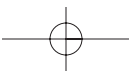
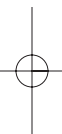
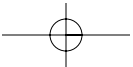
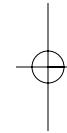
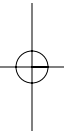
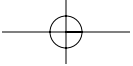


Valuing Intangible Assets





Valuing Intangible Assets

ROBERT F. REILLY, CFA, ASA, CPA

Managing Director
Willamette Management Associates

ROBERT P. SCHWEIHS, ASA

Managing Director
Willamette Management Associates

McGraw-Hill

New York San Francisco Washington, D.C. Auckland Bogotá
Caracas Lisbon London Madrid Mexico City Milan
Montreal New Delhi San Juan Singapore
Sydney Tokyo Toronto

Library of Congress Cataloging-in-Publication Data

Reilly, Robert F.

Valuing intangible assets / Robert F. Reilly, Robert P. Schweihs.

p. cm.

ISBN 0-7863-1065-0

1. Intangible property—Valuation. I. Schweihs, Robert P.

II. Title.

HF5681.I55R45 1998

657'.7—dc21

98-13959

CIP

McGraw-Hill*A Division of The McGraw-Hill Companies*

Copyright © 1999 by Robert F. Reilly and Robert P. Schweihs. All rights reserved. Printed in the United States of America. Except as permitted under the United States Copyright Act of 1976, no part of this publication may be reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written permission of the publisher.

1 2 3 4 5 6 7 8 9 0 DOC/DOC 9 0 3 2 1 0 9 8

ISBN 0-7863-1065-0

The sponsoring editor for this book was Roger Marsh and the production supervisor was Suzanne W. B. Rapcavage. It was set in Palatino by Inkwell Publishing Services.

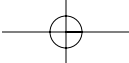
Printed and bound by R.R. Donnelley & Sons Company.

This publication is designed to provide accurate and authoritative information in regard to the subject matter covered. It is sold with the understanding that neither the author nor the publisher is engaged in rendering legal, accounting, or other professional service. If legal advice or other expert assistance is required, the services of a competent professional person should be sought.

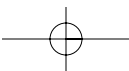
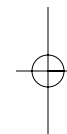
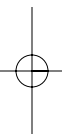
—From a Declaration of Principles jointly adopted by a Committee of the American Bar Association and a Committee of Publishers.

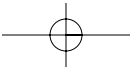
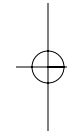
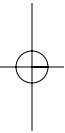
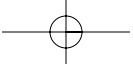
McGraw-Hill books are available at special quantity discounts to use as premiums and sales promotions, or for use in corporate training programs. For more information, please write to the Director of Special Sales, McGraw-Hill, 11 West 19th Street, New York, NY 10011. Or contact your local bookstore.

This book is printed on acid-free paper.



To our wives and children.





Contents

Preface *xvix*

Acknowledgments *xxiii*

Introduction *xxv*

PART I

INTRODUCTION TO INTANGIBLE ASSET VALUATION

- 1. Identification of Intangible Assets** 3
- Introduction. Definition of an Intangible Asset. *Economic Phenomena That Qualify as Intangible Assets. Economic Phenomena That Do Not Qualify as Intangible Assets. Economic Phenomena That Indicate Value in Intangible Asset. The Distinction between Tangible Assets and Intangible Assets. The Relationship between Tangible and Intangible Assets. Four Categories of Property. Real Estate. Tangible Personal Property. Intangible Real Property. Intangible Personal Property. Common Categories of Intangible Assets. Intellectual Properties. Attributes That Distinguish Intellectual Properties. How Intellectual Property Attributes Affect Value. Summary.*
- 2. Reasons to Conduct an Appraisal of Intangible Assets** 29
- Introduction. Purpose of the Appraisal. Common Reasons to Appraise an Intangible Asset. *Allocation of an Overall Business Purchase Price for Financial Accounting Purposes. Allocation of an Overall Business Purchase Price for Income Tax Accounting Purposes. Preacquisition Assessment of Business Value. The Purchase of Selected Intangible Assets. Capital Formation through Debt Financing. Reorganization and Bankruptcy Analysis. Establishment of Appropriate Royalty Rates for Intangible Asset Licenses. Establishment of a Fair Intercompany Transfer Price. Income Taxation Planning and Compliance. Ad Valorem Property Taxes. Litigation Support and Dispute Resolution. Business Formation and Dissolution. Corporate Planning and Governance. Contribution of Intangible Assets to a Business Entity. Audience for the Intangible Asset Analysis. Analyzing an Intangible Asset as a Component of a Business. Analyzing an Intangible Asset as an Independent Economic Unit. Summary.*
- 3. Professional Standards Related to Intangible Asset Appraisals** 39
- Introduction. Uniform Standards of Professional Appraisal Practice. American Society of Appraisers. Internal Revenue Service. *Section 197. Section 482. Section 170. Summary. Bibliography.*
- 4. Basic Valuation Concepts** 55
- Introduction. Importance of Documenting the Valuation Engagement. Defining the Appraisal Assignment. *The Objective of the*

Appraisal. The Purpose of the Appraisal. Selecting the Appropriate Standard of Value. Selecting the Appropriate Premise of Value. Highest and Best Use Analysis. Alternative Premises of Value. Describing the Particular Intangible Asset Subject to Appraisal. Describing the Bundle of Legal Rights Subject to Appraisal. Selecting the Appropriate Valuation Date. Communicating the Valuation Assignment in a Client Engagement Letter. Summary.

5. Data Collection and Analysis 77

Introduction. Generalized Intangible Asset Information Checklist. Relevant Time Period. Data Sources Internal to the Intangible Asset Owner. Prior Transactions or Offers. Data Sources External to the Intangible Asset Owner. *Scholarly and Legal Publications. Trade Publications. News Sources. Court Cases. Published Books.* Interviewing the Intangible Asset Owner. Scheduling the Sequence of Due Diligence Steps. Summary.

**PART II
INTANGIBLE ASSET VALUATION APPROACHES,
METHODS, AND PROCEDURES**

6. The Appraisal Process 87

Introduction. The Nature of the Appraisal Process. Identification of the Appraisal Problem. Highest and Best Use. Data Collection. Three Approaches to Value. Contingent and Limiting Conditions. Valuation Conclusion. Reporting the Valuation Conclusion. Summary.

7. Basic Valuation Approaches 95

Introduction. General Introduction to the Cost Approach. *Cost Approach Methods—Theoretical Concepts. The Concept of Obsolescence within the Cost Approach.* General Introduction to the Market Approach. *Market Approach Methods—Theoretical Concepts. Application of the Market Approach.* General Introduction to the Income Approach. *Income Approach Methods—Theoretical Concepts. Application of the Income Approach.* Introduction to Valuation Synthesis and Conclusion. Introduction to Reporting Valuation Conclusions. Summary.

8. Cost Approach Methods 118

Introduction. Cost, Price, and Value. Type of Cost. Components of Cost. When Does Cost Indicate Value? Data Verification with Regard to Cost Approach Analysis. Current Cost Trend Factors. Identification and Quantification of Obsolescence. Cost Approach Analysis—Example. Summary. Bibliography.

9. Market Approach Methods 146

Introduction. Collecting, Classifying, and Verifying Data. Establishing and Applying Pricing Multiples. *Frequency of Use. Market Potential. Units of Production.* Alternative Market Approach Methods. *Sales Transaction Method. Relief from Royalty Method. Comparative Income Differential Method. Rules of Thumb. Market Replacement Cost Method.* Applications and Limitations of the Market Approach. *Standard of Value. Marketability. Control versus Fractional Interests. Deal Structure. Reconciliation of Value Indications.* Data Sources. Summary. Bibliography.

10. Income Approach Methods 159

Introduction. Income Approach Methods. *Yield Capitalization Method. Simplified Yield Capitalization Method Example. Direct Capitalization Method. Simplified Direct Capitalization Method Example. Components of the Income Approach.* Pros and Cons of the Income Approach. Measures of Economic Income. *Income to Whom? Alternative Measures of Economic Income.* Economic Income Projection Period. Income Capitalization Rates. Discrete Valuation versus Collective Valuation of Intangible Assets. Differences between Intangible Asset and Business Valuation. Valuation Methods and Illustrative Examples. *Incremental Income Analyses. Profit Split Analyses. Royalty Rate Analyses. Illustrative Examples.* Summary. Bibliography.

PART III INTANGIBLE ASSET REMAINING USEFUL LIFE ANALYSIS

11. Life Analysis and Remaining Useful Life Estimation 205

Introduction. Life and Retirements Analysis. Causes of Retirement, Attrition, and Expiration in Intangible Assets. *Physical Characteristics. Functional Characteristics. Operational Characteristics. Economic Characteristics.* Value and Remaining Useful Life. Remaining Useful Life and the Three Approaches to Value. *The Cost Approach. The Market Approach. The Income Approach.* Reasons to Estimate Useful Life of an Intangible Asset or Intellectual Property. Determinants to Estimate Remaining Useful Life. *Definite Analysis. Qualitative Analysis. Quantitative Analysis.* Survivor Curves. *Definition of Terms. Survivor Curve Analysis. Methods of Calculating Survivor Curves. ASL from Survivor Curves. Standard Survivor Curve Functions. Iowa-Type Curves. Weibull Function.* Calculation of Average Service Life. Remaining Life Estimation When Actuarial Data Are Not Available. The Use of Survivor Curve Analysis for DCF Calculations. Summary. Bibliography.

12. Concluding Remaining Useful Life 238

Introduction. Differences between Business Enterprise Valuation and Intangible Asset Valuation. Determinants of Remaining Useful Life. Selecting a Remaining Useful Life Estimate. Summary.

PART IV INTANGIBLE ASSET VALUATION SYNTHESIS AND REPORTING

13. Valuation Synthesis 247

Introduction. Criteria for the Selection of Valuation Approaches and Methods. *Quantity and Quality of Available Data. Access to Available Data. Supply of Industry Transactional Data. Type and Nature of the Subject Intangible, and Industry Conditions in Which the Subject Intangible Is Expected to Operate. The Particular Bundle of Rights Represented in the Intangible Asset Subject to Appraisal. Statutory, Judicial, Contractual, and Administrative Considerations. Informational Needs of the Particular Appraisal Audience. Purpose and Objective of the Appraisal. Compliance with Promulgated Professional Standards. Professional Judgment and Technical Expertise of the Analyst.* Criteria for the Synthesis of Multiple Valuation Indications. *Income Approach Methods. Cost Approach Methods. Market Approach Methods.*

Reconciling an Inconsistency of Results among Valuation Approaches and Methods. Summary.	
14. Reporting of Intangible Asset Appraisals	258
Introduction. Overview of the Appraisal Report. USPAP Reporting Standards. Intangible Asset Appraisal Reporting Guidance. Other Related USPAP Standards. <i>Retention of Appraisal Reports and Workpaper Files. USPAP Confidentiality Provisions. Summary.</i>	
15. Sample Intangible Asset Valuation Opinion Report	268
Introduction. Summary Description of the Company. Definition of Value. Highest and Best Use. Valuation Report Outline. U.S. Economic Indicators. History and Description of the Company. Financial Statement Analysis. <i>Financial Overview. Balance Sheets. Statement of Earnings. Financial and Operational Ratios. Valuation Methodology. Asset Valuation Approaches. Intangible Asset Valuation Methods. Tangible Personal Property. Valuation Analysis. Valuation Conclusion. Patent License Agreements. General Theory of Patent Valuation. Relief from Royalty Method. Valuation Analysis. Valuation Conclusion. Customer Contract Valuation. Valuation Analysis. Valuation Conclusion. Cellular Service Customer List Valuation. Customer List—Remaining Useful Life Analysis. Customer Relationships—Valuation Analysis. Description of Valuation Model Key Input Variables. Valuation Conclusion. Valuation of the Noncompete Agreement. Scenario I: Business Value with Noncompete Agreement in Place. Scenario II: Business Value without the Noncompete Agreement in Place. Valuation Conclusion. Business Enterprise Valuation. Introduction. Discounted Net Cash Flow Method. Guideline Publicly Traded Company Method. Business Enterprise Valuation Conclusion. Valuation Synthesis and Conclusion. Appendix A—Statement of Contingent and Limiting Conditions. Appendix B—Appraisal Certification. Appendix C—Qualifications of the Principal Analysts.</i>	
PART V	
ANALYSIS OF SPECIFIC TYPES OF INTANGIBLE ASSETS	
16. Contract Intangible Assets	311
Description of Contract Intangibles. Common Valuation Methods. <i>Cost Approach. Market Approach. Income Approach. Data Sources. Internal Data Sources. External Data Sources. Valuation Example. Fact Set and Assumptions. Income Approach—Discounted Cost Savings Method. Contract Intangibles Valuation Considerations. Bibliography.</i>	
17. Copyright Intangible Assets	320
Description of Copyright Intangibles. <i>Economic Benefits Associated with Copyright Intangibles. Categories of Materials Subject to Copyright. Term of Copyright Protection. Copyright Registration. Transferability of Copyrights. Common Valuation Methods. Cost Approach. Market Approach. Income Approach. Data Sources. Internal Data Sources. External Data Sources. Valuation Example. Example I—Cost Approach Analysis. Example II—Income Approach Analysis. Bibliography.</i>	
18. Customer Intangible Assets	338
Description of Customer Intangibles. Common Valuation Methods. <i>Cost Approach. Market Approach. Income Approach. Data Sources. Internal Data Sources. External Data Sources. Valuation Example. Fact</i>	

Set and Assumptions. Approaches and Methods. Valuation Reconciliation and Value Conclusion. Bibliography.

- 19. Data Processing Intangible Assets** 363
- Description of Data Processing Intangibles. Computer Software. Electronic Databases. Tangible or Intangible Assets. Intellectual Property Protection Related to Data Processing Intangibles. Common Valuation Methods. Cost Approach. Income Approach. Market Approach. Obsolescence. Special Considerations in Software Valuation. Data Sources. Internal Data Sources. External Data Sources. Valuation Example. Cost Approach—Software Engineering Model Method (COCOMO 1981). Relief from Royalty Method. Market Transaction Method. Valuation Reconciliation and Conclusion. Bibliography.*
- 20. Goodwill Intangible Assets** 380
- Description of Goodwill Intangibles. Components of Goodwill. Types of Goodwill Intangibles. Accountant's Interpretation of Goodwill. Economist's Interpretation of Goodwill. The Analysis of Goodwill. Reasons to Analyze the Goodwill Intangible. Common Valuation Methods. Cost Approach. Market Approach. Income Approach. Data Sources. Internal Data Sources. External Data Sources. Financial Ratios. Directories, Periodicals, and Newsletters. Trade and Professional Societies. Valuation Example. Fact Set and Assumptions. Approaches and Methods. Valuation Reconciliation and Value Conclusion. Bibliography.*
- 21. Human Capital Intangible Assets** 399
- Description of Human Capital Intangibles. Trained and Assembled Workforce. Covenants Not to Compete and Noncompete Agreements. Common Valuation Methods. Cost Approach. Income Approach. Market Approach. Special Considerations in the Valuation of Human Capital Intangibles. Trained and Assembled Workforce. Covenants Not to Compete and Noncompete Agreements. Data Sources. Internal Data Sources. External Data Sources. Valuation Example. Trained and Assembled Workforce. Valuation Reconciliation and Conclusion. Covenants Not to Compete and Noncompete Agreements. Valuation Reconciliation and Conclusion. Bibliography.*
- 22. Location Intangible Assets** 410
- Description of Location Intangibles. Common Valuation Methods. Cost Approach. Market Approach. Income Approach. Data Sources. Internal Data Sources. External Data Sources. Valuation Example. Fact Set and Assumptions. Approaches and Methods. Valuation Reconciliation and Conclusion. Bibliography.*
- 23. Marketing Intangible Assets** 424
- Description of Marketing Intangibles. Common Valuation Methods. Cost Approach. Income Approach. Market Approach. Remaining Useful Life. Data Sources. Internal Data Sources. External Data Sources. Valuation Example. Cost Approach—Trended Historical Cost Method. Income Approach—Profit Split Method. Market Approach—Relief from Royalty Method. Valuation Reconciliation and Conclusion. Bibliography.*

24. Technology Intangible Assets	434
Description of Technology Intangibles. Common Valuation Methods. <i>Market Approach. Cost Approach. Income Approach.</i> Data Sources. <i>Internal Data Sources. External Data Sources.</i> Valuation Example. <i>Fact Set and Assumptions. Market Approach—Relief from Royalty Method. Cost Approach—Research and Development Cost Savings Method. Income Approach—Profit Split Method. Valuation Reconciliation and Conclusion.</i> Bibliography.	
PART VI	
SPECIAL TOPICS	
25. Intercompany Transfer Pricing and Royalty Rate Analysis	449
Introduction. The Nature of Intercompany Transfer Pricing. Key Features of the Final 482 Regulations. <i>Reporting Taxable Income. The Arm's-Length Standard. The Best Method Rule. The Arm's-Length Range.</i> Determining Comparable Circumstances. <i>Comparability Factors. Multiple-Year Data.</i> Two Major Types of Intercompany Transfers. Intangible Asset Pricing Methods. <i>The Profit Split Methods. The Comparable Uncontrolled Transaction Method. The Comparable Profits Method. Profit Split Methods. Other Methods.</i> Transfer Pricing for Domestic Taxation Purposes. Transfer Pricing—Related Valuation Misstatement Penalties. <i>The Revenue Reconciliation Act of 1993. Transfer Pricing Penalty Safe Harbor Provisions.</i> The Purposes and Roles of Intangible Asset Experts. Potential Purposes of Transfer Pricing Analysis. Types of Experts. <i>Financial Analysis Experts. Economists. The Role of Consultants and Experts in Transfer Pricing Analysis.</i> Summary. Bibliography.	
26. Case Studies	475
Introduction. Case 1: Sale Transaction Transfer Price—Nice Name Department Stores, Inc. <i>Case Description. Valuation Theory and Methodology. Economic Variables and Analyses. Sources of Information. Valuation Synthesis and Conclusion.</i> Case 2: Charitable Contribution—Benevolent Software Corporation. <i>Case Description. Description of the Computer Software Subject to Analysis. Computer Software Valuation Methods. Valuation Synthesis and Conclusion.</i> Case 3: License to Use Patented and Proprietary Technology—Way Cool Refrigeration, Inc. <i>Case Description. Valuation and Royalty Rate Analysis Methodology. Valuation Synthesis and Conclusion.</i> Case 4: Copyright Infringement Litigation—Thick Metropolitan Directory Company, Inc. <i>Case Description. Description of the Intellectual Property Subject to Analysis. Financial Statement Analysis. Analysis of the Publishing Industry. Royalty Rate Analysis. Economic Analysis Synthesis and Conclusion.</i>	
Index	513

List of Exhibits

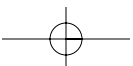
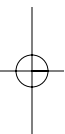
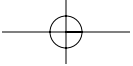
3-1	Uniform Standards of Professional Appraisal Practice, Table of Contents	42
3-2	American Society of Appraisers, Description	43
3-3	Treasury Regulations Section 1.482-0	47
3-4	Treasury Regulations Section 1.482-4(b)	50
3-5	Treasury Regulations Section 1.170A-13(c)(3)	51
3-6	Treasury Regulations Section 1.170A-13(c)(5)	52
4-1	Illustrative Listing of Intangible Assets and Intellectual Properties Commonly Subject to Appraisal and Economic Analysis	65
4-2	Illustrative Engagement Letter, Economic Analysis of Intangible Asset	70
4-3	Illustrative Engagement Letter, Appraisal of Intangible Asset	73
4-4	Illustrative Engagement Letter, Appraisal of Intellectual Property	75
5-1	Valuing Intangible Assets, Preliminary Information Request	79
6-1	The Intangible Asset Appraisal Process	94
8-1	Community Hospital, Intellectual Property Materials Including Documents, Reports, Manuals, Policies, and Procedures— Partial Listing	136
8-2	Community Hospital, Intellectual Property Materials Including Documents, Reports, Manuals, Policies, and Procedures— Personnel Loaded Hourly Rates	138
8-3	Community Hospital, Intellectual Property Materials Including Documents, Reports, Manuals, Policies, and Procedures— Fair Market Value Indication	140
10-1	Adjusting Present Value Formulas for Periodic Compounding	187
10-2	Adjusting Present Value Formulas for Midyear Discounting Convention	189
10-3	Big Dog Pet Food Company, Proprietary Technology Valuation, Fleabegone Pet Food	196
10-4	Friendly Foods Company, Trademark and Trade Name Valuation of Sweetstuff, Net Operating Income Analysis	197
10-5	Friendly Foods Company, Trademark and Trade Name Valuation of Sweetstuff, Selling Price Differential Profit Split Method	198
10-6	Friendly Foods Company, Trademark and Trade Name Valuation of Sweetstuff, Valuation Synthesis and Conclusion	199
10-7	Friendly Foods Company, Trademark and Trade Name Valuation, Royalty Rate Analysis	199
11-1	Analytical Methods to Remaining Useful Life Estimation, Survivor Curve Analysis	218

11-2	Analytical Method Life Analysis, Illustrative Survivor Curve	220
11-3	Illustrative Survivor Curve Construction, Calculation of the Survivor Curve	221
11-4	Illustrative Survivor Curve Construction	223
11-5	Eyeballing the Stub Curve	224
11-6	Illustrative Survivor Curve Construction	225
11-7	Illustrative Original Modal Type Curves	226
11-8	Illustrative Left Modal Type Curves	227
11-9	Illustrative Right Modal Type Curves	228
11-10	Illustrative Symmetrical Type Curves	229
11-11	Calculation of the Area under a Survivor Curve	233
11-12	Calculation of the Area under a Survivor Curve	234
11-13	Illustrative Survivor Curve Construction, Calculation of Surviving Customer Relationships	236
15-1	North-South Supply Company, Inc., Balance Sheets and Common-Size Analysis	275
15-2	North-South Supply Company, Inc., Statements of Operations and Common-Size Analysis	276
15-3	North-South Supply Company, Inc., Financial and Operating Ratios	277
15-4	North-South Supply Company, Inc., Tangible Personal Property, Fair Market Value	281
15-5	North-South Supply Company, Inc., Patent License Agreement, Fair Market Value	284
15-6	North-South Supply Company, Inc., Customer Contracts, Fair Market Value	286
15-7	North-South Supply Company, Inc., Cellular Service Customer List, Fair Market Value	289
15-8	North-South Supply Company, Inc., Noncompete Agreement, Fair Market Value	292
15-9	North-South Supply Company, Inc., Discounted Net Cash Flow Method, Fair Market Value	294
15-10	North-South Supply Company, Inc., Guideline Publicly Traded Company Method, Valuation Summary	296
15-11	North-South Supply Company, Inc., Guideline Publicly Traded Companies	297
16-1	Illustrative Listing of Contract Intangibles	313
16-2	Illustrative Supplier Contract Valuation, Favorable Contract Summary and Key Considerations	317
16-3	Illustrative Supplier Contract Valuation, Income Approach—Present Value of Projected Cost Savings	318
17-1	Cost Approach Analysis, Copyright Related to “How to Change a Light Bulb”	332
17-2	Copyright Infringement Damages Analysis, Value of Expected Copyright License Payments	336
18-1	A Typical Survivor Curve	353
18-2	The Three Basic Survivor Curves	354
18-3	The Probable Life Integral	355
18-4	A Typical Probable Life Curve	355

18-5	Example for Deriving Percent Surviving Table	357
18-6	Stub Period Curve Fitting	358
18-7	Iowa-Type Survivor Curve, Type L 0.0, Five-Year Average New Customer Life	359
18-8	Live Long and Prosper Prescription Drug Files, Customer Survival Table	360
18-9	Live Long and Prosper Prescription Drug Files, Valuation Variables	361
18-10	Live Long and Prosper Prescription Drug Files, Valuation Analysis	362
19-1	Software Valuation, Software Engineering Model Method, COCOMO 1981	377
19-2	Software Valuation, Relief from Royalty Method	377
19-3	Software Valuation, Market Transaction Method	378
20-1	Lotsa Goodwill, Inc., Summary Financial Statements	394
20-2	Lotsa Goodwill, Inc., Application of Capitalized Excess Economic Income Method, Value of Net Identified Asset Value	395
20-3	Lotsa Goodwill, Inc., Application of Capitalized Excess Economic Income Method, Overall Required Rate of Return and Overall Direct Capitalization Rate	396
20-4	Lotsa Goodwill, Inc., Application of Capitalized Excess Economic Income Method, Estimation of Excess Earnings	397
20-5	Lotsa Goodwill, Inc., Application of Capitalized Excess Economic Income Method, Capitalization of Excess Economic Income	397
20-6	Lotsa Goodwill, Inc., Capitalized Excess Economic Income Method, Indicated Value of Business Enterprise	397
21-1	Historical Cost Data Expressed as a Percent of Total Annual Compensation by Employee Grade and Tenure	405
21-2	Historical Compensation Data and Number of Employees by Employee Grade and Tenure	406
21-3	Estimated Replacement Cost of Assembled Workforce	407
21-4	Loss of Income Method, Scenario I Projections, with Noncompetition Agreement in Place	408
21-5	Loss of Income Method, Scenario II Projections, without Noncompetition Agreement in Place	408
22-1	Hotel Development Corporation, Value of Subject Building Permit, Cost Approach Analysis, as of the Date of Revocation	421
22-2	Hotel Development Corporation, Value of Subject Building Permit, Income Approach Analysis, as of the Date of Revocation	422
22-3	Hotel Development Corporation, Value of Subject Building Permit, Market Approach Analysis, as of Date of Revocation	422
22-4	Hotel Development Corporation, Value of Subject Building Permit, Valuation Synthesis and Conclusion, as of Date of Revocation	423
23-1	Attributes That Affect the Valuation of Trademarks and Trade Names	426
23-2	Illustrative Trademark Valuation, Cost Approach—Trended Historical Cost Method	430
23-3	Illustrative Trademark Valuation, Income Approach—Profit Split Method	431
23-4	Illustrative Trademark Valuation, Market Approach—Relief from Royalty Method	432

24-1	Attributes That Influence the Value of Technology Intangible Assets	437
24-2	Illustrative Technology Valuation, Market Approach—Relief from Royalty Method	442
24-3	Illustrative Technology Valuation, Cost Approach—Research and Development Cost Savings Method, Comparative Cost Savings Analysis	442
24-4	Illustrative Technology Valuation, Income Approach—Profit Split Method	443
24-5	Illustrative Technology Valuation, Valuation Synthesis and Conclusion	444
26-1	Nice Name Department Stores, Inc., Nice Name Canada Limited Trademark and Trade Name Valuation Synthesis and Conclusion	477
26-2	Nice Name Department Stores, Inc., Nice Name Canada Limited Trademark and Trade Name, Capitalized Advertising Cost Savings Valuation Method	477
26-3	Nice Name Department Stores, Inc., Nice Name Canada Limited Trademark and Trade Name, Capitalized Advertising Cost Savings Method, U.S. Retail Stores Advertising Analysis	478
26-4	Nice Name Department Stores, Inc., Nice Name Canada Limited Trademark and Trade Name, Profit Split Valuation Method	479
26-5	Nice Name Department Stores, Inc., Nice Name Canada Limited Trademark and Trade Name, Relief from Royalty Valuation Method	480
26-6	Nice Name Department Stores, Inc., Nice Name Canada Limited Trademark and Trade Name, Nice Name Canada Limited Income Statements	481
26-7	Nice Name Department Stores, Inc., Nice Name Canada Limited Trademark and Trade Name, Nice Name Canada Limited Balance Sheets	482
26-8	Benevolent Software Corporation, MED Software, COCOMO—Effort Adjustment Factor Estimation	487
26-9	Benevolent Software Corporation, MED Software, COCOMO Cost Estimation Method, Market Value Indication	487
26-10	Benevolent Software Corporation, MED Software, SLIM Cost Estimation Method, Market Value Indication	488
26-11	Sample Outputs from SLIM Model	489
26-12	Way Cool Refrigeration, Inc., Clever Research, Patented and Proprietary Technology Valuation, Discounted Cash Flow Analysis	492
26-13	Way Cool Refrigeration, Inc., Clever Research, Patented and Proprietary Technology, Royalty Rate Analysis, Profit Split Analysis	493
26-14	Way Cool Refrigeration, Inc., Clever Research, Patented and Proprietary Technology, Royalty Rate Analysis, Return on Investment Analysis	494
26-15	Way Cool Refrigeration, Inc., Clever Research, Patented and Proprietary Technology Valuation, Royalty Income Stream Analysis	495
26-16	Thick Metropolitan Directory Company, Inc., Historical and Common-Size Balance Sheets	498

26-17	Thick Metropolitan Directory Company, Inc., Historical and Common-Size Income Statements	499
26-18	Thick Metropolitan Directory Company, Inc., Ratio Analysis	500
26-19	Greater Metropolitan Industrial Buying Guide, Historical and Common-Size Income Statements	501
26-20	Thick Metropolitan Directory Company, Inc., Greater Metropolitan Industrial Buying Guide, Royalty Rate Analysis, Profit Split Method	504
26-21	Thick Metropolitan Directory Company, Inc., Greater Metropolitan Industrial Buying Guide, Royalty Rate Analysis, Estimation of Present Value Discount Rate	505
26-22	Thick Metropolitan Directory Company, Inc., Greater Metropolitan Industrial Buying Guide, Royalty Rate Analysis, Excess Earnings Method—Net Asset Basis	508
26-23	Thick Metropolitan Directory Company, Inc., Greater Metropolitan Industrial Buying Guide, Royalty Rate Analysis, Recreation Cost Method	510
26-24	Thick Metropolitan Directory Company, Inc., Greater Metropolitan Industrial Buying Guide, Royalty Rate Analysis, Arm's-Length Copyright License Royalty Rate Evidence	511



Preface

Intent of the Book

This book covers a number of related topics, all of which may be generally described as the analysis and appraisal of intangible assets.

The first and principal topic relates to the valuation of intangible assets. This topic involves the estimation of a defined monetary value for a subject intangible.

The second topic relates to the economic analysis of intangible assets. This topic includes the estimation of the effect on an economic unit of the use or ownership of an intangible asset—for example, estimating the incremental value to a business of being awarded a major contract or a new patent. This topic also entails the estimation of the effect on an intangible asset of an exogenous event or influence—for example, estimating the value decrement or other measure of economic damages to a trademark due to an infringement.

The third topic relates to the analysis of the appropriate transfer price for an intangible asset. This topic involves estimating the sale price for an intangible asset—that is the transfer of a fee simple ownership interest in the asset. Sometimes intangible asset transfer price analysis entails estimating a license fee or royalty rate. In this case, the third topic includes the lease, license, or other transfer of certain ownership rights to the intangible for a certain period of time. Finally, this topic covers the estimation of an intercompany transfer price—a fair, market-derived economic rent to pay for the use of an intangible asset, such as proprietary technology or computer software.

It should be noted that throughout all these topics related to the analysis and appraisal of intangible assets, there is a common subtopic that cannot be overlooked. That subtopic may be the most complex—and sometimes the most critical—element of the analysis and appraisal of intangibles: the remaining useful life analysis of intangibles. That element of technical analysis (whether it be implicit or explicit) is one aspect of each of the other topics: valuation, economic event analysis or damage analysis, and transfer pricing.

This book responds to the challenge of documenting a recognizable, systematic approach to valuing intangible assets. Its intent is to clarify and advance the debate on a complex and controversial subject matter. Generally accepted financial valuation techniques regarding intangible assets continue to evolve, just as have the generally accepted valuation techniques regarding tangible real estate and tangible personal property. Future editions of this book will continue the process of explaining and documenting generally accepted intangible asset valuation techniques.

Content of the Book

This book is presented in six parts. The earlier parts are intended to be more general and fundamental in nature. Later chapters build on the earlier chapters, and they are more specific and more advanced in nature.

Part I presents an introduction and overview to the valuation and economic analysis of intangible assets. Chapter 1 discusses the general methods associated with identifying (or recognizing the legal existence of) intangible assets and with valuing (or recognizing the economic existence of) intangible assets. Chapter 2 also explains many of the more common events that create a reason for conducting a valuation or economic analysis of intangible assets. Chapter 3 discusses professional standards related to intangible asset appraisals. Chapter 4 provides an overview of the basic concepts related to valuing (or recognizing the economic existence of) intangible assets. Chapter 5 introduces the basic procedures related to intangible asset data collection and analysis.

Part II explains the generally accepted intangible asset valuation approaches, methods, and procedures. These approaches, methods, and procedures are presented within the logical context of what is called the appraisal process. Chapters 6 through 10 discuss the proper applications of these analytical procedures and present numerous examples.

Part III discusses the remaining useful life analysis of intangible assets. Various quantitative and qualitative remaining useful life analyses are presented and contrasted. Chapters 11 and 12 discuss the proper applications of these lifing-related analytical procedures and present numerous examples.

Part IV discusses the logical process for reaching an overall analytical conclusion. Chapters 13, 14, and 15 describe the process for synthesizing various alternative analysis methods and quantitative indications and explain the thought process for reaching a final conclusion from among a range of analytical results. As we shall see, this thought process is valid regardless of whether the conclusion is a value estimate, a damage estimate, a royalty rate or transfer price determination, or a remaining useful life or decay rate indication.

Part V describes the analyses associated with various individual categories of intangible assets. Chapters 16 through 24 describe various common categories of intangible assets. Category-specific valuation methods are explained, and category-specific data sources are referenced. An example is provided for each category of intangible asset.

Part VI presents the application of intangible asset valuation and economic analysis procedures to transfer pricing analysis in Chapter 25. Chapter 26 gives detailed examples of intangible asset valuation and economic analysis under several different sets of circumstances and for several different purposes.

Audience for the Book

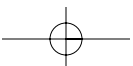
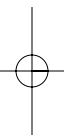
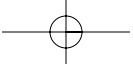
This book should be useful to a variety of constituencies who are interested in the valuation and economic analysis of intangible assets, including:

1. Intangible asset owners (individual and institutional) who want to consider strategic alternatives in order to maximize the value of their ownership interests.

2. Intangible asset creators (individual and institutional) who want to implement programs to commercialize, and thereby create value from, their developments.
3. Accountants who want to measure the value of intangible assets for various recording, taxation, or regulatory purposes.
4. Attorneys who want to best represent their clients when those clients are exposed to—or initiate—an event that will affect the historical or prospective economic value of an intangible asset.
5. Market makers who are involved in negotiating and structuring intangible asset license, sale, sale-leaseback, financing, and other commercial exploitation agreements.
6. Appraisers, economists, and financial analysts who are involved in the valuation analysis of intangible assets either as individual economic entities or as contributors to the overall going-concern value of a business enterprise.

Each audience may have different levels of interest in the theoretical concepts, practical applications, and empirical data presented in this book. One word of caution is in order, however. Casual readers of a book like this often read only the first part and convince themselves that they have a rigorous comprehension of this complex subject. The valuation and economic analysis of intangible assets is an evolving discipline. Even the serious reader of the entire book will begin—but not complete—an exploration of this complex topic.

*Robert F. Reilly
Robert P. Schweih
Chicago, Illinois*



Acknowledgments

Many of our colleagues at Willamette Management Associates provided valuable assistance with this book. In particular, we would like to recognize the following individuals.

Charlene M. Blalock, a research associate in the Portland office, served as the project manager for this undertaking. Charlene coordinated all aspects of the writing and publication of this book. She was responsible for obtaining permission to use material reprinted in this book from other sources. Charlene also prepared the index and edited and proofread the manuscript. This book would simply not have been completed without Charlene's dedication and project management.

Manoj Dandekar, a senior associate in the firm's McLean, Virginia, office, prepared Chapter 11, Life Analysis and Remaining Useful Life Estimation. Manoj was also responsible for checking all of the mathematical calculations.

Pamela Garland, a senior associate in the firm's Chicago office, was responsible for drafting two chapters: Chapter 19, Data Processing Intangible Assets, and Chapter 26, Case Studies.

Tom Millon, a principal of the firm and director of the McLean, Virginia office, was responsible for drafting two chapters: Chapter 15, Sample Intangible Asset Valuation Opinion Report, and Chapter 25, Intercompany Transfer Pricing and Royalty Rate Analysis. Tom also reviewed the entire manuscript and provided valuable comments.

James Rabe, a principal of the firm and codirector of the Portland, Oregon office, prepared two chapters: Chapter 21, Human Capital Intangible Assets, and Chapter 23, Marketing Intangible Assets.

Charles Wilhoite, a principal of the firm and codirector of the Portland, Oregon office, prepared two chapters: Chapter 16, Contract Intangible Assets, and Chapter 24, Technology Intangible Assets.

Victoria Platt, a senior associate in the Chicago office and director of information services, and Charlene Blalock, a research associate in the Portland office, prepared the chapter bibliographies. Victoria Platt also prepared the Data Sources sections of several of the chapters. Jan Tudor, a former member of the firm's Portland, Oregon office, drafted Chapter 5, Data Collection and Analysis, and provided information for some of the bibliographies.

The authors have reviewed and edited all of the chapters written by others and take final responsibility for their content.

Mary McCallister, office manager of the Chicago office, was responsible for typing the majority of the manuscript.

We are very grateful for the assistance of all these people.

For permission to use material, we especially wish to thank:

The Appraisal Foundation

Iowa State University Press

McGraw-Hill

Quantitative Software Management, Inc.

Appraisal Institute

John Wiley & Sons

Nolo Press

West Publishing Co.

*Robert F. Reilly
Robert P. Schweih
Chicago, Illinois*

Introduction

Evolution of This Subject

The appraisal and analysis of intangible assets has directly evolved from the academic discipline of economics. The theoretical concepts and quantitative procedures that collectively represent intangible asset valuation are unambiguous applications of applied microeconomics.

Indeed, the collective body of appraisal theory and practice—including the valuation of intangible assets—can ultimately be traced back to the classical economist, Adam Smith, and to his landmark treatise *The Wealth of Nations* that was published in 1776. Of course, the study of economic relationships has been greatly expanded and refined over the centuries. But the theoretical underpinnings of modern appraisal practice can be traced through Adam Smith to the classical economists David Ricardo and Thomas Malthus and, through them, to the neoclassical economists John Stuart Mill, Léon Walras, Alfred Marshall, and Irving Fisher. Of these inspired economists, Alfred Marshall presented the most comprehensive and cogent discussion of “value theory” in his authoritative text, *Principles of Economics*, published in 1890. Economic theory was brought into the modern era—and the foundations of appraisal theory embedded within economic theory became particularly obvious—in *The General Theory of Employment, Interest and Money*, the landmark work published in 1936 by John Maynard Keynes.

Around the time that Keynes published his authoritative text, “value theory” was beginning to be segmented for application to different types of assets, properties, and business interests. A number of land economists focused on the development of real estate appraisal analysis. The work of many of these land economists was ultimately synthesized in the first edition of *The Appraisal of Real Estate*, published in 1951 by the (then) Society of Real Estate Appraisers. A number of financial economists focused on the development of business appraisal and security analysis. The classic example of the development of this discipline segment is Benjamin Graham and David Dodd’s *Security Analysis*, first published in 1934.

In 1937, James Bonbright (then a professor of finance at Columbia University) published *The Valuation of Property*. Bonbright attempted to integrate the value theories of the land economists with those of the financial economists. He recognized that the common element in these theories was that the analyst is attempting to value property rights—or the bundle of legal rights and economic benefits related to property ownership (regardless of whether the property is real or personal, tangible or intangible).

The work begun by these economists has continuously evolved and (for better or worse) been further segmented to create the current state of the intangible asset valuation discipline.

Is the Discipline a Science or an Art?

More than the most esoteric technique or arcane formula used in intangible asset valuation, this question is academic and pedantic and without a purposeful answer. Nonetheless, the question is asked often enough that it should be addressed.

Intangible asset valuation is not a science in the same sense that chemistry and physics are sciences. In those disciplines, there are natural relationships that can be measured with certainty and precision. In chemistry, precise relationships exist between pressure, volume, and temperature. In physics, there are precise relationships between mass, energy, and velocity. These exact and repeatable relationships are based on the laws of nature. There are no corresponding universal laws of nature that relate to intangible asset valuation.

However, intangible asset valuation is a science in the sense that mathematics and economics are sciences. These soft sciences are based on logical relationships, rules of order, consistency, and generally accepted analytical protocols. Based upon such protocols, the various disciplines within mathematics, such as algebra, trigonometry, and calculus, function efficiently. Based upon similar protocols, the various disciplines within economics, such as money and banking, macroeconomics, land economics, and intangible asset valuation, function efficiently.

Some analysts assert that the valuation discipline is purely an art because the application of the discipline requires skill, experience, judgment, knowledge, study, and observation. It is true that the successful application of this discipline does require all these attributes. Of course, the same could be said for the successful application of physical chemistry, astrophysics, or any other recognized hard science.

If the art versus science debate is worth recognizing at all, the answer may be that the valuation discipline incorporates the best elements of both art and science.

Questions That Intangible Asset Analysis Will Answer

Practitioners involved in the valuation and economic analysis of intangible assets routinely address a variety of legitimate and complicated questions. These questions are often posed by intangible asset owners, by their accounting or legal advisors, by transaction participants, by transaction financing sources, and by lawyers and judges within the context of a controversy. This book is intended to provide a rational framework that will allow the analyst to study and answer questions such as the following:

1. What is an intangible asset? How does one identify an intangible asset? What set of attributes does a property need to have in order to qualify as an intangible asset?
2. What is the worth of an intangible asset? This question invariably leads to the question: Worth to whom? What is the value of the intangible to its current owner? Is that value different from the

value of the intangible to a particular buyer or licensee? Is that value different from the value of the intangible to the commercial marketplace in general?

3. What effect will a certain set of circumstances or events have on the worth of the intangible asset? How will the value of the intangible asset change in response to changes in market conditions, in the competitive environment, in the physical environment in which the intangible asset is commercialized, or in the amount of capital, labor, or coordination dedicated to the intangible asset?
4. How will the intangible asset be damaged—or its value reduced—as a result of a contract, or the breach of a contract, or an infringement, or a disclosure, or a lack of disclosure, or fair or unfair competition, or undercapitalization, or mismanagement, and so on?
5. How will the value of the intangible asset be expected to change over time? Will it increase or decrease? Will it change at a slow and predictable pattern or will it change suddenly, based upon a particular event? What events will cause a change in the value of the intangible asset? What is the expected life of the intangible asset? How is that life measured? What are the consequences of a longer or shorter remaining useful life of the intangible asset?
6. How does the intangible asset affect the worth of other assets, properties, or business entities? How does the intangible affect the value of other intangible assets? Of other tangible assets? Of the overall business enterprise in which the intangible asset is employed? Will the intangible asset affect the value of one business with which it is associated in a different way than it would affect another business with which it could become associated? If so, why?
7. Should the intangible asset be analyzed as an individual, or discrete, economic entity? Should it be analyzed as an integral part of a larger economic entity—for example, as part of an overall going-concern business enterprise? How—and why—will the value of the intangible asset change between these two analytical scenarios? Which analytical scenario is more appropriate?
8. What is the highest and best use of the intangible asset? How is that highest and best use defined? How is it identified? How can the intangible asset owner or licensee achieve the highest and best use? What amounts of labor, capital, and coordination are required? Will there be an adequate economic return (or payback) on the required investments in labor, capital, and coordination?
9. What is a reasonable license fee, royalty rate, lease payment, or other transfer price for the lease of a partial ownership interest—for example, a license to use—in the intangible asset? Is the reasonable fee or rate the same to the licensor and to the licensee? Will the reasonable fee or rate be different for different potential licensees? Will it be different for different potential uses of the intangible?

10. What is the best way to structure the license or lease transaction? How will specific terms—such as duration, geography, use limitations, industry limitations, licensor commitments, and so forth—affect the fee or rate associated with the agreement? Is a proposed license or lease structure fair to both parties—or to either party?

Analysts encounter these and many other questions in the normal commercial study of intangible assets.

Who Is the Appropriate Analyst?

The question as to what type of professional is best qualified to analyze intangible assets has some similarities to the art versus science question discussed earlier. Both questions are frequently asked and forcefully debated. However, the answer to either question, to the extent that there is an answer, will not meaningfully further the discipline of intangible asset analysis.

Accountants, appraisers, economists, engineers, financial analysts, license intermediaries, and other professionals have all made claim that their skills are most relevant to the valuation and analysis of intangible assets. The truth is that all their skills are relevant to this discipline. No one profession has a monopoly on logical thinking and analytical reasoning. The analysis of intangible assets may be considered a multidisciplinary activity. No one set of professional qualifications or academic training grants an individual a monopoly license to practice intangible asset valuation.

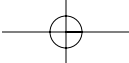
Clearly, the qualified analyst will have an understanding of, and grounding in, many academic disciplines, including accounting, appraisal, economics, finance, and so on. While qualitative judgment is essential, intangible asset valuation is fundamentally a quantitative analysis. Therefore, the qualified analyst will need well-defined mathematical skills.

In fact, intangible asset appraisal may require higher-level math skills than either real estate appraisal or business appraisal. In addition to algebra, the intangible asset analyst will need to be proficient in calculus and in intermediate statistics. If necessary, practitioners from other professions should bolster their quantitative skills before performing an intangible asset valuation or economic analysis.

Finally, analysts of every academic background should understand that their role is to interpret, explain, and quantify the actual marketplace for intangible asset transactions. It is not the function of the analyst to second-guess the market. Rather, it is the function of the analyst to emulate the market—to estimate how the appropriate market would actually respond to the subject intangible asset if the subject intangible were actually exposed to the market.

With respect to intangible asset valuation, analysts do not determine the value of intangibles. Analysts do not make the market (although they may study and form opinions on the market). Actual market participants—buyer, sellers, licensors, and licensees—make the market for intangible assets.

The analyst can predict the most likely response of the market to the subject intangible asset. In other words, the market determines value. The analyst estimates value.



Valuing Intangible Assets

