

Chaoyi Zhao

Updated September 8, 2022

Ph.D. Candidate in Statistics

Department of Financial Mathematics, School of Mathematical Sciences

Peking University, Beijing 100871, China

Email: zhaochaoyi@pku.edu.cn

Homepage: <https://zhaochaoyi.github.io/>

Research

Investments: Factor investing, High-frequency investing/trading, Sustainable investing

Interests

Statistics: High-dimensional statistics, Machine learning & deep learning

Actuarial Sciences

Education

Peking University

Beijing, China

Ph.D. Candidate in Statistics

2019 – Present

Supervisor: Prof. Lan Wu

Peking University

Beijing, China

B.S. in Mathematics and Applied Mathematics

2015 – 2019

B.S. (Double Degree) in Computer Science and Technology

2016 – 2019

Elite Undergraduate Program of Applied Mathematics

2017 – 2019

Honors

Awards

S&P Global Academic ESG Research Award

2022

Merit Student

2016, 2020, 2021

Excellent Graduate, Beijing Outstanding Graduate

2019

The Student of The Year (10 students per year)

2018

Merit Student Pacesetter

2018

Beijing Merit Student

2018

Excellent Student Leader

2017

Scholarships

President Scholarship

2019 – 2023

Huatai Science and Technology Scholarship

2021

CETC the 14th Research Institute Glarun Scholarship

2020

National Scholarship

2018

The National Southwest Associated University Scholarship

2018

Shenzhen Finance Institute Scholarship, the Chinese University of Hong Kong, Shenzhen

2017

Founder Scholarship

2016

Publications

Factor Investing

1. Breaking the Factor Zootopia: Factor Selection via Significant Tests of Multi-Task Lasso
Chaoyi Zhao and Lan Wu.
Working Paper.

High-Frequency Investing/Trading

2. High-Frequency Liquidity in the Chinese Stock Market: Measurements, Patterns, and Determinants
Ruixun Zhang, Chaoyi Zhao, Yufan Chen, Lintong Wu, Yuehao Dai, Ermo Chen, Zhiwei Yao, Yihao Zhou, and Lan Wu.
Under review. [[SSRN](#)]
3. Order Types and Natural Price Change: Model and Empirical Study of the Chinese Market
Siyu Liu, Chaoyi Zhao, and Lan Wu.
International Journal of Financial Engineering, 2022, Forthcoming.

Sustainable Investing

4. Optimal Impact Portfolios with General Dependence and Marginals
Andrew W. Lo, Lan Wu, Ruixun Zhang, and Chaoyi Zhao.
Working paper. [[SSRN](#)]
5. Measuring and Optimizing the Risk and Reward of Green Portfolios
Andrew W. Lo, Ruixun Zhang, and Chaoyi Zhao.
Under review. [[SSRN](#)] Winner of the [S&P Global Academic ESG Research Award](#).

Machine/Deep Learning and Their Applications in Finance

6. Channel and Spatial Attention CNN: Predicting Price Trends from Images
Ruixun Zhang, Guanglian Lin, and Chaoyi Zhao.
Under review. [[SSRN](#)]
7. The Success of AdaBoost and its Application in Portfolio Management
Yijian Chuan, Chaoyi Zhao, Zhenrui He, and Lan Wu.
International Journal of Financial Engineering, 8(02), 2142001, 2021. [[PDF](#)]

Actuarial Sciences

8. Construct Smith-Wilson Risk-Free Interest Rate Curves with Endogenous and Positive Ultimate Forward Rates
Chaoyi Zhao, Zijian Jia, and Lan Wu.
Under review.

Books

9. The Maths Book (in Chinese)
Dorling Kindersley Ltd. Translated by Chaoyi Zhao.
Publishing House of Electronics Industry, 2021. [[Link](#)]
10. Financial Market Risk Management Analytics (in Chinese)
Frank H. Koger. Translated by Chaoyi Zhao.
Truth & Wisdom Press, 2022.
11. Quantitative Investing (in Chinese)
Jian Sun, Lan Wu, and Chaoyi Zhao.
Science Press, Forthcoming.

Research Projects	High-Frequency T+0 Quantitative Trading Strategy Based on Deep Learning	2019 – 2020
	Peking University and Founder Securities	
	Gradient Optimization Model Based on Genetic Programming Algorithm	2019
	Ernst & Young (China) Advisor Ltd	
	Multi-Factor Alpha Strategy Based on the AdaBoost Algorithm	2018 – 2019
	Peking University and Founder Securities	
	Application of Statistical Learning in Modeling the Relationship Between Stock Index and Futures	2017 – 2018
	Undergraduate Research, Peking University	
Teaching Experience	Teaching Assistant for Peking University	
	<i>Quantitative Trading</i>	Fall 2022
	Elective for Graduate and Senior Undergraduate Students. Instructor: Prof. Lan Wu	
	<i>Theory and Practice for Futures and Other Derivatives</i>	Spring 2022
	Elective for Graduate and Senior Undergraduate Students. Instructor: Prof. Lan Wu <i>et al.</i>	
	<i>Exercise Class for Mathematical Analysis III</i>	Fall 2021
	Core Class for Undergraduate Students. Instructor: Prof. Jiazhong Yang	
	<i>Practice for Fixed Income Securities</i>	Fall 2021
	Elective for Graduate and Senior Undergraduate Students. Instructor: Prof. Lan Wu <i>et al.</i>	
	<i>Exercise Class for Mathematical Analysis II</i>	Spring 2021
	Core Class for Undergraduate Students. Instructor: Prof. Jiazhong Yang	
	<i>Risk Management and Financial Regulation</i>	Spring 2021
	Core Class for Graduate Students. Instructor: Prof. Lan Wu	
	<i>Quantitative Trading</i>	Fall 2020
	Elective for Graduate and Senior Undergraduate Students. Instructor: Prof. Jian Sun	
	<i>Exercise Class for Probability and Statistics</i>	Spring 2020
	Elective for Undergraduate Students.	
	<i>Introduction to Financial Mathematics</i>	Fall 2019
	Core Class for Undergraduate Students. Instructor: Prof. Lan Wu	
	Teaching Assistant for Master Program of Tulane University & University of Chinese Academy of Social Sciences	
	<i>Fixed Income Analysis</i>	2020, 2021
	Core Class for Graduate Students. Instructor: Prof. Bill W. Reese	
	<i>Investment and Asset Pricing</i>	2020, 2021
	Core Class for Graduate Students. Instructor: Prof. Frank H. Koger	
	<i>Risk Management</i>	2019, 2020, 2021
	Core Class for Graduate Students. Instructor: Prof. Frank H. Koger	
	<i>Options and Other Derivatives</i>	2019, 2020, 2021
	Core Class for Graduate Students. Instructor: Prof. Paul A. Spindt and Josh Pierce	
	<i>Valuation</i>	2020, 2021
	Core Class for Graduate Students. Instructor: Prof. Peggy Huang	
	<i>Portfolio Management</i>	2020, 2021
	Core Class for Graduate Students. Instructor: Prof. Helmuth Chavez	

Talks

High-Frequency Liquidity in the Chinese Stock Market: Measurements, Patterns, and Determinants

2022 INFORMS Annual Meeting

October 17, 2022

Speaker of the FinTech Session. [\[Link\]](#)

11th World Congress of Bachelier Finance Society

June 15, 2022

Session chair and speaker of the Market Microstructure II Session. [\[Link\]](#)

Statistical Patterns of High-Frequency Data for A-share stocks in Shenzhen Stock Exchange

3rd Seminar for Young Scholars in Financial Engineering and Risk Management

June 12, 2021

Invited talk. [\[Link\]](#)

Construct Smith-Wilson Interest Rate Curves with Endogenous Ultimate Forward Rates

United As One: 24th International Congress on Insurance: Mathematics and Economics June 5, 2021

Speaker of the Quantitative Finance session. [\[Link\]](#)

Speech for the Opening Ceremony of School of Mathematical Sciences

Opening Ceremony, School of Mathematical Sciences, Peking University

September 15, 2018

Representative of seniors. [\[Link\]](#)

Skills

Programming: Python, C/C++, MATLAB, R, Java, SQL

Languages: Chinese, English, Chinese sign language

Hobbies: Swimming, Ukulele