

# CONTENTS

Preface	xiii	2.2 Unit Roots, Random Walk and Cointegration	36
Acknowledgements	xv	2.3 Monte Carlo Simulation (MCS) and Bootstrapping	40
<b>1 Basic Concepts in Finance</b>	<b>1</b>	2.4 Bayesian Learning	47
Aims	1	2.5 Summary	50
1.1 Returns on Stocks, Bonds and Real Assets	1	<b>3 Efficient Markets Hypothesis</b>	<b>53</b>
1.2 Discounted Present Value, DPV	7	Aims	53
1.3 Utility and Indifference Curves	13	3.1 Overview	54
1.4 Asset Demands	19	3.2 Implications of the EMH	56
1.5 Indifference Curves and Intertemporal Utility	25	3.3 Expectations, Martingales and Fair Game	59
1.6 Investment Decisions and Optimal Consumption	28	3.4 Testing the EMH	65
1.7 Summary	32	3.5 Using Survey Data	66
Appendix: Mean-Variance Model and Utility Functions	33	3.6 Summary	70
<b>2 Basic Statistics in Finance</b>	<b>35</b>	Appendix: Cross-Equation Restrictions	71
Aims	35	<b>4 Are Stock Returns Predictable?</b>	<b>73</b>
2.1 Lognormality and Jensen's Inequality	35	Aims	73
		4.1 A Century of Returns	73

4.2 Simple Models	82	<b>8 Empirical Evidence: CAPM and APT</b>	<b>189</b>
4.3 Univariate Tests	85	Aims	189
4.4 Multivariate Tests	95	8.1 CAPM: Time-Series Tests	189
4.5 Cointegration and Error Correction Models (ECM)	100	8.2 CAPM: Cross-Section Tests	190
4.6 Non-Linear Models	103	8.3 CAPM, Multifactor Models and APT	195
4.7 Markov Switching Models	106	8.4 Summary	202
4.8 Profitable Trading Strategies?	109	Appendix: Fama–MacBeth Two-Step Procedure	203
4.9 Summary	113		
<b>5 Mean-Variance Portfolio Theory and the CAPM</b>	<b>115</b>	<b>9 Applications of Linear Factor Models</b>	<b>205</b>
Aims	115	Aims	205
5.1 An Overview	115	9.1 Event Studies	206
5.2 Mean-Variance Model	119	9.2 Mutual Fund Performance	209
5.3 Capital Asset Pricing Model	132	9.3 Mutual Fund ‘Stars’?	227
5.4 Beta and Systematic Risk	134	9.4 Summary	243
5.5 Summary	138		
<b>6 International Portfolio Diversification</b>	<b>141</b>	<b>10 Valuation Models and Asset Returns</b>	<b>245</b>
Aims	141	Aims	245
6.1 Mathematics of the Mean-Variance Model	142	10.1 The Rational Valuation Formula (RVF)	245
6.2 International Diversification	152	10.2 Special Cases of the RVF	248
6.3 Mean-Variance Optimisation in Practice	156	10.3 Time-Varying Expected Returns	249
6.4 Summary	163	10.4 Summary	254
Appendix I: Efficient Frontier and the CML	164	<b>11 Stock Price Volatility</b>	<b>255</b>
Appendix II: Market Portfolio	167	Aims	255
<b>7 Performance Measures, CAPM and APT</b>	<b>169</b>	11.1 Shiller Volatility Tests	257
Aims	169	11.2 Volatility Tests and Stationarity	261
7.1 Performance Measures	169	11.3 Peso Problems and Variance Bounds Tests	267
7.2 Extensions of the CAPM	176	11.4 Volatility and Regression Tests	268
7.3 Single Index Model	179	11.5 Summary	269
7.4 Arbitrage Pricing Theory	181	Appendix: LeRoy–Porter and West Tests	270
7.5 Summary	187		
		<b>12 Stock Prices: The VAR Approach</b>	<b>273</b>
		Aims	273

12.1	Linearisation of Returns and the RVF	274	15.3	SDF Model of Expected Returns	368
12.2	Empirical Results	280	15.4	Summary	368
12.3	Persistence and Volatility	291		Appendix I: Envelope Condition for Consumption-Portfolio Problem	369
12.4	Summary	295		Appendix II: Solution for Log Utility	370
	Appendix: Returns, Variance Decomposition and Persistence	296			
<b>13</b>	<b>SDF Model and the C-CAPM</b>	<b>303</b>	<b>16</b>	<b>Intertemporal Asset Allocation: Empirics</b>	<b>375</b>
	Aims	303		Aims	375
13.1	Consumption-CAPM	304	16.1	Retirement and Stochastic Income	375
13.2	C-CAPM and the 'Standard' CAPM	309	16.2	Many Risky Assets	381
13.3	Prices and Covariance	314	16.3	Different Preferences	383
13.4	Rational Valuation Formula and SDF	315	16.4	Horizon Effects and Uncertainty	386
13.5	Factor Models	315	16.5	Market Timing and Uncertainty	389
13.6	Summary	317	16.6	Stochastic Parameters	390
	Appendix: Joint Lognormality and Power Utility	318	16.7	Robustness	391
			16.8	Summary	392
				Appendix: Parameter Uncertainty and Bayes Theorem	393
<b>14</b>	<b>C-CAPM: Evidence and Extensions</b>	<b>323</b>	<b>17</b>	<b>Rational Bubbles and Learning</b>	<b>397</b>
	Aims	323		Aims	397
14.1	Should Returns be Predictable in the C-CAPM?	323	17.1	Rational Bubbles	397
14.2	Equity Premium Puzzle	327	17.2	Tests of Rational Bubbles	401
14.3	Testing the Euler Equations of the C-CAPM	332	17.3	Intrinsic Bubbles	404
14.4	Extensions of the SDF Model	336	17.4	Learning	409
14.5	Habit Formation	346	17.5	Summary	420
14.6	Equity Premium: Further Explanations	350			
14.7	Summary	353	<b>18</b>	<b>Behavioural Finance and Anomalies</b>	<b>423</b>
	Appendix: Hansen–Jagannathan Bound	354		Aims	423
<b>15</b>	<b>Intertemporal Asset Allocation: Theory</b>	<b>355</b>	18.1	Key Ideas	423
	Aims	355	18.2	Beliefs and Preferences	428
15.1	Two-Period Model	356	18.3	Survival of Noise Traders	430
15.2	Multi-Period Model	362	18.4	Anomalies	433
			18.5	Corporate Finance	447
			18.6	Summary	449

<b>19 Behavioural Models</b>	<b>451</b>	22.3 Single-Equation Tests	520
Aims	451	22.4 Expectations Hypothesis: Case Study	523
19.1 Simple Model	452	22.5 Previous Studies	532
19.2 Optimising Model of Noise Trader Behaviour	454	22.6 Summary	536
19.3 Shleifer–Vishny Model: Short-Termism	460	<b>23 SDF and Affine Term Structure Models</b>	<b>537</b>
19.4 Contagion	463	Aims	537
19.5 Beliefs and Expectations	466	23.1 SDF Model	537
19.6 Momentum and Newswatchers	468	23.2 Single-Factor Affine Models	541
19.7 Style Investing	470	23.3 Multi-Factor Affine Models	543
19.8 Prospect Theory	475	23.4 Summary	544
19.9 Summary	484	Appendix I: Math of SDF Model of Term Structure	545
Appendix I: The DeLong et al Model of Noise Traders	485	Appendix II: Single-Factor Affine Models	546
Appendix II: The Shleifer–Vishny Model of Short-Termism	486	<b>24 The Foreign Exchange Market</b>	<b>549</b>
<b>20 Theories of the Term Structure</b>	<b>489</b>	Aims	549
Aims	489	24.1 Exchange Rate Regimes	549
20.1 Prices, Yields and the RVF	490	24.2 PPP and LOOP	552
20.2 Theories of the Term Structure	494	24.3 Covered-Interest Parity, CIP	560
20.3 Expectations Hypothesis	498	24.4 Uncovered Interest Parity, UIP	561
20.4 Summary	500	24.5 Forward Rate Unbiasedness, FRU	562
<b>21 The EH–From Theory to Testing</b>	<b>501</b>	24.6 Real Interest Rate Parity	562
Aims	501	24.7 Summary	563
21.1 Alternative Representations of the EH	502	Appendix: PPP and the Wage–Price Spiral	564
21.2 VAR Approach	506	<b>25 Testing CIP, UIP and FRU</b>	<b>567</b>
21.3 Time-Varying Term Premium–VAR Methodology	511	Aims	567
21.4 Summary	513	25.1 Covered Interest Arbitrage	567
<b>22 Empirical Evidence on the Term Structure</b>	<b>515</b>	25.2 Uncovered Interest Parity	572
Aims	515	25.3 Forward Rate Unbiasedness, FRU	574
22.1 Data and Cointegration	516	25.4 Testing FRU: VAR Methodology	581
22.2 Variance Bounds Tests	518	25.5 Peso Problems and Learning	586
		25.6 Summary	589

<b>26 Modelling the FX Risk Premium</b>	<b>591</b>	28.2 Mapping Assets: Simplifications	635
Aims	591	28.3 Non-Parametric Measures	638
26.1 Implications of $\beta < 1$ in FRU Regressions	592	28.4 Monte Carlo Simulation	641
26.2 Consumption-CAPM	593	28.5 Alternative Methods	645
26.3 Affine Models of FX Returns	597	28.6 Summary	647
26.4 FRU and Cash-in-Advance Models	598	Appendix I: Monte Carlo Analysis and VaR	648
26.5 Summary	605	Appendix II: Single Index Model (SIM)	650
<b>27 Exchange Rate and Fundamentals</b>	<b>607</b>	<b>29 Volatility and Market Microstructure</b>	<b>653</b>
Aims	607	Aims	653
27.1 Monetary Models	607	29.1 Volatility	654
27.2 Testing the Models	617	29.2 What Influences Volatility?	656
27.3 New Open-Economy Macroeconomics	624	29.3 Multivariate GARCH	665
27.4 Summary	625	29.4 Market Microstructure–FX Trading	672
<b>28 Market Risk</b>	<b>627</b>	29.5 Survey Data and Expectations	674
Aims	627	29.6 Technical Trading Rules	679
28.1 Measuring VaR	628	29.7 Summary	681
		<b>References</b>	<b>683</b>
		Recommended Reading	711
		<b>Index</b>	<b>713</b>