Valuation of Intangible Assets for Fair Value Accounting Purposes

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Presentation Outline

- Types of intangible assets
- What is and isn't an intangible asset
- Reasons to value intangible assets
- Intangible assets and generally accepted accounting principles (GAAP)
- Intangible assets and fair value measurements (FASB SFAS No. 157)
- Accounting for acquired intangible assets (FASB SFAS Nos. 141R, 142, and 144)
- Intangible asset valuation approaches and methods
- Intangible asset valuation illustrative examples
- Questions and discussion

Valuation Analyst Common Categorization of Intangible Assets

A valuation analyst's common categorization of intangible assets:

1. Technology-related (e.g., engineering drawings, technical manuals and documentation, unpatented processes)
2. Customer-related (e.g., customer relationships, customer contracts, expected customer contract renewals)
3. Contract-related (e.g., favorable supplier contracts, franchises, permits, license agreements)
4. Data processing-related (e.g., computer software, automated data bases)
5. Human capital-related (e.g., trained and assembled workforce, employment agreements, noncompete agreements)

Valuation Analyst Common Categorization of Intangible Assets (cont).

6. Marketing-related (e.g., advertising campaigns, product catalogs, promotional brochures)
7. Location-related (e.g., leasehold interests, water rights, air rights, easements, rights of way, mining and mineral exploitation rights)
8. Goodwill-related (e.g., goodwill, going concern value)
9. Creative intellectual property (e.g., copyrights, trademarks and trade names)
10. Innovative intellectual property (e.g., patents, trade secrets)

Internal Revenue Code Section 197 Listing of Intangible Assets

- Goodwill,
- Going concern value,
- Any of the following intangible items:
  1. workforce in place,
  2. business books and records, operating systems, or any other information base,
  3. any patent, copyright, formula, process, design, pattern, know-how, format, or other similar item,
  4. any customer-based intangible,
  5. any supplier-based intangible, and any other similar item

Internal Revenue Code Section 197 Listing of Intangible Assets (cont.)

- Any license, permit, or other right granted by a governmental unit or any agency or instrumentality thereof,
- Any covenant not to compete entered into in connection with an acquisition of a trade or business, and
- Any franchise, trademark, or trade name.

FASB SFAS No. 141R Listing of Intangible Assets

- Marketing-related intangible assets
  1. trademarks, trade names
  2. service marks, collective marks, certification marks
  3. trade dress (unique color, shape, or package design)
  4. newspaper mastheads
  5. Internet domain names
  6. noncompetition agreements
- Customer-related intangible assets
  1. customer lists
  2. order or production backlog
  3. customer contracts and related customer relationships
  4. noncontractual customer relationships

FASB SFAS No. 141R Listing of Intangible Assets (cont.)

- Artistic–related intangible assets (copyrights)
  1. plays, operas, ballets
  2. books, magazines, newspapers, other literary works
  3. musical works such as compositions, song lyrics, advertising jingles
  4. pictures, photographs
  5. video and audiovisual material, including motion pictures, music videos, television programs

FASB SFAS No. 141R Listing of Intangible Assets (cont.)

- Contract-based intangible assets
  1. licensing, royalty, standstill agreements
  2. advertising, construction, management, service or supply contracts
  3. lease agreements
  4. construction permits
  5. franchise agreements
  6. operating and broadcast rights
  7. use rights such as drilling, water, air, mineral, timber cutting, and route authorities
  8. servicing contracts such as mortgage servicing contracts
  9. employment contracts

FASB SFAS No. 141R Listing of Intangible Assets (cont.)

- Technology-based intangible assets
  1. patented technology
  2. computer software and mask works
  3. unpatented technology
  4. databases, including title plants
  5. trade secrets, such as secret formulas, processes, recipes

Noncomprehensive Listing of Common Intangible Assets

Advertising campaigns and programs
Agreements
Airport gates and slots
Appraisal plant
Awards and judgments
Bank customers—deposit, loan, trust, and credit card
Blueprints
Book libraries
Brand names
Broadcast licenses
Buy-sell agreements
Certificates of need
Chemical formulations
Claims (litigation)
Computer software
Computerized databases
Contracts
Cooperative agreements
Copyrights
Credit information files
Customer contracts
Customer lists
Customer relationships
Designs
Development rights
Distribution networks
Distribution rights
Drilling rights
Easements
Employment contracts
Engineering drawings
Environmental rights
FCC licenses
Favorable leases
Film libraries
Food flavorings and recipes
Franchise agreements
Franchise ordinance
Going concern
Goodwill
Government contracts
Government programs
Governmental registrations
Historical documents
HMO enrollment lists
Insurance expirations
Insurance in force
Joint ventures
Know-how
Laboratory notebooks
Landing rights
Leasehold estates
Leasehold interests
Literary works
Litigation awards and damages
Loan portfolios
Location value
Management contracts
Manual databases
Manuscripts
Marketing and promotional materials
Masks and masters
Medical charts and records
Mineral rights
Musical compositions
Natural resources
Newspaper morgue files
Noncompete covenants
Nondiversion agreements
Open orders
Options, warrants, grants, rights
Ore deposits
Patent applications
Patents—design
Patents—plant
Patents—utility
Permits
Personality contracts
Possessory interest
Prescription drug files
Prizes and awards
Procedural manuals
Production backlogs
Product designs
Property use rights
Proposals outstanding
Proprietary computer software
Proprietary processes
Proprietary products
Proprietary technology
Publications
Purchase orders
Regulatory approvals
Reputation
Retail shelf space
Royalty agreements
Schematics and diagrams
Securities portfolios
Security interests
Shareholder agreements
Solicitation rights
Stock and bond instruments
Subscription lists
Supplier contracts
Technical and specialty libraries
Technical documentation
Technology
Technology sharing agreements
Title plants
Trade secrets
Trained and assembled workforce
Trademarks and trade names
Training manuals
Unpatented technology
Use rights–air, water, land
Work in process

What Is an Intangible Asset?

An intangible asset should possess certain economic and legal attributes. An intangible asset should be:

1. subject to specific identification and recognizable description.
2. subject to legal existence and protection.
3. subject to the right of private ownership, and this private ownership should be legally transferable.
4. demonstrated by some tangible evidence of existence.
5. created or have come into existence at an identifiable time or as the result of an identifiable event.
6. subject to being destroyed or to a termination of existence at an identifiable time or as the result of an identifiable event.
7. described by a specific bundle of legal rights.
8. recognized for accounting, taxation, or legal purposes (e.g., FASB SFAS No. 141R or IRC Section 197).

Intangible Asset Property Rights

- Intangible asset property rights
  - private ownership
  - title
  - transfer (sell, gift, etc.)
  - divide
  - legal protection
  - use (or not use)
  - possession
  - hypothecate

Intangible Asset Property Rights (cont.)

- Intellectual property additional property rights
  - legal registration
  - additional legal protection
  - transfer partial rights (license or sub-license)
  - develop (or prevent development)
  - commercialize (or prevent commercialization)

Factors that Distinguish Intellectual Property from Other Intangible Assets

- IP is a special category of intangible assets.
- IP manifests all of the legal existence and economic attributes of other intangible assets. Because of its special status, IP enjoys special legal recognition and protection.
- Unlike other intangible assets which may be created in the normal course of business operations, IP is created by human intellectual and/or inspirational activity.
- Such activity (although not always planned) is specific and conscious. Such creativity can be attributed to the activity of identified, specific individuals.
- Because of this unique creation process, IP is generally registered under, and protected by, specific federal or state statutes.

Common Types of Intellectual Property

1. Patents
    - utility patents—process, machine, manufacture (product)
    - design patents—designs for manufactured articles
    - plant patents—asexually reproduced plant varieties
2. Copyrights
    - literary, dramatic, musical, artistic compositions
    - computer programs and chip designs
    - architectural works
    - motion pictures, sound recordings

Common Types of Intellectual Property (cont.)

3. Trademarks
   - trademarks for products
   - service marks for services
   - trade names
   - service names
   - trade dress
4. Trade secrets
   - documents/drawings of processes, products
   - documents/drawings of systems, procedures
   - documents/data of customer, marketing, financial information
   - manuals/code listings of computer software

Intangible Asset Common Bundles of Legal/Ownership Rights

- Fee simple interest
- Term interest
- Life interest
- Residual interest
- Licensee/licensor interest
- Use rights
- Development rights
- Commercialization rights
- Territorial rights
- Sub-license rights

What Isn't an Intangible Asset?

- Economic phenomena that do not have the economic or legal attributes described previously are not intangible assets.
- Some economic phenomena are descriptive or expository in nature. They may describe conditions that contribute to the value of intangible assets.
- Some economic phenomena represent intangible influences on the value of either tangible assets or intangible assets.

What Isn't an Intangible Asset? (cont.)

- Such "descriptive" economic phenomena include:
  - high market share
  - high visibility
  - high profitability
  - lack of regulation (or a regulated environment)
  - monopoly position
  - market potential
  - first to market
- While these "descriptive" conditions do not qualify as an intangible asset, they may indicate that an intangible asset does exist and does have value.

What are Intangible Influences?

1. Intangible influences are not intangible assets.
2. Intangible influences are not assets.
3. Intangible influences are not recognized for accounting, legal, taxation, or other purposes.
4. Intangible influences may affect (and typically increase) the value of tangible assets and intangible assets.
5. Examples of intangible influences include:
   - liquidity
   - diversification
   - risk limitation
   - view
   - curb appeal
   - proximity
6. While intangible influences may affect the value of intangible assets, they are not intangible assets.

Reasons to Perform an Intangible Asset Valuation

1. Purchase price allocation in a taxable business acquisition.
2. Purchase price allocation for financial accounting and reporting.
3. Goodwill and other intangible asset impairment for financial accounting.
4. Exempt intangible assets for ad valorem property tax unit assessment taxpayers.
5. Fair value of assets for solvency/insolvency analysis—financing fraudulent conveyance, bankruptcy, income tax.
6. Equity basis/allocation in a joint venture/partnership formation—based on contributed intangible assets.
7. Value of intangible assets in the marital estate—equitable distribution.
8. Transaction fairness, adequate consideration, fair market valuation opinions.
9. Private inurement opinions regarding sale price/services price.

Reasons to Perform an Intangible Asset Valuation (cont.)

10. Business/professional practice valuation—using an asset-based approach valuation method
    - gift/estate tax
    - income tax—value of subsidiaries
    - condemnation/expropriation
    - commercial damages
11. Structuring/fairness opinions regarding sale/license of intellectual property.
12. Economic damages/lost profits related to infringement, breach of contract, or other commercial litigation.
13. Collateral valuations for intellectual property sale/licenseback transactions.
14. Income tax deductions regarding charitable contributions, intercompany transfers, abandonment loss, amortization, basis allocation, etc.
15. Intellectual property holding company intercompany transfers and licenses.

Fair Value Accounting for Intangible Assets The Hierarchy of GAAP

- FASB Statements and Interpretations
- FASB Staff Positions
- AICPA Accounting Research Bulletins (if not superseded)
- Accounting Principles Board Opinions (if not superseded)
- FASB Technical Bulletins
- AICPA Industry Audit Guides (if accepted by FASB)
- AICPA Statements of Position (if accepted by FASB)
- AICPA Accounting Standards Executive Committee Practice Bulletins (if accepted by FASB)
- FASB Emerging Issues Task Force (EITF) Abstracts
- FASB Staff Implementation Guides
- AICPA Accounting Interpretation

Note: GAAP encompasses all of the above and not just FASB Statements

FASB SFAS No. 157 - Fair Value Measurements

- Definition of fair value
  - Fair value is not fair market value
  - Fair value is the “exit” price that the current owner could sell the asset for (not the “entry” price that the owner would pay to a willing seller)
  - The price should be established in the principal (or most advantageous) market
  - The price is influenced by market participants
  - The price should consider the asset’s highest and best use
- Framework for measuring fair value
  - Recognizes market, income, and cost valuation approaches
  - Distinguishes between observable and unobservable inputs
  - Creates levels of valuation inputs
    - Level 1 inputs
    - Level 2 inputs
    - Level 3 inputs

FASB SFAS No. 157 - Fair Value Measurements (cont.)

- Expands disclosures regarding fair value measurements
- Applicable to all GAAP that currently requires fair value measurements, but does not expand the requirements for fair value measurement

FASB Statements Related to Intangible Asset Valuation Analyses

- SFAS No. 141R (revised 2007)
  Business Combinations
- SFAS No. 142
  Goodwill and Other Intangible Assets
- SFAS No. 144
  Accounting for the Impairment or Disposal of Long-Lived Assets

SFAS No. 141R – Business Combinations

- Applies only to business combinations but only to the acquired company
- Based on the acquisition method (previously called the purchase method) of accounting
- Purchase price is cash paid plus liabilities assumed plus contingent consideration
- Recognize identifiable assets that are either:
  - Capable of being separately sold, transferred, licensed, rented, or exchanged either individually or with other assets, or
  - Arising from a contractual or legal right regardless of whether the rights are separable or transferable
- Measures goodwill acquired or gain on a bargain sale—both as a residual
- Recognizes five categories of intangible assets
  - Marketing intangible assets
  - Customer intangible assets
  - Artistic intangible assets
  - Contract intangible assets
  - Technology intangible assets

SFAS No. 142 – Goodwill and Other Intangible Assets

- Provides guidance on post-recognition accounting for goodwill and other intangible assets
- Allows for the amortization of intangible assets with a determinable remaining useful life (RUL)
- Provides for the impairment loss of intangible assets not subject to amortization
- Provides for the annual test of goodwill impairment
- Goodwill impairment test is conducted at the reporting unit level
- Goodwill impairment is based on the reporting unit business value

SFAS No. 144 - Accounting for the Impairment or Disposal of Long-Lived Assets

- Provides guidance related to the accounting for the impairment or disposal of long-lived assets
- Includes both tangible assets and intangible assets
- Impairment exists when the carrying value of an asset exceeds its fair value
- Impairment loss is only recognized if the asset carrying value is not recoverable from the sum of the undiscounted cash flow
- An asset should be tested for impairment whenever conditions indicate that the asset carrying amount may not be recoverable
- Grouping of assets is based on cash flow generation over the RUL of the asset group
- Asset impairment is based on a comparison of the sum of future cash flow to the asset group carrying value

Differences Between Business Valuation and Intangible Asset Valuation

Analysis Valuation Variables	Intangible Asset Valuation	Business Valuation
Income subject to analysis	A portion of operating income	All operating income
Life of income projection	Usually limited RUL	Usually perpetuity
Discount/capitalization rate	Usually higher	Usually lower
Effect of obsolescence	Assume effect on RUL	Assume business will adapt
Highest and best use	Requires analysis	Usually obvious
Transactional data	Requires research	Usually obvious
Valuation approaches	Income, market, cost	Income, market, asset-based
Legal rights subject to analysis	Various ownership interests	Fee simple interest

Generally Accepted Intangible Asset Valuation Approaches and Methods

- Cost approach methods
  - Reproduction cost new less depreciation method
  - Replacement cost new less depreciation method
  - Trended historical cost new less depreciation method
- Market approach methods
  - Relief from royalty method
  - Comparable uncontrolled transactions method
  - Comparable profit margin method
- Income approach methods
  - Incremental income method
  - Differential income method
  - Profit split method (or residual profit split method)
  - Residual (excess) income method

Intangible Asset Cost Approach Valuation Factors

- Common cost measures include:
  - Replacement cost new
  - Reproduction cost new
  - Trended historical cost
- Four cost components include:
  - Direct costs
  - Indirect costs
  - Developer's profit
  - Entrepreneurial incentive (opportunity cost)

Intangible Asset Cost Approach Valuation Factors (cont.)

- Three depreciation components include:
  - Physical deterioration (rare, but possible)
  - Functional/technological obsolescence (consider RUL)
  - Economic obsolescence (consider ROI)
- Typical intangible asset cost approach valuation formula:

	Replacement cost new
less	Physical deterioration
less	Functional obsolescence
less	Technological obsolescence
less	Economic obsolescence
equals	Value

Intangible Asset Cost Approach Valuation Factors (cont.)

- Cost approach valuation considerations:
  - Capture all cost components
  - Consider the state of competition
  - Include all obsolescence components

Cost Approach Methods

- Cost approach methods analyze intangible asset utility characteristics.
- The cost approach is most useful when the intangible asset is relatively new.
- The cost approach is often used to estimate value of fungible or “backroom” intangible assets where there is
  1. little potential for sale or license
  2. no directly associated income stream

Cost Approach—Four Cost Components

- Regardless of the measure of cost estimated (e.g., reproduction, replacement, other), the valuation analyst should consider four cost components:
  1a. Direct material costs – expenditures and accruals related to the tangible elements of intangible asset development.
  1b. Direct labor costs – expenditures and accruals related to the human capital efforts associated with intangible asset development such as salaries and wages to employees and compensation to contractors.
  1c. Direct overhead costs – employment-related taxes, employment-related perquisites and fringe benefits, management and supervisory efforts, support and secretarial efforts, utility/operating expenses, development period interest.

Cost Approach—Cost Components (cont.)

2. Indirect costs – expenditures for outside consultants and subcontractors: environmental studies, advertising agency and marketing research firms, engineering and design firms, software developers, recruiters, etc.
3. Developer's profit – the intangible asset developer expects a return of all of the material, labor, and overhead costs (i.e., return on investment).
4. Entrepreneurial incentive – the amount of economic benefit required to motivate the intangible asset owner to enter into the development process (i.e., lost income during development period). This cost component is often perceived as an opportunity cost.

- Direct and indirect costs should be included in the cost measurement whether they were expensed or capitalized for financial accounting purposes.

Cost Approach—Forms of Obsolescence

- The valuation analyst should consider all forms of obsolescence in a cost approach analysis:
  1. Physical deterioration – reduction in value due to physical wear and tear.
  2a. Functional obsolescence – reduction in value due to inability to perform the function (or yield the economic utility) for which the intangible asset was originally created.
  2b. Technological obsolescence – reduction in value due to improvements in technology.
  3. External obsolescence – reduction in value due to the effects, events, or conditions external to the subject intangible asset.
     a. Locational obsolescence – related to location of real property rights.
     b. Economic obsolescence – related to the ability of the owner/operator to earn a fair ROI.

Functional Obsolescence

- Excess development costs compares the cost to create the subject intangible asset today—versus the historical development cost.
- Excess operating costs compares the cost of maintaining/operating the subject intangible asset—versus the cost of maintaining/operating a replacement intangible asset.

Economic Obsolescence

- Economic obsolescence may be identified by the question:

  Can the subject intangible asset generate a fair rate of return to the intangible asset owner/operator based on the estimated cost measure less depreciation?

Intangible Asset Market Approach Valuation Factors

- Valuation pricing metrics based on comparable/guideline
  - Licenses
  - Sales
  - Companies
- Valuation variables
  - Quantitative/qualitative analysis of subject intangible asset
  - Guideline license/sale/company selection criteria
  - Guideline license/sale/company selection
  - Verification of transactional data
  - Analysis of transactional data
  - Selection of appropriate pricing metrics
  - Selection of the subject intangible asset-specific pricing multiples
  - Application of the selected pricing multiples to the subject intangible asset

Intangible Asset Market Approach Valuation Factors (cont.)

- Valuation considerations
  - Seasoned guidelines/development stage intangible asset
  - Development stage guidelines/seasoned intangible asset
  - Consider the state of competition
  - Comparable profit margins—is the subject intangible asset the only reason for the excess profit margins?

Application of the Market Approach

- There is a systematic process or framework to all market approach valuation methods.
- The eight procedures of this systematic process are:
  1. Data collection and selection
  2. Classification of the selected transaction data
  3. Verification of the selected transaction data
  4. Selection of appropriate units of comparison
  5. Quantification of the transaction pricing multiples
  6. Adjustment of the pricing multiples to the subject intangible asset
  7. Application of the selected pricing multiples to the subject intangible asset
  8. Reconciliation of multiple value indications

Market Approach

- Valuation analysts often ignore the market approach because of the amount of research required.
- Guideline sale/license transactions need to be identified and analyzed in order to measure the following:
  - Relative economic income
  - Relative development/commercialization/competition risk
  - Relative expected RUL
- Market approach valuation methods include (1) guideline sale/license method, (2) relief from royalty method, and (3) comparative income/comparable profit margin method.

Intangible Asset Income Approach Valuation Factors

- Intangible asset economic income concepts
  - Incremental revenue
  - Decremental expense
  - Decremental investment
  - Decremental risk
- Common income measures (related to the subject intangible asset)
  - EBITDA
  - EBIT
  - NOI (EBITDA less taxes)
  - Net income
  - Net cash flow

Intangible Asset Income Approach Valuation Factors (cont.)

- Income approach valuation formula
  - Yield capitalization methods
  - Direct capitalization methods
- Valuation considerations
  - Match the discount/capitalization rate with the selected income measure
  - Match the discount/capitalization rate with the subject intangible asset risk
  - Consider the state of competition
  - Consider subsequent capx, R&D, marketing expenditures
  - Analyze the income related to the subject intangible asset only

Income Approach Procedures

- The three principal procedures of each intangible asset income approach valuation method are:
  1. The estimation of the subject intangible asset economic income.
  2. The estimation of the term of the economic income projection period.
  3. The estimation of the appropriate income discount/capitalization rate.

Income Approach Methods

- Yield capitalization methods
  - Procedure 1 – estimate the appropriate measurement of the economic income.
  - Procedure 2 – estimate the expected RUL of the economic income projection.
  - Procedure 3 – estimate a discrete income projection.
  - Procedure 4 - estimate a present value discount rate—the yield capitalization rate—to convert the projected economic income to a present value.

Income Approach Methods (cont.)

- Direct capitalization methods
  - Procedure 1 – estimate the appropriate measurement of the economic income.
  - Procedure 2 – estimate the expected RUL of the economic income projection.
  - Procedure 3 – estimate an income projection.
  - Procedure 4 – estimate an appropriate direct capitalization rate.
  - Procedure 5 – divide the projected income by the direct capitalization rate to estimate intangible asset value.

Measures of Economic Income

- Incremental income
  - Incremental selling price/units/revenue
  - Decremental production/operating costs
  - Decremental selling/administrative operating costs
  - Decremental investment costs
  - Deferred operating/investment costs
- Residual income
  - Total operating income less a fair return on all contributory tangible assets and intangible assets
- Differential income
  - Income measure with the subject intangible asset in place, less
  - Income measure without the subject intangible asset in place

Measures of Economic Income (cont.)

- Profit split income
  - Profit split % approximates the level of intangible asset residual income
  - Based on a functional analysis of the intangible asset owner/operator business operations
  - Based on the typical licensor/licensee analysis
- License agreement royalty income
- Income measure should be consistent with the selected discount/capitalization rate regarding debt service, taxes, etc.
- Income measure should be consistent with the assignment standard of value and premise of value

Capital Charge/Economic Rent Example
Single Contributory Intangible Asset Capital Charge

Proprietary Technology Intangible Asset Capital Charge Consideration
For the Valuation of a Trade Name Intangible Asset
As of January 1, 2008

Contributory Intangible Asset

Proprietary Technology Value	$15,000,000
Proprietary Technology RUL	10 years
Revenue Projection for 2008	$100,000,000
Expected Long-term Growth Rate:	1%
Required Rate of Return on Technology	15%

Projection Period	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Projected Revenue ($000)	100,000	101,000	102,010	103,030	104,060	105,101	106,152	107,214	108,296	109,369
Required Return on Technology ($) (A)	2,250	2,250	2,250	2,250	2,250	2,250	2,250	2,250	2,250	2,250
Capital Charge as % of Revenue	2.25%	2.23%	2.21%	2.18%	2.16%	2.14%	2.12%	2.10%	2.08%	2.06%

Average Proprietary Technology Intangible Asset Capital Charge as % of Revenue Over the Technology RUL **2.15%**

(A) Required annual return on the proprietary technology intangible asset = $15,000,000 value × 15% required rate of return.

Capital Charge/Economic Rent Example
Contributory Tangible Asset Capital Charge

Total Tangible Assets/Financial Assets Capital Charge
For the Valuation fo Income-Producing Intangible Assets
As of December 31, 2008
(in $ million)

Total Contributory Tangible Assets	Value	RUL	Required Rate of Return	Projection Period (Years) 1	2	3	4	5	6	7	8	9	10
Land	$16.80	100	12%	2.016	2.016	2.016	2.016	2.016	2.016	2.016	2.016	2.016	2.016
Leaseholds & buildings	11.8	40	12%	1.416	1.416	1.416	1.416	1.416	1.416	1.416	1.416	1.416	1.416
Furniture & fixtures	3.1	10	12%	0.372	0.372	0.372	0.372	0.372	0.372	0.372	0.372	0.372	0.372
Vehicles	6.2	3	12%	0.744	0.744	0.744							
Trucks	0.1	5	12%	0.007	0.007	0.007	0.007	0.007					
Machinery & equipment	4.9	10	12%	0.582	0.582	0.582	0.582	0.582	0.582	0.582	0.582	0.582	0.582
Construction in progress	0.6	40	12%	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077	0.077
Computer/laboratory equipment	26.6	15	15%	3.99	3.99	3.99	3.99	3.99	3.99	3.99	3.99	3.99	3.99
Net working capital	279.8	100	8%	23.086	23.086	23.086	23.086	23.086	23.086	23.086	23.2086	23.086	23.086
Total tangible assets capital charge	$349.90			$32.30	$32.30	$31.60	$31.60	$31.50	$31.50	$31.50	$31.50	$31.50	$31.50
Current period revenue	$2,650												
Expected revenue growth rate				5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Projected annual revenue				2,782	2,921	3,067	3,221	3,382	3,551	3,728	3,915	4,110	4,316
Periodic economic rent/contributory tangible asset charge--as a % of annual revenue				1.20%	1.10%	1.10%	1.00%	0.90%	0.90%	0.80%	0.80%	0.80%	0.70%

Income Approach Income Tax Amortization Value Increment

- For U.S. federal income tax purposes, taxpayers typically may amortize a purchased intangible asset over the Internal Revenue Code Section 197 statutory 15-year period.
- In the income approach analysis intangible asset income projection:
  - The intangible asset amortization expense is recognized as a non-cash expense before pretax income for 15 years.
  - The amortization expense is added back as a non-cash expense below the income tax expense line for 15 years.
  - Alternatively, the income tax amortization deduction value increment may be recognized by the use of an amortization "factor":

$$\text{Amortization deduction factor (ADF)} = \frac{1}{1 - (\text{income tax rate}) \times (\text{present value annuity factor}) / (\text{amortization period})}$$

where the intangible asset amortization period is 15 years

Income Approach Income Tax Amortization Value Increment—Illustrative Example

Illustrative valuation variables:	
Income tax rate	36%
Present value discount rate	18%
Present value annuity factor (PVAF)	5.5308
Amortization period (years)	15
Sum of the discounted annual net cash flow (NCF) calculated without consideration of the intangible asset amortization expense	$100,000

Year	Periods to Discount	Present Value Factor
1	0.5	0.9206
2	1.5	0.7801
3	2.5	0.6611
4	3.5	0.5603
5	4.5	0.4748
6	5.5	0.4024
7	6.5	0.3410
8	7.5	0.2890
9	8.5	0.2449
10	9.5	0.2075
11	10.5	0.1759
12	11.5	0.1491
13	12.5	0.1263
14	13.5	0.1071
15	14.5	0.0907
PV Annuity Factor (PVAF)		5.5308

$$\text{Amortization deduction factor (ADF)} = \frac{1}{1 - (\text{income tax rate}) \times (\text{present value annuity factor}) / (\text{amortization period})}$$

ADF = 1 / (1- 0.36 x 5.5308 / 15)
ADF = 1 / (1 - 0.1327)
ADF = 1 / 0.8673
ADF = 1.153
Intangible Asset Fair Value = NCF x ADF
Intangible Asset Fair Value = $100,000 x 1.153
Intangible Asset Fair Value = $115,300

Income Tax Amortization Value Increment Considerations

- The income tax amortization value increment is not added to the intangible asset value indication in the cost approach or the market approach
- The income tax amortization value increment should be considered in the income approach, but it is not always appropriate
- This value increment is applicable to IRC 197 intangible assets only
  - Specific intangible assets, subject to specific exceptions
  - Would the hypothetical sale be treated as an asset purchase, not a stock purchase?
  - Would the hypothetical willing buyer benefit from the amortization deductions (e.g., not-for-profit buyer, or taxpayer with NOLs)?

Intangible Asset Remaining Useful Life (RUL) Analysis

- Types of intangible asset life estimates
  - Legal/statutory life
  - Judicial life
  - Contractual life
  - Physical/functional life
  - Technological life
  - Economic life
  - Analytical life

RUL Analysis - Analytical Life Measures

- Survivor curve analysis
  - Construct a survivor curve based on actual intangible asset placements and retirements
  - Fit to a survivor curve from which probable life, RUL, and expected decay can be estimated for each intangible asset vintage age group
    - Iowa-type curves (L, S, R, & O type curves)
    - Weibull curve
    - Exponential curve
- Turnover analysis
  - Expected retirement is estimated as a percentage of the number of intangible asset members (e.g., customers, engineering drawings)
  - Equates to an exponential curve
  - Average RUL = -1 / ln(1-retirement rate)

RUL Analysis—Effect of the RUL Estimate on Intangible Asset Value

Valuation Approach	RUL Analysis Objective	Valuation Effect
Market Approach	RUL analysis should be performed to select or reject and/or to adjust "comparable" or "guideline" intangible asset sale and/or license transaction data.	1. The market should indicate an acceptance for the RUL of the subject intangible asset. 2. If the subject intangible asset RUL is different from the "guideline" transactions, then adjustments are required. 3. If the subject intangible asset RUL is substantially different from the "guideline" transactions, then this may indicate a lack of marketability of the subject intangible asset.
Cost Approach	RUL analysis should be performed to estimate the amount of obsolescence, if any, from the measure of reproduction or replacement cost.	1. Normally, a longer RUL means a higher intangible asset value. 2. Normally, a shorter RUL means a lower intangible asset value.
Income Approach	RUL analysis should be performed to estimate the time period for the economic income projection subject to capitalization.	1. Normally, a longer RUL means a higher intangible asset value. 2. Intangible asset value is particularly sensitive to the RUL estimate when the RUL is less than 10 years. 3. Intangible asset value is not very sensitive to the RUL estimate when the RUL is greater than 20 years.

Intangible Asset Valuation—Simplified Illustrative Examples

- Customer relationships valuation—income approach illustrative example
- Computer software valuation—cost approach illustrative example
- Assembled workforce valuation—cost approach illustrative example
- Patent valuation—market approach illustrative example

Customer Relationships Valuation—Income Approach Illustrative Example

- You are retained to perform an SFAS No. 141R purchase price allocation related to the acquisition of a manufacturing company, XYZ Manufacturing, Inc. ("XYZ Mfg.").
- You decide to use the income approach and the yield capitalization method to value the customer relationships
- You were provided with sufficient data to perform an analytical remaining useful life analysis: start dates for each active customer and five years of retirement data, (including start and stop date for each retired customer)
- The customer relationships intangible asset includes all customers in existence as of the valuation date, but not any future customers (i.e., customers who start doing business with XYZ Mfg. after the valuation date)

Customer Relationships Illustrative Example - Valuation Variables

- The revenue generated by the active customer relationships over the last 12 months was $1.25 billion
- Based on discussions with company management, analysis of XYZ Mfg. customer purchases, and analysis of industry data, you concluded the following expected growth rate in revenue for continuing customer relationships (i.e., before consideration of customer retirements):
  - 5 percent for the next 5 years
  - 3 percent, thereafter
- The conclusion of your remaining useful life analysis is that the best-fitting Iowa-type survivor curve was an O2 curve with an average life of 8 years
- From (1) the above survivor curve and the average life and (2) the start dates of the active customers, you are able to project the expected decay of the customer relationships

Customer Relationships Illustrative Example - Valuation Variables (cont.)

- Based on the projected customer decay, you selected an income projection period of 17 years
- Based on an analysis of historical financial statements and projected financial statements, as well as discussions with company management, you concluded the following customer relationships valuation variables:
  - cost of goods sold = 48 percent of revenue
  - SG&A expense = 25 percent of revenue
  - depreciation and amortization expense is projected to be approximately equal to capital expenditures
  - no projected increases in net working capital
- You estimated an income tax rate of 36 percent
- You concluded a discount rate of 17 percent

Customer Relationships Illustrative Example - Valuation Variables (cont.)

- You calculated a capital charge on contributory assets of 6.5 percent of revenue, based on the required returns on the values of:
  - tangible property (real and personal)
  - trademarks
  - patents
  - assembled workforce
  - net working capital

Customer Relationships Illustrative Example – Customer Decay

Iowa-type Curve That Best Fits the Actual Customer Relationships Suvivor Curve

Iowa-type Curve:	O2
Average Life:	8

Active Customers as of Valuation Date by Age Group

Start Year	# of Active Customers
2009	147
2008	498
2007	360
2006	285
2005	230
2004	190
2003	137
2002	96
2001	85
2000	71
1999	66
1998	43
1997	30
1996	24
1995	15
1994	8
Total	2,285

Projected Decay Based on Iowa-type Curve, Average Life, and Customer Age Groups

Years after Valuation Date	Remaining Customer Count	Remaining Customer Percent
0.5	2,167	94.8%
1.5	1,929	84.4%
2.5	1,704	74.6%
3.5	1,487	65.1%
4.5	1,285	56.2%
5.5	1,099	48.1%
6.5	927	40.6%
7.5	773	33.8%
8.5	635	27.8%
9.5	523	22.9%
10.5	426	18.6%
11.5	349	15.3%
12.5	284	12.4%
13.5	231	10.1%
14.5	186	8.1%
15.5	148	6.5%
16.5	115	5.0%
17.5	88	3.9%
18.5	65	2.8%
19.5	44	1.9%
20.5	27	1.2%
21.5	15	0.7%
22.5	5	0.2%
23.5	1	0.0%
24.5	-	0.0%

Average Remaining Useful Life (years): 5.9

Customer Relationships Illustrative Example – Yield Capitalization Method

		Year 1 $000	Year 2 $000	Year 3 $000	Year 4 $000	Year 5 $000	Year 6 $000	Year 7 $000	Year 8 $000
Revenue	1,250,000	1,312,500	1,378,125	1,447,031	1,519,383	1,595,352	1,643,213	1,692,509	1,743,284
Growth Rate(before retirements)		5.0%	*5.0%*	*5.0%*	*5.0%*	*5.0%*	*3.0%*	*3.0%*	*3.0%*
Customer Retention Rate		94.8%	84.4%	74.6%	65.1%	56.2%	48.1%	40.6%	33.8%
Revenue from Current Customers		1,185,449	1,163,415	1,079,099	988,762	897,167	790,324	686,633	589,741
Less Cost of Goods Sold	48%	569,015	558,439	517,968	474,606	430,640	379,356	329,584	283,076
Less: Selling, General and Administrative	*25%*	296,362	290,854	269,775	247,191	224,292	197,581	171,658	147,435
Pretax Income		320,071	314,122	291,357	266,966	242,235	213,388	185,391	159,230
Less: Income Taxes @ 36 percent		115,226	113,084	104,888	96,108	87,205	76,820	66,741	57,323
Net Income		204,846	201,038	186,468	170,858	155,031	136,568	118,650	101,907
Less: Capital Charge on Contributory Asse	*6.5%*	77,060	75,628	70,147	64,274	58,320	51,375	44,635	38,336
Net Cash Flow from Current Customers		127,786	125,410	116,321	106,584	96,711	85,193	74,015	63,571
Periods to Discount		0.5	1.5	2.5	3.5	4.5	5.5	6.5	7.5
Present Value Factor @ 17%		0.9245	0.7902	0.6754	0.5772	0.4934	0.4217	0.3604	0.3080
Present Value of Cash Flow (without consideration of the income tax amortization deduction)		118,138	99,099	78,563	61,520	47,717	35,926	26,675	19,580
Total Present Value of Discrete Cash Flow		535,057							
Income Tax Amortization Deduction Benefit		85,814							
Total Fair Value of Customer Relationships		620,871							

Customer Relationships Illustrative Example – Yield Capitalization (cont.)

	Year 9 $000	Year 10 $000	Year 11 $000	Year 12 $000	Year 13 $000	Year 14 $000	Year 15 $000	Year 16 $000	Year 17 $000
Revenue	1,795,583	1,849,450	1,904,934	1,962,082	2,020,944	2,081,572	2,144,020	2,208,340	2,274,590
Growth Rate(before retirements)	*3.0%*	*3.0%*	*3.0%*	*3.0%*	*3.0%*	*3.0%*	*3.0%*	*3.0%*	*3.0%*
Customer Retention Rate	27.8%	22.9%	18.6%	15.3%	12.4%	10.1%	8.1%	6.5%	5.0%
Revenue from Current Customers	498,991	423,310	355,143	299,679	251,181	210,435	174,524	143,035	114,476
Less Cost of Goods Sold	239,516	203,189	170,469	143,846	120,567	101,009	83,772	68,657	54,949
Less: Selling, General and Administrative	124,748	105,827	88,786	74,920	62,795	52,609	43,631	35,759	28,619
Pretax Income	134,728	114,294	95,889	80,913	67,819	56,817	47,122	38,619	30,909
Less: Income Taxes @ 36 percent	48,502	41,146	34,520	29,129	24,415	20,454	16,964	13,903	11,127
Net Income	86,226	73,148	61,369	51,785	43,404	36,363	30,158	24,716	19,781
Less: Capital Charge on Contributory Asse	32,437	27,517	23,086	19,481	16,328	13,679	11,345	9,298	7,442
Net Cash Flow from Current Customers	53,789	45,631	38,283	32,304	27,076	22,684	18,813	15,418	12,339
Periods to Discount	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5	16.5
Present Value Factor @ 17%	0.2633	0.2250	0.1923	0.1644	0.1405	0.1201	0.1026	0.0877	0.0750
Present Value of Cash Flow (without consideration of the income tax amortization deduction)	14,163	10,267	7,362	5,311	3,804	2,724	1,930	1,352	925

Computer Software Valuation Cost Approach Illustrative Example

- You are retained to perform an SFAS No. 141R purchase price allocation related to the acquisition of a company that developed specialized software used to run the business
- You consider the income approach, but there is no identifiable stream of income related to the subject software
- You consider the market approach but, given the unique nature of the subject software, you cannot find (1) comparable packaged/off-the-shelf software or (2) transactions related to comparable software
- In the cost approach, you consider the trended historical cost method, but the company (1) does not have timekeeping records related to software development and (2) did not capitalize much of the software development costs (i.e., only new projects over $50,000 starting in 1999)
- You decide to use the cost approach and the software engineering model method to value the subject computer software

Software Engineering Model Method

- Software engineering models are used to estimate effort (e.g., in person-months) to develop software based on(1) metric data (e.g., lines of source code) and (2) other attributes of the software and the software development environment
- Generally accepted software engineering models include:
  - Constructive Cost Model (COCOMO) II – developed by Dr. Barry Boehm of the University of Southern California and described in the textbook, *Software Cost Estimation with COCOMO II*
  - KnowledgePLAN – Licensed software cost estimation tool developed by Software Productivity Research, LLC
  - SLIM (Software Lifecycle Management) – Licensed software cost estimation tool developed by Quantitative Software Management, Inc.
- You decide to use the COCOMO II model in your analysis

COCOMO II Overview

$$PM = A \times (KNSLOC)^{B} \times \Pi\ EM$$

where:

PM	=	Person-months of development effort
A	=	2.94, the constant for COCOMO II.2000
KNSLOC	=	Thousands of new source lines of code
B	=	The exponent, a function of the scale factors, described below
Π EM	=	The product of the 17 effort multipliers associated with the cost drivers, also known as the effort adjustment factor (EAF)

The exponent B is calculated as follows:

$$B = 0.91 + 0.01 \times \Sigma\ SF$$

where: Σ SF = The sum of the five scale factors

Computer Software Illustrative Example – COCOMO II Valuation Variables

- The owner/operator company provided you with physical executable line-of-code counts for its four software applications, after eliminating duplicate and obsolete lines of code
- COCOMO II uses logical executable lines of code, so you used a 25 percent reduction to the physical executable lines of code to estimate logical executable lines of code
- You interviewed company software managers to rate the 17 cost drivers and the 5 scale factors defined by COCOMO II
  - Concluded effort adjustment factor = 0.53
  - Concluded exponent = 1.0731
- You estimated a full absorption cost per person-month of $10,400 including: salaries, bonuses, payroll taxes, employee benefits, and overhead
- You conclude that there is no functional, technological, or economic obsolescence related to the subject software

Computer Software Illustrative Example

System	Total Physical Lines of Code	Physical Executable Lines of Code	Logical Executable Lines of Code	Effort in Person Months
System 1	151,000	128,350	96,263	209.45
System 2	266,000	226,100	169,575	384.55
System 3	78,000	66,300	49,725	103.09
System 4	126,000	107,100	80,325	172.47
	621,000	527,850	395,888	869.56
Times: cost per person-month				$ 10,400
Direct and indirect cost component of the computer software replacement cost new (RCN)				$ 9,043,424
Plus: Developer's profit cost component—estimated at 10%, based on the industry average profit margin (i.e., $9,043,424 RCN × 10% developer's profit margin)				904,342
Plus: Entrepreneurial incentive cost component—opportunity cost based on (1) the cost of capital, (2) an estimated two years of software development, and (3) an average direct and indirect replacement cost investment of $4,521,712 (i.e., $9,043,424 ÷ 2) throughout the two year development period (i.e., $4,521,712 × 14% x 2 years = $1,266,079)				1,266,079
Equals: Total replacement cost new (RCN)				$ 11,213,846
Less: Depreciation and obsolescence allowance				-
Fair value of the computer software (rounded)				$ 11,200,000

Assembled Workforce and SFAS Nos. 141R and 142

- Assembled workforce is not an identifiable intangible asset under SFAS No. 141R
- However, the valuation of an assembled workforce may be necessary in order to estimate a capital charge to be used when using an income approach to estimate the value of other intangible assets under SFAS No. 141R
- Also, the valuation of an assembled workforce may be necessary so that this value can be subtracted in testing goodwill for impairment under SFAS No. 142

Assembled Workforce Cost Approach Valuation Analysis

1. Based on the economic principle of substitution – i.e., the cost to create a substitute workforce
2. Replacement cost new – the cost to create the ideal workforce

   Reproduction cost new – the cost to recreate the actual current workforce
3. Four cost components
   - Direct costs – recruitment/relocation fees
   - Indirect costs – interview/hiring/training time
   - Developer's profit – return on direct and indirect costs
   - Entrepreneurial incentive – lost income during the workforce assemblage period (i.e., an opportunity cost)

Assembled Workforce Cost Approach Valuation Analysis (cont.)

4. The depreciation components
   - Physical deterioration – e.g., age, injury
   - Functional obsolescence – e.g., classifications, excess employees
   - External obsolescence – e.g., union contract requirements
5. Value is not RCN
   Value is RCNLD

Economic Attributes of the Assembled Workforce Intangible Asset

- Workforce-related human capital
- The assembled workforce intangible asset is the:
  - Expectation that employees will be trained
  - Expectation that employees will be assembled
  - Expectation that employees will be efficient
  - Expectation that the subject workforce will be an optimal size

Assembled Workforce RCNLD Valuation Procedures

1. Consider actual number of employees
   Consider ideal number of employees
2. Consider actual compensation of employees
   Consider ideal compensation of employees
3. Consider actual tenure of employees
   Consider ideal tenure of employees
4. Document actual recruitment procedures
   Document actual interview/hire procedures
   Document actual training procedures

Assembled Workforce RCNLD Procedures (cont.)

5. Adjust for cost to replace short-term employees
   Adjust for cost to replace disability employees
6. Adjust for cost to replace overpaid employees
   Adjust to cost to replace over-experienced employees
7. Adjust for cost to replace excess employees
8. Confirm that the cost estimates reflect the actual subject company procedures

Assembled Workforce Valuation Illustrative Example

Alpha Company
Trained and Assembled Workforce
Current Employee Total Compensation Data
As of December 31, 2008

Employee Years of Service*	Total Number of Employees in Each Category	Actual Base Compensation	Actual Cost of Employee Benefits	Actual Bonuses and Additional Compensation	Total Direct and Indirect Compensation	Average Total Compensation Per Employee
0-5	50	$1,500,000	$375,000	$ --	$1,875,000	$37,500
6-10	100	4,000,000	1,000,000	100,000	5,100,000	51,000
11-15	200	10,000,000	2,500,000	200,000	12,700,000	63,500
15-20	400	28,000,000	7,000,000	400,000	35,400,000	88,500
20+	1,000	90,000,000	22,500,000	1,000,000	113,500,000	113,500
Totals	1,750	$133,500,000	$33,375,000	$1,700,000	$168,575,000	$96,329

*This categorization of employees by tenure (as compared to by department, job category, or job description) is presented for illustrative purposes only.

Assembled Workforce Valuation Illustrative Example (cont.)

Alpha Company
Estimated Current Cost
To Recruit, Hire and Train Replacement Employees
As of December 31, 2008

	Estimated Employee Replacement Cost—Expressed as a Percent of Total Direct and Indirect Compensation Paid			
Employee Years of Service	Estimated Cost to Recruit Employees	Estimated Cost to Hire Replacement Employees	Estimated Cost to Train Employees	Total Estimated to Recruit, Hire, and Train Replacement Employees*
0-5	2.5%	5%	25%	32.5%
6-10	2.5%	5%	25%	32.5%
11-15	2.5%	5%	30%	37.5%
15-20	5.0%	5%	30%	40.0%
20+	5.0%	10%	35%	50.0%

* Replacement employees of comparable experience and expertise to the subject assembled workforce

Assembled Workforce Valuation Illustrative Example (cont.)

Alpha Company
Summary of Current Compensation Data and
Current Cost to Recruit, Hire, and Train Replacement Employees
As of December 31, 2008

Employee Years of Service	Total Direct and Indirect Compensation Paid	Expressed as a Percent of Total Compensation Paid Total Cost to Recruit, Hire, and Replacement Employees	Replacement Cost New of the Workforce
0-5	$1,875,000	32.5%	$609,375
6-10	5,100,000	32.5%	1,657,500
11-15	12,700,000	37.5%	4,762,500
15-20	35,400,000	40.0%	14,160,000
20+	113,500,000	50.0%	56,750,000
Totals	$168,575,000		

Direct and indirect cost component of the assembled workforce cost new (RCN)	$77,939,375
Plus: Developer's profit cost component—estimated at 12%, based on the industry average profit margin (i.e., $77,939,375 RCN × 12% developer's profit margin)	9,352,725
Plus: Entrepreneurial incentive cost component—opportunity cost based on (1) the cost of capital, (2) an estimated one year workforce assemblage, and (3) an average direct and indirect replacement cost investment of $38,969,688 (i.e., $77,939,375 ÷ 2) throughout the one year assemblage period (i.e., $39,969,688 × 15% = $5,845,453)	5,845,453
Equals: Total replacement cost new (RCN)	93,137,553
Replacement cost new (rounded)	$93,100,000

Assembled Workforce Valuation Illustrative Example (cont.)

Alpha Company
Fair Market Value of the Assembled Workforce
Replacement Cost New Less Depreciation Method
As of December 31, 2008

Replacement cost new (RCN)	$93,100,000
Less: Physical depreciation (i.e., equals the RCN of all 1,400 "overqualified" employees with over 15 years of service when compared to the RCN of the same 1,400 employees if they were in the 11-15 years of service category)	44,900,000
Equals: Replacement cost new less physical depreciation (RCNLD)	48,200,000
Less: Functional/technological obsolescence—based on the illustrative assumption of a 3% "excess" number of current employees (i.e., RCNLD of $48,200,000 × 3% excess workforce = $1,446,000)	1,446,000
Equals: Replacement cost new less depreciation (RCNLD)	46,754,000
Indicated value of the Alpha Company assembled workforce (rounded)	$46,800,000

Patent Market Approach Valuation Analysis

1. You are retained to perform an SFAS No. 141R business combination purchase accounting price allocation of Val Aid Corp (VAC), a pharmaceutical company.
2. VAC owns a number of patents on pharmaceutical drug compounds.
3. You decide to use the relief from royalty method to value the patent for one drug—ABVigor (ABV).
4. ABV treats a common valuation analyst condition—economic dysfunction (ED).
5. Analysts with ED can't produce valuations that stand up to robust professional standards.

Patent Market Approach Valuation Analysis (cont.)

6. These flaccid valuations don't satisfy the analyst's client.
7. ABV allows analysts to achieve a firm conclusion whenever their client is ready.
8. Analysts who experience rigid thinking for more than 4 hours should see a physician.

Patent Market Approach Valuation Variables

1. ABV was patented, passed clinical trials, and received all FDA approvals.
2. ABV has been on the market for about 4 years.
3. ABV generates about $100 million in current year revenue.
4. You concluded a 9 year RUL based on:
   - consensus of VAC management
   - life cycle of previous ED drugs
   - current research stage of potential replacement drugs
   - expected impact of generics
   - published estimates from industry analysts
   - VAC plans for replacement drug

Patent Market Approach Valuation Variables (cont.)

5. You conclude these product revenue growth rates, based on the above-listed factors:
   - 10% first 3 years
   - 0% next 3 years
   - -12% last 3 years
6. You conclude a 20% pre-tax discount rate

Relief from Royalty Method Conceptual Framework

- IP ownership rights are often disaggregated between licensors and licensees
- IP ownership rights are often disaggregated between owners and operators
- If the IP owner was the IP operator (and not the owner), the operator should be willing to license the subject IP from the owner/licensor
- In that hypothetical license, the operator is the IP licensee; and the owner is the IP licensor
- In that hypothetical license, the operator will have to pay a market-derived royalty rate (to the hypothetical IP owner) for the use of the subject IP

Relief from Royalty Method Conceptual Framework (cont.)

- The royalty rate is typically based on a royalty rate, such as
  - X% of revenue (or some income measure)
  - $Y per unit produced (or sold)
  - $Z per period (e.g., per year)
- Since the owner actually does own the subject IP, the owner doesn't have to pay a hypothetical licensor to license the IP
- As the IP owner, the owner is "relieved" from having to pay a royalty payment to a hypothetical IP licensor
- The RFR method does not assume that the owner outbound licenses the IP; the RFR method does not apply the royalty rate to the licensor's revenue
- The RFR method assumes that the owner inbound licenses the IP; the RFR method applies the royalty rate to the licensee's (i.e., the actual owner's) revenue

Market Approach Relief from Royalty Method

1. Intangible asset constant growth rate valuation formula

$$\text{value} = \frac{\text{revenue} \times \text{royalty rate}}{\text{discount rate - growth rate}}$$

Market Approach Relief from Royalty Method (cont.)

2. Intangible asset RFR valuation formula considerations
   - use an IP-specific royalty rate (and not necessarily the mean, median, mode, etc.)
   - use a normalized revenue base
   - use a discount rate that is consistent with the
     1. standard of value
     2. premise of value
     3. risk of the subject intellectual property
     4. income tax level of the royalty income

Market Approach Relief from Royalty Method (cont.)

2. Intangible asset valuation formula considerations (cont.)
   - use a expected long-term growth rate consistent with the
     1. age of the subject IP
     2. RUL of the subject IP
     3. cost to maintain the subject IP
   - adjust the royalty payment (i.e., the formula numerator) as needed for the cost to develop or maintain the subject IP
   - use the yield capitalization model for an uneven expected growth rate assumption
   - use a limited life capitalization rate for an IP with a limited expected RUL

Factors to Consider in the Application of the Relief from Royalty Method

1. Factors to consider in the analyst's selection of the royalty rate
   - relative factors to compare the subject IP to the selected guideline IPs:
     1. seasoned IP versus new IP
     2. competition and relative market share
     3. barriers to entry
     4. industry/market growth rates
     5. industry/market profit margins
     6. industry/market ROIs
     7. expansion/commercialization opportunities
     8. promotional, R&D, other expenditures
     9. remaining useful life
     10. position in life cycle

Factors to Consider in the Application of the Relief from Royalty Method (cont.)

2. Factors to consider in the analyst's selection of the royalty rate (cont.)
   - absolute factors to compare the subject IP to the selected guideline IPs:
     1. cost to maintain
     2. consumer perceptions
     3. licensee's plans
     4. licensor's experience
3. Factors to consider in the analyst's selection of the relief from royalty valuation method
   - is the subject IP the type of IP that is regularly licensed
   - are these sufficient IP license transactional data
   - do the guideline licenses capture the subject-specific attributes?
   - is the method consistent with the subject engagement standard of value and premise of value?

Patent Market Approach Valuation Analysis
Guideline License Illustrative Search Procedures

1. You used all four on-line IP license data sources
   - Financial Valuation Group IP transaction database
   - Recombinant Capital rDNA biotech database
   - AUS Consultants RoyatySource database
   - RoyaltyStat database
2. You searched for the pharmaceutical industry and pharmaceutical products
3. You searched for patent licenses entered within 3 years of the valuation date
4. You searched for patent licenses where the royalty was primarily a % of revenue
5. You scanned the patent license descriptions for similar disease (i.e., vascular) and similar therapy (i.e., pill-type drug)

Illustrative Example
Guideline License Royalty Rates

Guideline License	Patent Licensee	Patent Licensor	Start Date	Term Years	Royalty Rate %	Other Consideration	Licensed Product (drug)
1	Pfizer, Inc.	Columbia U.	2007	15	6	$4m (a)	ED
2	Glaxo Smith Kline	Autogen	2007	10	5	$10m (b)	cardiovascular
3	Johnson & Johnson	Novel N.V.	2005	12	10	(c)	anti-obesity
4	Merck & Co.	All Saints Hospital	2005	10	4.5	(d)	vascular
5	Pharmecia & Upjohn	MIT	2006	15	5.5	(e)	pulmonary hypertension
6	Wyeth-Ayerst	MD, LP	2006	20	8-10(f)	(d)	botanical ED

Notes:
(a) upfront payment
(b) payment after 5th year
(c) also settles a pending $50 million litigation
(d) physician owners/employees also receive research grants from Merck
(e) numerous relationships between licensor/licensee parties
(f) based on annual sales volume

Illustrative Example
Royalty Rate Adjustment Grid

Guideline License	Royalty Rate %	Comparable to Subject (a)	Size of Market (b)	Growth of Market (b)	Relative Market Share (b)	Other Consideration	Adjusted Royalty Rate
1	6	3	0	0	–	+.5%(c)	6%
2	5	2	++	++	0	+1% (c)	7%
3	10	2	+	0	0	-2% (c)	8%
4	4.5	3	+	0	–	– (c)	4%
5	5.5	2	+	+	0	– (c)	6%
6	8-10	3	++	–	–	-2% (d)	7%

Mean	6.3%
Trimmed Mean	6.5%
Median	6.5%
Mode	6.5%
Conclusion	6.5%

Notes:
(a) on a scale of 0 to 3; 0 is less comparable; 3 is most comparable
(b) on a scale of –, -, 0, +, ++; – is smallest; ++ is largest
(c) analyst adjustment based on assessment of other factors (1) in license agreement or (2) between licensor and licensee
(d) analyst adjustment due to botanical product vs. pharmaceutical product

Patent Valuation Illustrative Example

ABVigor Patent
Fair Value
As of December 31, 2008
(in $ million)

	Projection Period (with non-constant revenue growth rate)								
Patent Valuation Analysis	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9
Patented product revenue expected growth rate	10%	10%	10%	0%	0%	0%	-12%	-12%	-12%
Patented product revenue amount (year 0 revenue = 100)	110	121	133	133	133	133	117	103	91
Selected patent license royalty rate	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%
Projected "relief from royalty" license expense (rounded)	7	8	9	9	9	9	8	7	6
Present value discount factor (at 20%, mid-year convention)	0.91	0.76	0.63	0.53	0.44	0.37	0.31	0.25	0.21
Present value of "relief from royalty" license expense	6	6	6	5	4	3	2	2	1
Total present value of "relief from royalty" license expense	35								
Indicated fair value of the ABVigor patent (rounded)	35								

Summary and Conclusion

- Types of intangible assets
- What is and isn't an intangible asset
- Reasons to value intangible assets
- Intangible assts and generally accepted accounting principles (GAAP)
- Intangible assets and fair value measurements (FASB SFAS No. 157)
- Accounting for acquired intangible assets (FASB SFAS Nos. 141R, 142, and 144)
- Intangible asset valuation approaches and methods
- Intangible asset valuation illustrative examples
- Questions and discussion