Society for Financial Econometrics  
(@University of Melbourne, 2010)  
19th International Workshop on Matrices and Statistics  
(@Shanghai Finance University, 2010)  
2009 Montreal Financial Econometrics Conference  
(@HEC Montreal)  
2008 Asian FA-NFA International Conference  
2008 Workshop on Advances in Portfolio Optimization  
(@London Imperial College Business School)

*Panelist:* Doctoral consortium, Financial Management Association Int'l, 2016.

*PhD Supervision:* Chair or co-chair on the thesis committees for  
Federico Nardari (1999, first job at Arizona State University)  
Paskalis Glabadanidis (2003, first job at Koc University)  
Yufeng Han (2003, first job at Tulane University)  
Jun Tu (2004, first job at Singapore Management University)  
Dashan Huang (2013, first job at Singapore Management University)  
Suying Liu (2015, first job at J. P. Morgan)  
Landon Ross (2021, stays Post-doc for 1-yr due to Covid, then works at SEC)  
*Committee member* for  
Students in Accounting, Management and Economics (in- and out-side B-school).

*Assessor:* National Science Foundation, 2004;  
National University of Singapore, 1995  
Research Grants Council, Hong Kong, 1998–present  
Social Sciences and Humanities Research Council of Canada, 1996, 2004

*Referee:*

Review of Financial Studies	Journal of Financial Economics
Journal of Finance	Journal of Financial and Quantitative Analysis
Journal of Portfolio Management	Financial Analysts Journal
Journal of Financial Markets	Finance Research Letters
Journal of Empirical Finance	Mathematical Finance

Econometrica	Journal of Econometrics
Econometric Theory	Journal of Applied Econometrics
Management Science	Review of Economic Studies
Journal of Financial Research	Journal of Business and Economic Statistics
Engineering Economist	Journal of Futures Markets
Journal of Banking and Finance	Real Estate Economics
Journal of Business	International Review of Economics & Finance
European Finance Review	Journal of Financial Econometrics
Quantitative Finance	Applied Mathematical Finance
Southern Economic Journal	Review of Economics and Statistics
North American Actuarial Journal	European Journal of Finance
European Financial Management	Journal of Forecasting
Global Finance Journal	China Economic Review
Pacific-basin Finance Journal	Journal of International Money and Finance
Canadian Journal of Economics	International J. of Business and Systems Research
Annals of Economics and Finance	Quarterly Review of Economics and Finance
Physica A	Computational Statistics and Data Analysis
Statistica Sinica	Statistics
Economics Letters	Journal of Money, Credit and Banking
Journal of Risk	Int'l J. of Portfolio Analysis & Mag.
Review of Asset Pricing Studies	Critical Finance Review
Review of Finance	Int'l Review of Finance
Econometric Reviews	SIAM Journal on Financial Mathematics
Scandinavian J. of Statistics	Applied Economics Letters
Complexity	North American J. of Economics and Finance
Economic Modelling	Journal of Multivariate Analysis
Sankhya	J. of Behavioral and Experimental Finance
Financial Review	Review of Quant. Fin. and Accounting
Quantitative Economics	Journal of Investing

### **Professional Associations**

Member: American Finance Association, 1990–present

## **Personal**

*Birth Place:* Chengdu, Sichuan Province, China.  
*Citizenship:* The United States of America.

## **Hobbies & Interests**

Reading (history, philosophy, martial arts fiction, cosmology), playing chess, and lifting weights.