

A collage of transportation and energy infrastructure. On the left is a vintage payphone booth with a 'Phone' sign. In the center and right are wind turbines, a KCS train engine numbered 4004, and a commercial airplane in flight. The text 'The Wonderful World of Public Service Valuation' is overlaid in a large, yellow, outlined font.

# The Wonderful World of Public Service Valuation

# OVERVIEW

- \$\$\$ FAIR CASH VALUE \$\$\$
- TWO ECONOMIC CONCEPTS
- THREE APPROACHES TO VALUE
  - MARKET
  - COST
  - INCOME
- RECONCILIATION OF INDICATORS
- FINAL VALUE OPINION

# FAIR CASH VALUE

- Title 68, Section 2802
- "*Fair Cash Value*" means the value or price at which a willing buyer would purchase property and a willing seller would sell property if both parties are knowledgeable about the property and its uses and if neither party is under any undue pressure to buy or sell.

# UNITARY VALUE CONCEPT

- The value of an integrated property as a whole without reference to the value of its component parts.
- In a Unitary Appraisal we value **all** of the assets, real and personal, tangible and intangible (Article 10, sec. 6a) as an operating unit.

# GOING CONCERN VALUE CONCEPT

- The value of an operating business enterprise which is produced by the **assemblage** of the land, building, labor, equipment and marketing operation.
- This process creates an economically viable business that is expected to continue in operation for the *long term*.

# THREE APPROACHES TO VALUE

- Market Approach
- Cost Approach
- Income Approach

# MARKET APPROACH



- Sales Comparison Analysis
- Gross Income Multipliers
- Gross Rent Multipliers



# PUBLIC SERVICE - MARKET APPROACH

- Sales are rare !!!
- Sales that do occur are very difficult to value for a **local** Ad Valorem tax.
- Surrogate or a replacement for an asset sale is the **Stock and Debt Approach**.

# PUBLIC SERVICE / STOCK AND DEBT APPROACH

- The theoretical basis for this approach is that the **market value** of the unit may be estimated by summing the market values of the liabilities (long term debt) and the owners equity at a single point in time (i.e. assessment date).

# STOCK AND DEBT (cont.)

- *Formula* –
- Total number of shares outstanding times the market price\* .
- *PLUS* +
- The market value of the companies debt\* .
- \* As of a specific date.

## STOCK AND DEBT (cont.)

- *Example –*
- ABC Company
- 14,000,000 @ \$55 = \$777,000,000
- Long Term Debt = \$200,000,000

$$\$770,000,000 + \$200,000,000 =$$

- *\$970,000,000 Fair Cash Value*

# STOCK AND DEBT (cont.)

- *PROS* –
- Data to do calculation is readily available.
- Actual calculations are straightforward.
- Provides a forward looking view of the firms value.

# STOCK AND DEBT (cont.)

- *Cons* –

- Allocation problems when stock is from a holding company and assets being valued are local.
- Comparability issue. Are stock values truly representative of the underlying assets ?
- Volatility of Market due to outside influences that may have nothing to do with the company being valued.

# MARKET APPROACH SUMMARY

- A sale with true market comparables is the ideal situation.
- Is practically non-existent for Public Service Companies.
- Stock and Debt Approach is a viable alternative but requires **careful analysis** by the appraiser.

# COST APPROACH

- *Original Cost* – Historical cost at the time of acquisition or construction less depreciation.
- *Reproduction Cost* – Estimated cost to construct, at current prices, an exact duplicate or replica property with the same or similar material.
- *Replacement Cost* – Estimated cost to construct, at current prices, a property with *equivalent utility* using modern materials and current construction techniques.

## ORIGINAL COST APPROACH (cont.)

- **Book Depreciation vs. Obsolescence**
- Book Depreciation – An accounting term that refers to the amount of capital recapture written off an owners books *according to current tax laws*.
- Obsolescence – A form of depreciation that, *if it exists*, can be measured through market analysis.

## ORIGINAL COST APPROACH (cont.)

- *Two forms of Obsolescence*
- *Functional* – Loss in value resulting from defects in design. Initial design or changes over time in materials or building standards.
- *Economic / External* – Loss in value from causes outside of the property.

## ORIGINAL COST APPROACH (cont.)

At the local level it can be a change in zoning or recent construction of an undesirable property in close proximity.

For Public Service companies it can be caused by over restrictive regulation or government induced environmental restrictions.

# COST APPROACH CALCULATION

## ABC Company

• Plant In Service	1,160,000,000
• Materials & Supplies	22,000,000
• Inventories & Fuel	18,000,000
<b>Total Plant</b>	<b>1,200,000,000</b>
• Less: Accrued Dep.	310,000,000
• <b>Net Investment</b>	<b>890,000,000</b>
• Plus: CWIP	30,000,000
<b>Cost Fair Cash Value</b>	<b>920,000,000</b>

# COST APPROACH SUMMARY

- Three types of Cost Appraisals
- Historical/Original
- Reproduction
- Replacement
- Obsolescence is a form of depreciation that can be the result of a deficiency in the property itself or from causes outside of the property.

# INCOME APPROACH

- *The Economic Principle of Anticipation* is fundamental to this approach.
- *Anticipation Principle* – “Value is created by the expectation of benefits to be derived in the future”.



# INCOME APPROACH (cont.)

- Formula for Income Approach
- *VALUE = INCOME / RATE*
- *Value* in this case is the Fair Cash Value for tax purposes as defined in Title 68, sec. 2802.

# INCOME APPROACH (cont.)

- Income utilized is *Net Operating Income* and can be estimated using simple five year average, five year weighted average or regression analysis.
- On rare occasions a shorter time period may be utilized if in the opinion of the appraiser it will produce a more accurate estimate for next years income.

# INCOME APPROACH (cont.)

- The Rate is a *Capitalization Rate* also known as a Discount Rate.
- When applied to an estimated income stream as shown in our formula,
- *Value = Income / Rate*
- An estimate of Fair Cash Value is produced.

## INCOME APPROACH (cont.)

- A Capitalization Rate is composed of *two elements*
- The first is an estimate of the *Cost of Debt*. This information is available from rating agencies such as the Mergent Bond Record which has been tracking long term corporate bond yields since 1929.
- The Cost of Debt for Public Service Companies for 2008 was **6.11%**.

## INCOME APPROACH (cont.)

- The second element is an estimate of the *Equity Rate*.
- The Equity Rate is to be reflective of an *Investors Required Rate of Return*.
- In simpler terms it is *the rate required to entice you to invest your money* in the enterprise.

# INCOME APPROACH (cont.)

- The Equity Rate consists of *two components*.
- The first is a *Safe Rate*. This rate is normally the 20 year Government Treasury Bond Rate. For 2008 that rate was *4.5%*.
- The second component is known as the *Risk Premium Rate*. As the name implies it is representative of the premium *above* the safe rate that investors require to accept the uncertainties or additional risk associated with the investment.
- *The Equity Rate is simply the sum of the two components.*

# INCOME APPROACH (cont.)

## The RISK PREMIUM RATE -

- THE "Rate is Right" Game



# THE " RATE IS RIGHT " GAME

- *RULES* –
- Each of you have just inherited **\$1,000,000** !!!
- However, to keep your inheritance you must immediately invest the full amount in the stock market (S&P 500).
- **THE GOOD NEWS** !!! You get to determine what **RATE OF RETURN** you will receive for your investment.
- **THE BAD NEWS** !!! In setting your Risk Premium Rate you must not exceed the long term historical average range.
- **THE UGLY NEWS** !!! If you are too high you immediately forfeit your entire inheritance.
- **SO ! DON'T BE GREEDY** !!!!!

# THE " RATE IS RIGHT " GAME

- **GUIDELINES** –
- We will use a Safe Rate of **4.5%**.
- You are trying to determine what additional % would be appropriate to develop an Equity Rate that is in line with historical averages. You can estimate within a tenth of a per-cent.
- This rate should be high enough to *entice* you to invest but should not exceed the historical average.
- You will stay a **MILLIONAIRE** provided your estimate is within a reasonable range.
- If you are outside of the range....



**KEEP YOUR  
DAY JOB**

# THE "RATE IS RIGHT" GAME

- *Record* your answer on the response sheet.

**GOOD LUCK !!!!!**

# RESPONSE SHEET -

- My estimate for the *RISK PREMIUM RATE* is

\_\_\_\_\_ %



# THE "RATE IS RIGHT" GAME

RISK PREMIUM HISTORICAL RANGE IS –

**6.2%-7.1%**

## INCOME APPROACH (cont.)

Adding our Safe Rate of **4.5%** to a Risk Premium of say, **6.5%** produces an Equity Rate of **11.00%**.

Our Equity Rate of 11.00% is then combined with our Debt Rate of 6.11% through a Band of Investment calculation to produce a Capitalization Rate.

For illustration let's assume a **Capitalization Rate of 10%**.

# INCOME APPROACH (cont.)

- *VALUE = INCOME / RATE*
- ABC COMPANY ESTIMATED INCOME  
89,000,000
- $VALUE = 89,000,000 / 10\%$
- *VALUE = 890,000,000*

# INCOME APPROACH SUMMARY

- The Economic Principle of Anticipation is fundamental to the Income Approach.
- Income Formula is *Value=Income/Rate*
- Actual historical income is obtained from **audited financial statements** to estimate next years income.
- In calculating the **CAPITALIZATION RATE** several independent sources of financial information are utilized.

# Reconciliation and the Final Value Opinion

- ABC COMPANY Fair Cash Value Estimates
- STOCK and DEBT            970,000,000
- COST APPROACH            920,000,000
- INCOME APPROACH        890,000,000
- FINAL VALUE = ????????????

# RECONCILIATION and the FINAL VALUE OPINION

- FINAL VALUE ESTIMATE IS BASED ON THE *APPRAISERS JUDGEMENT*.
- TWO APPRAISAL STANDARDS -
- WE AVOID USING FIXED WEIGHTS.
- THE RECONCILED NUMBER SHOULD ALWAYS REFLECT MARKET PERCEPTIONS AND PREFERENCES **NOT** PRE-CONCEIVED NOTIONS OF TAXABLE VALUE.



The Wonderful  
World of  
Public Service  
Valuation