Sensitivity Analysis of Asset Allocation: In The Presence of Correlation

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Abstract
Linearization of portfolio optimization plays a central role in financial studies, since linear problem allows for performing sensitivity analysis. This concept makes it possible to measure the variation of parameters as a result of variation of one parameter in a linear problem, without solving the problem from scratch. Based on the existing literatures, the approach of CVaR (conditional value at risk) method outperforms other methods, therefore in this study CVaR is applied as a constraint to change portfolio optimization problem into a linear problem. The coefficient of objective function of mentioned method for a portfolio includes average of asset returns, which are highly correlated. Here principal component analysis is employed to convert the correlation of the functional relations. An example of stock market is employed to substantiate the validity of method. Finally, we verify that the result of the presented method is closer to the ideal result.