

Learning the Stochastic Discount Factor

Zhanhui Chen

**School of Business and Management, HKUST
(with Yi Ding, Yingying Li and Xinghua Zheng)**

We develop a statistical framework to learn the high-dimensional stochastic discount factor (SDF) from a large set of characteristic-based portfolios. Specifically, we build on the maximum-Sharpe ratio estimated and sparse regression method proposed in Ao, Li and Zheng (RFS, 2019) to construct the SDF portfolio, and develop a statistical inference theory to test the SDF loadings. Applying our approach to 194 characteristic-based portfolios, we find that the SDF constructed by about 20 of them performs well in achieving a high Sharpe ratio and explaining the cross-section of expected returns of various portfolios.