Xinghua Zheng

Department of ISOM
Hong Kong University of Science and Technology
Clear Water Bay, Hong Kong SAR

Phone: (852) 2358 7750
Email: xhzheng@ust.hk
URL: http://xhzheng.people.ust.hk/

Education

2004 - 2008 PhD in Statistics, University of Chicago
2000 - 2003 MSc in Mathematics, Peking University
1996 - 2000 BSc in Mathematics, Beijing Normal University

Academic experience

2021 - present *Professor*, Department of Information Systems, Business Statistics and Operations Management (ISOM), Hong Kong University of Science and Technology (HKUST)
2016 - 2021 *Associate Professor*, Department of ISOM, HKUST
2011 - 2016 *Assistant Professor*, Department of ISOM, HKUST
2009 - 2011 *Visiting Assistant Professor*, Department of ISOM, HKUST
2008 - 2009 *Postdoctoral Fellow*, Department of Mathematics, University of British Columbia

Editorial appointment

2025 - present Associate Editor, *Journal of Business & Economic Statistics*
2017 - present Associate Editor, *Statistica Sinica*

Areas of specialization

Financial Big Data
High-dimensional statistics, large covariance matrices, large portfolio management
High-frequency and/or high-dimensional data analysis
Population models, stochastic interacting particle systems

Publications

2025 Multiplicative factor modeling for volatility, with Yi Ding, Robert Engle and Yingying Li, ***Journal of Econometrics***, 249(2025), 105959

2024 High-Dimensional Covariance Matrices Under Dynamic Volatility Models: Asymptotics and Shrinkage Estimation, with Yi Ding, ***Annals of Statistics***, 52(2024), 1027-1049

2024 In-Sample and Out-of-Sample Sharpe Ratios of Multi-Factor Asset Pricing Models, with Raymond Kan and Xiaolu Wang, ***Journal of Financial Economics***, 155(2024), 103837

2024 Supercritical Spatial SIR Epidemics: Spreading Speed and Herd Immunity, with Qingsan Zhu, ***Annals of Applied Probability***, 34 (2024), 3584-3630

2024 Ding, Y., Li, Y., Liu, G. and Zheng, X., "Stock Co-jump Network," ***Journal of Econometrics***, 239 (2024), 105420

2021 Neuman, E. and Zheng, X., "On the Maximal Displacement of Near-critical Branching Random Walks," ***Probability Theory and Related Fields***, 180 (2021), 199-232.

2021 Ding, Y., Li, Y. and Zheng, X., "High-dimensional Minimum Variance Portfolio Estimation under Statistical Factor Models", ***Journal of Econometrics***, 222 (2021), 502-515.

2021 Yang, X., Zheng, X. and Chen, J., "Testing High-dimensional Covariance Matrices under the Elliptical Distribution and Beyond", ***Journal of Econometrics***, 221(2021), 409-423.

2020 Cai, T., Hu, J., Li, Y. and Zheng, X., "High-dimensional Minimum Variance Portfolio Estimation Based on High-frequency Data", ***Journal of Econometrics***, 214 (2020), 482-494.

2019 Ao, M., Li, Y. and Zheng, X., "Approaching Mean-Variance Efficiency for Large Portfolios", ***Review of Financial Studies***, 32 (2019), 2890-2919.

2019 Jacod, J., Li, Y. and Zheng, X., "Estimating the Integrated Volatility with Tick Observations", ***Journal of Econometrics***, 208 (2019), 80-100.

2018 Xia, N. and Zheng, X., "On the Inference about the Spectral Distribution of High-Dimensional Covariance Matrix Based on High-Frequency Noisy Observations", ***Annals of Statistics***, 46 (2018), 505-525.

2018 Li, Y. and Zheng, X., "Comment on: Limit of Random Measures Associated with the Increments of a Brownian Semimartingale", ***Journal of Financial Econometrics***, 16 (2018), 583-587.

2017 Jacod, J., Li, Y. and Zheng, X., "Statistical Properties of Microstructure Noise", ***Econometrica***, 85 (2017), 1133-1174.

2017 Neuman, E. and Zheng, X., "On the Maximal Displacement of Subcritical Branching Random Walks", ***Probability Theory and Related Fields***, 167 (2017), 1137-1164.

2016 Li, Y., Xie, S. and Zheng, X., "Efficient Estimation of Integrated Volatility Incorporating Trading Information", ***Journal of Econometrics***, 195 (2016), 33 - 50.

2014 Lalley, S.P., Perkins, E.A. and Zheng, X., "A Phase Transition for Measure-valued SIR Epidemic Processes", ***Annals of Probability***, 42 (2014), 237 - 310.

2014 Li, Y., Mykland, P.A., Renault, E., Zhang, L. and Zheng, X., "Realized Volatility When Sampling Times are Possibly Endogenous", ***Econometric Theory***, 30 (2014), 580 - 605.

2013 Xiao, Y. and Zheng, X., "Discrete Fractal Dimensions of the Ranges of Random Walks in $\mathbb{Z}^d$ Associate with Random Conductances", ***Probability Theory and Related Fields***, 156 (2013), 1 - 26.

2013 Li, Y., Zhang, Z. and Zheng, X., "Volatility Inference in the Presence of Both Endogenous Time and Microstructure Noise", ***Stochastic Processes and their Applications***, 123 (2013), 2696 - 2727.

2012 Vatutin, V. and Zheng, X., "Subcritical Branching Processes in Random Environment without Cramer Condition", ***Stochastic Processes and their Applications***, 22 (2012), 2594 - 2609.

2011 Zheng, X. and Li, Y., "On the Estimation of Integrated Covariance Matrices of High Dimensional Diffusion Processes", ***Annals of Statistics***, 39 (2011), 3121 - 3151.

2011 Lalley, S.P. and Zheng, X., "Occupation Statistics of Critical Branching Random Walks in Two or Higher Dimensions", ***Annals of Probability***, 39 (2011), 327 - 368.

2010 Lalley, S.P. and Zheng, X., "Spatial Epidemics and Local Times for Critical Branching Random Walks in Dimensions 2 and 3", ***Probability Theory and Related Fields***, 148 (2010), 527 - 566.

2010 Zheng, X., "Critical Branching Random Walks with Small Drift", ***Stochastic Processes and their Applications***, 120 (2010), 1821 - 1836.

2010 Barlow, M.T. and Zheng, X., "The Random Conductance Model with Cauchy Tails", ***Annals of Applied Probability***, 20 (2010), 869 - 889.

Grants, honors & awards

2023 Elected Fellow, the Society for Financial Econometrics (SoFiE)

2016 - 2023 Dean's Recognitions of Teaching Excellence

2022 - 2024 PI: RGC/GRF, "Estimate Large Efficient Portfolios When No Risk-free Asset Is Available"

2022 - 2024 PI: RGC/GRF, "Spectral Properties of Sample Covariance Matrix under High-dimensional Volatility Models"

2021 PI: HKUST-Kaisa Joint Research Institute, "Approaching Mean-Variance Efficiency for Large Portfolios"

2020 - 2022 PI: RGC/GRF, "Inference for High-dimensional Elliptical Models"

2019 - 2022 Co-I: RGC Theme-based Project, "Contributing to the Development of Hong Kong into a Global FinTech Hub"

2018 - 2020 PI: RGC/GRF, "Statistical Inference of Large Factor Models"

2016 - 2018 PI: RGC/GRF, "High-dimensional Inference with Applications to Large Portfolio Management"

2014 - 2016 PI: RGC/GRF, "Particle Systems in Random Environment"

2011 - 2014 PI: RGC/GRF, "Statistical Inference for High-dimensional and High-frequency Data"

2010 - 2013 PI: RGC/GRF, "Critical Behavior of Stochastic Spatial Models"

2010 - 2013 Co-I: RGC/GRF, "Statistical Analysis of High-frequency Financial Data in the Presence of Random Transaction Times and Market Microstructure Errors"

2011 - 2013 Co-I: Special Research Fund Initiative, "Innovative Advancements in Quantitative Finance"

2010 - PI: Direct Allocation Grant, "Estimating Covariation Matrix For High-dimensional Diffusion Processes Using High-frequency Data"

Media coverage

Feb 2020 *CFA Institute Journal Review*, summary of “Approaching Mean-Variance Efficiency for Large Portfolios” by Ao, Li and Zheng (*Review of Financial Studies*, 2019).

Teaching

2021 - *Applied Statistics and Regression*, for Doctor of Business Administration
2017 - *Business Analytics in R*, for MSc in Business Analytics and MSc in Global Operations
2017 *Statistics for Financial Analysis*, for MSc in Investment Management and MSc in Financial Analysis
2009 - *Business Statistics*, for first-year undergraduate students
2010 - *Statistical Analysis of Financial Data in R*, for senior undergraduate students
2011 *Introduction to Probability Models*, for junior undergraduate students

Invited presentations

Conferences

Dec 2024 2024 First Macau International Conference on Business Intelligence and Analytics, Macau
Nov 2024 2024 Inaugural Meeting of the Greater Bay Econometrics Study Group, Macau
Jul 2024 2nd Joint Conference on Statistics and Data Science, Kunming
Jun 2024 The 36th Asian Finance Association Annual Conference, Macau
May 2024 Market Microstructure, Quantitative Trading, High Frequency, and Large Data, University of Chicago
Aug 2023 Hangzhou International Conference on Frontiers of Data Science, Zhejiang University
Jul 2023 The 9th International Forum on Statistics, Renmin University of China
Jul 2023 The 12th ICSA International Conference, Hong Kong
Sep 2021 Joint Laboratory of Data Science and Business Intelligence, Southwestern University of Finance and Technology
Mar 2021 Midwest Finance Association 2021 Annual Meeting
Dec 2019 The 11th ICSA International Conference, Hangzhou
Dec 2019 Workshop on Random Matrices and Complex Data Analysis, Shanghai
Aug 2019 The 62nd World Statistics Congress, Kuala Lumpur
Jul 2019 The 2nd Annual Conference of the Institute of Financial Econometrics and Risk Management of Chinese Society of Management Science and Engineering, *Keynote Speaker*, Dalian
Jul 2019 The 7th IMS-China International Conference on Statistics and Probability, Dalian
Jun 2019 China Meeting of the Econometric Society, Guangzhou
Jun 2019 The 12th Annual Society for Financial Econometrics (SoFiE) Conference, Shanghai.
May 2019 Hangzhou International Conference on Frontiers of Data Sciences
May 2019 CUHK-Imperial College London Joint Workshop on Quantitative Finance
Dec 2018 The 11th International Conference of the ERCIM WG on Computational and Methodological Statistics, Pisa
Dec 2018 CUHK Econometrics Workshop

Jul 2018 ICSA China Conference with the Focus on Data Science, Qingdao
Jun 2018 The 5th IMS-Asia Pacific Rim Meeting, Singapore
Jun 2018 International Symposium on Financial Engineering and Risk Management (FERM), Shanghai
Jul 2017 Joint Statistical Meetings, Baltimore
Jun 2017 ICSA Applied Statistics Symposium, Chicago
Jun 2017 The 10th Annual Society for Financial Econometrics (SoFiE) Conference, New York
May 2017 The 2nd Conference on High-Dimensional Statistics in the Age of Big Data, Guanghua, Peking University
Dec 2016 The 1st Fudan International Conference on Data Science
Dec 2016 CSA Annual Meeting & NCCU Joint Statistical Meetings, Taipei
Nov 2016 International Symposium on Probability Theory and Related Fields, Southern University of Science and Technology
Sep 2016 The 2nd Technion-HKUST Joint Workshop, HKUST
Jul 2016 ICSA Conference on Data Science, Dali
Jun 2016 The 4th IMS-Asia Pacific Rim Meeting, Hong Kong
Jun 2016 The 9th Annual Society for Financial Econometrics (SoFiE) Conference, Hong Kong
Jun 2016 International Symposium on Financial Engineering and Risk Management (FERM), Guangzhou
May 2016 The 7th International Statistics Forum, Renmin University of China
Dec 2015 The 9th Conference of the Asian Regional Section of the International Association for Statistical Computing, Singapore
Oct 2015 Conference on Econometrics of High-Dimensional Risk Networks, University of Chicago
Jul 2015 SYSU Workshop on Financial Engineering and Risk Management, Sun Yat-sen University
Jul 2015 The 5th IMS-China International Conference on Statistics and Probability, Kunming
Jun 2015 The 8th Annual Society for Financial Econometrics (SoFiE) Conference, Aarhus
Jan 2015 The 3rd Workshop on Random Matrices and their Applications, University of Hong Kong
Dec 2014 The 2nd CUHK Symposium on Statistics: Financial Risk Management, Chinese University of Hong Kong
Jul 2014 The 3rd IMS-Asia Pacific Rim Meeting, Taipei
Jun 2014 International Symposium on Financial Engineering and Risk Management (FERM), Beijing
May 2014 The 6th International Statistics Forum, Renmin University of China
Dec 2013 ICSA International Conference, Hong Kong
Aug 2013 The 59th World Statistics Congress, Hong Kong
Aug 2013 NSF/CBMS Conference on Analysis of Stochastic Partial Differential Equations, Michigan State University
Jun 2013 The 4th IMS-China International Conference on Statistics and Probability, Chengdu
Jun 2013 Russian-Chinese Seminar on Asymptotic Methods in Probability Theory and Mathematical Statistics, St. Petersburg
Dec 2012 International Conference on Advances on Fractals and Related Topics, Hong Kong
Aug 2012 Workshop on Random Matrix Theory and its Applications, National University of Singapore
Jul 2012 The 2nd IMS-Asia Pacific Rim Meeting, Tsukuba
Dec 2011 HKU-HKUST-Stanford Conference in Quantitative Finance, Hong Kong

Jun 2011 The 20th ICSA Applied Statistics Symposium, New York
Jul 2011 The 3rd IMS-China International Conference on Statistics and Probability, XiAn
Aug 2010 Joint Statistical Meetings, Vancouver
Jul 2010 International Conference on Statistics and Society, Beijing
Jul 2010 International Conference on Statistical Analysis of Complex Data, Kunming
Jan 2010 The 1st Friendship Meeting in Mathematics between Fudan and Kyoto Universities, Kyoto University
Jul 2009 The 2nd IMS-China International Conference on Statistics and Probability, Weihai
Jun 2009 Summer School in Probability, University of British Columbia
Jun 2008 The 1st Joint Meeting of American Mathematical Society and Chinese Mathematical Society, Shanghai

Colloquiums/Seminars

Apr 2023 Research School of Finance, Actuarial Studies & Statistics, Australian National University
Mar 2020 School of Operations Research and Information Engineering, Cornell University
Jan 2020 Department of Mathematics, Statistics and Computer Science, University of Illinois at Chicago
Apr 2017 Wang Yanan Institute for Studies in Economics, Xiamen University
Nov 2015 School of Finance and Statistics, East China Normal University
Nov 2015 School of Statistics and Management, Shanghai University of Finance and Economics
Oct 2014 Department of Mathematics, University of British Columbia
May 2014 School of Mathematics and Statistics, Northeast Normal University
Mar 2014 Department of Management Sciences, City University of Hong Kong
Aug 2014 Department of Mathematics, University of Macau
Dec 2013 Department of Mathematics, Zhejiang University
Dec 2013 School of Statistics and Management, Shanghai University of Finance and Economics
Nov 2013 Department of Mathematics, University of Hong Kong
Mar 2013 Department of Mathematics, University of Macau
Aug 2012 Center for Statistical Science, Peking University
Nov 2011 Department of Statistics, Chinese University of Hong Kong
Jul 2011 Department of Applied Mathematics, Hong Kong Polytechnic University
Jun 2010 Institute of Mathematics, Academia Sinica, Taipei
Apr 2012 Department of Mathematics, Chinese University of Hong Kong
May 2010 Department of Statistics and Actuarial Science, University of Hong Kong
Oct 2009 Department of Mathematics, City University of Hong Kong
Dec 2008 School of Mathematical Sciences, Fudan University
Oct 2008 Department of Mathematics, University of British Columbia
Feb 2008 Department of Statistics, Rutgers University

Academic services

Conference organization

2024 - Program committee member, International Symposium on Econometric Theory and Applications
2023 - Organizer, HKUST IAS-SBM Joint Workshop on Financial Econometrics in the Big Data Era
2023 - Program committee member, Joint Conference on Statistics and Data Science in China
2017 - Program committee member, Annual Society for Financial Econometrics (SoFiE) Conferences
2015 - Organizer of invited sessions at international conferences
2017 Local organizing committee, The 1st International Conference on Econometrics and Statistics, Hong Kong.
2013 - Co-organizer, HKUST International Forums on Probability and Statistics
2009 - Organizer of several IAS Distinguished Lectures.

Reviewer for academic journals/databases

• Annals of Applied Statistics • Annals of Probability • Annals of Statistics
• Bernoulli • Biometrika • Electronic Communications in Probability
• Electronic Journal of Probability • Journal of Business & Economic Statistics
• Journal of Econometrics • Journal of the American Statistical Association
• Journal of the Royal Statistical Society: Series B
• Journal of Time Series Analysis • Management Science
• Mathematical Finance • Mathematical Reviews
• Probability Theory and Related Fields • Statistics & Probability Letters
• Review of Financial Studies • Statistica Sinica • Statistical Science

PG student/postdoc supervision

2022 - PhD supervisor for Ruizhao Huang, Department of ISOM, HKUST
2020 - 2023 Supervisor for IAS Postdoc Qingsan Zhu (PhD from UBC)
2019 - 2024 PhD supervisor for Juncheng Li, Department of ISOM, HKUST
2022 - PhD co-supervisor for Leheng Chen, Department of ISOM, HKUST
2018 - 2023 PhD co-supervisor for Guoli Liu, Department of ISOM, HKUST
2015 - 2020 PhD co-supervisor for Yi Ding, Department of ISOM, HKUST, now at Hong Kong Polytechnic University
2013 - 2017 PhD supervisor for Xinxin Yang, Department of Mathematics, HKUST, now at Central University of Finance and Economics
2014 - 2016 MPhil supervisor for Chengeng Qu, Department of ISOM, HKUST
2012 - 2016 PhD co-supervisor for Mengmeng Ao, Department of ISOM, HKUST, now at Xiamen University
2016 - 2018 Postdoc supervisor for Chen Zhou (PhD from Fudan), now at Tencent AI Lab
2014 - 2015 Supervisor for IAS Postdoc Eyal Neuman (PhD from Technion - Israel Institute of Technology), now at Imperial College London
2013 - 2014 Postdoc supervisor for Ningning Xia (PhD from NUS), now at Shanghai University of Finance and Economics
2011 - 2012 Postdoc supervisor for Jiaqi Chen (PhD from Université de Rennes 1), now at Harbin

Institute of Technology

2010 - 2011 Postdoc co-supervisor for Zhiyuan Zhang (PhD from HKUST), now at Shanghai University of Finance and Economics

Undergraduate student supervision

2015 UROP project supervisor, "Large Portfolio Management", HKUST
2010 UROP project supervisor, "Large Portfolio Risk Analysis", HKUST

Serve on thesis committee (in the last five years)

2024 PhD thesis committee, Shengjie Xiu, Department of ECE, HKUST
2023 PhD thesis committee, Zhongyuan Lyu, Department of Mathematics, HKUST
2020 MPhil thesis committee, Di Song, Department of ISOM, HKUST
2019 PhD thesis committee, Ziping Zhao, Department of ECE, HKUST
2018 PhD thesis committee, Liusha Yang, Department of ECE, HKUST
2018 PhD thesis committee, Linlin Dai, Department of Mathematics, HKUST
2018 PhD thesis external reviewer, Fang Xie, Department of Mathematics, University of Macau

University services

University level

2019 - University Research Travel Grant Faculty Review Committee
2013 - Host of IAS Senior Visiting Fellow and IAS Postdocs
2009 - Organizer/co-organizer of several HKUST international forums and IAS Distinguished Lectures

School level

2016 - School Research Committee
2017 - 2018 Task Force on UG Curriculum Review, School of Business
2014 JUPAS parallel interview panel chair

Department level

2021 - Department Executive Committee
2021 - Merit Salary Review Committee (for Faculty)
2017 - Chair for the Statistics PhD/MPhil Committee
2019 Chair for the OM & STAT PhD/MPhil Committee
2013 - PG committee
2016 - MSBA committee
2018 - UG committee, Dept of ISOM
2016 - Seminar coordinator
2017 Substantiation & Promotion Committee
2016 Search & Appointment committee