

Matching Quantiles Estimation and Selecting Representative Portfolios

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Motivated by a backtesting problem for the risk management of banks, we propose a new Matching Quantiles Estimation (MQE) method, for selecting representative portfolios. An iterative procedure based on the ordinary least squares estimation is proposed to compute the MQE. The convergence of the algorithm and the asymptotic properties of the estimation are established. The finite sample properties are illustrated numerically by both simulation and a real data example on selecting a counterparty representative portfolio for a bank. The proposed MQE also finds applications in portfolio tracking, which demonstrates the potential usefulness of combining the MQE with the LASSO.

Key words: Bahadur-Kiefer bound, iterative algorithm, LASSO, matching quantile estimation, least squares estimation, portfolio selection, portfolio tracking, representative portfolio, sample quantile.