Bayesian Portfolio Optimization: Out-of-sample Performance of the Market Portfolio

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Abstract

The main focus of this thesis lies on Bayesian approaches to portfolio optimization. By using such statistical methods, it is possible to account for parameter uncertainty in the optimization procedure. Two different Bayesian approaches are utilized within the framework of this thesis, alongside with the conventional approach. We derive the weights of the market portfolio, which maximizes the Sharpe ratio, in the Bayesian settings. The market portfolio is then applied out-of-sample on empirical data consisting of asset returns through years 2002-2023 from Swedish stocks included in the OMXS30 index, as well as simulated data. The out-of-sample Sharpe ratio of the market portfolio is tested against the equally-weighted portfolio and we conclude that, in general, the market portfolio does not outperform the equally-weighted approach.

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