Robust portfolio with multi-objective optimization model under high-dimensional scenarios

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Abstract: This paper aims to study robust portfolio with mean-variance-CVaR criteria for high-dimensional data. Combining different estimators of covariance matrix, computational methods of CVaR and regularization methods, we construct five progressive optimization problems with short-selling allowed. The impacts of different methods on out-of-sample performance of portfolios are compared. Results show that the optimization model with well-conditioned and sparse covariance estimator, quantile regression computational method for CVaR and weighted LASSO performs best, which servers for stabilizing the solution and also encourages a sparse portfolio