

Security Selection Based on High Frequency Sharpe Ratio

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Abstract: In portfolio allocation, the classical Mean-Variance model in Markowitz (1952) relies heavily on the covariance structure among assets. As the number and types of assets increase rapidly, traditional methods to estimate the covariance matrix and its inverse suffer from the common issues in high-dimensional analysis. To avoid the issue of estimating the covariance matrix with ultra-high dimensional data, we propose a procedure to reduce dimension based on a new risk/return measure constructed from intra-day high frequency data and select assets via Sure Explained Variability and In- dependence Screening (SEVIS). While most feature screening methods only copy with i.i.d. samples, by nature of our data, we make contribution to studying SEVIS for samples with serial correlation, specifically, for the stationary α -mixing series. Under α -mixing condition, we prove that SEVIS still satisfy sure screening property and ranking consistency property. More importantly, with the assets selected through SEVIS, we will build a portfolio that earns more excess return compared with several existing portfolio allocation methods. We illustrate this advantage of our asset selection method with the real data from the stock market.