

Title: Dynamic trading strategies

Author: Jan Němec

Department: Department of Probability and Mathematical Statistics

Supervisor: doc. RNDr. Petr Lachout, CSc.

Abstract: Trading various financial instruments in real time brings interesting optimization problems. The aim is to deal with these optimization tasks. Firstly, the work focuses on the theory of utility functions, because in most cases, the investor will aim to maximize the expected utility of final wealth. After an introduction to the portfolio theory it is shown how to extend a static model, respectively how it can be turned into a multistage model. The multistage model is analyzed in more detail, including numerical methods for solving multistage model. Simulation method that allows to analyze the ongoing change of the portfolio is discussed in detail at the end of the text. This method is applied to a numerical example.

Keywords: Dynamic programming, optimal investment strategy, simulation methods.