

Detailed Contents

Preface xix
Acknowledgments xxv

CHAPTER 1	Introduction to Valuation	1		
	1.1 Introduction	1		
	1.2 The Nature of Major Investment Decisions	2		
	1.3 Valuing Projects and Businesses	4		
	<i>Project Valuation—Investing in the Caspian Sea Oil Fields</i>	4 ■ <i>Issues to Consider When Valuing an Investment</i>	5 ■ <i>Enterprise Valuation—Mergers and Acquisitions</i>	8
	1.4 Dealing with Complexity—Process and Discipline	9		
	<i>The Investment Evaluation Process</i>	9		
	1.5 Case Study—CP3 Pharmaceuticals Laboratories Inc.	12		
	<i>Example: Investing in a New Materials-Handling System</i>	12		
	■ <i>Addressing the Possibility of Decision Bias</i>	14		
	1.6 Summing Up and Looking Forward	15		
	<i>Final Comments—The Investment Decision-Making Process</i>	15		
	■ <i>Looking Forward—The Structure of the Rest of the Text</i>	16		

PART I Project Analysis Using Discounted Cash Flow 17

CHAPTER 2	Forecasting and Valuing Cash Flows	18		
	2.1 Discounted Cash Flows and Valuation	18		
	<i>Example—Car Wash</i>	18 ■ <i>The Three-Step DCF Process</i>	19	
	2.2 Defining Investment Cash Flows	20		
	<i>Only Incremental Cash Flows Are Relevant</i>	20 ■ <i>Expected Versus Conservative and Optimistic Cash Flow Estimates</i>	22 ■ <i>Equity Versus Project Free Cash Flow</i>	24
	2.3 Comprehensive Example—Forecasting Project Free Cash Flows	27		
	<i>Lecion’s Strategic Assessment of the LCD Investment Opportunity</i>	27		
	■ <i>Estimating the Investment’s Project Free Cash Flow</i>	28 ■ <i>Estimating Total Annual Expenses</i>	30	
	2.4 Valuing Investment Cash Flows	33		
	<i>Example—Valuing Lecion’s Project Cash Flows</i>	33 ■ <i>Using NPV and IRR to Evaluate the Investment</i>	33 ■ <i>Mutually Exclusive Projects</i>	35

	2.5 Calculating Project Free Cash Flows Using Pro Forma Accounting Statements 38
	<i>Example—Extracting FCF from Pro Forma Financial Statements</i> 41
	▫ <i>Key Learning Points—Pro Forma Financial Statements and FCF</i> 43
	2.6 Summary 47
	Exercises 47
	Problems 48
CHAPTER 3	Project Risk Analysis 54
	3.1 Introduction 54
	3.2 Uncertainty and Investment Analysis 55
	<i>The Investment Process with Risky Cash Flows</i> 55
	▫ <i>Example—The Earthlizer Proposal</i> 56
	3.3 Sensitivity Analysis—Learning More About the Project 59
	<i>Scenario Analysis</i> 59 ▫ <i>Breakeven Sensitivity Analysis</i> 60
	▫ <i>Simulation Analysis</i> 63 ▫ <i>Interpreting Simulation Results</i> 69
	▫ <i>Using the Tornado Diagram to Perform Sensitivity Analysis</i> 72
	▫ <i>Reflections on the Use of Simulation</i> 74
	3.4 Decision Trees—Valuing Project Flexibility 76
	<i>Example—Decision Tree Analysis of the Abandonment Option</i> 77
	3.5 Summary 81
	Exercises 81
	Problems 84
	Appendix: An Introduction to Simulation Analysis and Crystal Ball 94
PART II	Cost of Capital 99
<hr/>	
CHAPTER 4	Estimating a Firm's Cost of Capital 100
	4.1 Introduction 100
	4.2 Value, Cash Flows, and Discount Rates 101
	<i>Defining a Firm's WACC</i> 101 ▫ <i>Discounted Cash Flow, Firm Value, and WACC</i> 103
	▫ <i>Illustration—Using Discounted Cash Flow Analysis to Value an Acquisition</i> 103
	4.3 Estimating WACC 106
	<i>Evaluate the Firm's Capital Structure Weights—Step 1</i> 107 ▫ <i>Calculate the Cost of Debt—Step 2</i> 108
	▫ <i>Calculate the Cost of Preferred Equity—Step 2 (continued)</i> 112
	▫ <i>Calculate the Cost of Common Equity—Step 2 (continued)</i> 112
	▫ <i>Calculating the WACC (Putting It All Together)—Step 3</i> 134
	▫ <i>Taking a Stand on the Issues—Estimating the Firm's Cost of Capital</i> 136

4.4 Summary	137
Exercises	138
Problems	139
Appendix: Extensions and Refinements of WACC Estimation	146

CHAPTER 5	Estimating Required Rates of Return for Projects	153
5.1	Introduction	153
5.2	Pros and Cons of Multiple Risk-Adjusted Costs of Capital	154
	<i>The Rationale for Using Multiple Discount Rates</i>	154
	▫ <i>The Benefits of Using a Single Discount Rate</i>	157
	▫ <i>Weighing the Costs and Benefits of Multiple Versus Single Discount Rates</i>	159
5.3	Choosing a Project Discount Rate	159
	<i>Method 1: Divisional WACC (Industry-Based Divisional Costs of Capital)</i>	160
	▫ <i>Method 2: Project-Specific WACCs</i>	165
5.4	Hurdle Rates and the Cost of Capital	178
	<i>Mutually Exclusive Projects</i>	178
	▫ <i>High Hurdle Rates May Provide Better Incentives for Project Sponsors</i>	178
	▫ <i>Accounting for Optimistic Projections and Selection Bias</i>	179
5.5	Summary	180
	Exercises	181
	Problems	182

PART III Financial Statements and Valuation 187

CHAPTER 6	Forecasting Financial Performance	188
6.1	Introduction	188
6.2	Understanding Financial Statements and Cash Flow	189
	<i>The Income Statement</i>	189
	▫ <i>The Balance Sheet</i>	192
	▫ <i>Statement of Cash Flow</i>	198
	▫ <i>Free Cash Flow Computations</i>	198
	▫ <i>Reconciling the Cash Flow Statement with Firm FCF</i>	202
	▫ <i>Free Cash Flow and Nonoperating Income</i>	203
6.3	Forecasting Future Financial Performance	204
	<i>Step 1: Perform an Analysis of Historical Financial Statements</i>	205
	▫ <i>Step 2: Construct Pro Forma Financial Statements for the Planning Period</i>	206
	▫ <i>Step 3: Convert Pro Forma Financial Statements to Cash Flow Forecasts</i>	212
	▫ <i>Step 4: Estimate the Terminal Value of Firm Free Cash Flows</i>	213
6.4	Looking Ahead—The Mechanics of Calculating Enterprise Value	214
	<i>Planning Period and Terminal Value</i>	214

	6.5 Summary	216
	Exercises	217
	Problems	217
	Appendix: Detecting Financial Fraud	222
CHAPTER 7	Earnings Dilution, Incentive Compensation, and Project Selection	224
	7.1 Introduction	224
	7.2 Are Reported Earnings Important?	226
	<i>Why Managers Care About Earnings</i>	226
	7.3 Project Analysis—Earnings per Share and Project Selection	227
	<i>Example 1 —Bad Project with Good Earnings Prospects: The Equity-Cost Problem</i>	228
	■ <i>Example 2 —Good Project with Back-Loaded Earnings Prospects</i>	237
	7.4 Economic Profit and the Disconnect Between EPS and NPV	238
	<i>Economic Profit (EVA[®])</i>	240
	■ <i>Using Economic Profit to Evaluate the Equity-Cost Problem</i>	242
	■ <i>Using Economic Profit to Evaluate the Back- and Front-Loaded Earnings Problems</i>	244
	7.5 Practical Solutions—Using Economic Profit Effectively	245
	<i>Modifying the Calculation of Economic Profit</i>	246
	■ <i>Modifying the Method Used to Pay Bonuses Based on Economic Profit</i>	252
	7.6 Summary	253
	Exercises	255
	Problems	257

PART IV Enterprise Valuation 259

CHAPTER 8	Relative Valuation Using Market Comparables	260
	8.1 Introduction	260
	8.2 Valuation Using Comparables	261
	<i>Valuing Residential Real Estate Using Comparables</i>	262
	■ <i>Valuing Commercial Real Estate</i>	264
	8.3 Enterprise Valuation Using EBITDA Multiples	272
	<i>Enterprise Value Versus Firm Value</i>	272
	■ <i>EBITDA and Firm Free Cash Flow</i>	274
	■ <i>Why Use EBITDA Multiples Rather than Cash Flow Multiples?</i>	275
	■ <i>The Effects of Risk and Growth Potential on EBITDA Multiples</i>	276
	■ <i>Normalizing EBITDA</i>	277
	■ <i>Adjusting the Valuation Ratio for Liquidity Discounts and Control Premiums</i>	277

- 8.4 Equity Valuation Using the Price-to-Earnings Multiple 278
 - Example—Valuing ExxonMobil’s Chemical Division Using the P/E Method* 278
 - *P/E Multiples for Stable-Growth Firms* 280 ■ *P/E Multiple for a High-Growth Firm* 283
- 8.5 Pricing an Initial Public Offering 287
- 8.6 Other Practical Considerations 287
 - Selecting Comparable Firms* 288
 - *Choosing the Valuation Ratio* 288 ■ *Valuation Ratios Versus DCF Analysis* 293
- 8.7 Summary 294
- Exercises 295
- Problems 296

CHAPTER 9 Enterprise Valuation 315

- 9.1 Introduction 315
- 9.2 Using a Two-Step Approach to Estimate Enterprise Value 316
 - Example: Immersion Chemical Corporation Acquires Genetic Research Corporation* 318 ■ *Sensitivity Analysis* 330 ■ *Scenario Analysis* 331
- 9.3 Using the APV Model to Estimate Enterprise Value 332
 - Introducing the APV Approach* 333 ■ *Using the APV Approach to Value GRC Under the Growth Strategy* 334 ■ *Using an EBITDA Multiple to Calculate the Terminal Value* 340 ■ *Comparing the WACC and APV Estimates of GRC’s Enterprise Value* 342 ■ *A Brief Summary of the WACC and APV Valuation Approaches* 343 ■ *Estimating the Value of Subsidized Debt Financing* 344
- 9.4 Summary 345
- Exercises 346
- Problems 347

CHAPTER 10 Valuation in a Private Equity Setting 359

- 10.1 Introduction 359
- 10.2 Overview of the Market for Private Equity 361
 - Market for Private Equity—Financial Intermediaries* 362 ■ *Investors—The Suppliers of Private Equity Finance* 362 ■ *Investments—The Demand for Private Equity Finance* 362
- 10.3 Valuing Investments in Startups and Deal Structuring 365
 - The Cost of Capital for Venture Capital Financing* 365 ■ *Valuing a VC Investment and Structuring the Deal* 369 ■ *Summing Up the Venture Capital Method* 372 ■ *Pre- and Post-Money Value of the Firm’s Equity* 373 ■ *Refining the Deal Structure* 374

10.4	Valuing Leveraged Buyout Investments	376
	<i>Alternative LBO Acquisition Strategies—Bust-Ups and Build-Ups</i>	377
	■ <i>Example—Build-Up LBOs</i>	377
	■ <i>A Limitation of the Private Equity (LBO) Valuation Approach</i>	386
	■ <i>Valuing PMG Inc. Using the Hybrid Adjusted Present Value Approach</i>	387
10.5	Summary	390
	Exercises	391
	Problems	392

PART V Futures, Options, and the Valuation of Real Investments 401

CHAPTER 11	Using Futures and Options to Value Real Investments	404
	11.1 Introduction	405
	11.2 The Certainty-Equivalence Method	408
	<i>Forward Prices as Certainty-Equivalent Cash Flows</i>	409
	11.3 Using Forward Prices to Value Investment Projects	410
	<i>Example: Pricing Against the Forward Price Curve</i>	410
	■ <i>Convincing Your Skeptical Boss</i>	412
	11.4 Using Option Prices to Value Investment Opportunities	416
	<i>Option Value and Nonrecourse Financing</i>	417
	■ <i>Convincing Your Skeptical Boss</i>	418
	11.5 Caveats and Limitations—Tracking Errors	419
	<i>How Liquid Are Futures, Forward, and Option Markets?</i>	420
	■ <i>Uncertain Quantities and Operating Costs</i>	420
	■ <i>Basis Risk</i>	421
	11.6 Using an Option Pricing Model to Value Investments	422
	<i>Example—Valuing the Cotton Valley Investment Using the Binomial Option Pricing Model</i>	422
	■ <i>How Does Volatility Affect Option Values?</i>	426
	■ <i>Calibrating Option Pricing Models</i>	427
	11.7 Summary	427
	Exercises	428
	Problems	429
	Appendix A: Option Basics—A Quick Review	433
	Appendix B: Multiperiod Probability Trees and Lattices	439
	Appendix C: Calibrating the Binomial Option Pricing Model	441
CHAPTER 12	Managerial Flexibility and Project Valuation: Real Options	444
	12.1 Introduction	444
	12.2 Types of Real Options	445
	<i>Real Options to Consider Before an Investment Launch</i>	446

■	<i>Real Options to Consider After an Investment Launch</i>	446
12.3	Why Real Option Valuation Is Difficult	447
12.4	Valuing Investments That Contain Embedded Real Options	447
	<i>The Option to Invest: Staged Investments</i>	448 ■ <i>Option to Abandon</i>
		456
12.5	Analyzing Real Options As American-Style Options	458
	<i>Evaluating National Petroleum's Option to Drill</i>	458 ■ <i>Real Option Valuation Formula</i>
		467
12.6	Using Simulation to Value Switching Options	471
	<i>Option to Switch Inputs</i>	472
12.7	Summary	478
	Exercises	482
	Problems	482
	Appendix: Constructing Binomial Lattices	487

CHAPTER 13 Strategic Options: Evaluating Strategic Opportunities 489

13.1	Introduction	489
13.2	Where Do Positive NPV Investments Come From?	490
13.3	Valuing a Strategy with Staged Investments	492
	<i>Description of Vespar's New Coal Technology</i>	492 ■ <i>Stand-Alone Project Analysis of the Initial Plant</i>
		493 ■ <i>Analyzing Projects As Part of a Strategy</i>
		493 ■ <i>The Anatomy of Vespar's Power Plant Strategy</i>
		503 ■ <i>Sensitivity Analysis of Vespar's Power Plant Strategy</i>
		503
13.4	Strategic Value When the Future Is Not Well Defined	508
	<i>Which Investments Generate Strategic Options?</i>	508 ■ <i>How Does Corporate Structure Affect Strategic Option Value?</i>
		509 ■ <i>Management Incentives, Psychology, and the Exercise of Strategic Options</i>
		510
13.5	Summary	513
	Exercises	514
	Problems	515
	<i>Epilogue</i>	517
	<i>Index</i>	519