

Contents

Foreword	IX
List of Symbols and Acronyms	XI
1. Introduction to Portfolio Analysis: Key Notions	1
1. Financial Securities	1
1.1 Definition of financial securities	1
1.2 Computing the return of financial securities	3
2. Choices under Risky Situations	5
2.1 Choices under uncertainty: a general framework	5
2.2 Complete and incomplete criteria of choice under uncertainty	7
3. Statistical Summaries of Portfolio Returns	11
3.1 Portfolio mean	14
3.2 Portfolio variance and standard deviation	15
References and Further Readings	20
2. Choice under Uncertainty and State-Preference Approach to Portfolio Decisions	23
1. Representing Preferences and Risk Aversion Attitudes with Utility Functions	23
1.1 Choice under certainty: preference relations	23
1.2 The expected utility theorem	27
2. Measuring Risk Aversion and Its Economic Implications	35
2.1 Risk aversion and the concavity of the utility function	35
2.2 Measuring risk aversion	39
2.3 Absolute and relative risk aversion measures and acceptable odds of a bet	41

2.4 Absolute and relative risk aversion coefficients and the size of the risk premium	44
3. A Review of Commonly Used Utility of Wealth Functions	51
References and Further Readings	56
Appendix A	57
Appendix B	58
3. Introduction to Mean-Variance Analysis	61
1. The Opportunity Set and the Efficient Frontier (No Riskless Borrowing and Lending)	61
1.1 The efficient frontier with two risky securities	63
1.2 The efficient frontier with N risky securities	73
2. The Opportunity Set and the Efficient Frontier (with Riskless Borrowing and Lending)	81
3. Efficient Frontier under Short-Selling Constraints.	88
References and Further Readings	92
Appendix A	92
Appendix B	94
A Worked-Out Excel Example	94
4. Optimal Portfolio Selection: A Few Analytical Results	99
1. Risk Aversion and the Canonical Portfolio Problem	99
1.1 When will risky assets be demanded?	101
1.2 A few comparative statics results	106
1.3 A second two-fund separation result: Cass-Stiglitz's theorem	109
2. Aversion to Risk and Optimal Portfolio Selection in the Mean-Variance Framework	113
2.1 Mean-variance preference representations: pros and cons	113
2.2 Indifference curves in mean-variance space	117
2.3 Optimal mean-variance portfolios	119
3. Increasing Risk and Stochastic Dominance Criteria	123
3.1 First-order stochastic dominance	124
3.2 Second-order stochastic dominance	127
References and Further Readings	132
A Worked-Out Excel Example	132

5. Mean-Variance Theory at Work: Single and Multi-Index (Factor) Models	137
1. The Inputs to Mean-Variance Analysis and the Curse of Dimensionality	137
1.1 Asset pricing models as a way to recover mean-variance inputs	141
2. The Single-Index Model and Its Relationship with the Classical CAPM	144
2.1 Relationship with the CAPM	153
2.2 Practical implementation: conditional vs. unconditional inputs	157
2.3 Summary of the model	159
2.4 Determining the MV frontier under the single-index model	160
3. Multi-Index Models and Their Relationship with the APT	164
3.1 Can macroeconomic factors help in mean-variance analysis?	174
3.2 How does one orthogonalize factor series?	175
3.3 Relationship with the Arbitrage Pricing Theory (APT)	181
3.4 Which factors among many?	182
3.5 Getting a top-down handle on factor exposures	185
3.6 Summary of the model	192
References and Further Readings	193
6. Human Capital, Background Risks, and Optimal Portfolio Decisions	197
1. Simple Approaches to Labor Income in Portfolio Decisions	197
1.1 Taking a “first stab”: the case of deterministic, riskless labor income	200
1.2 A first formal, one-period stochastic model	203
2. The Case of Constant Relative Risk Aversion Preferences	208
References and Further Readings	217
7. Performance Measurement and Attribution	219
1. Generalities	219
2. Simple Performance Measures	225
3. Decomposing Performance	232
3.1 Market timing and tactical asset allocation	236
3.2 Multi-index measures	238

4. Active vs. Passive Portfolio Management	240
References and Further Readings	243
A Worked-Out Excel Example	244