

Ming Yuan - Efficient Portfolio Selection in a Large Market

The renowned Markowitz mean-variance portfolio analysis forms the foundation of modern investment science. However, the empirical performance of estimated mean-variance efficient portfolios oftentimes does not come close to meet the expectation when there are more than several assets in the investment universe. As many have observed recently, they may even underperform the naïve diversification which simply assigns equal weights across all assets. These findings inevitably cast a shadow on the usefulness of the Markowitz theory. To re-assert the practical value of mean-variance analysis, we show here that this "Markowitz optimization enigma" could be resolved by carefully balancing the tradeoff between the estimation error and systematic error through the so-called subspace mean-variance analysis.