Contents

Preface ix
Acknowledgments xiii

PART ONE
Market Microstructure 1

CHAPTER 1
Financial Markets: Traders, Orders, and Systems 3
  Traders 3
  Orders 5
  The Bid/Ask Spread 7
  Liquidity 9
  Market Structures 9
    Continuous Order-Driven Markets 10
    Oral Auctions 11
    Call Auctions 12
    Quote-Driven Markets and Hybrid Markets 13

CHAPTER 2
Modern Financial Markets 15
  The U.S. Equity Markets 15
  The NYSE 15
  NASDAQ 16
  Alternative Trading Systems 17
  European Equity Markets 18
  Spot FX Market 19
  The U.S. Fixed Income Markets 21
  High-Frequency Trading 22
Contents

Recent Empirical Findings 69
Fractals in Finance 72

CHAPTER 8
Volatility 75
Basic Notions 75
Conditional Heteroskedasticity 77
Realized Volatility 79
Market Risk Measurement 81

CHAPTER 9
Agent-Based Modeling of Financial Markets 86
Adaptive Equilibrium Models 87
Non-Equilibrium Price Models 89
The Observable-Variables Model 91
Modeling Efficiency of Technical Trading 94
Modeling the Birth of a Two-Sided Market 95

PART THREE
Trading Strategies 101

CHAPTER 10
Technical Trading Strategies 103
Trend Strategies 105
Filter Rules 105
Moving-Average Rules 106
Channel Breakouts 107
Momentum and Oscillator Strategies 109
Complex Geometric Patterns 113

CHAPTER 11
Arbitrage Trading Strategies 117
Hedging Strategies 118
Pair Trading 120
Cointegration and Causality 121
Pair Selection 123
Arbitrage Risks 125

CHAPTER 12
Back-Testing of Trading Strategies 129
Performance Measures 131
Resampling Techniques 133
Bootstrap 133