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Bachelor Thesis

# **Dynamic Portfolio Optimization**

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## Abstract

The goal of this thesis lies in the creation of an algorithm that uses historical data to perform a single period mean-variance optimization. The use of quadratic programming software allows a comparatively fast computing of the efficient frontier in large n-asset universes. The optimization is performed under various constraints where short-selling is forbidden (I), partially allowed (II) and fully allowed (III). The results showed the anticipated benefits of diversification. Allowance of short-sales increased sharpe ratios. However, since unconstrained portfolio optimization is sensitive to input data, results should be considered with precaution. On the other hand, optimization with no short-sales resulted not only in good numerical results, but as seen in the optimization within the S&P500 the obtained results showed great intuitive appeal.