

Contents

Foreword	xi
Introduction	xiii

Part 1: THE BASICS

1 Financial Arithmetic Basics	3
Some opening remarks on formulas	4
Use of an HP calculator	4
Simple and compound interest	5
Nominal and effective rates	10
Future value/present value; time value of money	12
Discount factors	15
Cashflow analysis	16
Annuities	19
Using an HP calculator for cashflow analysis	21
Interpolation and extrapolation	25
Mean, variance and standard deviation and volatility	28
Correlation and covariance	32
The 'normal' probability function	34
Exercises	36

Part 2: INTEREST RATE INSTRUMENTS

2 The Money Market	41
Overview	42
Day/year conventions	48
Money market instruments	50
Money market calculations	55
Discount instruments	57
CDs paying more than one coupon	61
Exercises	64

3	Forward-Forwards and Forward Rate Agreements (FRAs)	67
	Forward-forwards, FRAs and futures	68
	Applications of FRAs	77
	Exercises	79
4	Interest Rate Futures	83
	Overview	84
	Exchange structure and margins	90
	Futures compared with FRAs	91
	Pricing and hedging FRAs with futures	92
	Trading with interest rate futures	98
	Exercises	105
5	Bond Market Calculations	107
	Overview of capital market instruments	108
	Features and variations	110
	Introduction to bond pricing	113
	Different yield measures and price calculations	124
	A summary of the various approaches to price / yield	135
	Duration, modified duration and convexity	137
	Bond futures	144
	Cash-and-carry arbitrage	151
	Exercises	159
6	Repos, Buy/Sell-backs and Securities Lending	163
	Introduction	164
	Classic repo	166
	Margin calls	169
	General collateral (GC) and specials	174
	Other features	176
	Buy/Sell-back	183
	Close-out and repricing	189
	Securities lending	193
	Comparison between the different transactions	199
	Uses of repo and securities lending	200
	Exercises	204
7	Zero-Coupon Rates and Yield Curves	209
	Zero-coupon yields and par yields	210
	Forward-forward yields	214
	Summary	216
	Longer-dated FRAs	217
	Exercises	219

Part 3: FOREIGN EXCHANGE

8 Foreign Exchange	223
Introduction	224
Spot exchange rates	224
Forward exchange rates	230
Cross-rate forwards	242
Short dates	243
Calculation summary	246
Value dates	246
Forward-forwards	248
Time options	249
Long-dated forwards	250
Arbitraging and creating FRAs	251
Discounting future foreign exchange risk	254
Exercises	257

Part 4: SWAPS AND OPTIONS

9 Interest Rate and Currency Swaps	263
Basic concepts and applications	264
Overnight indexed swap (OIS)	268
Pricing	272
Valuing swaps	280
Hedging an interest rate swap	285
Amortising and forward-start swaps	286
Currency swaps	288
Exercises	292
10 Options	295
Overview	296
The ideas behind option pricing	298
Pricing models	299
OTC options vs. exchange-traded options	308
The Greek letters	309
Hedging with options	314
Some “packaged” options	315
Some trading strategies	317
Some less straightforward options	323
Exercises	324

Part 5: GOLD AND OTHER COMMODITIES

11 Gold and Other Commodities	329
Gold	330
Gold borrowing, forwards, swaps and GOFO	332
Other commodities	338
Forward pricing and convenience yield	339
Commodity futures and EFP (Exchange For Physical)	343
FRAs, swaps and options	348
Exercises	350

Part 6: HINTS AND ANSWERS TO EXERCISES

12 Hints and Answers to Exercises	355
Hints on exercises	356
Answers to exercises	371
Appendix 1 Using an HP calculator	423
Appendix 2 A summary of market day/year conventions and government bond markets	430
Appendix 3 A summary of calculation procedures	433
Appendix 4 Glossary	451
Appendix 5 ISO (SWIFT) currency codes	471
Select Bibliography	478
Index	479