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SECOND EDITION

Investment Banking

*Valuation, Leveraged Buyouts,
and Mergers & Acquisitions*

with data & analytics from Bloomberg

JOSHUA ROSENBAUM
JOSHUA PEARL

FOREWORD BY JOSEPH R. PERELLA
AFTERWORD BY JOSHUA HARRIS

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Investment Banking

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*In loving memory of Ronie Rosenbaum, an inspiration
for strength and selflessness.*

—J.R.

*To the memory of my grandfather, Joseph Pearl, a Holocaust
survivor, for his inspiration to persevere and succeed.**

—J.P.

* A portion of the authors' royalties will be donated to The Blue Card Fund aiding destitute Holocaust survivors—www.bluecardfund.org.

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Instructor and Student Resources

Written to reflect today's dynamic market conditions, *Investment Banking, University Edition* skillfully:

- Introduces students to the primary valuation methodologies currently used on Wall Street
- Uses a step-by-step how-to approach for each methodology and builds a chronological knowledge base
- Defines key terms, financial concepts, and processes throughout
- Provides a comprehensive overview of the fundamentals of LBOs and an organized M&A sale process
- Presents new coverage of M&A buy-side analytical tools—which includes both qualitative aspects, such as buyer motivations and strategies, along with technical financial and valuation assessment tools
- Includes a comprehensive merger consequences analysis, including accretion/dilution and balance sheet effects
- Contains challenging end-of-chapter questions to reinforce concepts covered

INSTRUCTOR RESOURCES

An extensive support package, including print and online tools, helps instructors maximize their teaching effectiveness. It offers useful supplements for instructors with varying levels of experience and different instructional circumstances. These resources can be accessed at Wiley's Global Education website by searching the book title or by visiting <http://www.wiley.com/WileyCDA/WileyTitle/productCd-1118472209.html>.

Instructor resources include:

- **Lecture Notes.** Full PowerPoint presentation for each chapter to help guide classroom instruction, including key topics, equations, and exhibits—over 325 slides in total.
- **Test Bank.** Over 500 questions and answers available in Microsoft Word and as a computerized test bank. The computerized test bank is available through

Respondus (Respondus.com) and is a powerful tool for creating and managing exams. It can be printed or published directly to ANGEL, Blackboard, Desire2Learn, eCollege, WebCT, and other eLearning systems. Questions are presented in multiple choice and true/false format.

- **Solutions Manual.** The solutions manual includes detailed solutions to end of chapter questions.
- **Case Studies with Video Commentary.** 14 University of Virginia, Darden School of Business case studies complete with companion video commentary by the authors. The video commentary presents an overview of the case material and key issues to address.
- **Image Gallery.** Each exhibit in the *University Edition* is available for instructors in PowerPoint format.
- **Valuation Models.** Five templates and five completed models, along with user guides for the valuation methodologies discussed in the book, including:
 - Comparable Companies
 - Precedent Transactions
 - DCF Analysis
 - LBO Analysis
 - Merger Consequences Analysis

STUDENT RESOURCES AVAILABLE FOR PURCHASE

Workbook

The *Investment Banking Workbook* is designed for use both as a companion to *Investment Banking, Second Edition*, as well as on a standalone basis. The workbook provides a mix of multi-step problem set exercises, as well as multiple choice and essay questions—over 400 questions in total. It also provides a comprehensive answer key that aims to truly teach and explain as opposed to simply identify the correct answer. Therefore, the answers themselves are an effective learning tool. The completion of this comprehensive guide will help ensure the achievement of your professional and educational milestones.

Focus Notes

Investment Banking Focus Notes provides a comprehensive, yet streamlined, review of the basic skills and concepts discussed in *Investment Banking, Second Edition*. The *Focus Notes* are designed for use as a companion to the main book as well as a standalone study program. This text serves as a one-stop resource in an easy-to-read-and-carry format that serves as a perfect reference material for a quick refresher.

Focus Notes seeks to help solidify knowledge of these core financial topics as true mastery must be tested, honed, and retested over time. It is the ultimate self-help tool for students, job seekers, and existing finance professionals, as well as in formal classroom and training settings.

About the Authors



JOSHUA ROSENBAUM is a Managing Director at UBS Investment Bank in the Global Industrial Group. He originates, structures, and advises on M&A, corporate finance, and capital markets transactions. Previously, he worked at the International Finance Corporation, the direct investment division of the World Bank. He received his AB from Harvard and his MBA with Baker Scholar honors from Harvard Business School.



JOSHUA PEARL is an investment analyst at Brahman Capital Corp. Previously, he structured and executed leveraged loan and high yield bond financings, as well as leveraged buyouts and restructurings as a Director at UBS Investment Bank in Leveraged Finance. Prior to UBS, he worked at Moelis & Company and Deutsche Bank. He received his BS in Business from Indiana University's Kelley School of Business.

CONTACT THE AUTHORS

Please feel free to contact **JOSHUA ROSENBAUM** and **JOSHUA PEARL** with any questions, comments, or suggestions for future editions at josh@investmentbankingbook.com.

Foreword

Mark Twain, long known for his critical views of formal education, once wisely noted: “I never let my schooling interfere with my education.”

Twain’s one-liner strikes at the core of investment banking, where deals must be lived before proper knowledge and understanding can be obtained. Hard time must be spent doing deals, with complexities in valuation, terms, and negotiations unique to every situation. The truly great firms and dealmakers have become so by developing cultures of apprenticeship that transfer knowledge and creativity from one generation to the next. The task of teaching aspiring investment bankers and finance professionals has been further complicated by the all-consuming nature of the trade, as well as its constantly evolving art and science.

Therefore, for me personally, it’s exciting to see Joshua Rosenbaum and Joshua Pearl take the lead in training a new generation of investment bankers. Their work in documenting valuation and deal process in an accessible manner is a particularly important contribution as many aspects of investment banking cannot be taught, even in the world’s greatest universities and business schools. Rosenbaum and Pearl provide aspiring—and even the most seasoned—investment bankers with a unique real-world education inside Wall Street’s less formal classroom, where deals come together at real-time speed.

The school of hard knocks and of learning-by-doing, which was Twain’s classroom, demands strong discipline and sound acumen in the core fundamentals of valuation. It requires applying these techniques to improve the quality of deals for all parties, so that deal makers can avoid critical and costly mistakes, as well as unnecessary risks. My own 35+ years of Wall Street education has clearly demonstrated that valuation is at the core of investment banking. Any banker worth his salt must possess the ability to properly value a business in a structured and defensible manner. This logic and rationale must inspire clients and counterparties alike, while spurring strategic momentum and comprehension into the art of doing the deal.

Rosenbaum and Pearl succeed in providing a systematic approach to addressing a critical issue in any M&A, IPO, or investment situation—namely, how much is a business or transaction worth. They also put forth the framework for helping approach more nuanced questions such as how much to pay for the business and how to get the deal done. Due to the lack of a comprehensive written reference material on valuation, the fundamentals and subtlety of the trade are often passed on orally from banker-to-banker on a case-by-case basis. In codifying the art and science of investment banking, the authors convert this oral history into an accessible framework by bridging the theoretical to the practical with user-friendly, step-by-step approaches to performing primary valuation methodologies.

Many seasoned investment bankers commonly lament the absence of relevant and practical “how-to” materials for newcomers to the field. The reality is that most

financial texts on valuation and M&A are written by academics. The few books written by practitioners tend to focus on dramatic war stories and hijinks, rather than the nuts-and-bolts of the techniques used to get deals done. Rosenbaum and Pearl fill this heretofore void for practicing and aspiring investment bankers and finance professionals. Their book is designed to prove sufficiently accessible to a wide audience, including those with a limited finance background.

It is true that we live in uncertain and volatile times—times that have destroyed or consumed more than a few of the most legendary Wall Street institutions. However, one thing will remain a constant in the long-term—the need for skilled finance professionals with strong technical expertise. Companies will always seek counsel from experienced and independent professionals to analyze, structure, negotiate, and close deals as they navigate the market and take advantage of value-creating opportunities. Rosenbaum and Pearl promulgate a return to the fundamentals of due diligence and the use of well-founded realistic assumptions governing growth, profitability, and approach to risk. Their work toward instilling the proper skill set and mindset in aspiring generations of Wall Street professionals will help establish a firm foundation for driving a brighter economic future.

JOSEPH R. PERELLA

Chairman and CEO, Perella Weinberg Partners

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Joseph Meisner's technical insights on M&A buy-side and sell-side analysis were invaluable for the book's second edition, as was his unique ability to marry the academic with the practical. His technical knowledge and experience is impressive, and he is able to distill the essence of a situation and express himself in layman's terms. He is the consummate M&A professional as well as a true friend and asset to those around him.

Jeffrey Groves provided us with valuable contributions on updating and expanding the leveraged buyouts content. Jeff is a highly skilled and experienced leveraged finance professional with a soft client touch and his pulse on the market. **Daniel Plaxe** was also helpful in enriching our LBO content with his technical and precise approach. **Vijay Kumra** made a valuable contribution to our updated M&A content, providing practical and grounding insights to help preserve the accessibility of a highly complex and technical topic.

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Jennifer Fonner DiNucci, *Cooley Godward Kronish LLP*

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Philip Konnikov, *UBS Investment Bank*
Vijay Kumra, *UBS Investment Bank*
Alex Lajoux, *National Association of Corporate Directors, Coauthor of “The Art of M&A” Series*
Ian Lampi, *Department of Treasury, Office of Financial Stability*
Michael Lanzarone, CFA, *Société Générale*
Eu-Han Lee, *Indus Capital Advisors (HK) Ltd.*
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James Paris, *BMO Capital Markets*
Dan Park, *Foros Group*
Daniel Plaxe, *Pioneer Funding Group, LLC*
Gregory Pryor, *White & Case LLP*
David Ross, *Bank of America Merrill Lynch*

Ashish Rughwani, *Dominus Capital*
David Sanford, *Scout Capital*
Arnold Schneider, *Georgia Tech College of Management*
Mustafa Singaporewalla, *Bank of America Merrill Lynch*
Steven Sherman, *Shearman & Sterling LLP*
Andrew Shogan, *Deutsche Bank*
Emma Smith, *Deutsche Bank*
David Spalding, *Dartmouth College*
Andrew Steinerman, *JP Morgan*
Matthew Thomson
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Introduction

In the constantly evolving world of finance, a solid technical foundation is an essential tool for success. Due to the fast-paced nature of this world, however, no one has been able to take the time to properly codify the lifeblood of the corporate financier's work—namely, valuation. We have responded to this need by writing the book that we wish had existed when we were trying to break into Wall Street. *Investment Banking: Valuation, Leveraged Buyouts, and Mergers & Acquisitions, Second Edition* is a highly accessible and authoritative book written by investment bankers that explains how to perform the valuation work at the core of the financial world. This book fills a noticeable gap in contemporary finance literature, which tends to focus on theory rather than practical application.

In the aftermath of the subprime mortgage crisis and ensuing credit crunch, the world of finance is returning to the fundamentals of valuation and critical due diligence for mergers & acquisitions (M&A), capital markets, and investment opportunities. This involves the use of more realistic assumptions governing approach to risk as well as a wide range of valuation drivers, such as expected financial performance, discount rates, multiples, leverage levels, and financing terms. While valuation has always involved a great deal of “art” in addition to time-tested “science,” the artistry is perpetually evolving in accordance with market developments and conditions. *As a result, we have updated the widely adopted first edition of our book with respect to both technical valuation fundamentals as well as practical judgment skills and perspective. We have also added a comprehensive and highly technical chapter on buy-side M&A analysis.*

The genesis for this book stemmed from our personal experiences as students seeking to break into Wall Street. As we both independently went through the rigorous process of interviewing for associate and analyst positions at investment banks and other financial firms, we realized that our classroom experience was a step removed from how valuation and financial analysis are performed in real-world situations. This was particularly evident during the technical portion of the interviews, which is often the differentiator for recruiters trying to select among hundreds of qualified candidates.

Faced with this reality, we searched in vain for a practical how-to guide on the primary valuation methodologies used on Wall Street. At a loss, we resorted to compiling bits and pieces from various sources and ad hoc conversations with friends and contacts already working in investment banking and private equity. Needless to say, we didn't feel as prepared as we would have liked. While we were fortunate enough to secure job offers, the process left a deep impression on us. In fact, we continued to refine the comprehensive preparatory materials we had created as students, which served as the foundation for this book.

Once on Wall Street, we both went through mandatory training consisting of crash courses on finance and accounting, which sought to teach us the skill set

necessary to become effective investment bankers. Months into the job, however, even the limitations of this training were revealed. Actual client situations and deal complexities, combined with evolving market conditions, accounting guidelines, and technologies stretched our knowledge base and skills. In these situations, we were forced to consult with senior colleagues for guidance, but often the demands of the job left no one accessible in a timely manner. Given these realities, it is difficult to overstate how helpful a reliable handbook based on years of “best practices” and deal experience would have been.

Consequently, we believe this book will prove invaluable to those individuals seeking or beginning careers on Wall Street—from students at undergraduate universities and graduate schools to “career changers” looking to break into finance. For working professionals, this book is also designed to serve as an important reference material. Our experience has demonstrated that given the highly specialized nature of many finance jobs, there are noticeable gaps in skill sets that need to be addressed. Furthermore, many professionals seek to continuously brush up on their skills as well as broaden and refine their knowledge base. This book will also be highly beneficial for trainers and trainees at Wall Street firms, both within the context of formal training programs and informal on-the-job training.

Our editorial contributors from private equity firms and hedge funds have also identified the need for a practical valuation handbook for their investment professionals and key portfolio company executives. Many of these professionals come from a consulting or operational background and do not have a finance pedigree. Furthermore, the vast majority of buy-side investment firms do not have in-house training programs and rely heavily upon on-the-job training. This book will serve as a helpful reference guide for individuals joining, or seeking jobs at, these institutions.

This book also provides essential tools for professionals at corporations, including members of business development, finance, and treasury departments. These specialists are responsible for corporate finance, valuation, and transaction-related deliverables on a daily basis. They also work with investment bankers on various M&A transactions (including leveraged buyouts (LBOs) and related financings), as well as initial public offerings (IPOs), restructurings, and other capital markets transactions. Similarly, this book is intended to provide greater context for the legions of attorneys, consultants, and accountants focused on M&A, corporate finance, and other transaction advisory services.

Given the increasing globalization of the financial world, this book is designed to be sufficiently universal for use outside of North America. Our work on cross-border transactions—including in rapidly developing markets such as Asia, Latin America, Russia, and India—has revealed a tremendous appetite for skilled resources throughout the globe. Therefore, this book fulfills an important need as a valuable training material and reliable handbook for finance professionals in these markets.

STRUCTURE OF THE BOOK

This book focuses on the primary valuation methodologies currently used on Wall Street, namely comparable companies analysis, precedent transactions analysis, discounted cash flow analysis, and leveraged buyout analysis. These methodologies are used to determine valuation for public and private companies within the context of M&A transactions, LBOs, IPOs, restructurings, and investment decisions. They also form the cornerstone for valuing companies on a standalone basis, including an assessment of whether a given public company is overvalued or undervalued. As such, these fundamental skills are just as relevant for private equity and hedge fund analysis as for investment banking. Using a step-by-step, how-to approach for each methodology, we build a chronological knowledge base and define key terms, financial concepts, and processes throughout the book.

We also provide context for the various valuation methodologies through a comprehensive overview of the fundamentals of LBOs and M&A transactions. For both LBOs and M&A, we discuss process and analytics in detail, including walking through both an illustrative LBO and M&A analysis as would be performed on a live transaction. This discussion also provides detailed information on an organized M&A sale process, including key participants, financing sources and terms, strategies, milestones, and legal and marketing documentation.

Furthermore, we address the importance of rigorous analysis based on trusted and attributable data sources. In this book, we highlight several datasets and investment banking tools from Bloomberg, a leading provider of business and financial data, news, research, and analytics. The Bloomberg Professional® service is a mainstay throughout the investment banking community, as it is an important tool for performing the depth of company and industry due diligence necessary to ensure successful transaction execution.

This body of work builds on our combined experience on a multitude of transactions, as well as input received from numerous investment bankers, investment professionals at private equity firms and hedge funds, attorneys, corporate executives, peer authors, and university professors. By drawing upon our own transaction and classroom experience, as well as that of a broad network of professional and professorial sources, we bridge the gap between academia and industry as it relates to the practical application of finance theory. The resulting product is accessible to a wide audience—including those with a limited finance background—as well as sufficiently detailed and comprehensive to serve as a primary reference tool and training guide for finance professionals.

This book is organized into three primary parts, as summarized below.

Part One: Valuation (Chapters 1–3)

Part One focuses on the three most commonly used methodologies that serve as the core of a comprehensive valuation toolset—comparable companies analysis (Chapter 1), precedent transactions analysis (Chapter 2), and discounted cash flow analysis (Chapter 3). Each of these chapters employs a user-friendly, how-to approach to performing the given valuation methodology while defining key terms, detailing various calculations, and explaining advanced financial concepts. At the end of each chapter,

we use our step-by-step approach to determine a valuation range for an illustrative target company, ValueCo Corporation (“ValueCo”), in accordance with the given methodology. The Base Case set of financials for ValueCo that forms the basis for our valuation work throughout the book is provided in Exhibits I.I to I.III.

Chapter 1: Comparable Companies Analysis Chapter 1 provides an overview of comparable companies analysis (“comparable companies” or “trading comps”), one of the primary methodologies used for valuing a given focus company, division, business, or collection of assets (“target”). Comparable companies provides a market benchmark against which a banker can establish valuation for a private company or analyze the value of a public company at a given point in time. It has a broad range of applications, most notably for various M&A situations, IPOs, restructurings, and investment decisions.

The foundation for trading comps is built upon the premise that similar companies provide a highly relevant reference point for valuing a given target as they share key business and financial characteristics, performance drivers, and risks. Therefore, valuation parameters can be established for the target by determining its relative positioning among peer companies. The core of this analysis involves selecting a universe of comparable companies for the target. These peer companies are benchmarked against one another and the target based on various financial statistics and ratios. Trading multiples—which utilize a measure of value in the numerator and an operating metric in the denominator—are then calculated for the universe. These multiples provide a basis for extrapolating a valuation range for the target.

Chapter 2: Precedent Transactions Analysis Chapter 2 focuses on precedent transactions analysis (“precedent transactions” or “transaction comps”), which, like comparable companies, employs a multiples-based approach to derive an implied valuation range for a target. Precedent transactions is premised on multiples paid for comparable companies in prior transactions. It has a broad range of applications, most notably to help determine a potential sale price range for a company, or part thereof, in an M&A or restructuring transaction.

The selection of an appropriate universe of comparable acquisitions is the foundation for performing precedent transactions. The best comparable acquisitions typically involve companies similar to the target on a fundamental level. As a general rule, the most recent transactions (i.e., those that have occurred within the previous two to three years) are the most relevant as they likely took place under similar market conditions to the contemplated transaction. Potential buyers and sellers look closely at the multiples that have been paid for comparable acquisitions. As a result, bankers and investment professionals are expected to know the transaction multiples for their sector focus areas.

Chapter 3: Discounted Cash Flow Analysis Chapter 3 discusses discounted cash flow analysis (“DCF analysis” or the “DCF”), a fundamental valuation methodology broadly used by investment bankers, corporate officers, academics, investors, and other finance professionals. The DCF has a wide range of applications, including valuation for various M&A situations, IPOs, restructurings, and investment decisions.

It is premised on the principle that a target's value can be derived from the present value of its projected *free cash flow* (FCF). A company's projected FCF is derived from a variety of assumptions and judgments about its expected future financial performance, including sales growth rates, profit margins, capital expenditures, and net working capital requirements.

The valuation implied for a target by a DCF is also known as its *intrinsic value*, as opposed to its *market value*, which is the value ascribed by the market at a given point in time. Therefore, a DCF serves as an important alternative to market-based valuation techniques such as comparable companies and precedent transactions, which can be distorted by a number of factors, including market aberrations (e.g., the post-subprime credit crunch). As such, a DCF plays a valuable role as a check on the prevailing market valuation for a publicly traded company. A DCF is also critical when there are limited (or no) "pure play" peer companies or comparable acquisitions.

Part Two: Leveraged Buyouts (Chapters 4 & 5)

Part Two focuses on leveraged buyouts, which comprise a large part of the capital markets and M&A landscape due to the proliferation of private investment vehicles (e.g., private equity firms and hedge funds) and their considerable pools of capital, as well as structured credit vehicles. We begin with a discussion in Chapter 4 of the fundamentals of LBOs, including an overview of key participants, characteristics of a strong LBO candidate, economics of an LBO, exit strategies, and key financing sources and terms. Once this framework is established, we apply our step-by-step how-to approach in Chapter 5 to construct a comprehensive LBO model and perform an LBO analysis for ValueCo. LBO analysis is a core tool used by bankers and private equity professionals alike to determine financing structure and valuation for leveraged buyouts.

Chapter 4: Leveraged Buyouts Chapter 4 provides an overview of the fundamentals of leveraged buyouts. An LBO is the acquisition of a target using debt to finance a large portion of the purchase price. The remaining portion of the purchase price is funded with an equity contribution by a financial sponsor ("sponsor"). In this chapter, we provide an overview of the economics of LBOs and how they are used to generate returns for sponsors. We also dedicate a significant portion of Chapter 4 to a discussion of LBO financing sources, particularly the various debt instruments and their terms and conditions.

LBOs are used by sponsors to acquire a broad range of businesses, including both public and private companies, as well as their divisions and subsidiaries. Generally speaking, companies with stable and predictable cash flows as well as substantial asset bases represent attractive LBO candidates. However, sponsors tend to be flexible investors provided the expected returns on the investment meet required thresholds. In an LBO, the disproportionately high level of debt incurred by the target is supported by its projected FCF and asset base, which enables the sponsor to contribute a small equity investment relative to the purchase price. This, in turn, enables the sponsor to realize an acceptable return on its equity investment upon exit, typically through a sale or IPO of the target.

Chapter 5: LBO Analysis Chapter 5 removes the mystery surrounding LBO analysis, the core analytical tool used to assess financing structure, investment returns, and valuation in leveraged buyout scenarios. These same techniques can also be used to assess refinancing opportunities and restructuring alternatives for corporate issuers. LBO analysis is a more complex methodology than those previously discussed as it requires specialized knowledge of financial modeling, leveraged debt capital markets, M&A, and accounting. At the center of LBO analysis is a financial model, which is constructed with the flexibility to analyze a given target under multiple financing structures and operating scenarios.

As with the methodologies discussed in Part One, LBO analysis is an essential component of a comprehensive valuation toolset. On the debt financing side, LBO analysis is used to help craft a viable financing structure for the target on the basis of its cash flow generation, debt repayment, credit statistics, and investment returns over the projection period. Sponsors work closely with financing providers (e.g., investment banks) to determine the preferred financing structure for a particular transaction. In an M&A advisory context, LBO analysis provides the basis for determining an implied valuation range for a given target in a potential LBO sale based on achieving acceptable returns.

Part Three: Mergers & Acquisitions (Chapters 6 & 7)

Part Three provides a comprehensive foundation for M&A, including process, strategies, deal structure, and analytics. M&A is a catch-all phrase for the purchase, sale, and combination of companies and their parts and subsidiaries. M&A facilitates a company's ability to continuously grow, evolve, and re-focus in accordance with ever-changing market conditions, industry trends, and shareholder demands. M&A advisory assignments are core to investment banking, traditionally representing a substantial portion of the firm's annual corporate finance revenues. In addition, most M&A transactions require financing on the part of the acquirer through the issuance of debt and/or equity.

In Chapter 6, we focus on sell-side M&A including the key process points and stages for running an effective M&A sale process, the medium whereby companies are bought and sold in the marketplace. This discussion serves to provide greater context for the topics discussed earlier in the book as theoretical valuation methodologies and analytics are tested based on what a buyer will actually pay for a business or collection of assets. We also describe how valuation analysis is used to frame the seller's price expectations, set guidelines for the range of acceptable bids, evaluate offers received, and, ultimately, guide negotiations of the final purchase price. Chapter 7 focuses on buy-side M&A. It builds upon the fundamental valuation material discussed earlier in the book by performing detailed valuation and merger consequences analysis on ValueCo from an illustrative strategic buyer's perspective, BuyerCo. As the name suggests, merger consequences analysis centers on examining the pro forma effects of a given transaction on the acquirer.