Intangible Asset Valuation – Cost Approach Methods and Procedures

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Presentation by
Robert F. Reilly, CPA
Managing Director
Chicago, Illinois
rfreilly@willamette.com
www.willamette.com
Discussion Outline

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- Common Types of Health Care Intangible Assets
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- Reasons to Use the Cost Approach
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- Economic Obsolescence Measurement Procedures
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Introduction

• There is a diversity of practice among analysts regarding the use of the cost approach to value intangible assets

• This diversity of practice encompasses:
  1. when to use the cost approach
  2. how to apply the cost approach
  3. how to interpret the cost approach value indication

• This diversity is particularly evident in intangible asset valuations prepared for financial accounting purposes (e.g., acquisition accounting, goodwill, and long-lived asset impairment)
Introduction (cont.)

- This diversity is also apparent in intangible asset valuations performed as a component of a business valuation prepared for regulatory compliance purposes. In particular, such valuations are performed to attest to the fair market value (FMV) of a health care entity transferred between a for-profit entity and a not-for-profit entity.

- To comply with various statutory and regulatory requirements:
  1. a for-profit entity cannot pay less than FMV for a not-for-profit entity
  2. a not-for-profit entity cannot sell for less than FMV to a for-profit entity

- Analysts often use the asset-based valuation approach to assess this FMV test. Analysts often use the cost approach to value the to-be-transferred health care entity intangible assets.
Introduction (cont.)

- The American Institute of Certified Public Accountants (AICPA) addressed this diversity concern by preparing a white paper regarding the use of the cost approach to value intangible assets. A draft of this white paper is currently exposed for comments.

- This presentation summarizes the contents of this AICPA white paper on the application of the cost approach to value intangible assets.

- Most analysts are familiar with income approach intangible asset valuation methods, including the multiperiod excess earnings method (MEEM) and others.

- Many analysts are familiar with market approach intangible asset valuation methods, including the relief from royalty method and others.
Introduction (cont.)

- Fewer analysts are familiar with cost approach intangible asset valuation methods. In comparison, real estate and tangible personal property appraisers have more experience and training in the application of cost approach valuation methods.

- In many circumstances, the cost approach is particularly applicable to the valuation of certain intangible assets.

- This discussion will not focus exclusively (or even primarily) on fair value accounting valuations. Fair value is one of the standards of value considered in this discussion.

- This discussion considers the application of the cost approach across alternative standards of value and for alternative valuation purposes.
Introduction (cont.)

- The illustrative examples primarily relate to the valuation of intangible assets within a health care entity merger and acquisition transaction. The examples involve estimating the FMV of intangible assets for regulatory compliance purposes.
Reasons to Value Intangible Assets

- Transaction pricing and structuring
  1. pricing the arm’s-length sale of an individual intangible asset or a portfolio of two or more intangible assets.
  2. pricing the arm’s-length license of an individual intangible asset or a portfolio of two or more intangible assets.
  3. calculating an exchange ratio between two owners for two respective intangible asset portfolios.
  4. measuring the equity allocations in a new business enterprise or joint venture when one or more parties contribute intangible assets.
  5. measuring the asset distributions in a liquidating business enterprise or joint venture when one or more of the parties receive intangible assets.
  6. pricing the transfer of an intangible asset between two wholly-owned subsidiaries (or between two unequally-owned subsidiaries) of a consolidated business enterprise.
Reasons to Value Intangible Assets (cont.)

• Financing collateralization and securitization
  1. using an intangible asset as the collateral in either a cash flow-based or an asset-based debt financing.
  2. arranging the sale/licenseback financing of a commercial intangible asset.
Reasons to Value Intangible Assets (cont.)

- Taxation planning and compliance
  1. forming an intangible asset holding company and structuring the intercompany intangible asset license to the taxpayer’s operating companies
  2. performing income tax basis purchase price allocations (among the acquired tangible assets and intangible assets) in a taxable business acquisition (e.g., a Section 1060 asset acquisition).
  3. quantifying the amortization deduction for a purchased Section 197 intangible asset.
  4. valuing intangible assets in the taxpayer corporation insolvency exemption (Section 108) related to cancellation of debt (COD) income recognition.
  5. valuing corporation intangible assets related to built-in gain (BIG) tax deferral upon the taxpayer election to convert from C corporation to S corporation.
  6. supporting the charitable contribution deduction for a donated intangible asset.
Reasons to Value Intangible Assets (cont.)

- Taxation planning and compliance (cont.)
  7. estimating the arm’s-length price (ALP) for the cross border transfer and use of a multinational taxpayer corporation’s intangible asset (Section 482 compliance).
  8. complying with state and local ad valorem property taxation of either taxable or tax exempt intangible assets.
  9. defending against IRS allegations of private inurement, excess benefits, or intermediate sanctions with regard to intangible asset transfers between a for-profit entity and a not-for-profit entity.
Reasons to Value Intangible Assets (cont.)

- Regulatory compliance and corporate governance
  1. estimating the fair market value estimation of the intangible asset sale, license, or other transfer between a for-profit entity and a not-for-profit entity
  2. performing the fair market value (asset-based approach) valuation of a going concern business enterprise to be sold between a for-profit entity and a not-for-profit entity
  3. documenting the custodial inventory and management of owned and licensed intangible assets.
  4. assessing the adequate insurance coverage for owned and licensed intangible assets.
  5. defending against infringement, misappropriation, diversion, other torts, breach of contract, and other wrongful acts to intangible assets.
  6. defending against allegations of dissipation of corporate assets.
Reasons to Value Intangible Assets (cont.)

- Bankruptcy and reorganization
  1. valuing an intangible asset that is pledged as collateral for secured creditor financing.
  2. using an intangible asset as collateral for debtor in possession (DIP) secured financing.
  3. opining on the fairness (to creditors) of the sale or license of an intangible asset as a DIP cash generation spinoff opportunity.
  4. valuing an intangible asset in the performance of the debtor corporation solvency or insolvency tests (particularly the balance sheet test) with respect to fraudulent transfer claims and preference actions.
  5. measuring the impact of the intangible assets on the plan of reorganization of the bankrupt owner/operator.
Reasons to Value Intangible Assets (cont.)

- Financial accounting and fair value reporting
  1. preparing the acquisition accounting (i.e., transaction purchase price) allocation among acquired tangible assets and intangible assets.
  2. testing for goodwill impairment and for other intangible asset impairment.
  3. preparing the post-bankruptcy fresh start accounting for the emerging entity tangible assets and intangible assets.
Reasons to Value Intangible Assets (cont.)

• Forensic analysis and dispute resolution
  1. calculating an intangible asset lost profits, reasonable royalty rate, or other economic damages analysis in infringement or other tort claims.
  2. measuring intangible asset lost profits or other economic damages in breach of contract, license, or noncompete/nondisclosure agreement damages claims.
  3. estimating intangible asset valuation in condemnation, expropriation, eminent domain, or dissipation of corporate assets claims.
Reasons to Value Intangible Assets (cont.)

• Strategic planning and management information
  1. forming an intangible asset joint venture agreement, joint development agreement, or joint commercialization agreement.
  2. negotiating an inbound or outbound intangible asset use, development, commercialization, or exploitation agreement.
  3. identifying and negotiating of intangible asset license, spin-off, joint venture, and other commercialization opportunities.
ASC 805-20-55
List of Identifiable Intangible Assets

- Marketing-related intangible assets
  1. newspaper mastheads
  2. trademarks, service marks, trade names, collective marks, certification marks
  3. trade dress
  4. internet domain names
  5. noncompetition agreements

- Customer-related intangible assets
  1. customer lists
  2. customer contracts and related customer relationships
  3. noncontractual customer relationships
  4. order or production backlogs
ASC 805-20-55
List of Identifiable Intangible Assets (cont.)

• Artistic-related intangible assets
  1. plays, operas, ballets
  2. books, magazines, newspapers, and other literary works
  3. musical works such as compositions, song lyrics, and advertising jingles
  4. photographs, drawings, and clip art
  5. audiovisual material including motion pictures, music videos, television programs
ASC 805-20-55
List of Identifiable Intangible Assets (cont.)

- Contract-based intangible assets
  1. license, royalty, standstill agreements
  2. advertising contracts
  3. lease agreements
  4. construction permits
  5. construction contracts
  6. construction management, service, or supply contracts
  7. broadcast rights
  8. franchise rights
  9. operating rights
  10. use rights
  11. servicing contracts
  12. employment contracts
ASC 805-20-55
List of Identifiable Intangible Assets (cont.)

- Technology-based intangible assets
  1. patented or copyrighted software
  2. mask works
  3. unpatented technology
  4. databases
  5. trade secrets
Internal Revenue Code Section 197
List of Amortizable Intangible Assets

- goodwill,
- going concern value,
- any of the following 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
- any license, permit, or other right granted by a governmental unit or 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.
Common Health Care Industry
Intangible Assets

- medical, dental, and other professional licenses
- certificates of need
- patient relationships
- patent files and records (manual and electronic)
- electronic medical records computer software
- medical and administrative assembled workforce
- office systems, procedures, and manuals
- position or “station” procedures and manuals
- facility operating licenses and permits
- physician (and other professional) employment agreements
- physician (and other professional) noncompetition agreements
- executive (and other administrator) employment agreements
Common Health Care Industry
Intangible Assets (cont.)

- executive (and other administrator) noncompetition agreements
- administrative services agreements
- medical (and other professional) services agreements
- facility or function management agreements
- equipment and other supplier purchase agreements
- service marks and service names
- joint venture agreements
- a professional’s personal goodwill
- an entity’s institutional goodwill
- equipment use or license agreements
- medical (other professional) staff privileges
- joint development or promotion agreements
Regulatory Fair Market Value Valuation
Prohibited Intangible Assets

• Under various anti-kickback statutes, any patient referral-related intangible asset is a prohibited intangible asset.
  1. The value of current or future patients to the current entity is okay
  2. The value of incremental income from current or future patients to the acquirer is prohibited
  3. This regulation does not mean that practice/entity goodwill is a prohibited intangible asset
Types of Health Care Entities

- Ambulatory care centers
- Ambulatory surgical centers
- Home health care agencies
- Urgent care centers/clinics
- Dialysis/other specialty clinics
- Primary care and specialty medical practices
- Primary care hospitals
- Specialty (e.g., psychiatric) hospitals
- MRI and other imaging centers
- Primary care and specialty dental practices
Health Care-Related Transactional Opinions

- Fairness opinions
- Solvency opinions
- Fair value valuations
  1. acquisition accounting
  2. asset impairment analyses
- Fair market value valuations
  1. not-for-profit entity buys an entity
  2. not-for-profit entity sells an entity
  3. not-for-profit entity enters into a contract
     - physician/executive employment contract
     - physician/executive noncompete agreement
     - ER, OR, IT, or other management services contract
     - any joint venture/partnership agreement
Why Health Care Entity Transactions are Often Asset Deals

- Most health care transactions (particularly those involving not-for-profit buyers or sellers) are cash for assets deals
- Few health care M&A transactions are
  1. cash for stock deals
  2. stock for stock deals
- Not-for-profit entities cannot use stock (which is owned for the public benefit) as transactional currency—like for-profit entities can
- Few health care acquirers (for-profit or not-for-profit) want to assume the professional, legal, and tax liabilities that come with purchasing stock in an acquisition
- Those liabilities remain with the seller entity/owners in a cash for assets deal
Why Asset-Based Valuation Approach is Often Used in Regulatory Fair Market Value Valuation

- Most transactions are cash for assets deals, so asset-based approach is particularly applicable.
- To comply with Stark, OIG regulations, IRS regulations, etc., the not-for-profit entity has to prove that it did not pay more than/receive less than FMV for the target entity assets, due to:
  1. private inurement concerns
  2. excess benefits concerns
  3. intermediate sanction concerns
- Income approach methods are sometimes used, but future income could be interpreted to include patient referrals value
- Market approach methods are sometimes used, but capitalized income could be interpreted to include patient referrals value
Categories of Health Care Industry
Intangible Assets

• For income-producing intangible assets, such as patient relationships, professional or administrative services agreements, and supplier agreements—the income approach is often used to value intangible assets that generate a measurable revenue increase or expense decrease.

• For intangible assets that may be sold or licensed (independent from the associated entity), such as certificates of need, trademarks and trade names, favorable equipment or real estate leases—the market approach is often used to value intangible assets for which the analyst can obtain market-derived pricing multiples or license royalty rates.
Categories of Health Care Industry
Intangible Assets (cont.)

- For fungible intangible assets that are used to support the business entity operations, such as station/employee manuals and procedures documentation, computer software and electronic files, and an assembled workforce—the cost approach is often used to value these “back room” intangible assets that contribute to the entity’s efficiency and effectiveness.

- The analyst typically considers the application of each valuation approach to each intangible asset.
Generally Accepted Intangible Asset Valuation Approaches

- There are three generally accepted intangible asset valuation approaches: the cost approach, the market approach, and the income approach.

- The analyst will typically considers, and attempts to apply, all three approaches in an intangible asset valuation.

- The application of multiple approaches provides the analyst with multiple value indications.

- Due to data limitations, most intangible asset valuations are primarily based on only one approach. The analyst typically selects the approach (or approaches):
  1. for which there are the greatest quantity and quality of available data.
  2. that best reflect the actual transactional negotiations of market participants in the industry.
  3. that best fit the characteristics (e.g., use, age, etc.) of the subject intangible asset.
  4. that are most consistent with the practical experience and professional judgment of the individual analyst.
The Cost Approach

- All cost approach valuation methods are based on the economics principle of substitution.
- The intangible asset value is influenced by the cost to create a new substitute intangible asset.
- All cost approach methods apply a comprehensive definition of cost, including consideration of an opportunity cost during the intangible asset development stage.
- The cost of the new substitute intangible asset should be reduced (or depreciated) in order to make the hypothetical new intangible asset comparable to the actual “old” intangible asset.
The Cost Approach (cont.)

- Not all intangible assets are fungible. Some intangible assets are unique and, therefore, cannot be replaced. For example, there may be only one hospital certificate of need (CON) granted by the state for a particular town. Either a hospital holds the one CON or it does not. A substitute or replacement CON is not available at any cost.

- In such an instance, the cost approach may not be the best approach to value the CON.
The Cost Approach and Intellectual Property

- Some analysts believe that the cost approach cannot be used to value an intellectual property (IP), such as a patent, copy, trademark, or trade secret.
- That is because the marketplace cannot actually replace the subject IP with a replacement IP.
- The subject is a legally protected IP, and the replacement IP would infringe on the subject.
- The analyst should note that the cost approach considers the cost to replace the utility of the subject IP. The application of the cost approach assumes that the actual IP does not already exist.
The Cost Approach and Intellectual Property (cont.)

- Real estate appraisers call this assumption the greenfield premise. That is, the subject building is assumed not to exist, and the real estate appraiser faces an undeveloped greenfield (i.e., a vacant site).

- In the valuation, the replacement IP provides the same utility as the actual IP. Since the analyst assumes a greenfield, the hypothetical IP does not infringe on actual IP.
The Market Approach

- All market approach valuation methods are based on the two economics principles of (1) efficient markets and (2) supply and demand.

- The intangible asset value may be estimated by reference to prices paid in the marketplace for the arm’s-length sale or license of a comparable (or a guideline) intangible asset.

- A comparable intangible asset is very similar to the subject intangible asset. The comparable intangible asset is approximately the same age, is at approximately the same place in its life cycle, and is used about the same way that the subject intangible asset is used.

- The analyst may be able to apply mean or median pricing metrics to the subject intangible asset.
The Market Approach (cont.)

- A guideline intangible asset is generally similar (but not identical to) the subject intangible asset. The guideline intangible asset should be subject to the same general risk and expected return investment elements as the subject intangible asset.

- Sales or licenses of guideline intangible asset still provide meaningful (albeit indirect) pricing evidence about the subject intangible asset.

- In order to obtain pricing evidence from guideline intangible asset sale or license transactions, the analyst compares the guideline assets properties to the subject asset. These comparative analyses allow the analyst to select subject-specific pricing metrics.

- The analyst considers comparable uncontrolled transaction (CUT) pricing data related to comparable intangible asset and to guideline intangible asset sales or licenses. The analyst considers the CUT data in order to extract pricing multiples or capitalization rates to apply to the intangible asset.
The Income Approach

- All income approach valuation methods are based on the economics principle of anticipation.

- The value of any investment is the present value of the income that the owner expects to receive from owning that investment.

- Income approach methods involve a projection of some measure of owner/operator income over the intangible asset’s RUL.

- The income measure relate to (1) income earned from operating the intangible asset in the business enterprise (i.e., operating income) and/or (2) income earned from outbound licensing of the intangible asset from the owner/licensor to an operator licensee that will pay a royalty (or some other payment) for the asset use (i.e., ownership income).

- The income projection is converted to a present value by the use of a risk-adjusted discount rate (or an annuity period direct capitalization rate).
Which Valuation Approach to Use

- Cost approach methods are particularly applicable to the valuation of a recently developed intangible asset. In the case of a relatively new intangible asset, the development cost and development effort data may still be available (or may be subject to an accurate estimation).

- Cost approach methods are also applicable to the valuation of an in-process intangible asset and to a noncommercialized (defensive) intangible asset.

- Market approach methods are particularly applicable when there are a sufficient quantity of comparable (almost identical) transaction data or guideline (similar from a risk and expected return perspective) transaction data.
Which Valuation Approach to Use (cont.)

- These intangible asset transactions may relate to either sale or license transactions. Such arm’s-length, third party transactions are typically called CUT sales or licenses.

- Income approach methods are particularly applicable to situations in which the intangible asset is used to generate a measurable amount of either operating income or license income.

- Income approach methods may also be used when the entity has elected not to commercialize the intangible asset. The entity may have elected to develop and maintain the intangible asset for defensive purposes.
Data Gathering and Due Diligence

• The analyst will collect information related to the current owner/operator including:
  1. historical and prospective financial statements (related to the line of business or business unit that operates the intangible asset)
  2. historical and prospective intangible asset development and maintenance costs
  3. any current and expected resource/capacity constraints (e.g., with consideration of raw materials, production, storage, distribution, sales, etc.)
Data Gathering and Due Diligence (cont.)

4. a description of, and an estimate of, the intangible asset economic benefits to the current owner/operator, including the following components:
   - any associated revenue increase (e.g., related product unit price/volume, market size/position)
   - any associated expense decrease (e.g., expenses related to product returns, COGS, SG&A, R&D)
   - any associated investment decrease (e.g., inventory, capital expenditures)
   - any associated risk decrease (e.g., the existence of any intangible asset licenses or contracts, a decrease of cost of capital components, the defensive use of the intangible asset)
   - any assessment of the intangible asset impact on the entity’s strategic/competitive strengths, weaknesses, opportunities, and threats (i.e., a SWOT analysis)
Other Due Diligence Considerations

• The analyst considers the intangible asset market potential outside of the current owner/operator.

• The analyst considers the following factors from the perspective of an alternative (e.g., hypothetical willing buyer) owner/operator:
  1. a change in the market definition or in the market size
  2. a change in alternative/competitive uses of the intangible asset
  3. the ability of the intangible asset to create inbound/outbound license opportunities
  4. whether the current owner can operate the intangible asset and also outbound license the intangible asset (in different products, different markets, different territories, etc.)
Benchmarking Owner/Operator Analyses

- The analyst may review and challenge (1) any owner/operator-prepared financial projections and (2) any owner/operator-prepared measures of intangible asset economic benefits.

- The analyst may test the achievability of such projections and the reasonableness of such economic benefit measures against industry, guideline company, and other benchmark comparisons.

- The analyst may perform the following analyses:
  1. compare any owner/operator prior-prepared projections to actual historical results of operations
  2. compare any owner/operator current management projections to current capacity constraints
  3. compare any owner/operator current financial projections to the current total market size (i.e., demand, capacity, etc.)
Benchmarking Owner/Operator Analyses (cont.)

4. consider any published industry average comparable profit margin (CPM) data for the industry
5. consider selected guideline publicly traded company comparable profit margin (CPM) data for the industry
6. consider the quality and quantity of available guideline or comparable intangible asset license data for the industry
7. perform an RUL analysis, with consideration of the following:
   • legal/statutory life
   • contract/license life
   • technology obsolescence life
   • economic obsolescence life
   • lives of prior generations of the intangible asset
   • position of the intangible asset in its current life cycle
Industry Financial Ratio Data Sources Used in the Intangible Asset Due Diligence

- The Risk Management Association—*Annual Statement Studies: Financial Ratio Benchmarks*
- BizMiner (The Brandow Company)—*Industry Financial Profiles*
- CCH, Inc.—*Almanac of Business and Industrial Ratios*
- Fintel, LLC—*Fintel Industry Metrics Reports*
- MicroBilt Corporation (formerly IntegraInfo)—*Integra Financial Benchmarking Data*
- ValueSource—*IRS Corporate Ratios*
- Schonfeld & Associates, Inc.—*IRS Corporate Financial Ratios*

These data sources allow the analyst to compare to owner/operator financial results to benchmark industry expense ratios, profit margins, returns on investment, etc.
Reasons to Use the Cost Approach

• The selection of the applicable valuation approaches is a process of elimination.

• If there are sufficient reliable data, then the analyst will typically apply all three approaches.

• If there are insufficient guideline sale or license transaction data available, then the analyst may have to rely on the cost approach by default.

• If the intangible asset is not the type of asset that generates a measurable amount of income (however defined), then the analyst may have to rely on the cost approach by default.
Application of the Cost Approach

- Certain intangible assets particularly lend themselves to the cost approach, such as:
  1. recently developed (i.e., relatively new) intangible assets
  2. intangible assets for which the historical development cost data are still available
  3. intangible assets that are operated by an owner with the expertise to assist the analyst in the estimation of a current development cost
  4. intangible assets that are operated by an owner with the expertise to assist the analyst in the estimation (a) of RUL and (b) of obsolescence
  5. intangible assets that are used (or used up) in the production of income but which themselves do not produce any income; examples include product formulae, employee or work station training/operator manuals, operating procedures, computer software, an assembled workforce, etc.; these intangible assets are sometimes referred to as “back room” intangible assets
Application of the Cost Approach (cont.)

- In selecting the cost approach, the analyst should consider if there are sufficient data available to estimate both:
  1. the intangible asset current cost
  2. all forms of obsolescence (including RUL considerations)
Cost Approach Valuation Methods

• There are several intangible asset cost approach valuation methods.

• Each valuation method uses a particular definition (or measurement metric) of cost.

• Two common cost definitions are:
  1. reproduction cost new and
  2. replacement cost new.

• Reproduction cost new measures the total cost, in current prices, to develop an exact duplicate of the intangible asset.

• Replacement cost new measures the total cost, in current prices, to develop a new intangible asset having the same functionality or utility as the intangible asset.
Cost Approach Valuation Methods (cont.)

- Functionality is an engineering concept that means the ability of the intangible asset to perform the task for which it was designed.

- Utility is an economics concept that means the ability of the intangible asset to provide an equivalent amount of satisfaction to the owner/operator.
Cost Measurement Procedures

• Any cost measurement should consider the following four cost components: (1) direct costs (e.g., materials and supplies), (2) indirect costs (e.g., engineering and design expenses, legal fees), (3) the intangible asset developer’s profit (e.g., a profit margin percent applied to the direct cost and indirect cost investment), and (4) an opportunity cost/entrepreneurial incentive (e.g., a measure of lost income opportunity cost during the development period adequate to motivate the development process).

• The intangible asset development material, labor, and overhead costs are easy to identify and quantify.

• The developer’s profit cost component is often estimated as a percentage rate of return (or profit margin) on the material, labor, and overhead costs.

• The entrepreneurial incentive component is often measured as the lost income that the developer would experience during the replacement intangible asset development period.
Depreciation and Obsolescence

• The cost new (however measured) should be adjusted for any value decreases due to:
  1. physical deterioration,
  2. functional obsolescence, and
  3. economic obsolescence.

• Physical deterioration is the reduction in value due to physical wear and tear.

• Functional obsolescence is the reduction in value due to the inability of the intangible asset to perform the function (or yield the periodic utility) for which it was originally designed.
Depreciation and Obsolescence (cont.)

- External obsolescence is a reduction in value due to the effects, events, or conditions that are external to—and not controlled by—the current use or condition of the intangible asset. There are two types of external obsolescence:
  1. locational obsolescence and
  2. economic obsolescence.

- Location obsolescence is a decrease in the asset value due to changes in the neighborhood conditions.

- Economic obsolescence relates to the inability of the intangible asset owner/operator to generate a fair rate of return on investment (ROI). Economic obsolescence may affect most types of intangible assets.
Comparison of Historical Cost to Replacement Cost New

Typically, the owner/operator accounting data capture (at most) the direct and indirect costs associated with the intangible asset historical development.

The replacement cost new considers: direct costs, indirect costs, developer’s profit, and entrepreneurial incentive (or opportunity cost) associated with the replacement intangible asset.
Comparison of Replacement Cost New to Current Value

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<thead>
<tr>
<th>Total Cost Components</th>
<th>Obsolescence Components</th>
<th>Value Estimate</th>
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</thead>
<tbody>
<tr>
<td>Entrepreneurial Incentive</td>
<td>Physical</td>
<td>Current Value (RCNLD)</td>
</tr>
<tr>
<td>Developer Profit</td>
<td>Functional</td>
<td></td>
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<tr>
<td>Labor</td>
<td>Economic</td>
<td></td>
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<tr>
<td>Material</td>
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Illustrative replacement cost new (RCN) for the intangible asset

Illustrative cost decrements for physical, functional, and economic obsolescence (collectively, "depreciation")

Replacement cost new less depreciation (RCNLD) indicates the intangible asset current value
Cost Does Not Equal Value

- A common formula for quantifying intangible asset replacement cost new is: reproduction cost new – curable functional obsolescence = replacement cost new.

- To estimate the intangible asset value, the following formula is commonly used: replacement cost new – physical deterioration – economic obsolescence – incurable functional obsolescence = value.
Remaining Useful Life Considerations

• The following list presents some of the factors that the analyst may consider in the RUL analysis:
  1. legal factors
  2. contractual factors
  3. functional factors
  4. technological factors
  5. economic factors
  6. analytical factors

• The analyst typically considers each category of life factors in the RUL estimation.

• Typically, the life factor that indicates the shortest RUL deserves primary consideration in the RUL estimate.
Physical Depreciation Measurement Procedures

- Intangible assets are typically not subject to wear and tear like tangible assets are.
- However, intangible assets can be “used up” over time.
- The intangible asset RUL may become shorter over time.
- An intangible asset that is contract-related or otherwise has a legal RUL will typically decrease in value as that RUL expires.
- Licenses, permits, contractual rights, agreements, franchises, and several types of intellectual property have legally-determined finite lives.
- As that life expires, the intangible asset value typically decreases.
- Let’s assume that the cost to obtain an FDA license for a new drug product is $10 million.
- Let’s assume that the FDA license period for the drug is 10 years. Nine years later (with only one year remaining in the FDA license term), the intangible asset value will have decreased.
Functional Obsolescence Measurement Procedures

- For all assets, obsolescence is usually related to inefficiencies associated with the operation of the asset. These inefficiencies typically involve either inadequacies or superadequacies.
- An inadequacy occurs when there is not enough of the asset (e.g., the asset is too small) for it to operate efficiently.
- A superadequacy occurs when there is too much of an asset (e.g., the asset is too large) for it to operate efficiently.
- A trained and assembled workforce is an example of an intangible asset that may experience functional obsolescence. If the workforce is too small, the entity will operate inefficiently.
Functional Obsolescence Measurement Procedures (cont.)

• If the workforce is too large, the entity will also operate inefficiently.

• In addition to the wrong size, an assembled workforce can experience functional obsolescence related to the wrong mix of employees.

• If the workforce includes employees who have inadequate skills or insufficient experience, then the work will be inadequately performed.

• If the workforce includes employees who are to highly skilled or experienced, then the owner/operator will incur higher compensation expense (to pay the skilled employees) than is necessary to get the job done.
Quantifying Functional Obsolescence

- There are two common methods for quantifying functional obsolescence:
  1. the excess capital cost method and
  2. the excess operating cost method

- Although it is called the excess capital cost method, this method can be used to measure obsolescence related to either an inadequacy or a superadequacy.

- However, the excess capital cost method is more commonly used to measure an intangible asset superadequacy.
Illustrative Example Fact Set

- The analyst is asked to value a fairly large internal medicine practice, The Columbia Group (“Columbia”).
- The valuation date is December 31, 2011. A local not-for-profit hospital, Cornell Hospital (“Cornell”), approaches the Columbia practice owners with an unsolicited offer to buy the practice assets.
- The Cornell board of directors retained the analyst to estimate a purchase offer price for the Columbia assets.
- The Columbia has 10 physicians, 20 clinical staff members (registered nurses, medical technicians, etc.) and 10 administrative staff (billing clerks, receptionists, etc.).
- As part of the practice valuation, the analyst estimates the value of the Columbia assembled workforce.
- The analyst decides to use the cost approach and the replacement cost new less depreciation (RCNLD) method.
## Trained and Assembled Workforce Replacement Cost New Less Depreciation
### As of 12/31/11

<table>
<thead>
<tr>
<th>Assembled Workforce Employee Component</th>
<th>No. of Employees</th>
<th>Average Salary</th>
<th>Other Costs Factor</th>
<th>Full Absorption Cost</th>
<th>Recruit Employees</th>
<th>Hire Employees</th>
<th>Train Employees</th>
<th>Percent of Full Absorption Cost to Replace Employees</th>
<th>Average Replacement Cost New Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physicians</td>
<td>10</td>
<td>180,000</td>
<td>1.6</td>
<td>288,000</td>
<td>20%</td>
<td>20%</td>
<td>40%</td>
<td>80%</td>
<td>230,400</td>
</tr>
<tr>
<td>Clinical staff</td>
<td>20</td>
<td>60,000</td>
<td>1.5</td>
<td>90,000</td>
<td>10%</td>
<td>10%</td>
<td>30%</td>
<td>50%</td>
<td>45,000</td>
</tr>
<tr>
<td>Administrative staff</td>
<td>20</td>
<td>40,000</td>
<td>1.4</td>
<td>56,000</td>
<td>5%</td>
<td>10%</td>
<td>25%</td>
<td>40%</td>
<td>22,400</td>
</tr>
<tr>
<td>Total employees</td>
<td>50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total direct and indirect cost components: $3,652,000

Add:

- Developer’s profit cost component
  - Developer’s profit margin: $10%
  - Developer’s profit cost component (rounded): $365,000

Total direct and indirect cost plus developer’s profit: $4,017,000

Add:

- Entrepreneurial incentive
  - Estimated total workforce replacement period: 6 months
  - Estimated average workforce replacement cost investment (i.e., $4,017,000 total cost ÷ 2): $2,009,000
  - Required annual return on investment: 16%
  - Required return on investment for 6 month replacement period: 8%
  - Entrepreneurial incentive (i.e., $2,009,000 × 8%) (rounded): $161,000

Total replacement cost new: $4,178,000
Replacement Cost New – Direct and Indirect Costs

- The RCN estimate considers the total compensation paid to each employee, labeled as “average salary.” These costs are typically called direct costs.

- The RCN estimate considers all of the other expenses that the entity incurs related to each employee. Those costs are called indirect costs, including:
  1. payroll taxes
  2. employee benefits
  3. continuing professional education
  4. annual license and credential fees
  5. uniforms and lab coats
  6. employee parties, gifts, etc.

- The total annual cost that the entity pays for an employee is called the full absorption cost. This full absorption cost includes:
  1. the compensation paid by the employer to the employee and
  2. the expenses paid by the employer to others so that the employee can perform his or her job.
Replacement Cost New – Direct and Indirect Costs (cont.)

- The RCN includes all of the costs that the employer would incur to replace the current workforce with a brand new (but comparable) workforce. These costs may include:
  1. advertising for recruiting potential new employees to apply for each position
  2. interviewing expenses, background checks and other pre-employment tests, and placement fees incurred to have the new employee show up on day one
  3. on-the-job training in the particular position including first month training, first year training, and accumulated continuing education for long-term employees

- There are two additional cost components to consider:
  1. developer’s profit and
  2. entrepreneurial incentive.
Replacement Cost New – Developer’s Profit and Entrepreneurial Incentive

- The developer’s profit considers the profit margin that a management consulting, human resources outsourcing, or professional staffing firm would earn if a willing buyer retained such a firm to create the assembled workforce.

- Likewise, the practice owners would expect to earn a profit on the sale of their internally developed assets to the willing buyer.

- There are several alternative procedures for estimating entrepreneurial incentive.

- A common procedure is to estimate the lost profits opportunity cost that the entity would experience during the intangible asset replacement period.
Replacement Cost New – Developer’s Profit and Entrepreneurial Incentive (cont.)

- When using this procedure, the analyst should appropriately allocate the entity’s overall profit to all of the intangible assets.

- Let’s assume that the Columbia practice has five intangible assets. The entrepreneurial incentive should be allocated among the five intangible assets.

- Another common entrepreneurial profit measurement procedure is to calculate a fair rate of return on the total intangible asset cost components (i.e., direct costs, indirect costs, and developer’s profit).

- The assembled workforce RCN is the sum of all four cost components.
Illustrative Depreciation Considerations

- In order to reach a value conclusion, the analyst next estimates the workforce RCNLD. As in any cost approach analysis, the analyst considers if there is any deterioration or obsolescence related to this intangible asset.

- From the practice acquisition due diligence, the analyst learns the following facts:
  1. two of the practice’s lab techs (part of the clinical staff) are scheduled to retire in the next year or so
  2. one of the practice’s billing accountants (part of the administrative staff) is out on disability leave and is not expected to return to work
  3. the practice is overstaffed with regard to administrative personnel; in addition to the above-mentioned billing accountant, any willing buyer would eliminate two of the administrative positions
  4. the practice has experienced very low turnover of the clinical staff; because of long tenure of these nurses and technicians, they earn an average annual salary of $60,000; if the actual clinical employees were replaced, they would be replaced with adequately qualified (but less tenured) employees earning an average annual salary of $50,000
### Trained and Assembled Workforce

**Physical Deterioration – As of 12/31/11**

<table>
<thead>
<tr>
<th>Workforce Component</th>
<th>No. of Employees</th>
<th>Average Direct and Indirect Replacement Cost New</th>
<th>Total Direct and Indirect Replacement Cost New</th>
<th>Developer’s Profit and Entrepreneurial Incentive Cost Components</th>
<th>Total Replacement Cost New</th>
<th>Percent Depreciation</th>
<th>Accumulated Depreciation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical staff</td>
<td>2</td>
<td>$45,000</td>
<td>$90,000</td>
<td>$13,000</td>
<td>$103,000</td>
<td>100%</td>
<td>$103,000</td>
</tr>
<tr>
<td>Administrative staff</td>
<td>1</td>
<td>22,400</td>
<td>22,400</td>
<td>3,200</td>
<td>25,600</td>
<td>100%</td>
<td>25,600</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>16,200</td>
<td>128,600</td>
<td></td>
<td></td>
<td>$128,600</td>
</tr>
</tbody>
</table>
### Trained and Assembled Workforce

#### Functional Obsolescence – As of 12/31/11

<table>
<thead>
<tr>
<th>Workforce Component</th>
<th>No. of Employees</th>
<th>Excess Direct and Indirect Replacement Cost New</th>
<th>Excess Developer’s Profit and Entrepreneurial Incentive Components</th>
<th>Excess Total Replacement Per Employee</th>
<th>Functional Obsolescence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical staff</td>
<td>18</td>
<td>$7,500</td>
<td>$1,100</td>
<td>$8,600</td>
<td>$154,800</td>
</tr>
<tr>
<td>Administrative staff</td>
<td>2</td>
<td>22,400</td>
<td>3,200</td>
<td>25,600</td>
<td>51,200</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>20</strong></td>
<td><strong>$206,000</strong></td>
<td></td>
<td><strong>$206,000</strong></td>
<td></td>
</tr>
</tbody>
</table>
Trained and Assembled Workforce
Replacement Cost New Less Depreciation
As of 12/31/11

<table>
<thead>
<tr>
<th>Cost Approach Analysis</th>
<th>Cost Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>Replacement cost new (all employees)</td>
<td>$4,178,000</td>
</tr>
<tr>
<td>Less: Physical deterioration allowance (inadequate staff)</td>
<td>128,600</td>
</tr>
<tr>
<td>Less: Functional obsolescence allowance (superadequate staff)</td>
<td>206,000</td>
</tr>
<tr>
<td>Equals: Replacement cost new less depreciation</td>
<td>$3,843,400</td>
</tr>
</tbody>
</table>

- This RCNLD conclusion indicates what a willing buyer would pay to a willing seller for this assembled workforce, assuming that there is no economic obsolescence related to this intangible asset.
Factors that May Indicate the Existence of Economic Obsolescence

- The entity income approach value indication is less than the entity asset-based approach value indication.
- The entity market approach value indication is less than the entity asset-based approach value indication.
- Owner/operator revenue decreasing in recent years.
- Owner/operator profitability decreasing in recent years.
- Owner/operator cash flow decreasing in recent years.
- Owner/operator product pricing decreasing in recent years.
- Industry/profession revenue decreasing in recent years.
- Industry/profession profitability decreasing in recent years.
- Industry/profession cash flow decreasing in recent years.
- Industry/profession product pricing decreasing in recent years.
Factors that May Indicate the Existence of Economic Obsolescence (cont.)

- Owner/operator profit margins decreasing in recent years.
- Owner/operator returns on investment decreasing in recent years.
- Industry/profession profit margins decreasing in recent years.
- Industry/profession returns on investment decreasing in recent years.
- Industry/profession competition increasing in recent years.
Procedures to Measure Economic Obsolescence

- Most of the analyses to quantify economic obsolescence are performed on a comparative basis.

- The comparative basis may be:
  1. actual operating results with the economic obsolescence effect compared to
  2. hypothetical (e.g., historical or projected) operating results without the economic obsolescence effect.

- Alternatively, the comparative basis may be:
  1. actual operating results “with” the economic obsolescence effect compared to
  2. one or more comparable entity’s operating results “without” the economic obsolescence effect.

- A non-comparative analysis may not be adequate to measure economic obsolescence.
Procedures to Measure Economic Obsolescence (cont.)

- The analyst may have to review financial documents or operational reports to quantify economic obsolescence, such as:
  1. financial statements or financial results of operations
  2. financial budgets, plans, projections, or forecasts
  3. production statements, production cost analyses, or operating cost variance analyses
  4. material, labor, and overhead cost of goods sold (or services delivered) analyses
  5. fixed versus variable expense operating statements
  6. cost/volume/profit analyses
  7. unit/dollar sales analyses or average selling price analyses
Procedures to Measure Economic Obsolescence (cont.)

- The analyst may consider the above-listed data and documents on various comparative bases, including:
  1. actual results versus historical results
  2. actual results versus budgeted results
  3. actual results versus specific comparative entity results
  4. actual results versus specific competitor results
  5. actual results versus industry/profession average or benchmark results
  6. actual results versus the subject entity’s practical or normal production capacity
# Economic Obsolescence Illustrative Example

Trained and Assembled Workforce

Selected Economic Obsolescence Data

As of December 31, 2011

<table>
<thead>
<tr>
<th>Item</th>
<th>Financial or Operational Performance Metric</th>
<th>LTM Ended 12/31/11</th>
<th>Benchmark Measure</th>
<th>LTM Percent Shortfall</th>
<th>Benchmark Comparison Reference Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Average collected revenue per physician</td>
<td>$340,000</td>
<td>$420,000</td>
<td>19%</td>
<td>2011 regional internal medicine group average</td>
</tr>
<tr>
<td>2</td>
<td>Number of support staff per physician</td>
<td>4.0</td>
<td>3.2</td>
<td>25%</td>
<td>2011 regional internal medicine group average</td>
</tr>
<tr>
<td>3</td>
<td>Average salary per physician</td>
<td>$180,000</td>
<td>$220,000</td>
<td>18%</td>
<td>2011 regional internal medicine group average</td>
</tr>
<tr>
<td>4</td>
<td>Annual growth rate in the practice revenue</td>
<td>3.5%</td>
<td>4.5%</td>
<td>22%</td>
<td>actual subject practice average for 2006-10</td>
</tr>
<tr>
<td>5</td>
<td>Profit contribution per physician (pre-MD comp)</td>
<td>$200,000</td>
<td>$280,000</td>
<td>29%</td>
<td>2011 regional internal medicine group average</td>
</tr>
<tr>
<td>6</td>
<td>Profit contribution margin (pre-MD comp)</td>
<td>59%</td>
<td>67%</td>
<td>12%</td>
<td>2011 regional internal medicine group average</td>
</tr>
<tr>
<td>7</td>
<td>Average patients seen per physician per day</td>
<td>8.2</td>
<td>10</td>
<td>18%</td>
<td>the 2011 subject practice budget</td>
</tr>
<tr>
<td>8</td>
<td>Average revenue billed per patient visit</td>
<td>$80</td>
<td>$100</td>
<td>20%</td>
<td>the 2011 subject practice budget</td>
</tr>
<tr>
<td>9</td>
<td>Return on the practice average assets</td>
<td>10%</td>
<td>12.5%</td>
<td>20%</td>
<td>actual subject practice average for 2006-10</td>
</tr>
<tr>
<td>10</td>
<td>Return on the practice average equity</td>
<td>20%</td>
<td>25%</td>
<td>20%</td>
<td>actual subject practice average for 2006-10</td>
</tr>
</tbody>
</table>

LTM benchmark measures percent shortfall:

- mean 20.3%
- median 20.0%
- mode 20.0%
- trimmed mean 20.3%
- trimmed median 20.0%

Economic obsolescence indication 20%
Trained and Assembled Workforce
Economic Obsolescence Allowance – As of 12/31/11

<table>
<thead>
<tr>
<th>Cost Approach Analysis</th>
<th>Cost Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>Replacement cost new less depreciation</td>
<td>$3,843,400</td>
</tr>
<tr>
<td>Times: Selected economic obsolescence percent</td>
<td>20%</td>
</tr>
<tr>
<td>Equals: Economic obsolescence allowance (rounded)</td>
<td>$768,700</td>
</tr>
</tbody>
</table>
Concluding the Cost Approach Value Indication

- At this point, the analyst has performed each of the following procedures:
  1. concluded that the cost approach is appropriate for the intangible asset
  2. confirmed that adequate current cost information is available to perform a cost approach analysis
  3. selected the appropriate measurement measure for the current cost
  4. included all appropriate cost components in the current cost measurement
  5. identified and quantified any necessary allowance for physical deterioration
  6. identified and quantified any necessary allowance for functional obsolescence
  7. identified and quantified any necessary allowance for economic obsolescence

- The only remaining procedure is to subtract all depreciation and obsolescence allowances from the current cost measure in order to conclude a value indication.
Trained and Assembled Workforce – Cost Approach Valuation Synthesis and Conclusion – As of 12/31/11

<table>
<thead>
<tr>
<th>Cost Approach Analysis</th>
<th>Cost Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>Replacement cost new</td>
<td>$4,178,000</td>
</tr>
<tr>
<td>less: Physical deterioration allowance</td>
<td>128,600</td>
</tr>
<tr>
<td>Less: Functional obsolescence allowance</td>
<td>206,000</td>
</tr>
<tr>
<td>Less: Economic obsolescence allowance</td>
<td>768,700</td>
</tr>
<tr>
<td>Equals: Replacement cost new less depreciation</td>
<td>3,074,700</td>
</tr>
<tr>
<td>Assembled workforce value (rounded)</td>
<td>$3,100,000</td>
</tr>
</tbody>
</table>
Defending the Intangible Asset Valuation Report

- In order to defend the intangible asset value conclusion, the valuation report should typically include the following attributes:
  - define the intangible asset valuation (or other analysis) assignment
  - describe the subject intangible asset and the subject bundle of legal rights
  - explain the reasons for the selection or the rejection of all generally accepted valuation approaches and methods
  - explain the selection and application of all of the specific analytical procedures that were performed
  - describe the analyst’s data gathering and due diligence procedures
  - list all intangible asset-related documents and data that were considered by the analyst
Defending the Intangible Asset Valuation Report (cont.)

- include copies of all of the analysis source documents that were specifically relied on by the analyst
- summarize all of the qualitative valuation analyses performed (including, with regard to the owner/operator, all strengths, weaknesses, opportunities and threats analysis and other competitive analyses)
- include schedules and exhibits documenting all of the quantitative valuation analyses performed
- avoid any unexplained or unsourced valuation variables or analysis assumptions
- provide sufficient explanation and data to allow the report reader to be able to replicate all of the quantitative valuation analyses performed
The Intangible Asset Valuation Report

• To encourage the acceptance of the party relying on the written or oral valuation report analysis and conclusion, the intangible asset valuation report should be:
  1. clear, convincing, and cogent,
  2. well-organized, well-written, and well-presented, and
  3. free of grammar, punctuation, spelling, and mathematical errors.
The Intangible Asset Valuation Report (cont.)

- The effective (i.e., the persuasive) valuation report will tell a narrative story that:
  1. defines the elements of (or components of) the analyst’s specific engagement or assignment,
  2. describes the analyst’s data gathering and due diligence procedures,
  3. justifies the analyst’s selection of the generally accepted intangible asset valuation approaches, methods, and procedures,
  4. explains how the analyst performed the valuation synthesis process (including any value confirmation procedures) and reached the final intangible asset value conclusion, and
  5. leads the party relying on the report to the analyst’s intangible asset value conclusion.
Valuation Synthesis and Conclusion

- In the intangible asset valuation synthesis and conclusion process, the analyst should consider the following questions:
  1. Does the selected valuation approach(es) and method(s) accomplish the analyst’s assignment?
  2. Does the selected valuation approach and method actually quantify the desired objective of the analysis, such as:
     - a defined value
     - a transaction price
     - a third-party license rate
     - an intercompany transfer price
     - an economic damages estimate
     - an intangible asset bundle exchange ratio
     - an opinion on the intangible asset transaction fairness
Valuation Synthesis and Conclusion (cont.)

- The experienced analyst uses professional judgment to weight the various valuation approach and method value indications to conclude a final intangible asset value, based on:
  - the analyst’s confidence in the quantity and quality of available data
  - the analyst’s level of due diligence performed on that data
  - the relevance of the valuation method to the subject’s life cycle stage and degree of marketability
  - the degree of variation in the range of value indications
Summary and Conclusion

- Valuation analysts are often asked to value an intangible asset for a number of reasons.

- In addition to financial accounting purposes, analysts are often asked to estimate intangible asset value for various transaction, taxation, financing, litigation, bankruptcy, and planning purposes.

- In all cases, the analyst should consider all generally accepted valuation approaches, methods, and procedures.

- Many analysts are more familiar with market approach and income approach valuation methods.

- However, there are numerous instances when cost approach valuation methods are particularly applicable to the intangible asset valuation analysis.
Summary and Conclusion (cont.)

- Regardless of the intangible asset or the reason for the valuation, the analyst should consider all generally accepted valuation approaches and methods.

- The analyst should have a clear, convincing, and cogent rationale for (1) accepting each approach and method applied in the valuation and (2) rejecting each approach and method not applied in the valuation.