Contents

	Preface	xv
1	Introduction	1
	Overview	1
	Financial Derivatives	1
	Applications of Financial Derivatives	5
	The Concept of Arbitrage	7
	Organization of the Text	8
	Questions and Problems	10
	Notes	12
2	Futures Markets	13
	Overview	13
	Futures Markets	13
	Exchanges and Types of Futures	25
	Purposes of Futures Markets	29
	Regulation of Futures Markets	32
	Taxation of Futures Trading	37
	Brokers, Advisors, and Commodity Fund Managers	37
	The Changing Environment of Futures Markets	39
	Electronic Futures Trading	41
	Market Corners and Squeezes	42
	Conclusion	46
	Questions and Problems	47
	Notes	48
3	Futures Prices	50
	Overview	50
	Reading Futures Prices	51
	The Basis and Spreads	54
	Models of Futures Prices	60
	Futures Prices and Expectations	80
	Futures Prices and Risk Aversion	82
	Characteristics of Futures Prices	88
	Conclusion	92

	Questions and Problems Notes	93 95
4	Using Futures Markets	97
7	-	
	Overview Prince Discourses	97
	Price Discovery Speculation	98 100
	Speculative Profits	100
	Hedging	111
	Conclusion	122
	Questions and Problems	123
	Notes	125
5	Interest Rate Futures: Introduction	128
	Overview	128
	Short-Maturity Interest Rate Futures Contracts	128
	Longer-Maturity Interest Rate Futures	133
	Pricing Interest Rate Futures Contracts	139
	Speculating with Interest Rate Futures	147
	Hedging with Interest Rate Futures	152
	Conclusion	160
	Questions and Problems	160
	Notes	163
6	Interest Rate Futures: Refinements	164
	Overview	164
	The T-Bond Futures Contract in Detail	165
	Seller's Options in T-Bond Futures	175
	Interest Rate Futures Market Efficiency	180
	Applications: Eurodollar and T-Bill Futures	187
	Hedging with T-Bond Futures	198
	Conclusion	214
	Questions and Problems	214
	Notes	217
7	Stock Index Futures: Introduction	219
	Overview	219
	The Indexes	220
	Stock Index Futures Contracts	224
	Stock Index Futures Prices	225
	Index Arbitrage and Program Trading	228
	Speculating with Stock Index Futures	233
	Risk Management with Stock Index Futures	236
	Conclusion	239

		CONTENTS
	Questions and Problems Notes	239 242
8	Stock Index Futures: Refinements	243
	Overview	243
	Stock Index Futures Prices	243
	Real-World Program Trading	248
	Hedging with Stock Index Futures	251
	Asset Allocation	258
	Portfolio Insurance	260
	Index Futures and Stock Market Volatility	262
	Index Futures and Stock Market Crashes	265
	Conclusion	270
	Questions and Problems	271
	Notes	272
9	Foreign Currency Futures	275
	Overview	275
	Price Quotations	276
	Geographical and Cross-Rate Arbitrage	276
	Forward and Futures Market Characteristics	279
	European Monetary Union	282
	Determinants of Foreign Exchange Rates	283
	Forward and Futures Prices for Foreign Exchange	286
	More Futures Price Parity Relationships	287
	Foreign Exchange Forecasting Accuracy	294
	The Efficiency of Foreign Exchange Futures Markets	295
	Speculation in Foreign Exchange Futures	297
	Hedging with Foreign Exchange Futures	300
	Conclusion	304
	Questions and Problems	305
	Notes	308
10	The Options Market	309
	Overview	309
	An Option Example	309
	Moneyness	310
	American and European Options	311
	Why Trade Options?	311
	The Option Contract	312
	The Options Market	312
	Option Trading Procedures	320
	The Clearinghouse	325
	Margins	. 325
	Commissions	327

ix

	Taxation	328
	Conclusion	330
	Questions and Problems	330
	Notes	333
11	Option Payoffs and Option Strategies	335
	Overview	335
	Stocks and Bonds	336
	Option Notation	338
	European and American Option Values at Expiration	339
	Buy or Sell a Call Option	339
	Call Options at Expiration and Arbitrage	343
	Buy or Sell a Put Option	345
	Moneyness	348
	Option Combinations	348
	Combining Options with Bonds and Stocks	368
	Conclusion	382
	Questions and Problems	383
	Notes	387
12	Bounds on Option Prices	389
	Overview	389
	The Boundary Space for Call and Put Options	389
	Relationships Between Call Option Prices	392
	Relationships Between Put Option Prices	400
	Option Prices and the Interest Rate	409
	Option Prices and Stock Price Movements	411
	Option Prices and the Riskiness of Stocks	415
	Conclusion	417
	Questions and Problems	417
	Notes	419
13	European Option Pricing	421
	Overview	421
	The Single-Period Binomial Model	421
	The Multi-Period Binomial Model	425
	Stock Price Movements	430
	The Binomial Approach to the Black-Scholes Model	435
	The Black-Scholes Option Pricing Model	437
	Inputs for the Black-Scholes Model	440
	European Options and Dividends	444
	Tests of the Option Pricing Model	453
	Conclusion	456
	Questions and Problems	456
	Notes	463

14	Option Sensitivities and Option Hedging	467
	Overview	467
	Option Sensitivities in the Merton and Black-Scholes Models	467
	DELTA	472
	THETA	476
	VEGA	478
	RHO	479
	GAMMA	481
	Creating Neutral Portfolios	485
	Option Sensitivities and Option Trading Strategies	486
	Conclusion	498
	Questions and Problems	498
	Notes	506
15	American Option Pricing	507
	Overview	507
	American versus European Options	507
	American versus European Calls	510
	Psuedo-American Call Option Pricing	511
	Exact American Call Option Pricing	512
	Analytical Approximations of American Option Prices	517
	The Binomial Model and American Option Prices	521
	Conclusion	533
	Questions and Problems	534
	Notes	536
16	Options on Stock Indexes, Foreign Currency, and Futures	537
	Overview	537
	European Option Pricing	538
	Option Sensitivities	545
	Pricing American Options	547
	Conclusion	558
	Questions and Problems	560
	Notes	560
17	The Options Approach to Corporate Securities	562
	Overview	562
	Equity and a Pure Discount Bond	563
	Senior and Subordinated Debt	566
	Callable Bonds	568
	Convertible Bonds	570
	Warrants	571
	Conclusion	572
	Questions and Problems	573
	Notes	576

18	Exotic Options	577
	Overview	577
	Assumptions of the Analysis and the Pricing Environment	578
	Forward-Start Options	578
	Compound Options	580
	Chooser Options	583
	Barrier Options	589
	Binary Options	597
	Lookback Options	604
	Average Price Options	607
	Exchange Options	610
	Rainbow Options	613
	Conclusion	621
	Questions and Problems	622
	Notes	623
19	Interest Rate Options	626
	Overview	626
	Interest Rate Options: Markets and Instruments	627
	The Term Structure of Interest Rates	631
	Stripped Treasury Securities and Forward Rate Agreements (FRAs)	636
	The Option-Adjusted Spread (OAS)	639
	The Black Model	643
	Applications of the Black Model	645
	Forward Put-Call Parity	655
	Caps, Floors, and Collars	659
	Conclusion	665
	Questions and Problems	666
	Notes	668
20	The Swaps Market: Introduction	670
	Overview	670
	Swaps	671
	The Swaps Market	671
	Plain Vanilla Swaps	673
	Motivations for Swaps	680
	Swap Facilitators	686
	Pricing of Swaps	689
	Swap Portfolios	691
	Beyond Plain Vanilla Swaps	697
	Commodity Swaps	702
	Equity Swaps	703
	Swaptions	704
	Conclusion	708
	Questions and Problems	709
	Notes	712

21 Swaps: Economic Analysis and Pricing715Overview715The Economic Analysis of Swaps716Interest Rate Swap Pricing741Currency Swap Pricing747Conclusion752Questions and Problems752	
The Economic Analysis of Swaps 716 Interest Rate Swap Pricing 741 Currency Swap Pricing 747 Conclusion 752	
The Economic Analysis of Swaps716Interest Rate Swap Pricing741Currency Swap Pricing747Conclusion752	
Interest Rate Swap Pricing741Currency Swap Pricing747Conclusion752	
Currency Swap Pricing 747 Conclusion 752	
Conclusion 752	
•	
· · · · · · · · · · · · · · · · · · ·	
Notes 761	
22 Swaps: Applications 762	
Overview 762	
The Parallel Loan—How Swaps Began 763	
Creating Synthetic Securities with Swaps 764	
The All-In Cost 768	
B. F. Goodrich–Rabobank Interest Rate Swap 771	
The Duration of Interest Rate Swaps 774	
Interest Rate Immunization with Swaps 776	
Structured Notes 783	
Pricing Flavored Interest Rate and Currency Swaps 795	
Equity Swap Pricing and Applications 807	
Swaption Pricing and Applications 812	
Day Count Conventions 821	
Conclusion 824	
Questions and Problems 825	
Notes 835	
OPTION! Installation and Tutorial 837	
Installation 837	
Tutorial: Introduction 837	
Entering Data and Calculating a Solution 838	
OPTION! Hot Buttons and Menu Commands 840	
Creating Graphs in OPTION! 843	
Moving and Zooming Graphs 844	
Printing Graphs 845	
Saving a Graph to a File 846	
Exercises for OPTION! 848	
Appendix A Summary of Accounting Rules for Derivative Instruments 864	
Appendix B Cumulative Distribution Function for the Standard Normal Random Variable 870	
Answers to Selected End-of-Chapter Problems 871	
Index 879	