Contents

List of Figures xi
List of Tables xvii
Acknowledgments xix

Introduction xx
1.1 Treasury, Funding, and the Reasons behind This Book xx
1.2 Funding Issues as Credit and Pricing Issues xxiii
1.3 Treasury Finance and Development Banking xxv
1.4 The Structure of the Book xxvi

CHAPTER 1
An Introductory View to Banking, Development Banking, and Treasury 1
1.1 A Representation of the Capital Flow in a Financial Institution 2
1.2 Lending 3
1.3 Borrowing 7
1.4 Investing and ALM 10
1.5 The Basic Structure of a Traditional Financial Institution 12
1.5.1 Private and Public Sides 12
1.5.2 Sales and Trading Desks 13
1.5.3 The Treasury Desk 14
1.6 Development Banking 17
1.6.1 The Different Types of Development Institutions 17
1.6.2 The Structure of a Development Bank 19

CHAPTER 2
Curve Construction 21
2.1 What Do We Mean by Curve Construction? 22
2.2 The Instruments Available for Curve Construction 24
2.2.1 Discount Bonds and Cash Deposits 24
2.2.2 Interest Rate Futures and Forward Rate Agreements 26
2.2.3 FX Forwards 28
CONTENTS

2.2.4 Interest Rate Swaps 30
2.2.5 Basis Swaps 34
  2.2.5.1 Tenor Basis Swaps 34
  2.2.5.2 Cross Currency Basis Swaps 35
2.3 Using Multiple Instruments to Build a Curve 37
2.4 Collateralized Curve Construction 42
  2.4.1 The Evolution of the Perception of Counterparty Credit Risk 42
    2.4.1.1 Overnight Index Swaps 43
  2.4.2 Discounting in the Presence of Collateral 46
    2.4.2.1 Collateral in a Foreign Currency 47
  2.4.3 Clearing, the Evolution of a Price, and the Impact of Discounting 48
  2.4.4 The Special Case of AAA-Rated Institutions 52
2.5 Numerical Example: Bootstrapping an Interest Rate Curve 55
  2.5.1 The Short End of the Curve: Deposits and FRAs 56
  2.5.2 The Long End of the Curve: Interest Rate Swaps 58
  2.5.3 Interpolation and Extrapolation 62

CHAPTER 3
Credit and the Fair Valuing of Loans 67
3.1 Credit as an Asset Class 67
  3.1.1 The Underlyings 69
  3.1.2 Credit Default Swaps 71
3.2 A Brief Overview of Credit Modeling 75
  3.2.1 Hazard Rates and a Spread-Based Modeling of Credit 78
  3.2.2 The Bootstrapping of a Hazard Rate Curve 81
  3.2.3 Different Quotations and Different Currencies 84
3.3 Fair Value of Loans and the Special Case of Development Institutions 88
  3.3.1 The Argument around the Fair Valuing of Loans 88
  3.3.2 Prepayment Option and the Case of Development Institutions 91
3.4 Numerical Example: Calculating the Fair Value of a Loan 95

CHAPTER 4
Emerging Markets and Liquidity 101
4.1 The Definition of Emerging Markets 101
4.2 The Main Issues with Emerging Markets 103
  4.2.1 Liquidity 103
  4.2.2 Maturity 108
Contents ix

4.2.3 Credit 110
4.2.4 Capital Control 112
4.3 Emerging Markets and Development Banking 116
  4.3.1 Borrowing 116
  4.3.2 Lending 118
4.4 Case Studies of Development Projects 122
  4.4.1 Rural Development in X 122
  4.4.2 Development of Textile Exports in Y 124

CHAPTER 5
Bond Pricing 127
  5.1 What Is a Bond? 127
  5.2 A Few Fundamental Concepts of the Bond World 129
    5.2.1 Par 129
    5.2.2 Yield 130
    5.2.3 Duration 134
  5.3 Expressing Credit Explicitly When Pricing a Bond 138
    5.3.1 Benchmarks and Z-Spreads 138
    5.3.2 Asset Swaps 142
    5.3.3 Constructing a CDS-Implied Credit Framework for Bond Pricing 146
  5.4 Illiquid Bonds 150
    5.4.1 Pricing at Recovery 151
    5.4.2 Case Study: The Default of Greece 155
    5.4.3 Building Proxies 161
      5.4.3.1 The Case of Missing Maturities 162
      5.4.3.2 The Case of Quasi Government Entities 162
      5.4.3.3 Similar Countries 162
      5.4.3.4 Similar Companies 163
  5.5 Numerical Example: Estimating the Coupon of an Emerging Market Debt Instrument 164

CHAPTER 6
Treasury Revisited 171
  6.1 Funding as an Asset Swap Structure 171
    6.1.1 Asset Swaps Revisited 171
    6.1.2 The Impact of Discounting on Asset Swap Levels 177
  6.2 Funding Level Targets 179
    6.2.1 The Objective of Ever-Smaller Funding Levels 179
    6.2.2 Different Funding Levels for Different Types of Debt 182
  6.3 The Fundamental Differences between Investment Banking and Development Banking 187
X CONTENTS

6.4 Benchmarks for Borrowing and Investing 189
   6.4.1 Borrowing 190
   6.4.2 Investing 195
   6.4.3 Case Study: A Note on the LIBOR Scandal 203

CHAPTER 7
Risk and Asset Liability Management 207
7.1 The Issue of Leverage 208
7.2 Hedging
   7.2.1 Risk Neutrality and the Meaning of Hedging 210
   7.2.2 Static and Dynamic Hedging 214
   7.2.3 Valuation in the Absence of Dynamic Hedging 219
7.3 Managing Risk Related to Financial Observables 224
   7.3.1 Interest Rate and FX Risk
      7.3.1.1 Hedging a Fixed or Structured Bond 225
      7.3.1.2 The Unhedgeable Nature of the Discount Spread $\Phi$ 226
      7.3.1.3 Hedging a Fixed-Rate Loan 228
      7.3.1.4 Hedging a Foreign Currency Bond or Loan 230
      7.3.1.5 Hedging a Credit-Linked Instrument Such as an Asset-Backed Security 234
      7.3.1.6 Hedging an Equity Position 236
      7.3.1.7 Locking an Interest Rate Position 237
   7.3.2 Credit Risk 238
7.4 Funding Risk
   7.4.1 Funding Gap Risk 242
   7.4.2 Refinancing Risk
      7.4.2.1 The Case of Constant Funding Level 250
      7.4.2.2 The Case of Funding Level Lower Than Expected 250
      7.4.2.3 The Case of Funding Level Higher Than Expected 251
   7.4.3 Numerical Example: Estimating Refinancing Risk 251
   7.4.4 Reset Risk 255
   7.4.5 Numerical Example: Estimating Reset Risk 257

CHAPTER 8
Conclusion 261
8.1 Credit Is Everywhere 261
8.2 The Fundamental Steps to Borrowing, Lending, and Investing: A Summary 263
Contents

APPENDIX A
  Implying Zero Rates from FX Forward Quotes  269

APPENDIX B
  CDS Spreads and Default Probabilities  271

APPENDIX C
  Modeling the Credit-Driven Prepayment Option of a Loan  273

APPENDIX D
  The Relation between Macaulay and Modified Durations  275

APPENDIX E
  The Impact of Discounting on an Asset Swap Spread  277

APPENDIX F
  Replication Leading to Risk-Neutral Probabilities  279

References  283

About the Web Site  289

Index  293