## Contents

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preface</td>
<td></td>
<td></td>
</tr>
<tr>
<td>About the Editors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contributing Authors</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### CHAPTER 1

An Introduction to Quantitative Equity Investing

**Paul Bukowski**

- Equity Investing: 1
- Fundamental vs. Quantitative Investor: 2
- The Quantitative Stock Selection Model: 7
- The Overall Quantitative Investment Process: 9
- Research: 9
- Portfolio Construction: 18
- Monitoring: 21
- Current Trends: 22
- Key Points: 23
- Questions: 24

### CHAPTER 2

Equity Analysis Using Traditional and Value-Based Metrics

**James L. Grant and Frank J. Fabozzi**

- Overview of Traditional Metrics: 25
- Price Multiples: 32
- Fundamental Stock Return: 36
- Traditional Caveats: 38
- Overview of Value-Based Metrics: 39
- Key Points: 58
- Appendix: Case Study: 60
- Questions: 69
CHAPTER 3
A Franchise Factor Approach to Modeling P/E Orbits 71
Stanley Kogelman and Martin L. Leibowitz

Background 72
Historical Data Observations 75
Formulation of the Basic Model 81
P/E Myopia: The Fallacy of a Stable P/E 85
Two-Phase P/E Orbits 91
Franchise Valuation under Q-Type Competition 96
Franchise Labor 97
Key Points 101
Questions 102

CHAPTER 4
Relative Valuation Methods for Equity Analysis 105
Glen A. Larsen Jr., Frank J. Fabozzi, and Chris Gowlland

Basic Principles of Relative Valuation 106
Hypothetical Example 115
Key Points 123
Questions 124

CHAPTER 5
Valuation over the Cycle and the Distribution of Returns 125
Anders Ersbak Bang Nielsen and Peter C. Oppenheimer

The Link Between Earnings and Returns 126
The Phases Can Be Interpreted in Relationship to the Economy 132
Asset Class Performance Varies across the Phases 137
Incorporating Cyclicality into Valuations 139
Appendix: Dates and Returns of the Phases 142
Key Points 146
Questions 146

CHAPTER 6
An Architecture for Equity Portfolio Management 147
Bruce I. Jacobs and Kenneth N. Levy

Architectural Building Blocks 148
Traditional Active Management 151
Passive Management 156
Engineered Management 157
## CHAPTER 10
Tracking Error and Common Stock Portfolio Management

*Raman Vardharaj, Frank J. Fabozzi, and Frank J. Jones*

- Definition of Tracking Error 251
- Components of Tracking Error 254
- Forward-Looking vs. Backward-Looking Tracking Error 255
- Information Ratio 256
- Determinants of Tracking Error 257
- Marginal Contribution to Tracking Error 261

### Key Points
- Questions 262

### Questions
- 263

## CHAPTER 11
Factor-Based Equity Portfolio Construction and Analysis

*Petter N. Kolm, Joseph A. Cerniglia, and Frank J. Fabozzi*

- Factor-Based Trading 266
- Developing Factor-Based Trading Strategies 269
- Risk to Trading Strategies 271
- Desirable Properties of Factors 273
- Sources for Factors 273
- Building Factors from Company Characteristics 274
- Working with Data 275
- Analysis of Factor Data 283

### Key Points
- Questions 287

### Questions
- 289

## CHAPTER 12
Cross-Sectional Factor-Based Models and Trading Strategies

*Joseph A. Cerniglia, Petter N. Kolm, and Frank J. Fabozzi*

- Cross-Sectional Methods for Evaluation of Factor Premiums 292
- Factor Models 300
- Performance Evaluation of Factors 310
- Model Construction Methodologies for a Factor-based Trading Strategy 317
- Backtesting 328
- Backtesting Our Factor Trading Strategy 330

### Key Points
- Questions 331

### Questions
- 337

### Appendix: The Compustat Point-in-Time, IBES Consensus Databases and Factor Definitions
- 333
CHAPTER 13
Multifactor Equity Risk Models and Their Applications
Anthony Lazanas, António Baldaque da Silva, Arne D. Staal, and Cenk Ural

Motivation
Equity Risk Factor Models
Applications of Equity Risk Models
Key Points
Questions

CHAPTER 14
Dynamic Factor Approaches to Equity Portfolio Management
Dorsey D. Farr

Methods of Active Management
Modeling
Implementation
Key Points
Questions

CHAPTER 15
A Factor Competition Approach to Stock Selection
Joseph Mezrich and Junbo Feng

The Problem
The Solution
Which Factors Get Picked?
Does the Alpha Repair Process Work?
Key Points
Questions

CHAPTER 16
Avoiding Unintended Country Bets in Global Equity Portfolios
Michele Aghassi, Cliff Asness, Oktay Kurbanov, and Lars N. Nielsen

Country Membership and Individual Stock Returns
Ways to Build Active Global Portfolios
Studying the Naive Portfolio
Empirical Results
Why Does the Naive Stock Selection Portfolio Make Country Noise Bets?
Key Points
Questions
# CONTENTS

## CHAPTER 17
**Modeling Market Impact Costs**

*Petter N. Kolm and Frank J. Fabozzi*

- Market Impact Costs 426
- Liquidity and Transaction Costs 427
- Market Impact Measurements and Empirical Findings 430
- Forecasting and Modeling Market Impact 433
- Key Points 439
- Questions 440

## CHAPTER 18
**Equity Portfolio Selection in Practice**

*Dessislava A. Pachamanova and Frank J. Fabozzi*

- Portfolio Constraints Commonly Used in Practice 442
- Benchmark Exposure and Tracking Error Minimization 450
- Incorporating Transaction Costs 454
- Incorporating Taxes 460
- Multi-Account Optimization 465
- Robust Parameter Estimation 469
- Portfolio Resampling 471
- Robust Portfolio Optimization 474
- Key Points 480
- Questions 481

## CHAPTER 19
**Portfolio Construction and Extreme Risk**

*Jennifer Bender, Jyh-Huei Lee, and Dan Stefek*

- Measures of Extreme Loss 484
- Constraining Shortfall 485
- Performance 485
- Imposing Benchmark Neutrality 487
- Analysis 489
- Key Points 493
- Appendix: Constructing Out-of-Sample Shortfall Betas 494
- Questions 495

## CHAPTER 20
**Working with High-Frequency Data**

*Irene Aldridge*

- What is High-Frequency Data? 497
### Contents

<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>How is High-Frequency Data Recorded?</td>
<td>499</td>
</tr>
<tr>
<td>Properties of High-Frequency Data</td>
<td>500</td>
</tr>
<tr>
<td>High-Frequency Data are Voluminous</td>
<td>501</td>
</tr>
<tr>
<td>High-Frequency Data are Subject to Bid-Ask Bounce</td>
<td>503</td>
</tr>
<tr>
<td>High-Frequency Data are Irregularly Spaced in Time</td>
<td>509</td>
</tr>
<tr>
<td>Equity Correlations Decay at High Frequencies</td>
<td>517</td>
</tr>
<tr>
<td>Key Points</td>
<td>519</td>
</tr>
<tr>
<td>Questions</td>
<td>520</td>
</tr>
</tbody>
</table>

**CHAPTER 21**

**Statistical Arbitrage**

*Brian J. Jacobsen*

<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pairs Trading</td>
<td>523</td>
</tr>
<tr>
<td>General Models</td>
<td>532</td>
</tr>
<tr>
<td>Key Points</td>
<td>534</td>
</tr>
<tr>
<td>Questions</td>
<td>534</td>
</tr>
</tbody>
</table>

**About the Website**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index</td>
<td>537</td>
</tr>
</tbody>
</table>