

Contents

- 1 Portfolio Optimization** 1
 - 1.1 Introduction 1
 - 1.2 Market and Diversification 1
 - 1.3 The Optimization Framework 3
 - 1.4 Portfolio Performance 5
 - 1.5 Basic Concepts and Notation 7
 - 1.6 Markowitz Model 9
 - 1.7 Risk and Safety Measures 12
 - 1.8 Handling Bi-Criteria Optimization Problems 14
 - 1.9 Notes and References 17
- 2 Linear Models for Portfolio Optimization** 19
 - 2.1 Introduction 19
 - 2.2 Scenarios and LP Computability 19
 - 2.3 Basic LP Computable Risk Measures 21
 - 2.4 Basic LP Computable Safety Measures 27
 - 2.5 The Complete Set of Basic Linear Models 32
 - 2.5.1 Risk Measures from Safety Measures 33
 - 2.5.2 Safety Measures from Risk Measures 35
 - 2.5.3 Ratio Measures from Risk Measures 36
 - 2.6 Advanced LP Computable Measures 38
 - 2.7 Notes and References 44
- 3 Portfolio Optimization with Transaction Costs** 47
 - 3.1 Introduction 47
 - 3.2 The Structure of Transaction Costs 48
 - 3.3 Accounting for Transaction Costs in Portfolio Optimization 53
 - 3.4 Optimization with Transaction Costs 59
 - 3.5 A Complete Model with Transaction Costs 60
 - 3.6 Notes and References 61

4 Portfolio Optimization with Other Real Features	63
4.1 Introduction	63
4.2 Transaction Lots	64
4.3 Thresholds on Investment	67
4.4 Cardinality Constraints	70
4.5 Logical or Decision Dependency Constraints	71
4.6 Notes and References	71
5 Rebalancing and Index Tracking	73
5.1 Introduction	73
5.2 Portfolio Rebalancing	74
5.3 Index Tracking	78
5.3.1 Market Index	79
5.3.2 An Index Tracking Model	80
5.4 Enhanced Index Tracking	83
5.5 Long/Short Portfolios	85
5.6 Notes and References	86
6 Theoretical Framework	87
6.1 Introduction	87
6.2 Risk Averse Preferences and Stochastic Dominance	88
6.3 Stochastic Dominance Consistency	91
6.4 Coherent Measures	93
6.5 Notes and References	95
7 Computational Issues	97
7.1 Introduction	97
7.2 Solving Linear and Mixed Integer Linear Programming Problems...	99
7.3 A General Heuristic: The Kernel Search	101
7.4 Issues on Data	103
7.5 Large Scale LP Models	108
7.6 Testing and Comparison of Models	111
7.7 Notes and References	113
References	115

Linear and Mixed Integer Programming for Portfolio
Optimization

Mansini, R.; Ogryczak, W.; Speranza, M.G.

2015, XII, 119 p. 25 illus., 12 illus. in color., Hardcover

ISBN: 978-3-319-18481-4