

Yi Ding

CURRICULUM VITAE

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EDUCATION

Hong Kong University of Science and Technology

Ph.D. in Business Statistics

Tsinghua University

B.Sc. in Mathematics and Applied Mathematics

ACADEMIC EXPERIENCE

The Hong Kong Polytechnic University, Research Assistant Professor, Department of Applied Mathematics, 2020 –

RESEARCH INTEREST

Financial econometrics; High-dimensional statistics; Financial technology; Statistical learning; Portfolio optimization; Asset allocation; High-frequency financial data

RESEARCH PAPERS

- **Ding, Yi** and Li, Yingying and Zheng, Xinghua, “High dimensional minimum variance portfolio under statistical factor model” (2020), *Journal of Econometrics*

Abstract: We propose a high dimensional minimum variance portfolio estimator under statistical factor models, and show that our estimated portfolio enjoys sharp risk consistency. Our approach relies on properly integrating ℓ_1 constraint on portfolio weights with an appropriate covariance matrix estimator. In terms of covariance matrix estimation, we extend the theoretical results of POET (Fan et. al (2013)) to a setting that is coherent with principal component analysis. Simulation and extensive empirical studies on S&P 100 Index constituent stocks demonstrate favorable performance of our MVP estimator compared with benchmark portfolios.

- **Ding, Yi** and Li, Yingying and Song, Rui, “Statistical learning for individualized asset allocation” (2021), submitted

Abstract: We establish a statistical learning framework for individualized asset allocation. A high-dimensional Q-learning methodology is proposed for continuous decision making. The

proposed methodology enjoys desirable theoretical properties and facilitates valid statistical inference for optimal values. Empirically, the proposed statistical learning framework is exercised with Health and Retirement Study data. The results show that our proposed optimal individualized strategy improves individual financial well-being and surpasses benchmark strategies under a consumption-based utility framework.

- **Ding, Yi** and Engle, Robert and Li, Yingying and Zheng, Xinghua, “Factor modeling for volatility” (2021), manuscript

Abstract: Under a high-frequency and high-dimensional setup, we establish a framework to estimate the factor structure in idiosyncratic volatility, and more importantly, stock volatility. We provide explicit conditions for the consistency of conducting principal component analysis on realized volatilities in identifying the factor structure in volatility. Empirically, we confirm the factor structure in idiosyncratic volatilities of S&P 500 Index constituents. Furthermore, with strong empirical evidence, we propose a simplified single factor model for stock volatility, where volatility is represented by a common volatility factor and a multiplicative lognormal idiosyncratic component. We further utilize the simplified single factor model for volatility forecasting and show that our proposed approach outperforms various benchmark methods.

PROGRAMMING LANGUAGES

R: 5+ experience of research data processing, analysing, modeling

Python: high frequency financial data processing, algo trading execution

Matlab, C++

PRESENTATIONS

Conference Presentations

The 11th ICSA International Conference (**ICSA 2019**), invited talk, “*Factor modeling for volatility*”, Hangzhou (Dec. 2019)

The 3rd International Conference on Econometrics and Statistics (**EcoSta 2019**), invited talk, “*Factor modeling for volatility*”, Tai Wan (June 2019)

The 2nd International Conference on Econometrics and Statistics (**EcoSta 2018**), invited talk, “*Statistical learning of personalized wealth management*”, Hong Kong (June 2018)

The 1st International Conference on Econometrics and Statistics (**EcoSta 2017**), invited talk, “*High dimensional minimum variance portfolio under factor model*”, Hong Kong (June 2017)

China Meeting of Econometric Society 2017 (**CMES 2017**), invited talk, “*High dimensional minimum variance portfolio under factor model*”, Wuhan (June 2017)

The 2017 Asia Meeting of the Econometrics Society 2017 (**AMES 2017**), “*High dimensional minimum variance portfolio under factor model*”, Hong Kong (June 2017)

Invited Seminar Presentations

Hong Kong University (2020)

City University of Hong Kong (2019)

Shenzhen University (2019)

HONORS AND REWARDS

Research Startup fund from Hong Kong Polytechnic University (2021-2024)

Dean’s PhD Fellowship for Research Excellence from Hong Kong University of Science and Technology (2019-2020)

SoFiE 2019 Shanghai Conference Travel Grant from New York University (2019)

Dean’s PhD Fellowship from Hong Kong University of Science and Technology (2016–2017)

Research Travel Grant from Hong Kong University of Science and Technology (2016–2017)

Post Graduate Studentship from Hong Kong University of Science and Technology (2015–2020)

Various scholarships from Tsinghua University (2005–2009)

TEACHING EXPERIENCE

Instructor: *Econometrics*, AMA 481, Hong Kong Polytechnic University, undergraduate course, Fall 2020

Instructor: *Business Statistics*, ISOM 2500, Hong Kong University of Science and Technology, undergraduate course, instructor rating: 87.5/100 (average: 86.5/100), Summer 2019

Teaching Assistant: *Statistical Analysis of Financial Data in R*, ISOM 4530, Hong Kong University of Science and Technology, undergraduate course, Fall 2016, Fall 2017, Fall 2018, Fall 2019

Teaching Assistant: *Statistics for Financial Risk Management*, ISOM 4520, Hong Kong University of Science and Technology, undergraduate course, Spring 2016, Spring 2017

ACADEMIC SERVICE

Reviewer for Journal of Econometrics, Journal of Empirical Finance, Journal of Business & Economic Statistics, Statistics and Its Interface