

**Botswana Confederation of  
Commerce, Industry and Manpower**

**Privatization: How to Value, Negotiate, and  
Gain Support for Transforming Parastatals**

**August 23, 1996**

**Gaborone, Botswana**

**Objective:** The objective of this course is to provide participants with a one day overview of the theory and practice of valuing companies for privatization. The course highlights the basic concepts of valuation and privatization. Specific goals include providing an understanding to participants as to why valuing a company is important for privatization, and learning the basic concepts to look for when reviewing valuation report to ensure that the valuation has been done to the highest standards. The course will utilize both real world examples and a some short case studies to familiarize participants with both valuation theory and real world application.

1. **Valuation for Privatization: Definitions and concepts**
  - a) Purpose of a valuation
  - b) Definitions of value
  - c) The valuation opinion
  - d) How a valuation is used in privatization
  
2. **Information Required to Perform a Valuation**
  - a) Data gathering
    - i) Company data
    - ii) Economic and industry data
  - b) Data analysis
  
3. **Financial Analysis**
  - a) Importance of financial analysis
  - b) The process of financial analysis
  - c) Ratio Analysis

15 minute break

  - d) Comparable company financial analysis
  - e) Trend analysis
  - f) Short financial analysis case study

4. **Valuation Methodologies**

- a) Discounted Cash Flow
  - i) DCF theory and components
  - ii) Definition of cash flow
  - iii) Expense and revenue analysis
  - iv) Calculate cash flows and residual value

Lunch Break

- v) Determine the appropriate discount rate
  - a) Capital asset pricing model
  - b) Build-up approach
- vi) Country risk analysis
- vii) DCF conclusion
- b) Guideline Company Method
  - i) Overview of three approaches
  - ii) Capital market approach
  - iii) Transaction approach
  - iv) Industry pricing approach

15 minute break

- c) Applying minority discounts or control premiums
- d) Asset Accumulation Approach

5. **Reaching a Valuation Conclusion, Selecting the Appropriate Approaches and Reconciling Different Values**

- a) Valuation methods advantages and disadvantages
- b) Selecting a final value
- c) Practical considerations
- d) Summary of approaches



**Privatization: How to Value,  
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**Valuation Methodologies  
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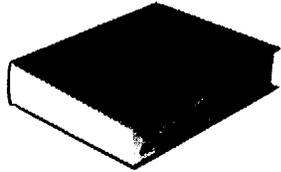
# ***Valuation: Definitions & Concepts***



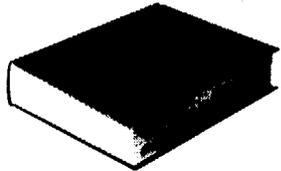
## ***WHAT IS A VALUATION?***

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- **A valuation of a company involves arriving at an opinion of value for that company as of a given point in time, based on:**
  - **an understanding of the historical, current and future operations of the company;**
  - **an analysis of the economic environment that the company operates in;**
  - **an analysis of the industry in which the company competes in;**
  - **an analysis of the financial information of the company; and**
  - **applying acceptable valuation methods to arrive at a reasonable estimate of value for the company.**

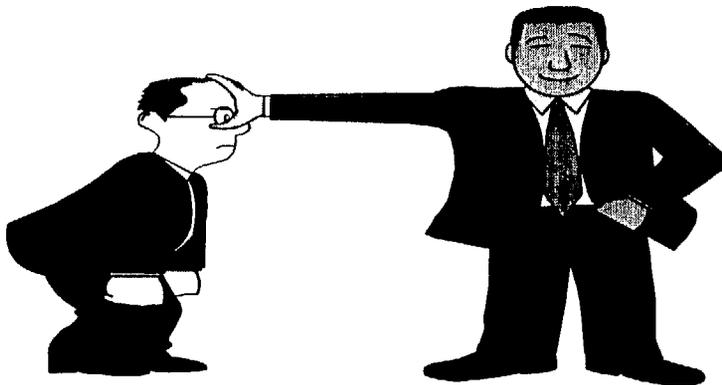


- **COMMON TYPES OF VALUE**
  - Fair market value
  - Investment value
  - Going concern value
  - Liquidation value
  - Book value
- ***The definition of value affects the valuation engagement***



## **Definition of fair market value (FMV)...**

- **The amount at which property would change hands between a willing seller and a willing buyer when neither is under compulsion and when both have reasonable knowledge of the relevant facts.** *American Society of Appraisers, Business Valuation Standards*



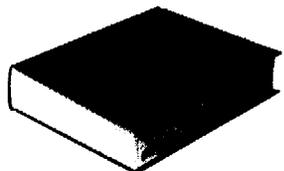
*An arms length transaction*

- **Assumes a hypothetical sale between two unrelated parties without regard to a specific buyer.**



***Further Discussion...***

- It is intended to be a reasonable estimate of the price at which property would change hands between two willing parties.
- The actual price paid in a transaction may differ from fair market value due to such factors as:
  - the motivation of the parties
  - the negotiation skills of the parties
  - the financial structure of the transaction
- This definition assumes the consideration is *paid in cash*. Consideration paid in the form of installment payments, seller financing, or contribution of intangible assets by the buyer, could affect the price paid.

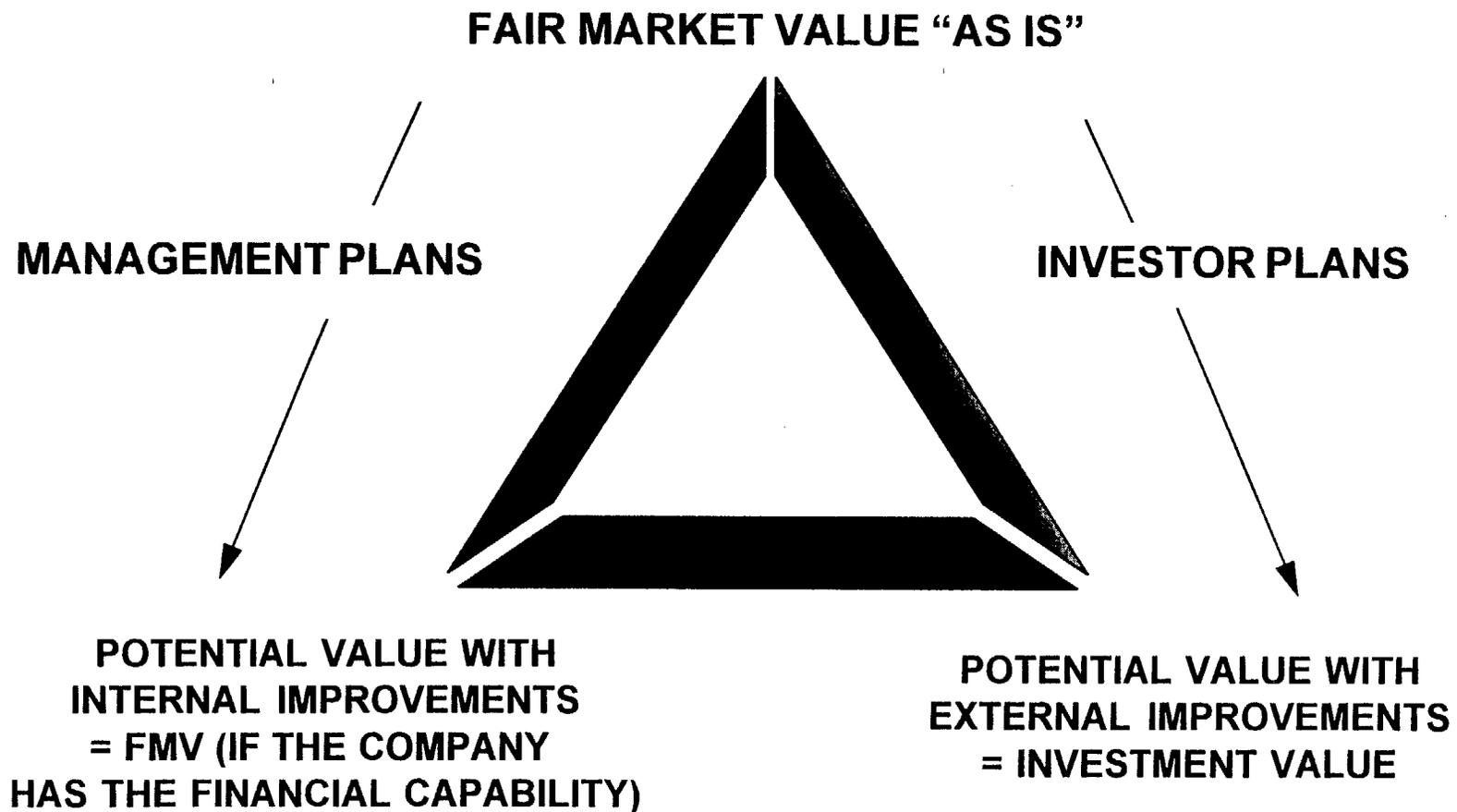


### ***Definition...***

- **Represents the value to a specific investor or purchaser of the company. Accordingly, the methods used to value the business in this case consider the investor's know-how, business plans, cost-savings, risk analysis, etc.**
- **Differs from fair market value in that it does not assume a specific buyer.**
- **Often a point of negotiation in a joint venture.**



## ***FMV VERSUS INVESTMENT VALUE***



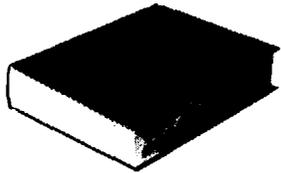


## **GOING CONCERN VALUE**

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### ***Concept...***

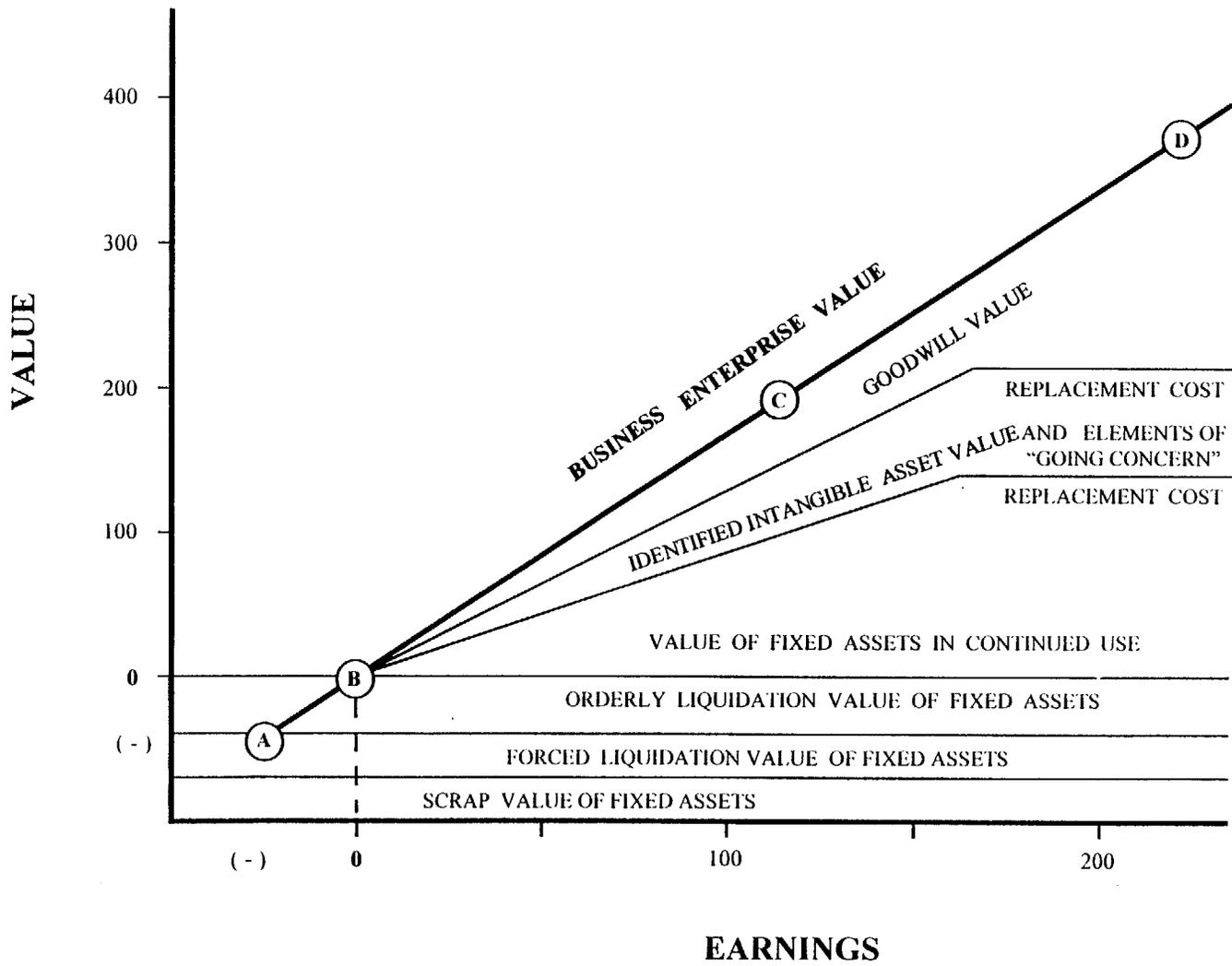
- **Not a definition of value, but rather a concept.**
- **Refers to the intangible elements of a business arising from such factors as:**
  - **having in place a trained, qualified work force;**
  - **a business that is in operation; and**
  - **the required licenses, systems and procedures.**
- **The premise underlying going concern value is that there is no uncertainty (for example, continued losses) about future events that calls into question the fundamental assumption that the entity can continue to operate as a going concern.**
- **If the business is not considered to be a “going concern,” liquidation value may be the appropriate definition of value to consider.**



### *Definition...*

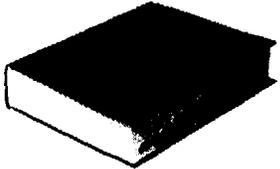
- Assumes the company's operations are expected to be discontinued and that its assets will be sold on a "piecemeal" basis.
- The the "going-concern" assumption no longer exists.
- Two levels of liquidation value:
  - *Orderly liquidation:* assumes assets are sold over a reasonable time period (6 months to a year) to obtain the highest price.
  - *Forced liquidation:* assumes assets are sold as quickly as possible, perhaps on an auction basis.
- Liquidation value also considers the costs incurred to sell the assets, such as selling fees.
- Typically represents the minimum value for a business.

## The Interaction Between the Value of an Enterprise, Its Earnings, and the Value of Its Tangible and Intangible Assets



- A.** The business is losing money and will be forced to liquidate.
- B.** The business is breaking even, but could start losing money. An orderly liquidation is appropriate.
- C.** The business has normal earnings. The business has both tangible and intangible assets with minimal economic obsolescence.
- D.** The business is highly profitable. Tangible and intangible assets reflect value in use. The value of superior earnings would be reflected in goodwill.

SOURCE: Smith, Parr



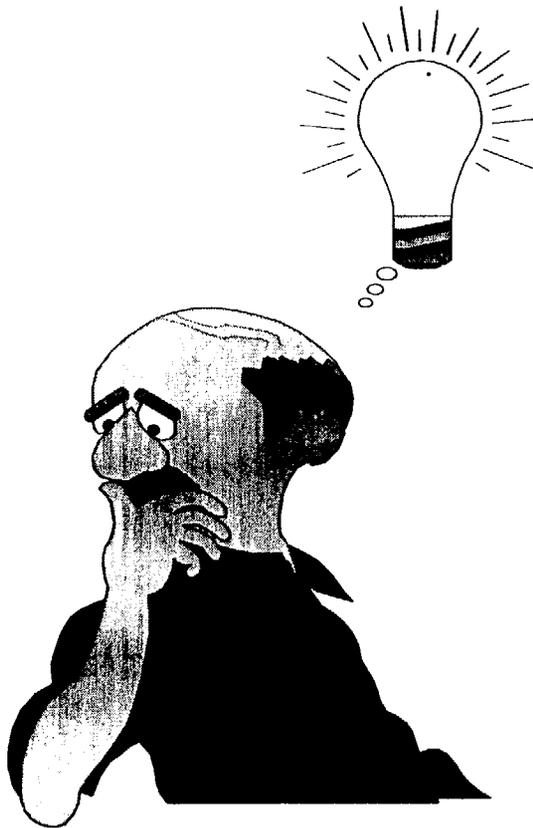
**Definition...**

- **Book value is an accounting term that typically refers to one of the following:**
  - **For an asset, its historical cost reduced by any allowances for depreciation.**
  - **For a business, the excess of total assets over total liabilities. This is the same concept as “stockholder’s equity” or “net asset value.”**
- ***It is only a coincidence when book value is the same as fair market value.***



## **WHAT IS A VALUATION OPINION?**

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- **A valuation opinion should be an independent, objective conclusion based on the facts and circumstances of each company.**
- **A valuation opinion should be based on acceptable methods, which are applied using the data available, along with the appraiser's professional judgment, to arrive at a *reasonable estimate of value*.**



## ***THE PURPOSE OF THE APPRAISAL***

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- **The purpose of the appraisal can impact the selection of valuation methods used and the definition of value used.**
- **Various reasons to conduct an appraisal:**
  - ✓ **Transaction pricing (mergers, acquisitions)**
  - ✓ **Privatization/post privatization**
  - ✓ **Financing**
  - ✓ **ESOPs**
  - ✓ **Management buyouts**
  - ✓ **Joint venture investments**
  - ✓ **Bankruptcy, reorganization, restructuring**
  - ✓ **Allocation of purchase price**
  - ✓ **Litigation**



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## ***HOW IS A VALUATION USED IN A PRIVATIZATION?***

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- **Valuations are used for the following reasons:**
  - ✓ **by the foreign buyer to determine a price to offer for the company.**
  - ✓ **by the privatization agency to assist them in determining a reasonable selling price.**
  - ✓ **by management of the company, if they are purchasing the company in a privatization.**
  - ✓ **to determine the value of assets (both tangible and intangible) contributed to a joint-venture by either the foreign partner or company being privatized.**
  - ✓ **to analyze restructuring alternatives.**



## **THE OBJECTIVE OF THE APPRAISAL**

***What is being valued, and when?***

- **Valuation date:**

- ◇ As of specific point in time
- ◇ Current versus historical date
- ◇ Differs from the “report” date
- ◇ Valuation opinion is based on information available *only* through the valuation date

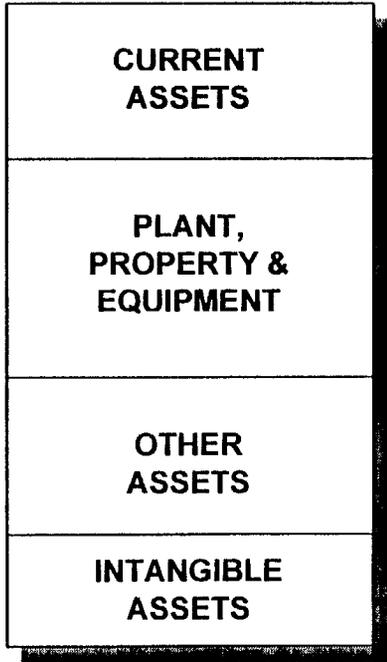
- **What is being valued?**

- ◇ Total assets
- ◇ Specific assets
- ◇ Invested capital
- ◇ Owners’ equity
  - ↳ at a controlling or minority level of ownership

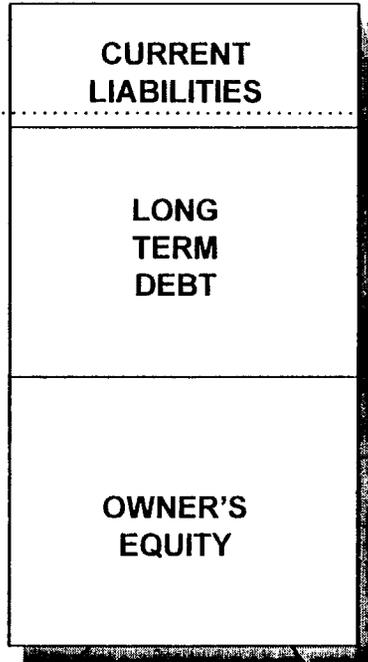
# WHAT IS BEING VALUED?

## THE VALUATION BALANCE SHEET

TOTAL ASSETS



INVESTED CAPITAL



← *The investors*

EQUITY



CONTROL

MINORITY



## ***BUSINESS VALUATION PREMISES***

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- **The value of a business is equal to the present worth of the future benefits of ownership:**
  - *A rational buyer normally will invest in a company only if the present value of the expected benefits of ownership are at least equal to the purchase price.*
  - *Conversely, a rational seller normally will not sell if the present value of those expected benefits is more than the selling price.*
- **Value is not a single number:**
  - *A company's value depends on each potential investor's assessment of the benefits and risks relating to a company. Generally, the valuation consultant's task is to determine the most likely or reasonable value estimate.*
- **Value is based on a specific point in time -- the valuation date.**



## **MANAGEMENT'S RESPONSIBILITY IN A VALUATION**

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- To assist the valuation team in gathering the data.
- To provide the valuation team with an opportunity to inspect the facilities.
- Answering the valuation team's questions regarding the company and the data provided. This includes providing company experts in operations, finance, marketing, etc.
- Preparing a business plan or forecast for the company.
- Reviewing the valuation report and discussing problems or errors management feels have been made in the valuation.
- To not influence the valuation team in reaching their conclusion.



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# ***Information Required to Perform a Valuation***



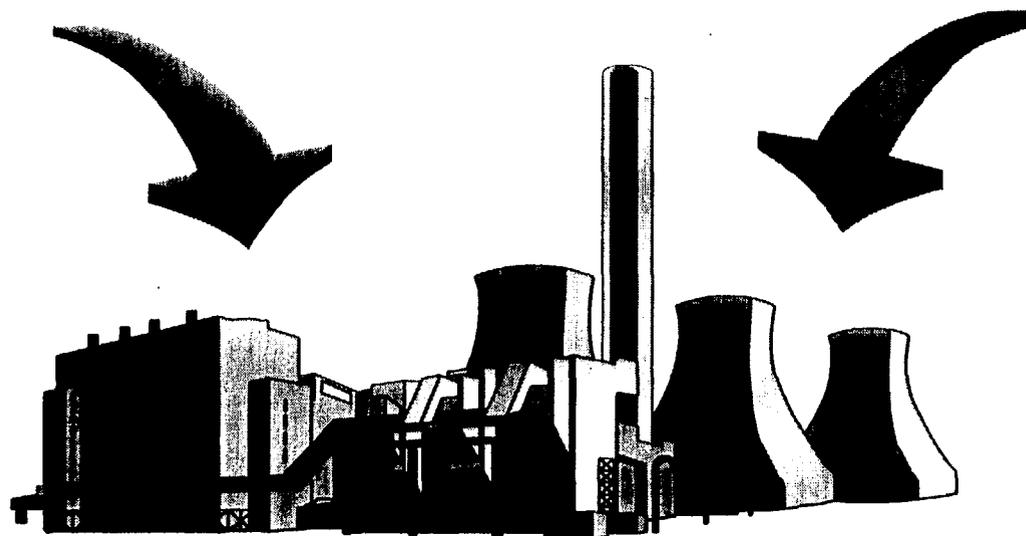
### ***Company data...***

- **Typical information required:**
  - ✓ **company background & history**
  - ✓ **description of products and services**
  - ✓ **balance sheets/income statements (3 to 5 years)**
  - ✓ **balance sheet account details**
  - ✓ **information concerning facilities (land and buildings)**
  - ✓ **fixed asset information (machinery & equipment)**
  - ✓ **information regarding management**
  - ✓ **operational data (production data, capacity, etc.)**
  - ✓ **forecasts**
- **Objective: to gain a thorough understanding of the company's history, current and projected financial position, products, markets, strengths, weaknesses, etc.**
- **Inquiries should also be made concerning: environmental issues, social assets and asset ownership.**
- **Information request and interview guideline handout.**



### ***Economic & industry data...***

- **A company does not operate in isolation. It is affected by external factors such as economic and industry trends.**
- **Thus a company's value cannot be determined by just financial statement data -- the external factors and their impact on value must be considered.**





***Industry data...***

- **The industry data and analysis impacts the following valuation variables:**
  - the outlook for growth in unit sales
  - the outlook for prices in the industry
  - the risk assessment and therefore the discount rate
  - the expected margins
- **Industry data can help in assessing the following information important to the valuation:**
  - competition
  - trends in demand, inflation
  - legislative concerns
  - technological developments
  - environmental problems
  - industry profitability
  - management forecasts



### *Industry data...*

- **COMPARATIVE FINANCIAL INFORMATION:**
  - ***Common size balance sheets*** - a balance sheet with all asset, liability and equity accounts expressed as a percent of total assets, based on the average of the balance sheets in the industry.
  - ***Common size income statements*** - each item on the income statement is expressed as a percent of sales, based on the average of the income statements in the industry.
  - ***Ratio analysis*** - the average financial ratios (liquidity, leverage, margins, etc.) for the companies in the industry.
- This data is the basis for the financial analysis of the company and its comparison to the industry.



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***Economic data...***

- **The economic analysis impacts the following variables in the valuation:**
  - **discount rate calculation**
  - **future sales growth assumptions**
  - **risk assessment of the business**
  - **country risk analysis**
- **Economic information can be gathered and analyzed for the local (regional) economy or the national economy, or both. The type of information and amount depends on the nature of the company and the purpose of the valuation.**
- **A local retail shop would be affected more by local economic trends, while a large national enterprise would be affected more by national economic trends.**



## ***ECONOMIC & INDUSTRY DATA***

### ***Analyzing the data...***

- **After obtaining the economic and industry data, the valuation consultant should consider the effects on the company's financial condition and earnings potential as of the valuation date.**
- **Questions to consider include:**
  - **How has the company performed relative to its industry?**
  - **Are current economic conditions favorable or unfavorable to the company?**
  - **Is the industry growing, flat or declining?**



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# ***Financial Analysis***



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***Importance to the Appraisal Process...***

- **Is a key factor in assessing the risk of investing in the business.**
- **Provide a basis to analyze trends**
- **Identify strengths, weaknesses and unusual items for further analysis.**
- **Provide a basis for comparison to industry data or similar company data.**
- **Impacts the discounted cash flow methodology in assessing *growth, costs, margins, working capital, debt and of most importance -- the discount rate.***
- **Is a key factor in selecting the appropriate valuation multiple in the guideline company approach.**
- **Can provide a basis for assessing economic obsolescence.**



## **FINANCIAL ANALYSIS**

### ***Importance to the Appraisal Process - Con't***

- In summary, the financial analysis affects many of the phases of the appraisal process, including each of the valuation methods.
- Thus, the financial analysis is probably the most important part of the appraisal process.
- A lack of data from which to perform the financial analysis increases significantly the risk of investing in the business.





***The Process...***

- ① Transformation of the accounts.**
- ② Financial statement adjustments to normalize operations.**
- ③ Ratio analysis: liquidity, leverage and operating ratios and common size balance sheets and income statements.**
- ④ Comparable company financial analysis.**
- ⑤ Analysis of trends and unusual items.**



**① Account Transformation...**

- **Involves restating or reformatting the accounts from the local accounting standard to a Western accounting format or standard.**
- **Not required for a valuation, but it can improve the valuation.**
- **Common adjustments include: fixed assets and depreciation, revenue recognition, inventory and receivable adjustments.**
- **Provides a better basis of comparison when comparing the subject company's financial data.**
- **Investors often ask that a transformation be performed to improve the quality of the data.**



**② Financial Statement Adjustments...**

- > These adjustments differ from the transformation.**
- > They are based on adjustments to “normalize” operations so that a true level of operating income can be analyzed.**
- > Examples of adjustments include:**
  - ✓ non-recurring income and expenses**
  - ✓ income and expenses relating to excess assets and non-operating assets.**
  - ✓ related party (or company) revenue or expenses.**

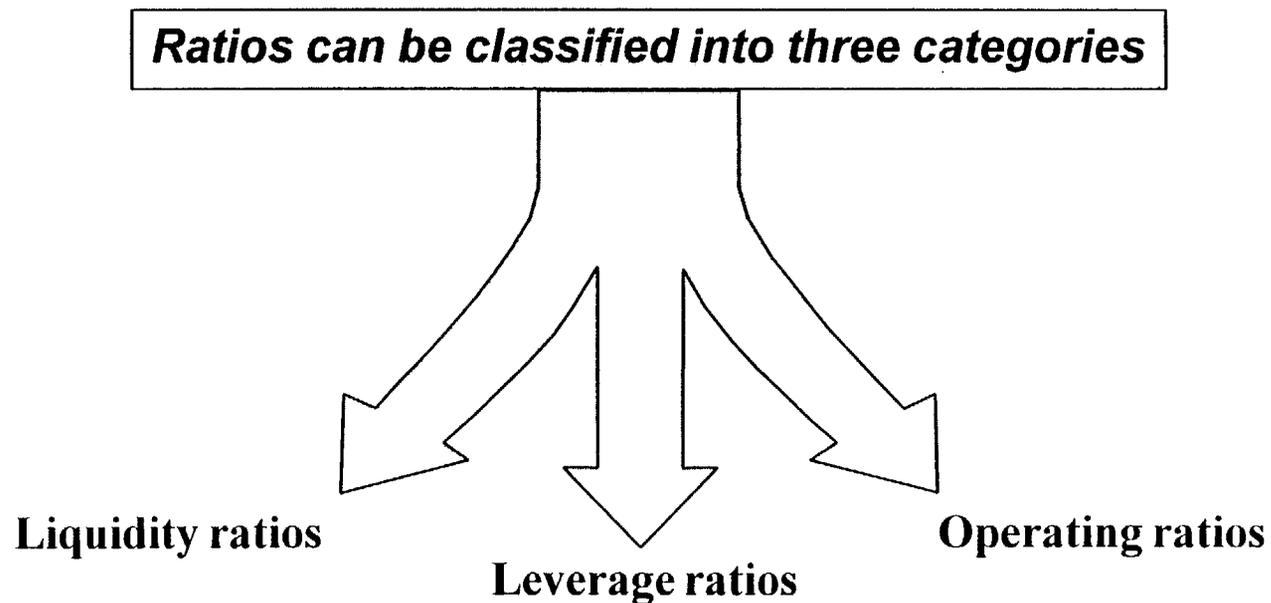


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***Financial Analysis - The Process***

**③ Ratio analysis and common size financial statements**

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## *Financial Analysis - The Process*

### **3** Ratio analysis - liquidity ratios

- **Liquidity ratios provide the following information:**
  - ⇒ **the ability of the company to pay its current obligations.**
  - ⇒ **how well the company is managing inventory and receivables.**
  - ⇒ **whether the company has excess or deficient working capital.**
  - ⇒ **the working capital component of the cash flow forecast.**
- **Liquidity ratios include the following:**
  - ⇒ **current ratio**
  - ⇒ **quick ratio**
  - ⇒ **days' receivables**
  - ⇒ **days' inventory**
  - ⇒ **days' payables**
  - ⇒ **working capital to sales**



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*Financial Analysis - The Process*

**3** **Ratio analysis - leverage ratios**

- **Leverage ratios provide the following information:**
  - ⇒ **the ability of the company to pay its long-term obligations.**
  - ⇒ **the level of financial risk in the company.**
  - ⇒ **whether there is any “debt capacity” (to finance capital investment), or if the company has too much debt.**
- **Leverage ratios include the following:**
  - ⇒ **interest coverage ratio**
  - ⇒ **long-term debt to total capital**
  - ⇒ **interest expense to revenue**



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## *Financial Analysis - The Process*

### **3** **Ratio analysis - operating ratios**

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- **Operating ratios provide the following information:**
  - ⇒ **a measure of how efficiently assets are being utilized.**
  - ⇒ **the return provided the investors on their capital.**
  - ⇒ **the return provided on assets.**
  - ⇒ **how efficiently assets are being utilized.**

- **Operating ratios include the following:**
  - ⇒ **return on equity**
  - ⇒ **return on assets**
  - ⇒ **sales to assets**
  - ⇒ **sales to fixed assets**
  - ⇒ **return on sales**



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***Financial Analysis - The Process***

**③ Ratio analysis: common size balance sheets and income statements.**

***Common size balance sheets are simply all asset accounts expressed as a percent of total assets***

***Common size income statements are simply all revenue and expense account expressed as a percent of revenues***

***Common size balance sheets and income statements provide:***

- ☞ a basis for trend and comparative analysis***
- ☞ analysis of balance sheet structure, and***
- ☞ analysis of income statement margins.***



**④ Comparable Company Analysis...**

- **Comparative analysis is used to measure how well the company compares to similar companies in the areas of liquidity, leverage, utilization and returns.**
- **It is an important factor in assessing the risk of the business, which in turn affects the discount rate calculation and the selection of the appropriate value for the valuation multiplier used in the guideline company approach.**
- **The company can be compared to individual similar companies, or to an average for the industry.**
- **The comparison is based on the ratios and common size financial statements.**



**⑤ Trends Analysis & Unusual Items...**

- **Trend analysis focuses on examining how accounts have changed over time.**
  - ↳ **For example, examining the operating income margin to determine if it has been stable, or if it has varied significantly, why.**
- **Unusual items that seem out of place compared to other years or compared to industry averages should be discussed with management to determine why. These items could provide the basis for adjustments to normalize income.**
- **Accounts with unusual titles or that seem out of place compared to the normal business operations should be investigated. These accounts may provide information regarding non-operating assets or excess assets.**



### **Conclusion & Key Factors to Consider...**

*Focus on the issues affecting the value of the company:*

- ➔ **Does the company have adequate liquidity? Is there excess working capital, or will the investor/buyer have to invest in more working capital? What is the required working capital as a percent of sales?**
- ➔ **Does the company have too much debt? Does the company have the ability to borrow in the future if needed? Does the company have debt capacity?**
- ➔ **Are the margins for the company acceptable? Are they improving, declining or stable? Are the returns on equity and assets acceptable? Does the company have an adequate utilization of assets?**
- ➔ **Are there any non-operating assets not contributing to the production of cash flow?**



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***Conclusion & Key Factors to Consider...***

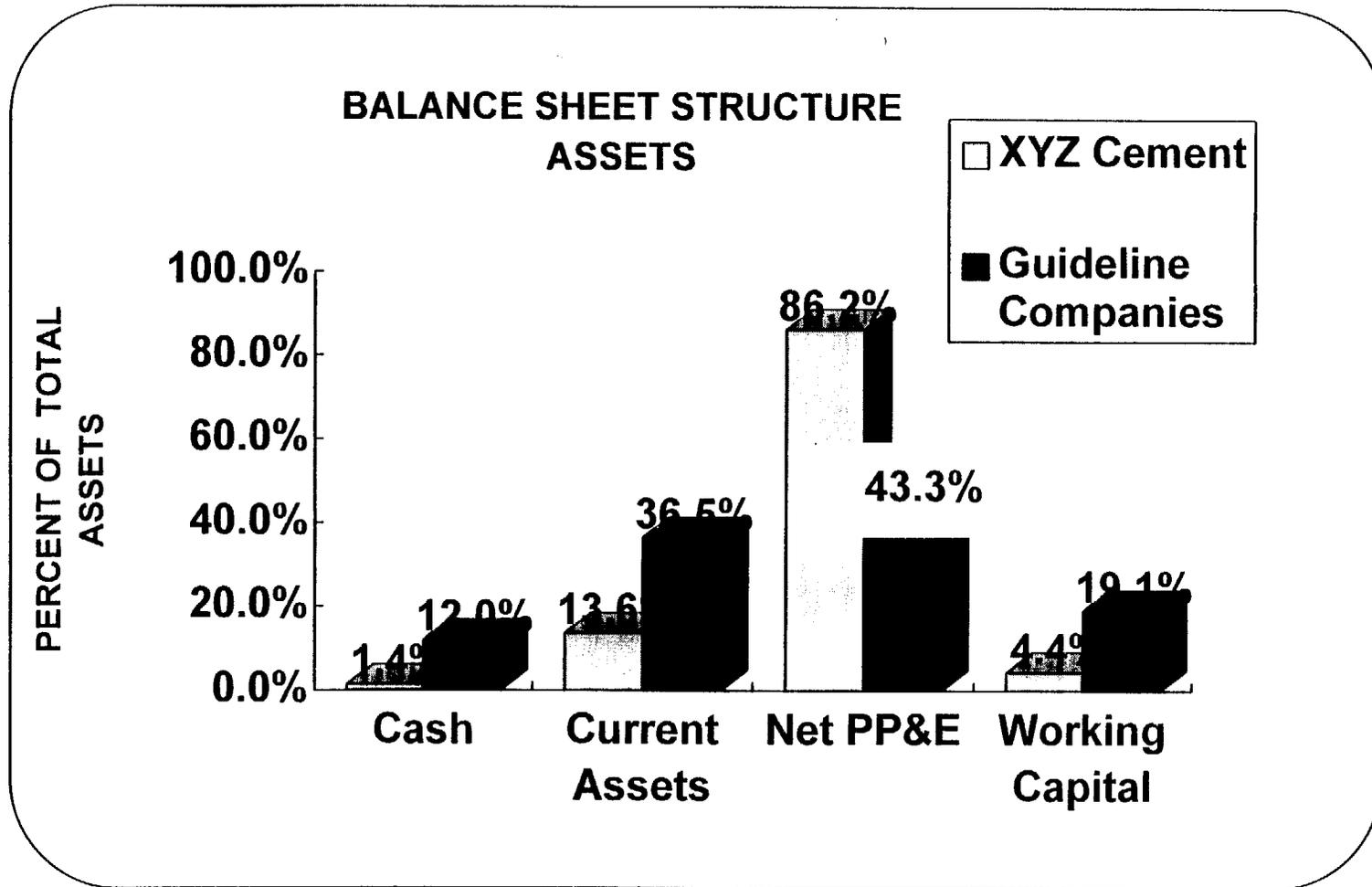
- **Is the overall trend in the business (sales, profits, etc.) improving, stable or getting worse?**
- **How does the company compare with its competitors?**
- **In summary, based on your financial analysis of the company would you say that the company had below average, average, or above average risk?**

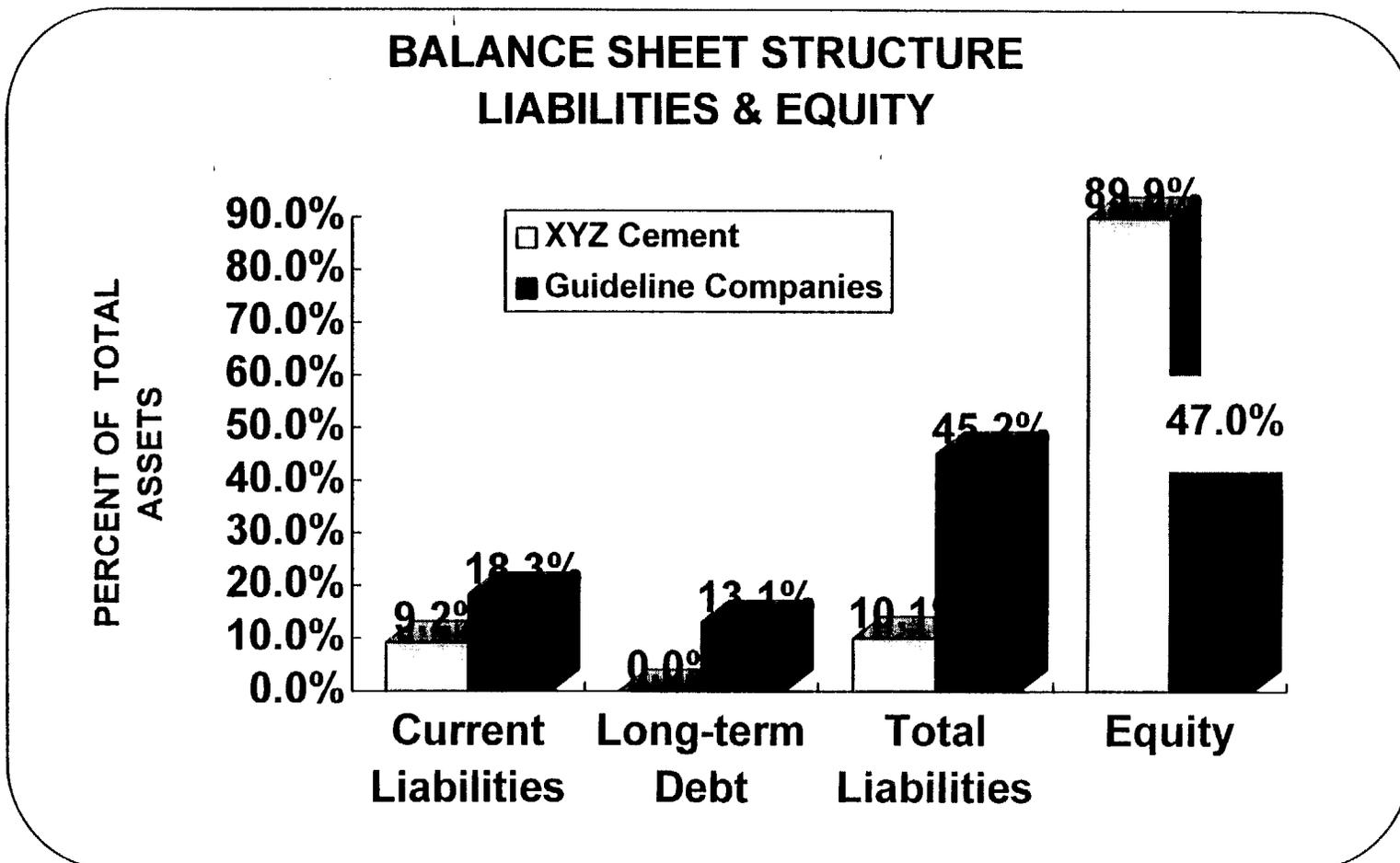
**Your conclusion should be one of the key factors in determining:**

- ⊖ **the discount rate to be applied in the discounted cash flow method; and**
- ⊖ **the appropriate value for the pricing multiple in the guideline company approach.**



**XYZ CEMENT - CASE STUDY**

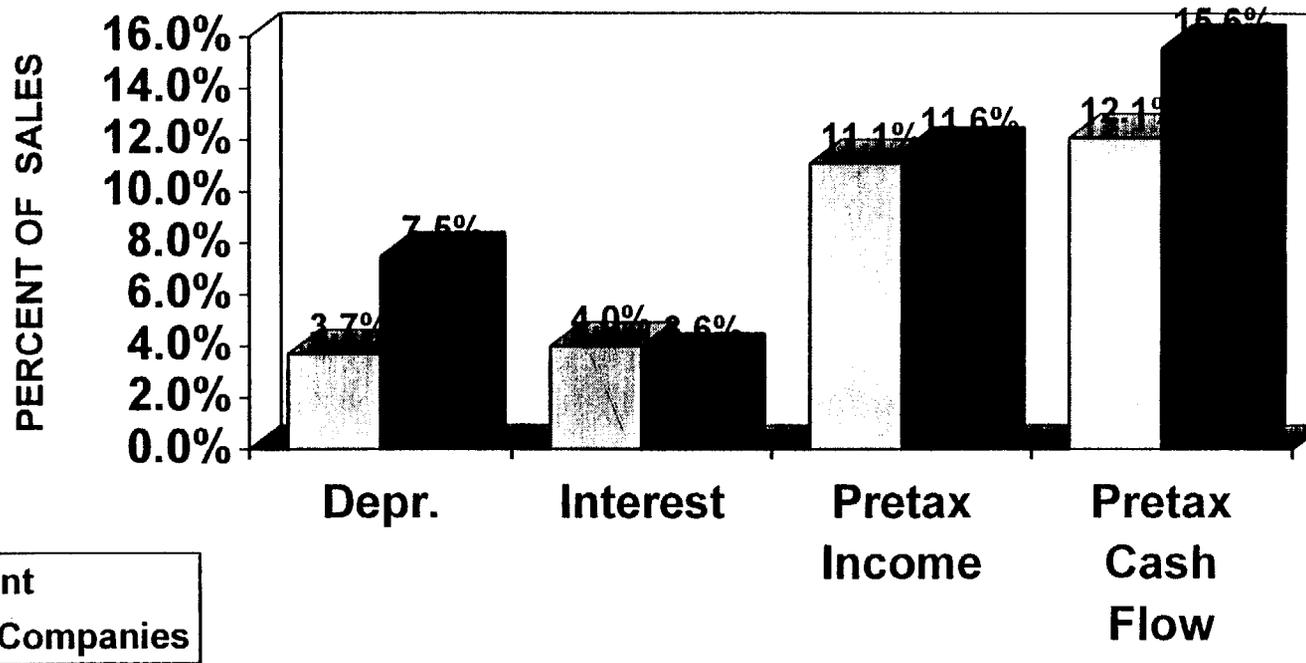






XYZ CEMENT - CASE STUDY

INCOME STATEMENT COSTS & MARGINS





**SELECTED FINANCIAL RATIOS**

<b>Ratio</b>	<b>XYZ Cement</b>	<b>Guideline Companies</b>
<b>Working Capital/Sales</b>	<b>11.4%</b>	<b>28.4%</b>
<b>Current Ratio</b>	<b>1.48</b>	<b>2.14</b>
<b>Interest Coverage</b>	<b>3.4</b>	<b>4.1</b>
<b>Pretax Return on Assets</b>	<b>4.3%</b>	<b>8.7%</b>
<b>Pretax Return on Equity</b>	<b>4.8%</b>	<b>17.3%</b>
<b>Asset Turnover</b>	<b>.39</b>	<b>.57</b>



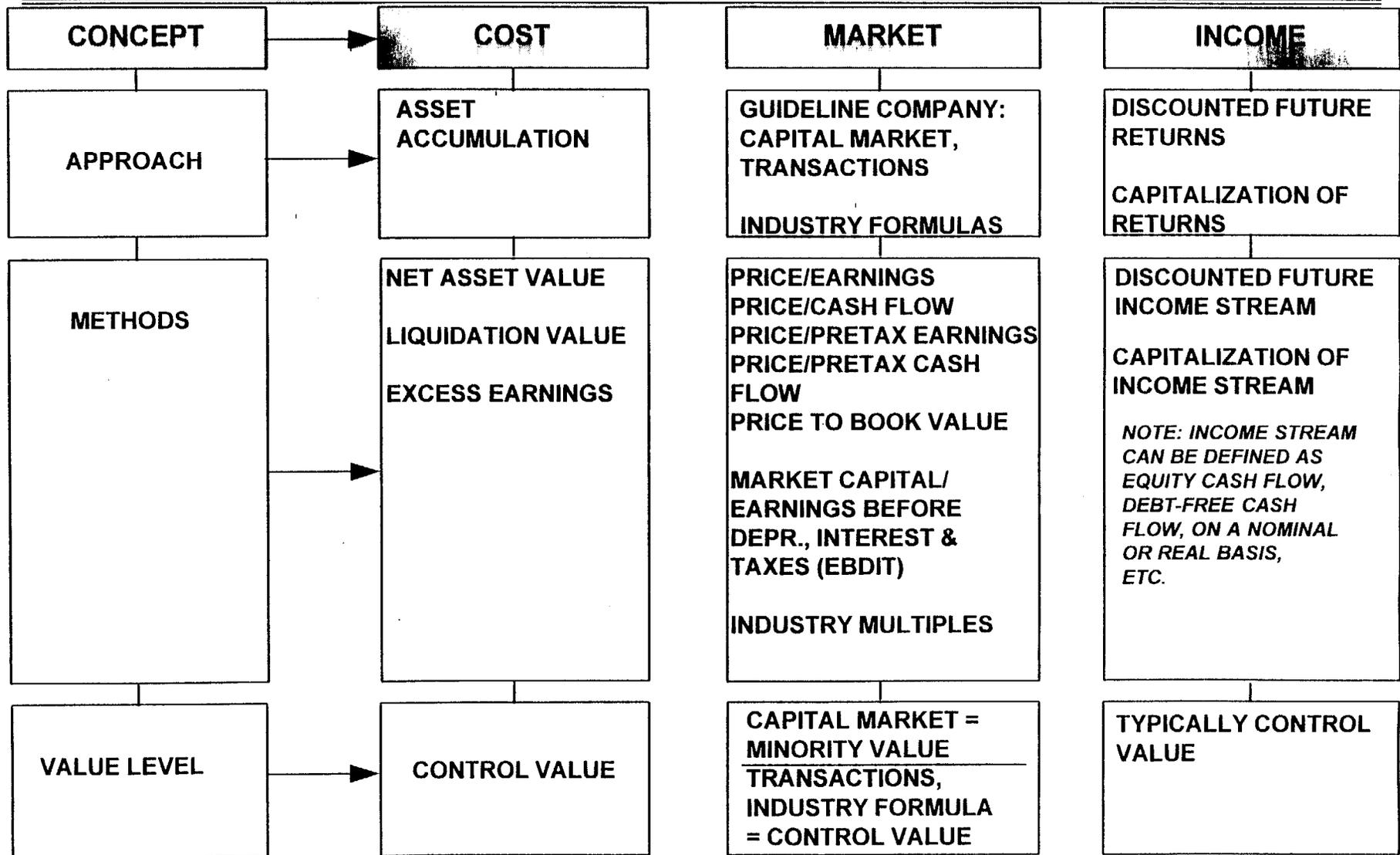
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# ***Valuation Methodologies***

- **Discounted Cash Flow**
- **Guideline Company**
- **Asset Accumulation**



# Overview-Valuation Methodology





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# ***Discounted Cash Flow Approach***



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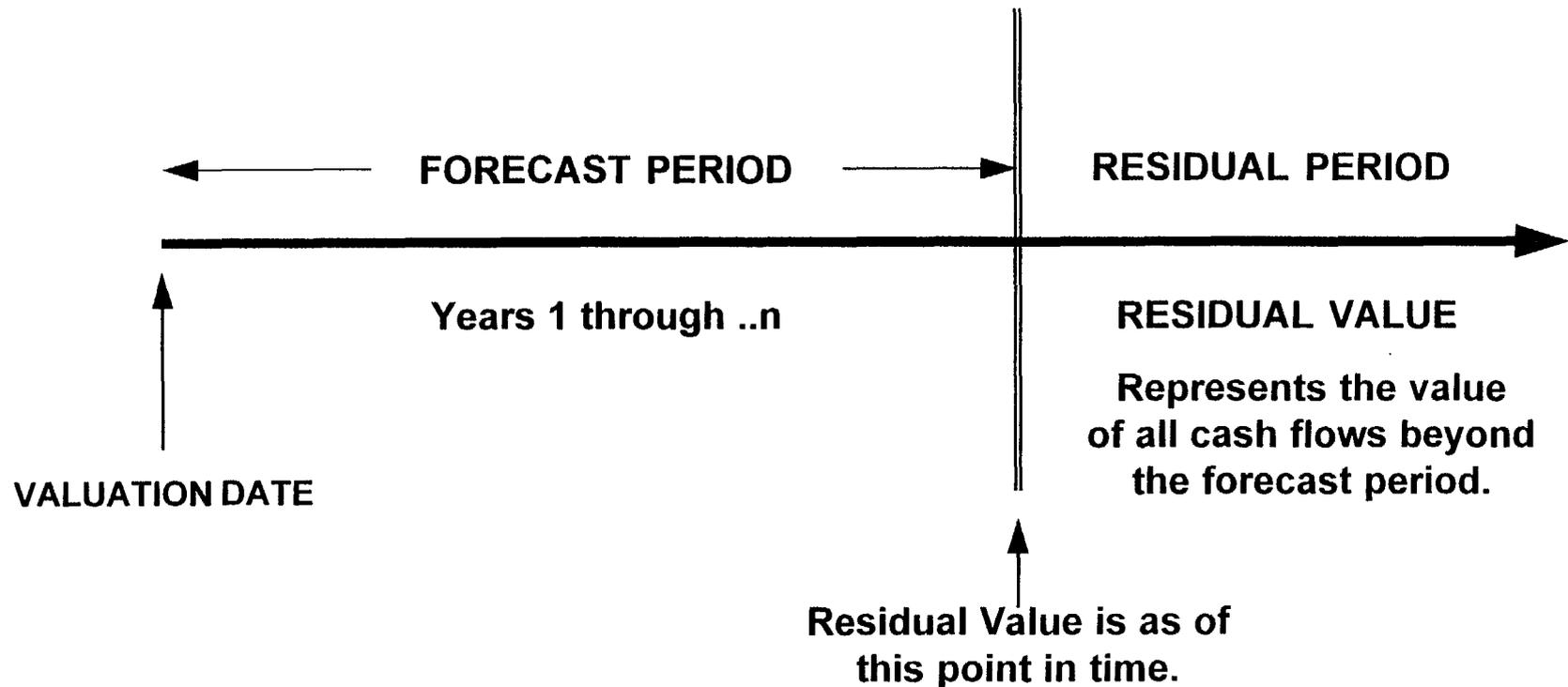
**THEORY**

- **This method is based on the theory that the value of an investment in a business depends on the future benefits (e.g., cash flow) that will accrue to the owner or investor in that business.**
- **These future cash flows are then discounted back to their present value equivalent using a discount rate that matches the investor's required rate of return.**
- **The investor's required rate of return is based on his analysis of the risk of investing in the business and in the risk of receiving the expected future cash flow.**



**DISCOUNTED FUTURE CASH FLOW**

**COMPONENTS**





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**STEPS**

- ① Select the definition of cash flow to be used.**
- ② Analyze revenues and prepare the revenue forecast.**
- ③ Analyze expenses and prepare an expense forecast.**
- ④ Analyze investments and prepare an investment forecast.**
- ⑤ Calculate cash flow for each year.**
- ⑥ Determine the appropriate discount rate.**
- ⑦ Calculate the residual value.**
- ⑧ Calculate the present value of the future cash flows and residual value and sum.**
- ⑨ Make any final adjustments.**
- ⑩ Perform review procedures.**



## **DISCOUNTED FUTURE CASH FLOW**

- Definition of cash flow:
  - ✓ debt-free or equity cash flow
  - ✓ nominal or real cash flow

### **EQUITY CASH FLOW**

**=**

**NET INCOME**

**PLUS**

**NON-CASH ITEMS  
(DEPRECIATION, AMORTIZATION)  
INCREASES IN LONG-TERM DEBT**

**MINUS**

**INCREMENTAL WORKING CAPITAL  
CAPITAL INVESTMENT  
DECREASES IN LONG-TERM DEBT**

### **DEBT-FREE CASH FLOW**

**=**

**NET INCOME  
(EXCLUDING INTEREST EXPENSE)**

**PLUS**

**NON-CASH ITEMS  
(DEPRECIATION, AMORTIZATION)**

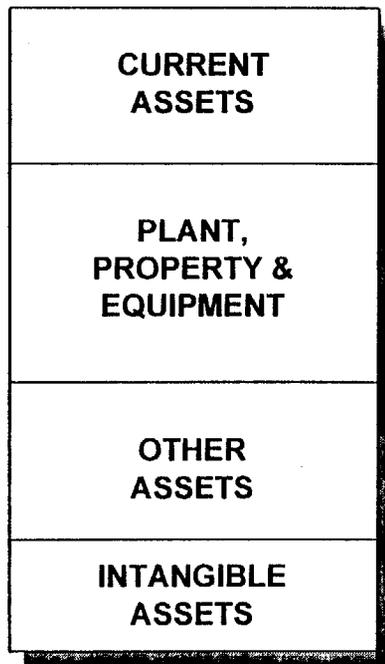
**MINUS**

**INCREMENTAL WORKING CAPITAL  
CAPITAL INVESTMENT**

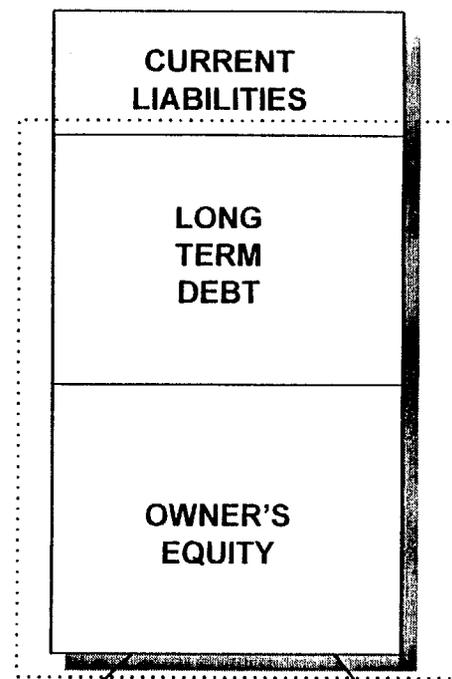
**WHAT IS BEING VALUED?**

**THE VALUATION BALANCE SHEET**

TOTAL ASSETS



INVESTED CAPITAL



← *The investors*

EQUITY



CONTROL

MINORITY



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***STEPS***

- ① Select the definition of cash flow to be used.**
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**FORECASTING REVENUES**

**○ Revenue forecast analysis - considerations:**

- ⇨ Forecasting units and prices, or overall growth
- ⇨ Consideration of export versus domestic sales
- ⇨ Capacity to produce
- ⇨ Impact of capital investment
- ⇨ Long-term growth in the residual period
- ⇨ What growth will the buyer pay for?

**○ Consideration should be given to:**

- ⇨ Historical growth
- ⇨ The economic outlook
- ⇨ The outlook for the industry, including competition
- ⇨ Demand for the product
- ⇨ Expected product price increases
- ⇨ Product mix
- ⇨ Management plans

*...over what period should cash flows be forecasted in estimating the value of a company?*



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**STEPS**

- ❶ Select the definition of cash flow to be used.**
- ❷ Analyze revenues and prepare a revenue forecast.**
- ❸ Analyze expenses and prepare an expense forecast.**
- ❹ Analyze investments and prepare an investment forecast.**
- ❺ Calculate cash flow for each year.**
- ❻ Determine the appropriate discount rate.**
- ❼ Calculate the residual value.**
- ❽ Calculate the present value of the future cash flows, the residual value, and sum.**
- ❾ Make any final adjustments.**
- ❿ Perform review procedures.**



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**FORECASTING EXPENSES**

**○ EXPENSE ANALYSIS:**

- ☛ Consider historical relationships and trends**
- ☛ Examine fixed versus variable costs**
- ☛ Inflation considerations for each category**
- ☛ Examine unusual and non-recurring expenses that may be included in historical figures, but will not occur in the future**
- ☛ Depreciation should be based on existing levels plus an analysis of additions and retirements in the future**
- ☛ Interest expense is included in the equity model (but excluded in the debt-free model)**
- ☛ Compare forecasted margins to competitors or to industry guideline data for reasonableness.**



**IMPORTANCE OF FINANCIAL ANALYSIS**

- **The financial analysis of the company is important to the discounted cash flow method because it helps in assessing:**
  - ☞ **Growth**
  - ☞ **Costs**
  - ☞ **Margins**
  - ☞ **Working capital required**
  - ☞ **The level of debt**
  - ☞ **The discount rate**
- **Before the ratios are calculated, two steps should occur:**
  - ☞ **An accounting transformation should be performed**
  - ☞ **The results should be “normalized”**



**STEPS**

- ① Select the definition of cash flow to be used.**
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- ⑩ Perform review procedures.**



## **DISCOUNTED FUTURE CASH FLOW**

**Analysis of investments consists of three components:**

### **Working Capital:**

**Analysis of working capital includes:**

- **Examining the adequacy of the beginning amounts; and**
- **The incremental amounts needed to fund future growth in the business.**

- *Based on forecasting the individual components of working capital, or*
- *Based on a percent change in sales.*

### **Capital Investment:**

**Represents the investment needed to:**

- **Replace existing assets as they wear out; and**
- **To purchase or build new assets to increase production capacity in the future.**

- *Based on the estimated remaining useful lives of the assets; and*
- *Based on new equipment for replacement and expansion.*

### **Financing Needs:**

**Represents:**

- **Borrowings and repayments of long-term debt; and**
- **Issuance of shares.**

- *Based on financing requirements and existing debt levels and repayment schedules.*



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**STEPS**

- ① Select the definition of cash flow to be used.**
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## **DISCOUNTED FUTURE CASH FLOW**

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**Calculate the cash flows for each year.**



*Once the revenues and expenses, working capital requirements, capital investment and financing requirements have been forecasted, future cash flows during the forecast period can be calculated based on the equity or debt free method.*



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## **DISCOUNTED FUTURE CASH FLOW**

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- **Definition of cash flow:**
  - ✓ **debt-free or equity cash flow**
  - ✓ **nominal or real cash flow**

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### **EQUITY CASH FLOW**

**=**

**NET INCOME**

**PLUS**

**NON-CASH ITEMS  
(DEPRECIATION, AMORTIZATION)  
INCREASES IN INTEREST BEARING DEBT**

**MINUS**

**INCREMENTAL WORKING CAPITAL  
CAPITAL INVESTMENT  
DECREASES IN INTEREST BEARING DEBT**

### **DEBT-FREE CASH FLOW**

**=**

**NET INCOME  
(EXCLUDING INTEREST EXPENSE)**

**PLUS**

**NON-CASH ITEMS  
(DEPRECIATION, AMORTIZATION)**

**MINUS**

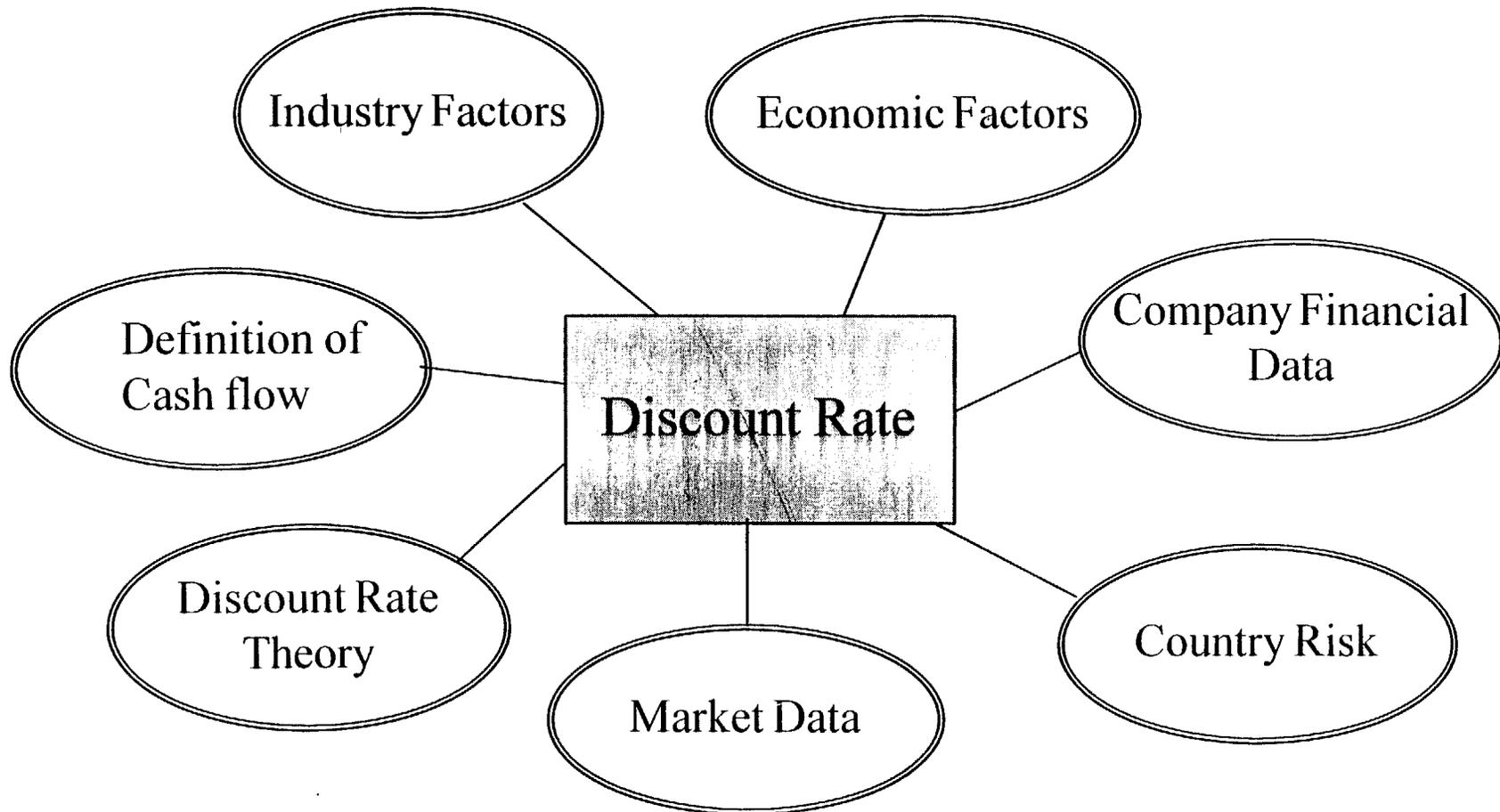
**INCREMENTAL WORKING CAPITAL  
CAPITAL INVESTMENT**



**STEPS**

- ① Select the definition of cash flow to be used.**
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## ***FACTORS TO CONSIDER IN SELECTING THE DISCOUNT RATE***

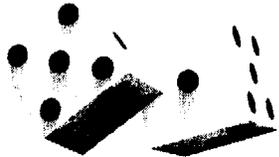


## ***DISCOUNT RATE DEFINITION***

**The term “discount rate” has been defined by the American Society of Appraisers as:**

*a rate of return used to convert a monetary sum, payable or receivable in the future, into present value.*

- **Thus the discount rate is used to determine the amount an investor would pay today (present value) for the right to receive an anticipated stream of payments (e.g., cash flows) in the future.**
- **Generally, in the context of a business valuation, the discount rate is the rate of return that would be required by an investor to purchase the stream of expected benefits (e.g., future cash flows), given the risk of achieving those benefits.**



***Definition...***

- **Risk is generally defined as the degree of certainty or uncertainty as to the realization of expected future returns.**
- **Generally, in the context of a business valuation, the discount rate is the rate of return that would be required by an investor to purchase the stream of expected benefits (e.g., future cash flows), *given the risk of achieving those benefits.***
- **Thus, in terms of a discounted cash flow projection, this can be interpreted as the probability and extent to which the future projections will be realized. *In other words, the risk of achieving the projections.***



## ***DISCOUNTED FUTURE CASH FLOW***

### ***DISCOUNT RATE ANALYSIS -DISCUSSION***

- **The basis for the discount rate must match that of the cash flow being used, for example:**
  - ⇨ **An equity cash flow would use an equity discount rate.**
  - ⇨ **A debt-free cash flow would use the weighted average cost of capital (WACC) discount rate.**
  - ⇨ **If the forecast is on a “real” basis (excluding inflation), then the discount rate must be calculated on a real basis.**
- **Two basic methods to estimate the equity discount rate:**
  - ⇨ **The Capital Asset Pricing Model (CAPM), and**
  - ⇨ **The Build-up Approach.**



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**CAPITAL ASSET PRICING MODEL**

○ **Formula:  $R = R_f + \beta(R_m - R_f)$**

▶ **Where:**

☞ **R = the investor's required rate of return (equity)**

☞  **$R_f$  = the risk free rate**

☞  **$\beta$  = beta**

☞  **$R_m$  = return from the equity market**

☞  **$R_m - R_f$  = the market premium**

○ **In addition to these variables, there are adjustments for applying this method to closely-held companies:**

☞ **small company risk**

☞ **specific company risk**

☞ **country risk**



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**DISCUSSION OF THE COMPONENTS**

- **$R_f$  is based on the risk free rate, either nominal or real. It is typically based on the comparative yield from long-term government bonds. It represents an alternative rate of return to the investor that is risk-free and has liquidity.**
- **Beta is a risk measure that is based on the volatility of the price of the shares of the company compared to the volatility of the market as a whole.**
  - ⇒ **A company whose share price is volatile has more risk for an investor since the price can fall quickly.**
  - ⇒ **Thus, the higher the beta, the higher the risk. The share prices of a company with a beta of 1.5, on average will increase 50% faster than the market, or decline by 50% more than the market. So if the overall market fell by 10%, one would expect this company's shares to fall by 15%.**
  - ⇒ **Betas are typically calculated for an industry to provide a measure of risk for that particular industry.**



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**DISCUSSION OF THE COMPONENTS - continued**

- **Beta can also be estimated by analyzing the economic, industry and financial risk factors of the company.**
- **R<sub>m</sub>, the return from the equity market, is based on historical returns from the shares over a long period.**
- **R<sub>m</sub>-R<sub>f</sub> (the market premium) is thus the amount by which the historical equity returns from the market have exceeded the risk free rate in that market.**
- **Adjustments to the CAPM:**
  - ⇒ **Small company premium:** the data used in calculating the market returns and beta are based on large, publicly-traded companies. Normally, we are valuing small companies. Studies have shown there is a small company premium. (Investors have priced shares of small companies to provide a higher return than the larger companies).



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**DISCUSSION OF THE COMPONENTS - continued**

○ **Adjustments to the CAPM (continued):**

- ⇒ **Specific company premium:** in some cases the company being valued will have specific risks associated with it that will justify an additional risk premium.
- ⇒ **Country risk:** studies of multi-national companies have shown that they add a country risk factor to their required rate of return.

○ **CAPM - equation including adjustments:**

$$R = R_f + \beta(R_f - R_m) + S1 + S2 + C$$

where: S1 = size premium, S2 = specific company risk and C = the country risk.



**WORLD WIDE RISK FREE RATES**

**R<sub>f</sub>**

Country	Long-term Govt. Bond Yields	Consumer Prices:		Real Rate of Return Based on Inflation	
		Current 1995	Projected 1996	Current 1995	Projected 1996
Australia	8.9%	4.0%	3.8%	4.9%	5.1%
Belgium	7.2%	2.1%	2.5%	5.1%	4.7%
Canada	7.9%	2.3%	2.8%	5.6%	5.1%
France	7.3%	1.9%	2.4%	5.4%	4.9%
Germany	6.6%	2.2%	2.6%	4.4%	4.0%
Netherlands	6.7%	2.4%	2.7%	4.3%	4.0%
Italy	12.1%	5.3%	5.8%	6.8%	6.3%
Japan	3.2%	0.2%	0.6%	3.0%	2.6%
Spain	11.3%	5.0%	5.2%	6.3%	6.1%
Sweden	10.4%	3.2%	3.7%	7.2%	6.7%
Switzerland	4.6%	2.4%	2.3%	2.5%	2.3%
UK	8.2%	3.5%	4.1%	4.7%	4.1%
USA	6.1%	3.3%	3.8%	2.8%	2.3%
<b>Average</b>	<b>7.7%</b>	<b>2.9%</b>	<b>3.2%</b>	<b>4.9%</b>	<b>4.5%</b>
<b>Median</b>	<b>7.6%</b>	<b>2.6%</b>	<b>3.0%</b>	<b>5.0%</b>	<b>4.8%</b>
<b>Europe only</b>	<b>8.3%</b>	<b>3.1%</b>	<b>3.5%</b>	<b>5.2%</b>	<b>4.8%</b>

Source: The Economist



**ANALYSIS OF BETAS**

**SELECTED INDUSTRIES**

	<b>GENERAL BUILDING CONTRACTORS</b>	<b>ELECTRIC UTILITIES</b>
<b>NUMBER OF COMPANIES</b>	<b>210</b>	<b>156</b>
<b>AVERAGE BETA</b>	<b>1.88</b>	<b>0.75</b>
<b>PERCENT OVER 1.00</b>	<b>85.0%</b>	<b>29.0%</b>
<b>US</b>	<b>1.44</b>	<b>0.51</b>
<b>UK</b>	<b>2.00</b>	<b>NA</b>
<b>EUROPE (EXCLUDING UK)</b>	<b>2.12</b>	<b>1.07</b>
<b>JAPAN</b>	<b>1.78</b>	<b>1.20</b>
<b>OTHER INDUSTRIES:</b>	<b>BETA</b>	
<b>CONCRETE (56 COMPANIES)</b>	<b>1.76</b>	
<b>TELECOMMUNICATIONS (32)</b>	<b>0.79</b>	

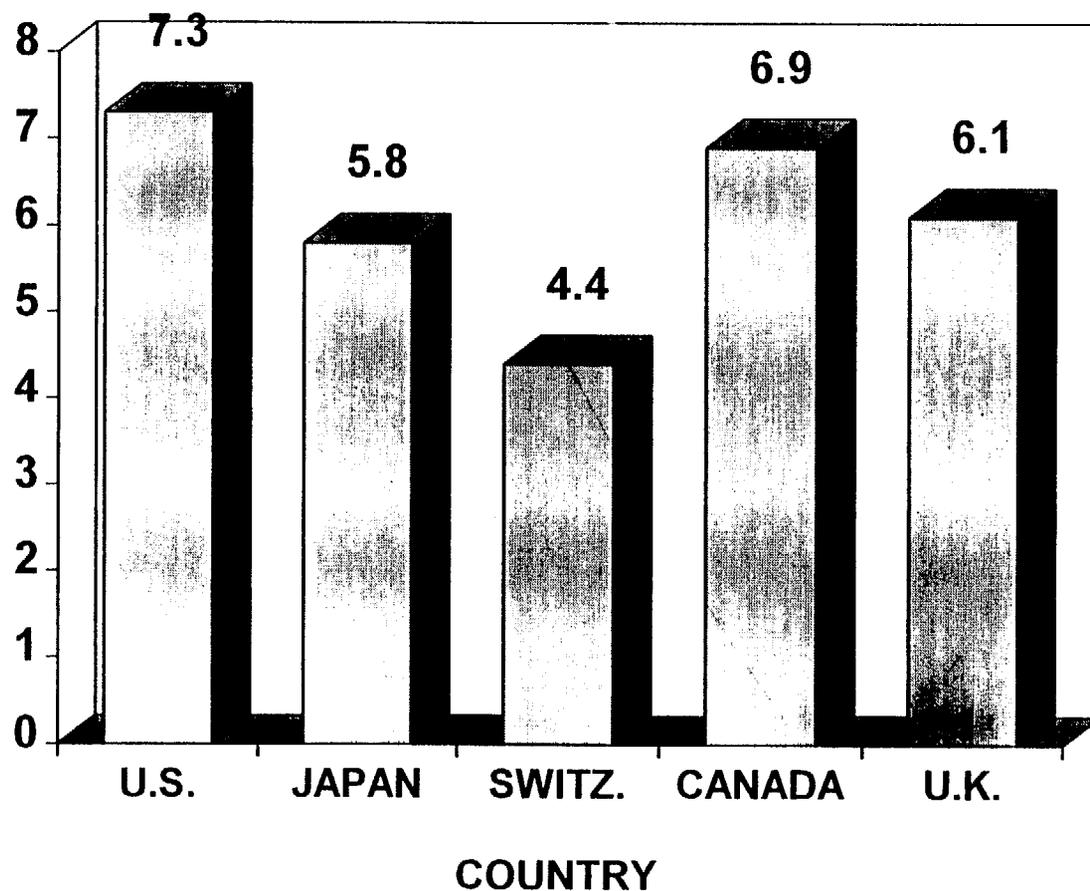




***EQUITY RISK PREMIUMS***

**$(R_m - R_f)$**

**PERCENT  
PREMIUM**



**SOURCE: IBBOTSON & ASSOCIATES**



**EQUITY RISK PREMIUMS  
EUROPE ONLY**

$$(R_m - R_f)$$

<b>COUNTRY</b>	<b>MARKET PREMIUM</b>
<b>U.K.</b>	<b>5.3%</b>
<b>GERMANY</b>	<b>2.1%</b>
<b>ITALY</b>	<b>3.3%</b>
<b>SWITZERLAND</b>	<b>4.3%</b>
<b>FRANCE</b>	<b>4.8%</b>
<b>NETHERLANDS</b>	<b>3.9%</b>
<b>SPAIN</b>	<b>6.1%</b>
<b>AVERAGE</b>	<b>4.3%</b>
<b>AVERAGE (EXCLUDING GERMANY)</b>	<b>4.6%</b>

**BASED ON THE ANNUALIZED MEAN EXCESS RETURN FROM 1988 TO 1993.  
EXCESS RETURN COMPARED TO 10 YEAR GOVERNMENT BONDS.**

**SOURCE: LEHMAN BROTHERS**

## **SAMPLE EQUITY RATE OF RETURN CALCULATIONS USING THE CAPM**

<b>INDUSTRY RISK</b>	<b>LOW</b>	—————▶	<b>AVE.</b>	—————▶	<b>HIGH</b>
<b>RISK FREE RATE</b>	<b>6.5%</b>	<b>6.5%</b>	<b>6.5%</b>	<b>6.5%</b>	<b>6.5%</b>
<b>BETA</b>	<b>0.5</b>	<b>0.75</b>	<b>1.00</b>	<b>1.50</b>	<b>2.00</b>
<b>MARKET PREMIUM</b>	<b>5.0%</b>	<b>5.0%</b>	<b>5.0%</b>	<b>5.0%</b>	<b>5.0%</b>
<b>SMALL CO. PREMIUM (1)</b>	<b>5.0%</b>	<b>5.0%</b>	<b>5.0%</b>	<b>5.0%</b>	<b>5.0%</b>
<b>NOMINAL COST OF EQUITY</b>	<b>14.0%</b>	<b>15.3%</b>	<b>16.5%</b>	<b>19.0%</b>	<b>21.5%</b>
<b>REAL COST OF EQUITY (2)</b>	<b>11.0%</b>	<b>12.3%</b>	<b>13.5%</b>	<b>16.0%</b>	<b>18.5%</b>
<b>PLUS: SPECIFIC CO. RISK</b>	?	?	?	?	?
<b>PLUS: COUNTRY RISK</b>	?	?	?	?	?

(1) The small stock premium in the Ibbotson study was 5.1%, representing the smallest 10% of stocks on the U.S. markets.

(2) Based on a real risk free rate of 3.5%.



## ***DISCOUNT RATE ANALYSIS BUILD-UP APPROACH***

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- **As with the CAPM, the Build-up approach begins with an estimate of the risk-free rate.**
- **A premium for investing in a closely-held business is added to the risk-free rate. The premium represents the amount the investor would demand to invest in the business instead of the risk-free investment.**
- **Guidelines for establishing premiums have been published in appraisal journals.**
- **Examples.**



**BUILD-UP APPROACH  
RISK PREMIUM CATEGORIES**

<b>SUGGESTED PREMIUMS FOR SPECIFIC COMPANY RISKS</b>	
<b>SPECIFIC RISK</b>	<b>LIKELY RANGE</b>
Key man; management quality/depth	0-5%
Size of the company	0-5%
Financial structure	0-5%
Product/geographical diversification	0-5%
Customer diversification	0-5%
Earnings: margins and historical predictability	0-5%
Other specific risks	0-5%
<p><b>SOURCE: Business Valuation Review, December, 1992.</b>  <b>"The Adjusted Capital Asset Pricing Model for Developing Capitalization Rates: An Extention of Previous Build-Up Methodologies Based Upon the Capital Asset Pricing Model."</b></p>	

## **BUILD-UP APPROACH AN EXAMPLE**

<b>FACTOR</b>	<b>AMOUNT</b>	<b>COMMENT</b>
<b>RISK FREE RATE</b>	<b>6.5%</b>	
<b>KEY MAN RISK</b>	<b>2.0%</b>	<b>THE COMPANY IS NOT DEPENDENT ON 1 KEY MAN; HOWEVER THERE IS NO MANAGEMENT DEPTH</b>
<b>COMPANY SIZE</b>	<b>0.0%</b>	<b>THE COMPANY IS VERY LARGE; ENJOYS A MONOPOLY</b>
<b>FINANCIAL STRUCTURE</b>	<b>5.0%</b>	<b>THE COMPANY HAS A HIGH AMOUNT OF DEBT; TWICE THE INDUSTRY AVERAGE.</b>
<b>PRODUCT/GEOGRAPHICAL DIVERSIFICATION</b>	<b>2.0%</b>	<b>THE COMPANY RELIES ON ONE PRODUCT FOR ALL SALES; HOWEVER, IT SELLS ON BOTH THE DOMESTIC AND EXPORT MARKETS.</b>
<b>CUSTOMER DIVERSIFICATION</b>	<b>4.0%</b>	<b>80% OF SALES LAST YEAR WERE TO ONLY 5 CUSTOMERS, WITH THE LARGEST ACCOUNTING FOR 35%.</b>
<b>EARNINGS: MARGINS AND PREDICTABILITY</b>	<b>3.0%</b>	<b>LACK OF A HISTORY BEYOND 2 YEARS OLD MAKES PREDICTABILITY DIFFICULT.</b>
<b>OTHER RISKS</b>	<b>0.0%</b>	<b>NO OTHER SPECIFIC COMPANY RISKS.</b>
<b>ESTIMATED EQUITY DISCOUNT RATE (BEFORE COUNTRY RISK)</b>	<b>22.5%</b>	

- Discussion so far has focused on the equity rate of return which is applied to the equity cash flow.
- If the cash flow forecast is based on a debt-free approach, then the Weighted Average Cost of Capital (WACC) must be used to discount the future cash flow.
- The WACC is based on:
  - the cost of equity and debt for the firm, and
  - the amount of total capital each component has in the capital structure.
- Example WACC calculation.

## EXAMPLE WACC CALCULATION

**FACTORS:**

EQUITY RATE OF RETURN	20.0%	DETERMINED BY CAPM OR BUILD UP APPROACH
COST OF DEBT	10.0%	BASED ON COMPANY COST OF DEBT
TAX RATE	45.0%	COMPANY RATE
AFTER TAX COST OF DEBT	5.5%	COST OF DEBT TIMES (1-TAX RATE)
DEBT TO TOTAL CAPITAL RATIO	30.0%	INDUSTRY, COMPANY OR BUYER LEVEL

**FORMULA:**

$W1 \cdot E + W2 \cdot D$

**WHERE:**

- W1 = PERCENT OF TOTAL CAPITAL THAT EQUITY REPRESENTS                      E = COST OF EQUITY
- W2 = PERCENT OF TOTAL CAPITAL THAT LONG-TERM DEBT REPRESENTS      D = COST OF DEBT (AFTER TAX)

**CALCULATION:**

$(70\% \cdot 20\%) + (30\% \cdot 5.5\%) = 15.7\%$

USED TO DISCOUNT A DEBT FREE CASH FLOW  
 RESULTS IN THE VALUE OF THE INVESTED CAPITAL (INTEREST BEARING DEBT PLUS EQUITY).  
 TO ARRIVE AT EQUITY VALUE, INTEREST BEARING DEBT MUST BE SUBTRACTED.

## ***DISCOUNT RATE ANALYSIS COUNTRY RISK ADJUSTMENT***

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- **If the buyer is from a foreign country, then he faces additional risks, including:**
  - **foreign currency risk**
  - **loss of assets through expropriation/nationalization**
  - **restrictions on flows of capital**
  - **price controls**
  - **and many other factors**
- **The foreign buyer will account for this increased risk by adjusting either:**
  - **cash flow (reduce amount)**
  - **the payback period (shorten)**
  - **the discount rate (increase)**
- **Studies of multi-national companies have provided details regarding the amount of country risk.**
- **Does a local buyer have country risk?**

## **COUNTRY RISK ADJUSTMENT STEPS**

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- 1. Determine the country risk factors.**
  - publications have provided guidelines concerning the important country risk factors.
- 2. Quantify the country risk factors.**
  - analyze the factors and assign values to arrive at an overall country risk rating.
- 3. Incorporate the country risk into the discount rate.**
  - studies have provided guidelines as to how much to increase the discount rate based on the riskiness of the country.
- 4. See discount rate handout.**

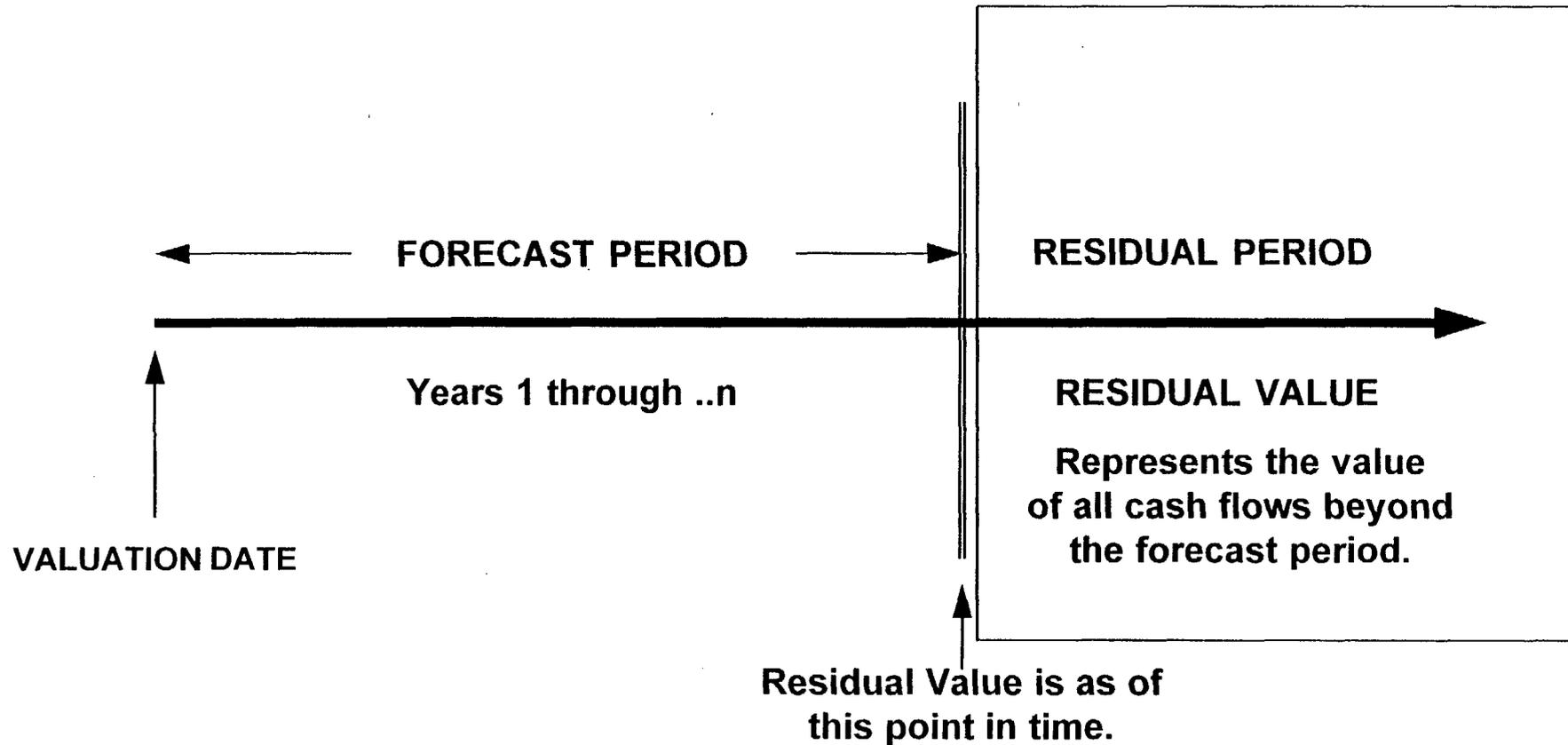
**STEPS**

- ① Select the definition of cash flow to be used.
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## **DISCOUNTED FUTURE CASH FLOW**

**Calculate the residual value: components.**



## ***DISCOUNTED FUTURE CASH FLOW Residual Value Analysis***

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### **○ METHODS OF CALCULATION.**

- ⇨ **GORDON MODEL** (*also known as the Dividend Discount Model, DDM*).
- ⇨ **ASSUMED SALE.**
- ⇨ **NET ASSET VALUE.**
- ⇨ **LIQUIDATION VALUE.**

- ① The *Gordon Model* assumes continued ownership of business.
  - ② The *Assumed Sale* method is based on some multiple of cash flow or earnings at the end of the forecast.
- **Key assumptions for both the Gordon Model and Assumed Sale methods:**
- ⇨ Depreciation and capital expenditures should be equal in the residual period.
  - ⇨ Length of forecast period must be until a stable level of growth is achieved; the residual period must assume a long-term stable growth rate.



## ***DISCOUNTED FUTURE CASH FLOW Residual Value Analysis, Continued***

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### ***The Gordon Model:***

#### **○ COMMENTS:**

- ✧ This formula represents the value of all cash flows remaining beyond the end of the forecast period.
- ✧ The value is as of the end of the forecast period, thus the residual value must be discounted to arrive at its present value.
- ✧ The model assumes a constant growth in cash flow.
- ✧ The conclusion provided by the Gordon Model should be close to the same answer as if continuing the cash flow model into infinity.

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#### **○ FORMULA:**

$$\frac{\text{CASH FLOW IN THE RESIDUAL PERIOD}}{(\text{DISCOUNT RATE} - \text{LONG-TERM GROWTH RATE})^*}$$

\* represents the long-term growth rate in cash flow.

## ***DISCOUNTED FUTURE CASH FLOW GORDON MODEL - EXAMPLE***

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- Cash flow in year 5 equals 1,000
- Expected long-term growth in cash flow is 3%.
- The equity discount rate is 20%
- Residual value calculation:

$$\frac{(1,000 * 1.03)}{(.20-.03)} = 6,059$$



## ***DISCOUNTED FUTURE CASH FLOW***

### **STEPS**

- ① Select the definition of cash flow to be used.**
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## **DISCOUNTED FUTURE CASH FLOW**

### **PRESENT & FUTURE VALUE**



- **Present Value Theory:**
  - ⇒ is based on the fact that one can invest \$1 today and, through investment return on that \$1, receive more than \$1 in the future.
- **Example:** if you invested \$1 today to earn 10%, in one year your investment would be worth \$1.10. The *future value* in this case would be \$1.10 and the *present value* is \$1.00
- **Conversely,** if you knew that you would receive \$1.10 in the future, and your required rate of return was 10%, what amount would that future \$1.10 be worth to you today?



## **DISCOUNTED FUTURE CASH FLOW**

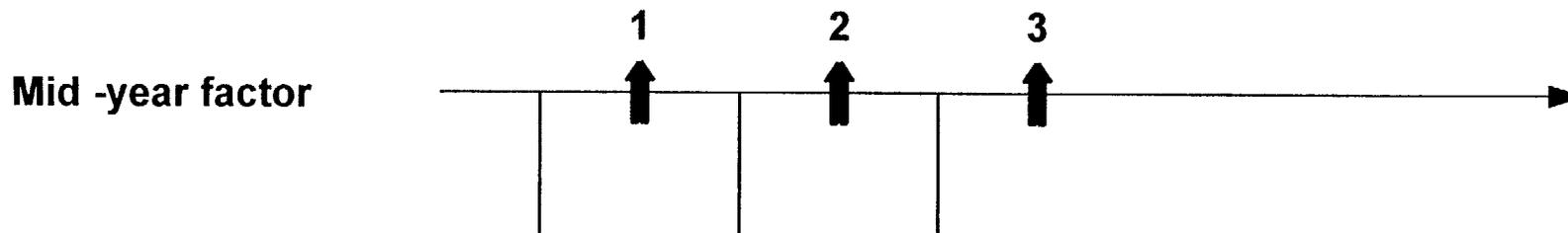
### **TIME VALUE OF MONEY - TIMELINE**

Year:



Cash flow is received at the end of each period.

Year:



Cash flow is assumed to be received evenly during the year. For calculation purposes cash flow is assumed to be distributed at the mid-point of the year.



## **DISCOUNTED FUTURE CASH FLOW**

### **PRESENT VALUE FORMULA END-OF-YEAR & MID-YEAR FACTORS**

**End-of-year formula:**

$$\text{PVF} = \frac{1}{(1+r)^n}$$

**Mid-year formula:**

$$\text{PVF} = \frac{1}{(1+r)^{(n-.5)}}$$

**Where: PVF = present value factor**

**r = discount rate**

**n = number of periods**

**Example calculations:**

**End-of-year**

**Mid-year**

**Beginning period is less than 1 year**



**STEPS**

- ① Select the definition of cash flow to be used.**
- ② Analyze revenues and prepare the revenue forecast.**
- ③ Analyze expenses and prepare an expense forecast.**
- ④ Analyze investments and prepare an investment forecast.**
- ⑤ Calculate cash flow for each year.**
- ⑥ Determine the appropriate discount rate.**
- ⑦ Calculate the residual value.**
- ⑧ Calculate the present value of the future cash flows and residual value and sum.**
- ⑨ Make any final adjustments.**
- ⑩ Perform review procedures.**



## ***DISCOUNTED FUTURE CASH FLOW***

### ***FINAL ADJUSTMENTS***

- After summing the present values of the future cash flows and residual value, that figure represents the value of the operations of the business.
  - It does not include the value of “excess assets” or non-operating assets that did not contribute to producing the cash flow.
  - These assets must be separately valued and added to the value resulting from the business cash flow.
- If the company has excess working capital, this amount should be added to the value of the business operations (a working capital deficiency would be deducted).
- Potential environmental liabilities may exist and might need to be deducted from the value.
- Social assets: assumptions regarding the sale of these assets, the use of the proceeds and the resulting impact on the labor force must be carefully considered. In some cases the value of the social assets is added, in others it is not.
- The DCF model typically results in the value of a 100% ownership in the business. If a minority interest is being valued, a minority interest discount is applied.



**STEPS**

- ① Select the definition of cash flow to be used.**
- ② Analyze revenues and prepare the revenue forecast.**
- ③ Analyze expenses and prepare an expense forecast.**
- ④ Analyze investments and prepare an investment forecast.**
- ⑤ Calculate cash flow for each year.**
- ⑥ Determine the appropriate discount rate.**
- ⑦ Calculate the residual value.**
- ⑧ Calculate the present value of the future cash flows and residual value and sum.**
- ⑨ Make any final adjustments.**
- ⑩ Perform review procedures.**

## ***DISCOUNTED FUTURE CASH FLOW REVIEW PROCEDURES***

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- **Consider forecast in units compared to available capacity.**
- **Consider the price forecast compared to prices for the product in other countries. Also consider government pricing regulations.**
- **Compare forecasted margins to historical.**
- **Compare forecasted margins to similar companies.**
- **Compare old forecasts to actual results.**
- **Compare old forecasts to current forecasts for the same period.**



***DISCOUNTED CASH FLOW  
WHAT DOES THE ANSWER REPRESENT?***

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- A debt-free cash flow model results in the value of the invested capital. Interest bearing debt must be subtracted to arrive at the equity value.
- An equity cash flow model results in the value of the owner's equity.
- The value provided by the cash flow model represents the value of a controlling interest in the business.
- No marketability discount is required.
- If valuing a minority interest, then a minority discount is required.



## ***DISCOUNTED FUTURE CASH FLOW PROBLEMS IN DEVELOPING ECONOMIES***

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- HISTORICAL DATA AVAILABILITY AND RELEVANCE.
- LACK OF SOPHISTICATED MANAGEMENT.
- TOTAL CHANGE IN THE COMPANY PROFILE, MARKETS AND ECONOMY.
- IMPACT OF HYPER-INFLATION.
- FOREIGN EXCHANGE CONSIDERATIONS.
- DISCOUNT RATE SELECTION.
- SOCIAL ASSETS.
- CAPITAL EXPENDITURES.



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***Guideline Company Approach:  
Capital Market Method  
Transaction Method  
Industry Pricing Method***

## **GUIDELINE COMPANY APPROACH OVERVIEW**

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- ***CAPITAL MARKET METHOD*** - based on prices paid for shares of similar companies on the world stock markets.
- ***TRANSACTION METHOD*** - based on prices paid for acquisitions of controlling interests in similar companies.
- ***INDUSTRY PRICING METHOD*** - based on special formulas or pricing guidelines used in certain industries, based on observations of sales of companies in those industries.



## **GUIDELINE COMPANY APPROACH CAPITAL MARKET METHOD - OVERVIEW**

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- **Theory**
  - **Data required**
  - **Sources of data**
- **Selection of “guideline” or comparable companies**
  - **Financial Analysis and comparison**
  - **Selection and calculation of valuation multiples**
  - **Application to the company being valued**
  - **Result - what value level does the answer represent?**
  - **Final adjustments to consider**



## ***GUIDELINE COMPANY APPROACH CAPITAL MARKET METHOD***

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- ***Theory:*** This approach is based on the market prices of shares of similar companies; an investor, under the principle of substitution (or alternative investment), can invest in these companies, or the company being valued. The publicly-traded companies, therefore, with proper adjustments, should provide a guideline for determining the price of a private company.
- ***Data Required:*** To apply this method, detailed financial and market pricing information for a comparable group of companies is required.
- ***Sources of Data:*** Compustat, Lotus One Source and Disclosure World Scope are examples of computer databases that are available on a subscription basis.

## **GUIDELINE COMPANY APPROACH CAPITAL MARKET METHOD - OVERVIEW**

---

- Theory
- Data required
- Sources of data
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## **GUIDELINE COMPANY APPROACH** **CAPITAL MARKET METHOD**

- **Selection of Guideline Companies:**
  - Identification
  - Similar industry
  - Similar products
  - Diversification of products/industries
  - Maturity of operations, for example the stage of development
  - Geographic considerations
  - Size considerations
  - Operating strategies
  - Financial characteristics (for example, profitability, growth, etc.)
  - What is an appropriate sample size?

## **GUIDELINE COMPANY APPROACH CAPITAL MARKET METHOD - OVERVIEW**

---

- Theory
- Data required
- Sources of data
- Selection of “guideline” or comparable companies
- **Financial Analysis and comparison**
- Selection and calculation of valuation multiples
- Application to the company being valued
- Result - what value level does the answer represent?
- Final adjustments to consider



## **GUIDELINE COMPANY APPROACH CAPITAL MARKET METHOD**

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- **Financial Analysis and Comparison**
  - is just as important in applying the Capital Market method as in the Discounted Cash Flow method.
  - provides information regarding the riskiness of the business, which in turn helps determine the appropriate value of the valuation multiple.
  - consists of financial analysis focusing on:
    - » leverage ratios (capital structure)
    - » working capital ratios (liquidity)
    - » common size balance sheet comparison
    - » common size income statement comparison
    - » operating ratios (return on assets, return on equity, etc.)
    - » growth expectations
- The financial analysis and comparison must be made giving consideration to the differences in accounting and business practices in the country in question compared to other countries.

## **GUIDELINE COMPANY APPROACH CAPITAL MARKET METHOD - OVERVIEW**

---

- Theory
- Data required
- Sources of data
- Selection of “guideline” or comparable companies
- Financial Analysis and comparison
- Selection and calculation of valuation multiples
- Application to the company being valued
- Result - what value level does the answer represent?
- Final adjustments to consider



## **GUIDELINE COMPANY APPROACH CAPITAL MARKET METHOD**

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- **Selection and calculation of the valuation multiples:**
  - price-to-earnings (P/E) ratio: one of the most common valuation ratios; results in the value of the equity.
  - price-to-cash flow (P/CF) ratio: results in the value of the equity based on the available cash flow (typically measured as net income plus depreciation)
  - price of the invested capital (equity plus interest bearing debt) to earnings before depreciation, interest and tax. (IC/EBDIT). Results in the value of the invested capital. To arrive at equity value, interest bearing debt must be subtracted).
  - the price-to-earnings and price-to-cash flow ratios can be based on pretax levels.
  - price-to-book value: provides the value of the equity, but is based on net asset value rather than earnings or cash flow.
  - *a country risk adjustment to the multiple is usually applied.*
- Discussion of the advantages & disadvantages and application of the common valuation multiples.

**CAPITAL MARKET METHOD  
EXAMPLES OF VALUATION MULTIPLES**

**Income Statement**

Sales	45,000
Expenses	<u>35,000</u>
Operating profit	10,000
Depreciation	<u>5,600</u>
Earnings before interest and tax (EBIT)	4,400
Interest	<u>400</u>
Earnings before tax	4,000
Tax	<u>1,600</u>
Net Earnings	2,400
<b>Cash flow:</b>	
Net earnings plus depreciation	8,000
<b>Pretax cash flow:</b>	
Earnings before tax plus depreciation	9,600

**Value of Equity = 36,000**

**Valuation Multiple =**

→	9.0
→	15.0
→	4.5
→	3.8



## **GUIDELINE COMPANY APPROACH CAPITAL MARKET METHOD - OVERVIEW**

- Theory
- Data required
- Sources of data
- Selection of “guideline” or comparable companies
- Financial Analysis and comparison
- Selection and calculation of valuation multiples
- Application to the company being valued
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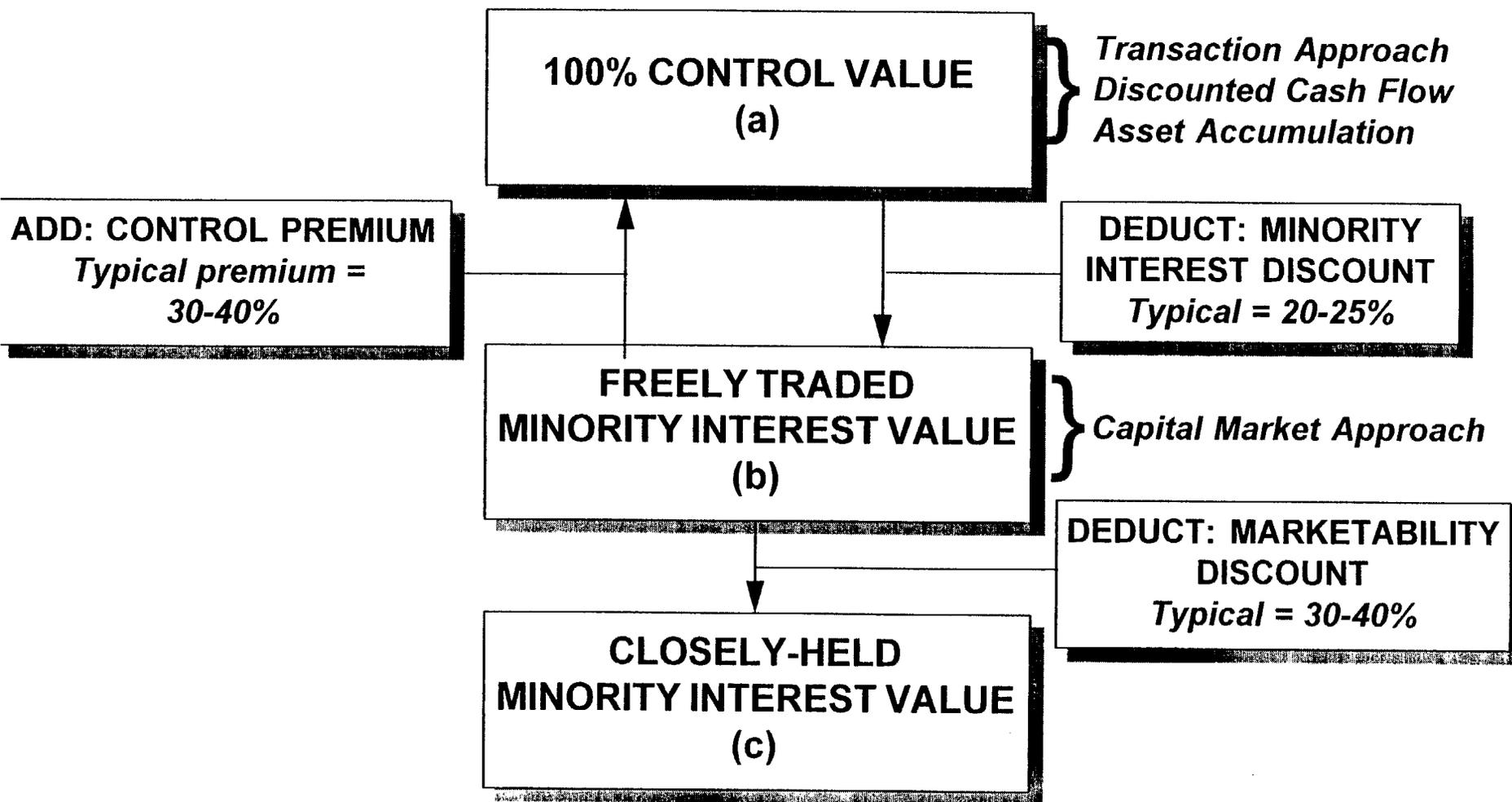


## **GUIDELINE COMPANY APPROACH CAPITAL MARKET METHOD**

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- **Valuation of the Subject Company:** - the selected multiples should be applied to the appropriate financial data of the subject company, on a basis consistent with the way the multiple for the public companies was calculated.
  - for example:
    - » a price-to-pretax earnings ratio should not be applied to the after tax earnings of the company being valued.
    - » in some cases, price-to-earnings ratios are calculated based on an average of several years earnings; the ratio should be applied to the same period of average earnings for the company being valued.
- **Result:**
  - The value reached using the capital market method represents the value of a minority ownership in the business;
  - It also represents a value that is freely marketable
  - Thus a control premium and marketability discount must be applied to arrive at a value for a controlling interest in a private company.

## **RELATIONSHIP BETWEEN MINORITY & CONTROL LEVELS OF OWNERSHIP**



## ***RELATIONSHIP BETWEEN MINORITY & CONTROL LEVELS OF OWNERSHIP***

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- *Point a:* Represents the value of the entire business as if for sale. Typically derived from:
  - (1) Capital market approach, after adding a control premium
  - (2) Transaction approach
  - (3) Discounted cash flow approach (assuming cash flow is at a control level), or
  - (4) Asset based approaches.
- *Point b:* Typically arrived at by using the capital market approach. Represents the value of a freely-traded, minority interest in the business. Can also be arrived at by deducting a minority interest discount from the transaction, discounted cash flow and asset based valuation approaches.
- *Point c:* Represents the value of a non-traded, minority interest in a privately owned company. Derived through the capital market approach less a marketability discount, or through the transaction, discounted cash flow , or asset based approaches less a combined minority and marketability discount.

## **GUIDELINE COMPANY APPROACH CAPITAL MARKET METHOD - OVERVIEW**

---

- Theory
- Data required
- Sources of data
- Selection of “guideline” or comparable companies
- Financial Analysis and comparison
- Selection and calculation of valuation multiples
- Application to the company being valued
- Result - what value level does the answer represent?
- Final adjustments to consider



## **GUIDELINE COMPANY APPROACH CAPITAL MARKET METHOD**

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- ***Final Adjustments:***
  - the value of non-operating, or excess assets must be added to the value of the business operations as determined by the cash flow method.
    - » examples include:
      - real estate not in use, or idle facilities
      - social assets (assuming adjustments have been made in the forecasts for costs, if required; and assuming they can be sold).
  - any excess working capital should be added; conversely, a working capital deficit would be subtracted.
  - consideration should be given to environmental liability, if any



**PRICE-EARNINGS RATIOS  
SELECTED INDUSTRIES (1993)**

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<b>Industry</b>	<b>P/E Ratio</b>
<b>Motors</b>	<b>27.0</b>
<b>Building materials</b>	<b>24.9</b>
<b>Hotels &amp; leisure</b>	<b>20.3</b>
<b>Electronics</b>	<b>19.4</b>
<b>Brewers &amp; distillers</b>	<b>15.3</b>
<b>Electricity</b>	<b>9.4</b>

•DATA IS FROM THE LONDON STOCK EXCHANGE

*Source: London Business School, Risk Management Services*



**PRICING DATA FROM VARIOUS  
WORLD MARKETS**

EMERGING MARKETS		MAJOR WORLD MARKETS			EFFECT OF EXPECTED GROWTH		
COUNTRY	P/E RATIOS	COUNTRY	P/E RATIOS	P/CF RATIOS	COUNTRY	P/CF RATIOS	GROWTH (1) 94-96
TAIWAN	24.0	JAPAN	64.6	9.8	FINLAND	13.3	53.3%
INDIA	19.0	ITALY	37.0	4.8	SWEDEN	14.9	29.2%
MALAYSIA	18.0	AUSTRIA	32.1	5.8	JAPAN	9.8	20.5%
INDONESIA	18.0	GERMANY	25.0	5.4	NORWAY	6.5	17.1%
ISRAEL	18.0	FRANCE	23.2	7.6	AUSTRIA	5.8	14.9%
PERU	17.0	US	19.1	8.7	FRANCE	7.6	12.7%
KOREA	16.0	UK	19.0	9.6	BELGIUM	6.6	12.6%
CHILE	15.9	BELGIUM	18.6	6.6	NETHERLANDS	6.5	11.0%
PORTUGAL	15.0	SWITZERLAND	16.4	8.4	SWITZERLAND	8.4	10.7%
THAILAND	15.0	NETHERLANDS	14.9	6.5	DENMARK	9.3	10.7%
SRI LANKA	13.9	SPAIN	13.7	4.9	GERMANY	5.4	10.6%
VENEZUELA	13.3	NORWAY	NA	6.5	UK	9.6	10.3%
BRAZIL	13.0	SWEDEN	NA	14.9	SPAIN	4.9	10.0%
HONG KONG	12.6	FINLAND	NA	13.3	ITALY	4.8	10.0%
PHILIPPINES	12.3	DENMARK	NA	9.3	US	8.7	7.1%
ARGENTINA	12.0						
COLOMBIA	11.0	AVERAGE	25.8	8.1	AVERAGE	8.1	
MEXICO	11.0	MEDIAN	19.1	7.6	MEDIAN	7.6	
PAKISTAN	10.0	AVERAGE (EXCL. JAPAN)	21.9	6.8	(1) FORECASTED GROWTH IN EARNINGS AND DIVIDENDS.		
TURKEY	9.5				R SQUARE OF ABOUT 50%		
GREECE	9.4						
AVERAGE	14.5						
MEDIAN	13.9						

## GUIDELINE COMPANY APPROACH TRANSACTION METHOD

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- **Theory:** Based on an analysis of the prices paid for acquisitions of controlling interests in similar companies.
- **Sources of data:** Mergerstat Review, Acquisitions Monthly
- **Selection of comparable companies:** Same as the capital market method; based on similar industry, products, etc.
- **Financial analysis and comparison:** As with the capital market method, the financial analysis should help in determining the appropriate figure for the valuation multiple.
- **Selection and calculation of valuation multiples:** Typically, due to the lack of data, this approach is limited to price/earnings and price/book multiples.
- **Result:** The major difference between this and the capital market method is that the answer provided by the transaction method represents a control level of value, not a minority level.
- **Adjustments:** As with the capital market method, adjustments for non-operating assets, excess assets, working capital surplus or shortage and country risk must be considered.



**EXAMPLE - TRANSACTIONS IN THE CEMENT INDUSTRY**

SELLING COMPANY	COUNTRY	YEAR	% ACQUIRED	PRICE TO EARNINGS RATIO
AUXILIAR DE LA CONSTRUCCION SA	SPAIN	1990	50.0%	11.1
MINERA, FINANCIERA Y INVERYESO	SPAIN	1990	100.0%	19.4
CH INDUSTRIALS PLC	SPAIN	1990	65.0%	22.3
CIMENTS FRANCAIS SA	UK	1990	100.0%	16.2
CIMENTS D'OBourg SA	FRANCE	1991	70.3%	7.9
LARFARGE-COPPEE SA	BELGIUM	1991	40.0%	14.4
ORIGNY SA, GROUP	FRANCE	1991	5.0%	9.2
CEMENTIR SPA	FRANCE	1991	10.4%	10.8
CIVIL AND MARINE LTD	ITALY	1992	51.8%	40.3
CEMENTOS DEL MAR SA	UK	1992	100.0%	10.0
AUXILIAR DE LA CONSTRUCCION SA	SPAIN	1992	50.0%	9.4
VALENCIANA DE CEMENTOS PORTLAND SA	SPAIN	1992	92.0%	7.0
NOROESTE SA, CORP.	SPAIN	1992	100.0%	15.8
CALIFORNIA PORTLAND CEMENT CO.	SPAIN	1992	100.0%	25.3
	US	1990	19.0%	28.2
<b>AVERAGE</b>				<b>15.7</b>
<b>MEDIAN</b>				<b>14.4</b>

## **INDUSTRY PRICING METHODS SELECTED EXAMPLES**

- **Advertising agencies - 75% of annual revenues.**
- **Accounting firms - 90% to 150% of annual billings.**
- **New car seller - 50% of annual adjusted earnings, plus inventory, fixtures and equipment.**
- **Auto rental - number of cars times \$1,000**
- **Bakeries - 15% of annual sales plus fixtures, equipment and inventory.**
- **Beer taverns - 1-1.5 times annual adjusted earnings, plus inventory**
- **Coffee shop - 4 times monthly gross sales, plus inventory**
- **Drug store - 75% of annual adjusted earnings, plus fixtures, equipment and inventory**
- **Movie theater - 4 times annual adjusted earnings (<1000 seats)**
- **Pizza shop - 4 times monthly gross sales, plus inventory**
- **Taxi - 80% of annual adjusted earnings**

*Source: Handbook of Business Valuation*



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# ***Asset Accumulation Approach***

**STEPS**

- ① Begin with historical balance sheet**
- ② Restate based on accounting adjustments**
- ③ Restate financial assets to net realizable value**
- ④ Appraise tangible property at fair market value**
  - real estate and improvements**
  - machinery and equipment**
- ⑤ Identify and value intangible assets**
- ⑥ Restate liabilities to current value; (and add any unrecorded liabilities)**
- ⑦ Equity value = FMV of total assets less current value of all liabilities**

## **ASSET ACCUMULATION APPROACH FINANCIAL ASSETS**

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- ***Accounts Receivable*** - usually are valued by examining an aging schedule, with an amount over a certain number of days past due written off partly or entirely.
- ***Inventory*** - obsolete inventory is written down. Inventory is usually valued at cost. However, in some cases, value is based on expected selling price, less costs to sell, less a profit portion for the seller.
- ***Investments*** - can include stocks, bonds, real estate, etc. Value is based on market; however, in some cases this may require a valuation of the shares of private companies in which the company owns an interest.
- ***Prepaid expenses*** - are generally valued at face value if the associated benefit still exists.
- ***Loans receivable*** - typically valued by discounting future principal and interest payments to their present value, based on a discount rate reflecting the risk of collecting the future payments.



## **ASSET ACCUMULATION APPROACH VALUATION OF TANGIBLE ASSETS**

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- **Valuation of real estate and improvements**
  - based on cost, market and income approaches
  - considers highest and best use of the property
  - should be performed by a qualified real estate appraiser
- **Valuation of machinery and equipment**
  - based primarily on cost and market approaches
  - in addition to depreciation due to the age of the assets, consideration should also be given to the functional, technical and economic obsolescence that may exist in the business
  - should be performed by a qualified equipment appraiser
- **Assistance provided the business valuation expert by the asset appraisers:**
  - identification of excess capacity, non-operating assets, requirements for capital expenditures -- this data is important for the other business valuation approaches

## **ASSET ACCUMULATION APPROACH VALUATION OF REAL ESTATE ASSETS**

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- **Market approach**: the value is based on a selection of comparable properties that have sold in the area; a price per square meter or hectare is developed from this data to apply to the subject property.
- **Cost approach**: the value is based on the estimated construction costs (based on current costs, or trending historical costs) required to duplicate the buildings and improvements. Depreciation is then applied to reflect the age and utility of the buildings and improvements. The value of the land is then added to determine the total value of the property.
- **Income approach**: based on the expected future revenues, expenses and income that would result from leasing the property to a third party. The conclusion under this approach includes the value of the buildings, improvements and land.

## **ASSET ACCUMULATION APPROACH VALUATION OF MACHINERY AND EQUIPMENT**

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- Typically valued using the replacement cost approach
- Replacement costs new are estimated by trending historical costs, estimating capacity replacement costs, or using secondary market prices
- Adjustments are then made for the following:
  - physical obsolescence
  - functional obsolescence
  - technical obsolescence
  - economic obsolescence
- This is a “value in use” concept, not a market value of all the equipment as if it were sold on an individual basis.
- Difference between “replacement cost” and “reproduction cost”

**ASSET ACCUMULATION APPROACH  
DESCRIPTION OF OBSOLESCENCE FACTORS**

**PHYSICAL OBSOLESCENCE**

Physical deterioration is a loss in value of the property brought about by wear and tear, disintegration, use in service and all physical factors that reduce the life and serviceability of the property.

**FUNCTIONAL OBSOLESCENCE**

Functional obsolescence is a loss in value of the property caused by the inability of the property to adequately perform the function for which it was intended. Functional obsolescence is thus internal to the property and is related to such factors as design or production inefficiencies, excess operating costs, etc.

**TECHNOLOGICAL OBSOLESCENCE**

Technological obsolescence (a form of functional obsolescence) is a loss in value due to changes in technology which cause the asset to be less productive, more costly to operate, etc.

**ECONOMIC OBSOLESCENCE**

Economic obsolescence is a loss in value of the asset caused by external forces such as changes in the economics of the operation, reduced demand for the product, increased competition, etc.



## **ASSET ACCUMULATION APPROACH VALUATION OF INTANGIBLE ASSETS**

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### **CONCEPT OF GOODWILL**

- **Goodwill is created when a company has strong, stable earnings, with an above average return on assets (or equity), so that the value of the business (based on expected earnings or cash flow) exceeds the underlying net asset value.**
  - **Thus goodwill is the amount by which the value of the business exceeds the value of the underlying, tangible assets.**
- **Goodwill value includes: excess earnings, intangible assets and going concern value.**
- **Going concern value is the value of the systems, procedures and trained workforce that brings together the assets in place and creates an operating business. Without a going concern, you would just have a collection of assets not producing a product for a profit.**

**ASSET ACCUMULATION APPROACH**  
**EXAMPLES OF INTANGIBLE ASSETS**

**Contracts**  
**Proposals**  
**Favorable leases**  
**Noncompete agreements**  
**Trademarks**  
**Technical libraries**  
**Copyright**  
**Management know-how**  
**Engineering drawings/plans**

**Patents**  
**Going-concern value**  
**Trained workforce**  
**Customer lists**  
**Tradenames**  
**Computer software**  
**Formulas**  
**Access to markets**

## **ASSET ACCUMULATION APPROACH VALUATION OF INTANGIBLE ASSETS**

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- **Cost approach**
    - cost to reproduce the asset
  - **Income approach**
    - projected incremental cash flow
    - projected incremental cost savings
  - **Market approach**
    - comparable sales transactions
    - comparable royalty rates
- 
- **Remaining life of the asset a key factor**
    - contractual life
    - economic life

**ASSET ACCUMULATION APPROACH  
EXAMPLE**

<b><u>ASSETS</u></b>	<b><u>31-12-93</u></b>	<b><u>ADJUSTMENTS</u></b>	<b><u>BALANCE SHEET</u></b>	<b>FMV</b>
Cash	1,000			1,000
Receivables	7,500	-800		6,700
Current assets	8,500	-800		7,700
Notes receivable	5,000	-500		4,500
Land and buildings	15,000	5,000		20,000
Equipment	20,000	-2,000		18,000
Goodwill/intangibles		4,000		4,000
Total assets	48,500	5,700		54,200
<b><u>LIABILITIES &amp; EQUITY</u></b>				
Current liabilities	6,000			6,000
Long-term debt	25,000			25,000
Total liabilities	31,000			31,000
Equity	17,500	5,700		23,200
Total liab. & equity	48,500	5,700		54,200



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# ***Reaching a Conclusion: Selecting the Appropriate Approaches***



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**DISCOUNTED CASH FLOW APPROACH**

• **Advantages:**

- the only method that incorporates future expectations regarding prices, costs, investment, etc.
- does include an aspect of market data through a market derived required rate of return (discount rate).
- provides a measure of economic obsolescence.

• **Disadvantages:**

- difficulty in developing a forecast.
- speculative in nature.



## **VALUATION METHODS ADVANTAGES AND DISADVANTAGES**

### **GUIDELINE COMPANY APPROACH**

- **Advantages:**

- the only method based primarily on market data.
- reflects the current actions of buyers and sellers.

- **Disadvantages:**

- difficulty in obtaining comparable company data.
- a number of adjustments are needed.
- it is historically based -- it does not take into account future expectations.



## **VALUATION METHODS ADVANTAGES AND DISADVANTAGES**

### **ASSET ACCUMULATION APPROACH**

- **Advantages:**

- is based on existing assets, and thus is less speculative in nature.
- it is particularly suited for certain kinds of companies.

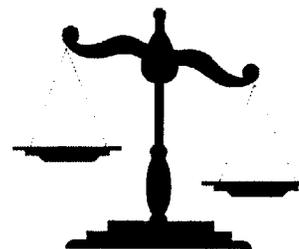
- **Disadvantages:**

- often fails to include value for goodwill and intangible assets.
- is static in nature, that is, it does not consider the future prospects of the business.
- does not consider the earnings levels, return on assets, etc.



## **VALUATION CONCLUSION SELECTING THE FINAL VALUE**

- Two basic methods:
  - mathematical weighting
  - subjective weighting
- Mathematical weighting, example:



<u>METHOD</u>	<u>VALUE</u>	<u>WEIGHT</u>	<u>WEIGHTED AVERAGE VALUE</u>
DCF	1,000	50%	500
GLC	800	25%	200
ASSET	900	25%	<u>225</u>
<b>Weighted average value =</b>			<b>925</b>

- In some cases, a simple average of all the approaches is made.



## **VALUATION CONCLUSION SELECTING THE FINAL VALUE**

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- **Subjective weighting approach:** under this approach, percentage weights are not used. The valuation conclusion is based on the factors of the valuation (advantages and disadvantages of each approach and the quality and quantity of data supporting each approach).
- The conclusion is based on the appraiser's professional experience and judgment.
- Both methods require subjectivity since the weighting approach requires the selection of a mathematical percentage for each approach.



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## **VALUATION CONCLUSION SELECTING THE FINAL VALUE**

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- **Subjective weighting approach**: under this approach, percentage weights are not used. The valuation conclusion is based on the factors of the valuation (advantages and disadvantages of each approach and the quality and quantity of data supporting each approach).
- The conclusion is based on the appraiser's professional experience and judgment.
- Both methods require subjectivity since the weighting approach requires the selection of a mathematical percentage for each approach.



## **VALUATION CONCLUSION PRACTICAL CONSIDERATIONS**

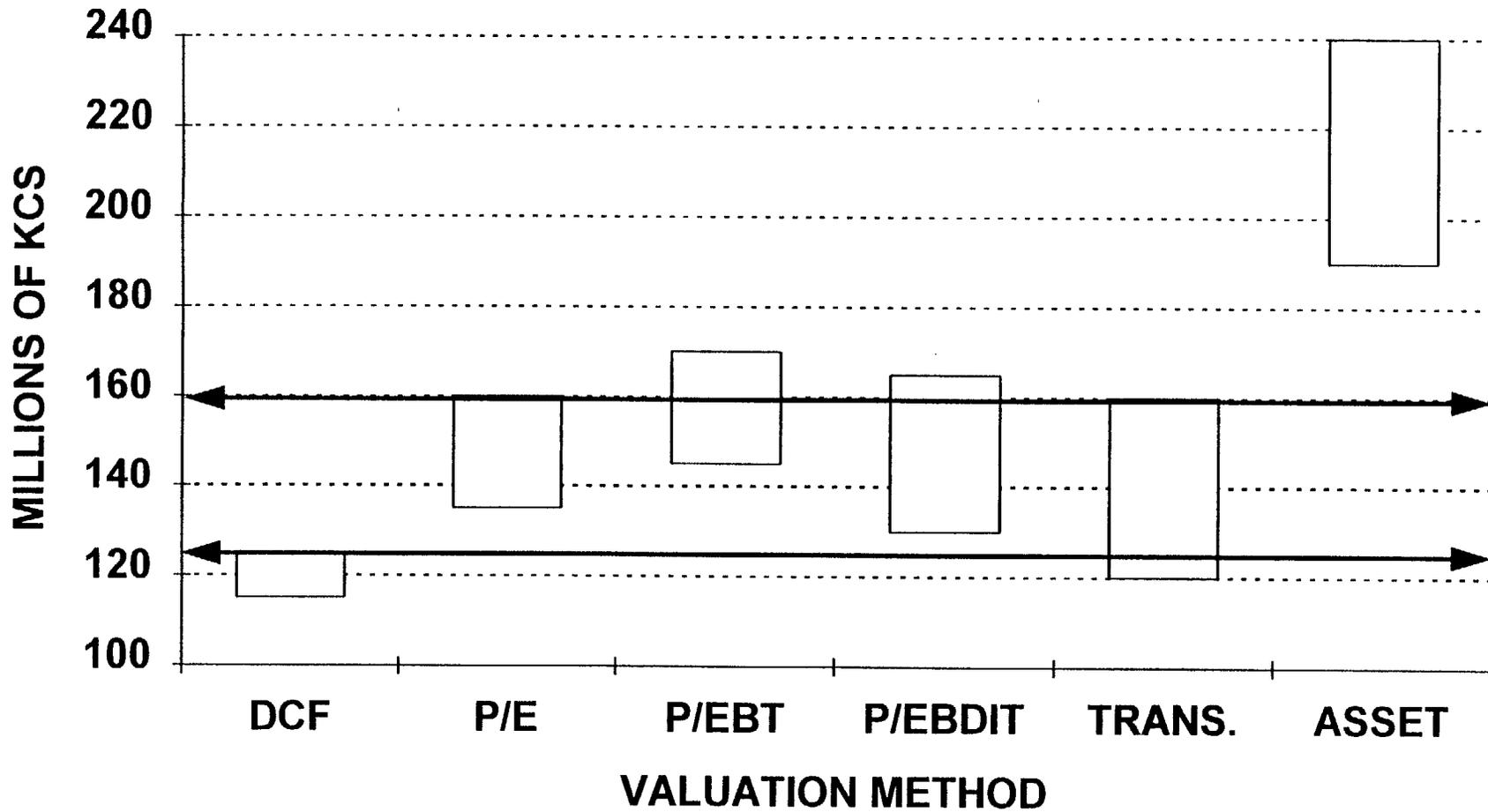
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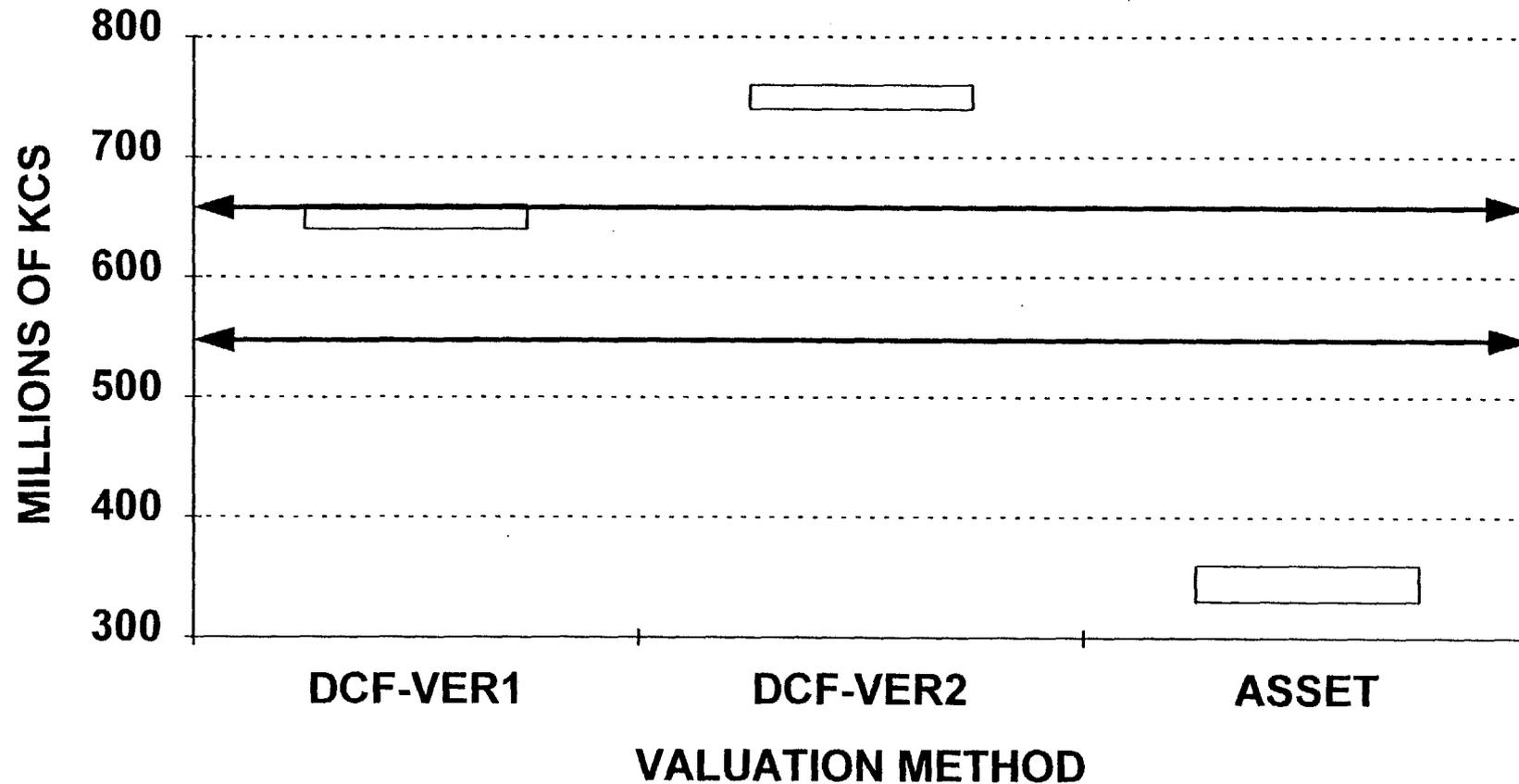
- **If the approaches based on market and cash flow are well below the asset based approach, this indicates economic obsolescence. Should the valuation conclusion under the asset approach be considered?**
- **An investor will only pay a price for those assets that will provide him with an adequate return on those assets.**
- **If the market or income approaches exceed the value based on the replacement value of the tangible assets, this indicates goodwill or intangible value in the business. Should the underlying net asset value be considered in this case?**
- **In summary, use common sense. Do not include valuation conclusions in your final estimate (whether based on an average or subjective basis) if they do not make sense!**

**SUMMARY OF VALUATION APPROACHES**



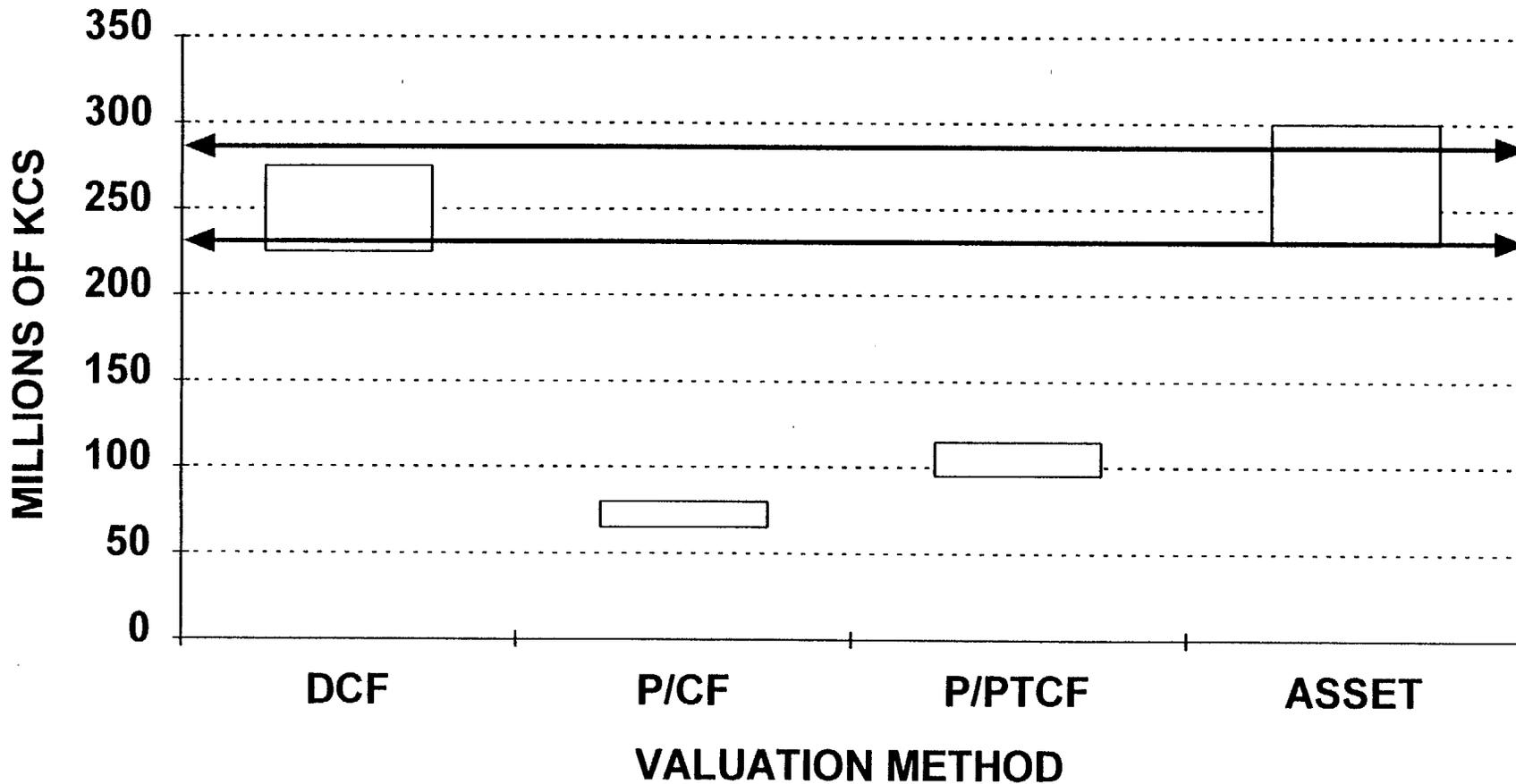


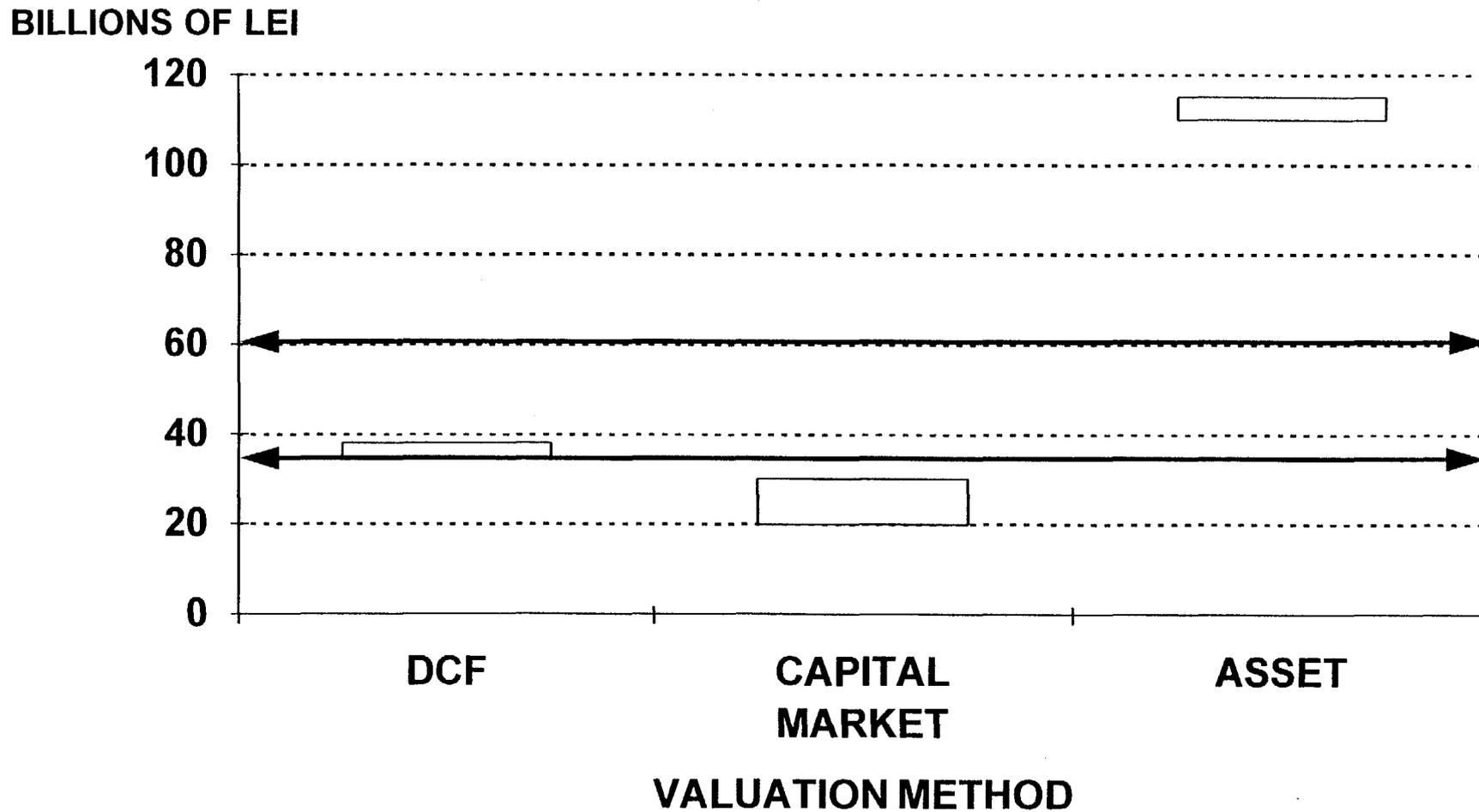
SUMMARY OF VALUATION APPROACHES





**SUMMARY OF VALUATION APPROACHES**





## ***VALUATION ISSUES IN DEVELOPING ECONOMIES***

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- ➡ **Availability of historical company financial and operational data.**
- ➡ **Quality of company operational and financial data.**
- ➡ **Lack of management business plans or forecasts.**
- ➡ **Drastic changes in the economies and markets in which the company operates.**
- ➡ **The impact of hyper-inflation on the valuation methods.**
- ➡ **Foreign exchange considerations.**
- ➡ **Low value based on future cash flows compared to the replacement cost value of the assets.**
- ➡ **Social assets.**

## ***ENHANCING THE VALUE OF A COMPANY***

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- ✓ **Improve the quality of company accounting data - through an audit or transformation.**
- ✓ **Identify non-operating or excess assets for the appraiser.**
- ✓ **Prepare a well thought out business plan for your company that includes an analysis of revenues, costs, financing and required investment.**
- ✓ **Work with the valuation team, not against them.**
- ✓ **Use the discounted cash flow method to determine which business plan results in the highest value for the company.**