

# General approach to the optimal portfolio selection

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## Abstract

In this paper we present an explicit solution to a problem of maximization of a ratio of function of a linear functional and function of a quadratic functional, subject to a system of linear constraints. This is of interest for solving important problems in financial economics and risk management related, for example, to optimal portfolio selection. This work essentially generalizes the results of the authors, where the problem of minimizing the combination of linear functional and a function of quadratic functional was considered. The new results essentially generalize classical results. In particular, the mean-variance principle, the Sharpe ratio principle, the recently introduced tail mean-variance principle and the optimization with respect to translation invariant and positive homogeneous risk measures. The results are demonstrated using real data.

Key words: Risk Measure; Mean-Variance model; Sharpe ratio; Tail mean-Variance; Fractional programming

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