Contents

Foreword ix

Preface xi

Acknowledgements xv

Notes xvii

1 Derivatives in their Golden Days (1994 to 2007) 1
   1.1 Uses of Derivatives 2
   1.2 Structured Notes 5

2 Themes in Constructing Exotic Products 13
   2.1 Principal Protection 13
   2.2 Upside-Only Participation 16
   2.3 Protected Selling of Optionality for Yield 18
   2.4 Betting Against the Forward Curve 22
   2.5 Diversification 23
   2.6 Some Considerations in Hedging 24

3 Basics of Derivatives 27
   3.1 The Forward Contract 27
   3.2 The Plain Vanilla Option 29
   3.3 No-Arbitrage Pricing 31
   3.4 The Black–Scholes Model 33
   3.5 The Volatility Surface 36
   3.6 Correlation 39
   3.7 Modelling Considerations 42

4 Barriers 45
   4.1 Digitals 45
   4.2 Knockouts and Reverse Knockouts 47
   4.3 One-Touches and No-Touches 53
   4.4 Double Barriers and More 55
Contents

5 Quantoes 57
  5.1 Some Motivation 57
  5.2 Multi-Currency Products 58
  5.3 Non-Deliverable Products 59
  5.4 Self-Quantoes (Auto-Quantoes) 60
  5.5 Quantoes 62

6 Swaps, Constant Maturity Swaps and Spreads 65
  6.1 The Swap 65
  6.2 Natural Payment Time and the Libor-in-Arrears 71
  6.3 The Swaption 74
  6.4 The Constant Maturity Swap 77
  6.5 Spread between Two CMS Rates 85
  6.6 Callable CMS 88

7 Range Accruals 89
  7.1 Motivation 89
  7.2 Single Reference Accruals 91
  7.3 Multiple Reference Accruals 94

8 Early Termination 95
  8.1 The Mindset of a Benchmark Investor 95
  8.2 Callables 96
  8.3 Triggers (Autocalls) 99
  8.4 The Target Redemption Note 102
  8.5 Puttables 104
  8.6 Early Termination and Contingent Cashflows 106

9 Pathwise Accumulators 109
  9.1 The One-Way Floater 109
  9.2 Skylines 112
  9.3 Snowballs 116

10 Power Reverse Dual Currencies 121
  10.1 The Carry Trade 121
  10.2 Long-Dated Foreign Exchange 125
  10.3 Normal PRDCs 127
  10.4 The Redemption Strike 131
  10.5 Chooser PRDCs 132

11 Baskets and Hybrids 135
  11.1 Baskets and the Benign Effect of Averaging 135
  11.2 Hybrid Baskets 138
  11.3 “Best of” Products and Hybrids 139
  11.4 Hybrids and Conditional Coupons 145
  11.5 Multiplying Assets 147
## Table of Contents

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Some Exotic Equity Products</td>
<td>149</td>
</tr>
<tr>
<td>12.1</td>
<td>A Historical Perspective</td>
<td>149</td>
</tr>
<tr>
<td>12.2</td>
<td>The Cliquet</td>
<td>152</td>
</tr>
<tr>
<td>12.3</td>
<td>The Himalaya</td>
<td>154</td>
</tr>
<tr>
<td>12.4</td>
<td>The Altiplano</td>
<td>157</td>
</tr>
<tr>
<td>12.5</td>
<td>The Atlas</td>
<td>159</td>
</tr>
<tr>
<td>12.6</td>
<td>The Everest</td>
<td>160</td>
</tr>
<tr>
<td>12.7</td>
<td>Principal Protection or Lack Thereof</td>
<td>161</td>
</tr>
<tr>
<td>13</td>
<td>Volatility and Correlation Products</td>
<td>163</td>
</tr>
<tr>
<td>13.1</td>
<td>Variance and Volatility Swaps</td>
<td>163</td>
</tr>
<tr>
<td>13.2</td>
<td>Options on Variance Swaps</td>
<td>169</td>
</tr>
<tr>
<td>13.3</td>
<td>Correlation Swaps</td>
<td>170</td>
</tr>
<tr>
<td>14</td>
<td>Fund Derivatives</td>
<td>173</td>
</tr>
<tr>
<td>14.1</td>
<td>Fund Derivatives Products</td>
<td>173</td>
</tr>
<tr>
<td>14.2</td>
<td>Constant Proportion Portfolio Insurance</td>
<td>175</td>
</tr>
<tr>
<td>14.3</td>
<td>The Ideal Underlying Fund</td>
<td>178</td>
</tr>
<tr>
<td>15</td>
<td>The Products Post-2008</td>
<td>179</td>
</tr>
<tr>
<td>15.1</td>
<td>The Products Likely to Survive the Credit Crunch</td>
<td>179</td>
</tr>
<tr>
<td>15.2</td>
<td>Incorporating Some Lessons Learned</td>
<td>187</td>
</tr>
<tr>
<td>15.3</td>
<td>Credit Considerations</td>
<td>189</td>
</tr>
<tr>
<td></td>
<td>Some Final Thoughts</td>
<td>193</td>
</tr>
<tr>
<td></td>
<td>Glossary</td>
<td>195</td>
</tr>
<tr>
<td></td>
<td>Appendices</td>
<td>203</td>
</tr>
<tr>
<td></td>
<td>Bibliography</td>
<td>239</td>
</tr>
<tr>
<td></td>
<td>Index</td>
<td>243</td>
</tr>
</tbody>
</table>