

DEJUNXIE

Faculty of Business
City University of Macau
4/F, Luso-Chinese Building, Avenida Padre Tomás Pereira, Taipa, Macau.
Phone: 853-8590-2303
Email: djxie@cityu.edu.mo

Google Scholar:
<https://scholar.google.com/citations?user=74cZsiUAAAJ&hl=en&oi=ao>

Profile Summary

Prof. Dejun Xie, who holds a PhD degree in applied mathematics from University of Pittsburgh, has joined the City University of Macau (CityU Macau) in 2024. Prof. Xie's research areas are, broadly, in quantitative finance, economics, and business in general. His research has led to many publications and presentations in top academic journals and conferences. Prof. Xie has extensive experience in teaching, supervision and mentoring at various levels, including undergraduate, postgraduate, and postdoctoral. Prof. Xie has also abundant experience in services both within-university and in academic societies more broadly.

Research Areas

Prof. Xie's research interests are mainly in quantitative methods to finance, economics, and business, particularly focusing on the mathematical and statistical modeling of financial and economic problems and using both quantitative and computing methods to study the problem from financial decision maker's point of view. Example topics of Prof. Xie's research include option pricing, credit risk, interest rate modeling and derivatives, valuation of mortgages, innovative business models, optimization of carbon emission, and energy and environmental finance. Prof. Xie warmly welcomes students with diversified backgrounds to join his team, in line with CityU Macau's mission of "serving Macao, integrating into the Greater Bay Area" with high quality interdisciplinary research.

Teaching Portfolio and Experiences

Prof. Xie has taught more than twenty different courses in math, applied math, statistics, computing, finance, and math finance fields with excellent student feedbacks and evaluations. The courses Prof. Xie designed and taught often use intensive quantitative and computing skills such as business calculus, computational finance, statistical methods, financial econometrics, portfolio management, fixed income, and interest rate derivatives.

Qualifications

- Ph.D. in Applied Mathematics, concentration on mathematical finance, University of Pittsburgh, US
- MA, University of Pittsburgh, US
- MBA, finance concentration, Joseph Katz Graduate School of Business, US

Academic Appointments

Dr. Dejun Xie is a Professor at Faculty of Business (FOB), CityU Macau. Prior to this he was an Associate Professor at School of Mathematics and Physics, Xi'an Jiaotong Liverpool University (XJTLU), where he had served as the Director of MSc in Financial and Mathematics for over six years.

- Professor, FOB, CityU Macau, 2024-present
- Associate Professor, School of Mathematics and Physics, XJTLU, 2017-2023
- Assistant Professor, Department of Finance, SUSTech Business School, 2013-2017

Selected Referred Journal Papers and Book Chapters

- Zhao, C., Xie, D., & Chen, Z. (2024). A Survey of Systemic Risk in Banking Industry, *Journal of Electronic Finance*, 13(1), 103-120.
- Liu, Y., Xie, D., Li, Y., & Li, S. (2023). Nonparametric Bayesian modeling on infinite mixture Student t copulas, *Communications in Statistics - Simulation and Computation*, 1-19, DOI: [10.1080/03610918.2023.2263184](https://doi.org/10.1080/03610918.2023.2263184).
- Liu, Y., Xie, D., & Edwards, D. (2023). Mixture copulas with discrete margins and their application to imbalanced data. *J. Korean Stat. Soc.* 52(4), 878-900.
- Liu, Y., Xie, D., & Li, Y. (2023). Implications of imbalanced datasets for empirical ROC-AUC estimation in binary classification tasks, *Journal of Statistical Computation and Simulation*, 1-21, DOI: [10.1080/00949655.2023.2238235](https://doi.org/10.1080/00949655.2023.2238235).
- Liu, Y., Xie, D., & Yu, S. (2023). Bayesian Mixture Copula Estimation and Selection with Applications, *Analytics 2* (2), 530-545.
- Xie, D., Cui, Y., & Liu, Y. (2023). How does investor sentiment impact stock volatility? New evidence from Shanghai A-shares market. *China Finance Review International*, 13 (1), 102-120.
- Xie, D., Edwards, D., & Wu, X. (2022). Optimal exercise frontier of Bermudan options by simulation methods. *International Journal of Financial Engineering*, 9 (3), DOI: [10.1142/S242478632250013X](https://doi.org/10.1142/S242478632250013X).
- Zhang, T., Zhu, X., Xie, D., Su, F., & Balakrishnan, N. (2022). Test of equality of proportional hazard models with jointly censored data, *International Journal of Data Science* 7 (1), 1-21.

- Xie, D., Wang, R., Shen, S., Zhou, W., & Li, X. (2022) Customer satisfaction analysis in bike sharing. *International Journal of Green Economics*, 16 (1), 36-55.
- Zhao, M. Xie, D., Edwards, D., & Liu, Y. (2022). A VAR-based factor decomposition to the term structure of treasury bonds. *International Journal of Monetary Economics and Finance*, 15(6), 585-613.
- Zhu, J., Xie, D., Liu, G., & Ma, F. (2021). An XVA approach to counterparty risk appraisal. *Current Chinese Computer Science*, 10.2174/2665997201999200909124001
- Shen S., Xie, D., Liu, G., Wen, C. & Ma, F. (2020). AMOS Based Analysis of User Satisfaction of Bike Sharing Services. *Journal of Statistical and Econometric Methods*. 9(2), 2020, 45-65.
- Wang, X., Zhai, J., Xie, D., & Jiang, J. (2019). The impact of monetary policy on option-implied stock market expectations. *China Finance Review International*, 10(1), 37-51. <https://doi.org/10.1108/CFRI-07-2018-0068>.
- Wu, X., Xie, D., & Edwards, D. (2019) An Optimal Refinancing Strategy with Stochastic Interest Rate, *Computational Economics*, 53 (4), 1353-1375.
- Shen, B. Shan, Y., Jia, Y., Xie, D., & Zhu., S. (2019). Modeling the Cashflow Management of Bike Sharing Industry. *Lecture Notes in Business Information Processing*. 354, 132-146.
- Xie, D., Zhang, N., & Edwards, D. (2018), Simulation Solution to a Two-Dimensional Mortgage Refinancing Problem. *Computational Economics*, 52 (2), 479-492.
- Feng, F., Xie, D., & Chong, W. K. (2017), Interconnectedness Analysis of Second Board Markets, *International Journal of Design, Analysis & Tools for Integrated Circuits & Systems*, 6(1). 26-29.
- Jiang, J., Ye, B., Xie, D., Li, J., Miao, L., & Yang, P. (2017). Sector Decomposition of China's National Economic Carbon Emission and Its Policy Implication for National ETS Development, *Renewable and Sustainable Energy Reviews*, 75, 855-867. DOI: <http://dx.doi.org/10.1016/j.rser.2016.11.066>
- Wang, X., Xie, D., Jiang, J., Wu, X., & He, J. (2017). Value-at-Risk Estimation with Stochastic Interest Rate Model for Option-Bond Portfolios. *Financial Research Letters*, 21, 10-20.
- Ye, B., Jiang, J., Miao, L., & Xie, D. (2017), Interprovincial Allocation of China's National Carbon Emission Allowance: An Uncertainty Analysis Based on Monte-Carlo Simulations. *Climate Policy*, 17(4), 401-422.
- Jiang, J., Xie, D., Ye, B., Shen, B., & Chen, Z. (2016). Research on China's Cap-and-Trade Carbon Emission Trading Scheme: Overview and Outlook. *Applied Energy*, 178, 902-917.
- Xie, D., & Zhang, S. (2016). Semi Discrete Model for Mortgage Valuation and its Computation by an Adaptive Finite Element Method, *International Journal of Numerical Analysis and Modeling*, 6(13), 831-851.
- Wang, X., Xie, D., Jiang, J., & He, J. (2016). Value-at-Risk Estimation with Stochastic Interest Rate Model for Option-Bond Portfolios. *Financial Research Letters*. DOI:<http://dx.doi.org/10.1016/j.frl.2016.11.013>

- Jiang, J., Ye, B., Xie, D., & Miao, L. (2015). Dynamic Nonlinear Relationships between Carbon Emission Allowance and Reduction Credit Markets-Based on the IRF-DCC Model. *Geo-Informatics in Resource Management and Sustainable Ecosystem*, 770-777.
- Dai, W., Xie, D., & Sun, B. (2015). Intraday Periodicity and Long Memory Volatility in Hong Kong Stock Market. *Open Journal of Social Sciences*, 3, 61-66.
- Zhang, N., Man, K. L., & Xie, D. (2014). Computing Value at Risk in OpenCL on the Graphics Processing Unit. *Lecture Notes in Electrical Engineering*, 329, 71-78.
- Xie, D., Zheng, J., Zhang, N., Chen, K., & Wang, H. (2014). Finite Difference Approach to Steady State Problems Arising from Mortgage and Option Pricing, *Lecture Notes in Electrical Engineering*, 308, 429-435.
- Dai, W. (2014). An Analysis of Factors Impacting the Housing Prices in China's Market. *Finance Economy*, 9, 16-20.
- Feng, X., & Xie, D. (2013). Optimal Refinancing of Mortgage Loans Based on Monte Carlo Methods, *International Journal of Applied Mathematics*
- Feng, X., & Xie, D. (2012). Bayesian Estimation of CIR Model. *Journal of Data Sciences*, 10, 271-280.
- Xie, D., Edwards, D., Gilberto, S., & Zhu, Q. (2011). Characterization of the American Put Option Using Convexity. *Applied Mathematical Finance*, 18, 353-365. <https://core.ac.uk/display/6932259>, DOI:10.1080/1350486X.2010.524359;
- Xie, D., Edwards, D., & Gilberto, S. (2009). An Asymptotic Method to a Financial Optimization Problem, *Advances in Machine Learning and Data Analysis*, S. Ao, et al. (eds.), New York: Springer (2009), 79-94.
- Xie, D. (2009). Fixed Rate Mortgage Contract: A Closed Form Approximation. *International Journal of Applied Mathematics*, 1, 16-25.
- Xie, D. (2008). Numerical Valuation of Fixed Rate Mortgages. *International Journal of Applied Mathematics*, 38, 89-98.
- Xie, D., Chen, X., & Chadam, J. (2007). Optimal Payment of Mortgages, *European Journal of Applied Mathematics*, 18, 363-388.

Selected Referred Proceedings

- Guo, X., & Xie, D. (2021). Optimizing the design of recommendation systems. *ACM International Conference Proceeding Series*, 79-84. DOI: 10.1145/3479162.3479174.
- Shan, Y., Xie, D., & Zhang, R. (2019). A Multi-Objective Optimization Model for Bike-Sharing. *Proceedings of The 7th International Conference on Information Technology*, 383-387.
- Shen, B. Shan, Y., Jia, Y., Xie, D., & Zhu, S. (2019). Modeling the Cashflow Management of Bike Sharing Industry. *Lecture Notes in Business Information Processing*. 354, 132-146.
- Management of Bike Sharing Industry. *Lecture Notes in Business Information Processing*. 354, 132-146.

- Ye, B., & Xie, D. (2018). An Overview of Event Based Directional Change for Algorithmic Trading. Proceedings of 16th International Conference on Software Engineering Research, Management and Applications (SERA), 13-18. DOI:10.1109/SERA.2018.8477229.
- Sun, Y., Chong, W. K., Man, K. L., Rho, S., & Xie, D. (2016). Exploring Critical Success Factors of Mobile Recommendation Systems: The End User Perspective. In: G.C. Yang, S.I. Ao, X. Huang, O. Castillo (eds.), Transactions on Engineering Technologies, International MultiConference of Engineers and Computer Scientists, Springer, Heidelberg, German.
- Chen, X., & Xie, D. (2016). How Responsive is China's Stock Market to the Monetary Polices. Proceedings of the International MultiConference of Engineers and Computer Scientists, IAENG.

Selected Presentations, Posters, and Invited Talks

- Bayesian approach for multivariate sequential data analysis in finance, research seminar talk, XJTLU, 2021.
- MIDAS Analysis for Investor Sentiment Impact on A-Shares Market Research talk at XJTLU-Soochow University Joint Statistical Workshop, 2021
- Optimizing the Design of Recommendation Systems, 9th ICCCM, ACM, Singapore, 2021.
- A Multi-Objective Optimization Model for Bike-Sharing, ICIT Conference, Shanghai, 2019.
- The Impact of Name Change on A-Share Quoted Firm Values, 2nd International Conference on Economics Social Science and Business Development, Shanghai, 2019.
- Financial Optimization Problems in Mortgage Prepayment and Refinancing, Workshop Stochastic Processes with Applications in Finance and Related Fields, XJTLU, 2018.
- Mathematical Modeling Applied to Finance Problems, invited talk at Mathematical Modeling Club, XJTLU, 2018.
- How Responsive is China's Stock Market to the Monetary Polices? IAENG, 2016.
- Finite Difference Approach to Steady State Problems Arising from Mortgage and Option Pricing, International Conference on Platform Technology and Service, 2014.
- Implied Volatilities of S&P 100 Index with Applications to Financial Market, 8th International GPC Conference and Colocated Workshops, 2013.
- Optimal Mortgage Refinancing Based on Monte Carlo Simulation, IAENG, 2012.
- Application of MCMC Algorithm in Interest Rate Modeling, IAENG, 2011.
- A PDE Approximation Approach to the Valuation of American Put Option, AMS Southeastern Section Meeting on Numerical Methods and Application of Partial Differential Equations, 2009.
- An Integral Equation Approach to a Free Boundary Problem Arising from Mortgage Valuation, SIAM Conference on Financial Math and Engineering, New Jersey, 2008.

- Free Boundary Problems in Mathematical Finance, University of Sydney, 2008.
- Numerical Solution to a Free Boundary Problem Arising from Mortgage Valuation, World Congress of Engineering and Computer Science, San Francisco, 2007.
- Numerical Methods to a Mortgage Valuation Problem, CUNY Baruch College, 2007.
- A Newton's Iterative Scheme for Pricing FRMs, Kent-Purdue Minisymposium on Financial Mathematics, 2007.
- Optimal Strategy of Prepayment of Mortgages, Carnegie Mellon University, 2007.
- Numerical Methods to a Mortgage Valuation Problem, University of Delaware, 2007.
- Monte Carlo Simulations for Interest Rate Models, University of Pittsburgh, 2006.

Student Research and Dissertation Supervision

Prof. Xie has extensive student supervision and mentoring experiences. He has supervised towards completion more than forty dissertations and projects at postgraduate levels, including master, doctorate, and postdoctoral. Recent examples of completed dissertation projects under Prof. Xie's supervision include

- Bayesian approaches of mixture copulas with applications, PhD Dissertation 2023
- ESG rating and the potential occurrence of a decline in stock values, MSc Dissertation 2023
- Analysis of factors influencing purchase intention based on structural equation modeling - the example of luxury purchases, MSc Dissertation 2023
- Optimization and Empirical Analysis of Pricing Mechanism for Hog "Insurance + Futures" Contracts, MSc Dissertation 2023
- The Impact of GCP on Enterprise Innovation: A DID Model Test Based on "Two Two High" Indus, MSc Dissertation 2023
- The ChatGPT Effect on price discovery and market perceptions of AI-crypto-assets: SDID Analysis, MSc Dissertation 2023
- Industrial agglomeration and innovation efficiency of industrial firms: empirical analysis based on data from China's Yangtze River Economic Belt, MSc Dissertation 2023
- The impact of ESG on corporate return on assets is based on a Multi-model Comparative Predictions, MSc Dissertation 2023
- An Empirical Study of Quantitative Trading Strategies with Machine Learning Methods, MSc Dissertation 2023
- A study on stock price prediction by fusing sentiment features based on cemotion2.0 text sentiment analysis model, MSc Dissertation 2023
- Impact of the development of the digital economy on the technical complexity of service export in international trade, MSc Dissertation 2023
- Statistical and machine learning models in credit scoring, MSc Dissertation 2023

Technical Skills

Matlab, Mathematica, R, Maple, Stata, Python, Eviews, SPSS, LaTeX