

Foundations	
Introduction	p. 3
An Introduction to This Book	p. 3
An Introduction to Financial Economics	p. 5
Trade and Valuation in Financial Markets	p. 5
No Arbitrage and No Excess Returns	p. 7
Market Efficiency	p. 8
Equilibrium	p. 9
Aggregation and Comparative Statics	p. 10
Time Scale of Investment Decisions	p. 10
Behavioral Finance	p. 11
An Introduction to the Research Methods	p. 12
Decision Theory	p. 15
Fundamental Concepts	p. 16
Expected Utility Theory	p. 20
Origins of Expected Utility Theory	p. 20
Axiomatic Definition	p. 28
Which Utility Functions are "Suitable"?	p. 36
Measuring the Utility Function	p. 43
Mean-Variance Theory	p. 47
Definition and Fundamental Properties	p. 47
Success and Limitation	p. 48
Prospect Theory	p. 52
Origins of Behavioral Decision Theory	p. 53
Original Prospect Theory	p. 56
Cumulative Prospect Theory	p. 60
Choice of Value and Weighting Function	p. 67
Continuity in Decision Theories*	p. 71
Other Extensions of Prospect Theory*	p. 73
Connecting EUT, Mean-Variance Theory and PT	p. 75
Ambiguity and Uncertainty*	p. 80
Time Discounting	p. 82
Summary	p. 85
Tests and Exercises	p. 86
Tests	p. 86
Exercises	p. 89
Financial Markets	
Two-Period Model: Mean-Variance Approach	p. 95
Geometric Intuition for the CAPM	p. 96
Diversification	p. 97
Efficient Frontier	p. 99

Optimal Portfolio of Risky Assets with a Riskless Security	p. 99
Mathematical Analysis of the Minimum-Variance Opportunity Set*	p. 100
Two-Fund Separation Theorem	p. 105
Computing the Tangent Portfolio	p. 106
Market Equilibrium	p. 107
Capital Asset Pricing Model	p. 107
Application: Market Neutral Strategies	p. 108
Empirical Validity of the CAPM	p. 109
Heterogeneous Beliefs and the Alpha	p. 110
Definition of the Alpha	p. 112
CAPM with Heterogeneous Beliefs	p. 116
Zero Sum Game	p. 120
Active or Passive?	p. 124
Alternative Betas and Higher Moment Betas	p. 126
Alternative Betas	p. 127
Higher Moment Betas	p. 128
Deriving a Behavioral CAPM	p. 130
Summary	p. 135
Tests and Exercises	p. 136
Tests	p. 136
Exercises	p. 139
Two-Period Model: State-Preference Approach	p. 141
Basic Two-Period Model	p. 141
Asset Classes	p. 142
Returns	p. 143
Investors	p. 145
Complete and Incomplete Markets	p. 151
What Do Agents Trade?	p. 152
No-Arbitrage Condition	p. 152
Introduction	p. 152
Fundamental Theorem of Asset Prices	p. 154
Pricing of Derivatives	p. 160
Limits to Arbitrage	p. 162
Financial Markets Equilibria	p. 167
General Risk-Return Tradeoff	p. 168
Consumption Based CAPM	p. 169
Definition of Financial Markets Equilibria	p. 170
Intertemporal Trade	p. 174
Special Cases: CAPM, APT and Behavioral CAPM	p. 177
Deriving the CAPM by 'Brutal Force of Computations'	p. 178
Deriving the CAPM from the Likelihood Ratio Process	p. 180

Arbitrage Pricing Theory	p. 182
Deriving the APT in the CAPM with Background Risk	p. 183
Behavioral CAPM	p. 184
Pareto Efficiency	p. 185
Aggregation	p. 188
Anything Goes and the Limitations of Aggregation	p. 188
A Model for Aggregation of Heterogeneous Beliefs, Risk- and Time Preferences	p. 194
Empirical Properties of the Representative Agent	p. 195
Dynamics and Stability of Equilibria	p. 201
Summary	p. 206
Tests and Exercises	p. 207
Tests	p. 207
Exercises	p. 209
Multiple-Periods Model	p. 221
The General Equilibrium Model	p. 221
Complete and Incomplete Markets	p. 226
Term Structure of Interest	p. 228
Term Structure without Risk	p. 229
Term Structure with Risk	p. 232
Arbitrage in the Multi-Period Model	p. 234
Fundamental Theorem of Asset Pricing	p. 234
Consequences of No-Arbitrage	p. 236
Applications to Option Pricing	p. 236
Stock Prices as Discounted Expected Payoffs	p. 238
Equivalent Formulations of the No-Arbitrage Principle	p. 239
Ponzi Schemes and Bubbles	p. 240
Pareto Efficiency	p. 244
First Welfare Theorem	p. 244
Aggregation	p. 245
Dynamics of Price Expectations	p. 246
What is Momentum?	p. 246
Dynamical Model of Chartists and Fundamentalists	p. 247
Survival of the Fittest on Wall Street	p. 252
Market Selection Hypothesis with Rational Expectations	p. 252
Evolutionary Portfolio Theory	p. 253
Evolutionary Portfolio Model	p. 254
The Unique Survivor: ζ^*	p. 258
Summary	p. 259
Tests and Exercises	p. 259
Tests	p. 259
Exercises	p. 260

Advanced Topics	
Theory of the Firm*	p. 267
Basic Model	p. 267
Modigliani-Miller Theorem	p. 274
When Does the Modigliani-Miller Theorem Not Hold?	p. 277
Firm's Decision Rules	p. 278
Fisher Separation Theorem	p. 278
The Theorem of Drèze	p. 282
Summary	p. 285
Information Asymmetries on Financial Markets*	p. 287
Information Revealed by Prices	p. 288
Information Revealed by Trade	p. 290
Moral Hazard	p. 292
Adverse Selection	p. 293
Summary	p. 295
Time-Continuous Model	p. 297
A Rough Path to the Black-Scholes Formula	p. 298
Brownian Motion and Ito Processes	p. 301
A Rigorous Path to the Black-Scholes Formula	p. 304
Derivation of the Black-Scholes Formula for Call Options	p. 304
Put-Call Parity	p. 307
Exotic Options and the Monte Carlo Method	p. 308
Connections to the Multi-Period Model	p. 310
Time-Continuity and the Mutual Fund Theorem	p. 315
Market Equilibria in Continuous Time	p. 318
Limitations of the Black-Scholes Model and Extensions	p. 321
Volatility Smile and Other Unfriendly Effects	p. 321
Not Normal: Alternatives to Normally Distributed Returns	p. 322
Jumping Up and Down: Lévy Processes	p. 327
Drifting Away: Heston and GARCH Models	p. 329
Summary	p. 332
Appendices	
Mathematics	p. 335
Linear Algebra	p. 335
Basic Notions of Statistics	p. 338
Basics in Topology	p. 341
How to Use Probability Measures	p. 343
Calculus, Fourier Transformations and Partial Differential Equations	p. 347
General Axioms for Expected Utility Theory	p. 351
Solutions to Tests and Exercises	p. 355
References	p. 357

