Credit Analysis
Liquidity refers to the company’s ability to meet short-term obligations.

Liquidity is the ability to convert assets into cash or to obtain cash.

Short term is the longer of one-year or the company operating cycle.
Liquidity is a matter of degree

Lack of liquidity can limit

• Advantages of favorable discounts
• Profitable opportunities
• Management actions
• Coverage of current obligations
Liquidity and Working Capital

Basics

Severe illiquidity often precedes

- Lower profitability
- Restricted opportunities
- Loss of owner control
- Loss of capital investment
- Insolvency and bankruptcy
Current assets are cash and other assets reasonably expected to be (1) realized in cash, or (2) sold or consumed, during the longer of one-year or the company’s operating cycle.

Current assets include:

- **Cash** -- ultimate liquid asset
- **Cash equivalents** -- temporary investments of excess cash
- **Marketable securities** -- debt or equity securities held as s-t investments
- **Accounts receivable** -- mounts due from credit sales
- **Inventories** -- items held for sale in the normal course of business
- **Prepaid expenses** -- advance payments for services and supplies
Classification as current asset depends on:

1. Management’s intent
2. Industry practice

Analysis must assess this classification:

1. Is classification as current asset appropriate?
2. If not, then adjust accounts and amounts among current and noncurrent.
Classification as current liability depends on:
1. Management’s intent
2. Industry practice

Analysis must assess this classification
1. Is classification as current liability appropriate?
2. If not, then adjust accounts and amounts among current and noncurrent
3. Are current liabilities reported?
4. If not, then adjust accounts for these amounts—potential examples:
   • Contingent liabilities associated with loan guarantees
   • Future minimum rental payments under noncancelable operating leases
   • Progress payments under contracts
   • Current deferred tax liabilities (and assets)
Working capital is

- defined as the excess of current assets over current liabilities
- Widely used measure of short-term liquidity
- Deficient when current liabilities exceed current assets
- In surplus when current assets exceed current liabilities
- A margin of safety for creditors
- A liquid reserve to meet contingencies and uncertainties
- A constraint for technical default in many debt agreements
Working capital more relevant when related to other key variables such as

- Sales
- Total assets

Working capital is of limited value as an absolute amount
**Liquidity and Working Capital**

**Current Ratio**

\[
\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}
\]

Current Ratio Reflects on:

- **Current liability coverage** -- assurance in covering current liabilities
- **Buffer against losses** -- margin of safety for shrinkage in noncash current assets
- **Reserve of liquid funds** -- margin of safety against uncertainties and shocks to cash flows
Liquidity and Working Capital

Current Ratio — Limitations:

If liquidity is the ability to meet cash outflows with adequate cash inflows, then does the current ratio:

- Measure and predict the pattern of future cash inflows and outflows?
- Measure the adequacy of future cash inflows to outflows?

Answer is generally no to both these questions

Current ratio

- Is a static measure
- Does not have a causal relation to future cash inflows
Current Ratio — Limitations in Numerator

Adjustments often needed to counter various limitations such as

- Failure to reflect open lines of credit
- Adjust securities’ valuation since the balance sheet date
- Reflect revolving nature of accounts receivable
- Recognize profit margin in inventory
- Adjust inventory values to market
- Remove deferred charges of dubious liquidity from prepaid expenses
Three important qualifications

1. Liquidity depends to a large extent on prospective cash flows

2. No direct relation between working capital account balances and patterns of future cash flows

3. Managerial policies are directed primarily at efficient and profitable asset utilization and secondly at liquidity

4. Cash flow forecasts and pro forma financial statements are preferred over the current ratio for liquidity and solvency analysis

5. Current ratio is a static measure of the ability of current assets to satisfy current liabilities
Two important elements are integral to use of the current ratio

1. Quality of both current assets and current liabilities
2. Turnover rate of both current assets and current liabilities
Comparative Analysis

Two useful tools in analyzing the trend in the current ratio

*Trend analysis* -- components of working capital and the current ratio are converted to indexes and examined over time

*Common-size analysis* -- composition of current assets is examined over time
Ratio Management (window dressing)

Examples are:
• Press the collection of receivables at year-end
• Call in advances to officers for temporary repayment
• Reduce inventory below normal levels
• Delay normal purchases

Proceeds from these activities are then used to pay off current liabilities
Liquidity and Working Capital

Rule of Thumb Analysis (2:1)

> 2:1 → superior coverage of current liabilities (but not too high, suggesting inefficient use of resources and reduced returns)

< 2:1 → deficient coverage of current liabilities
Liquidity and Working Capital

Net Trade Cycle Analysis

Working capital requirements are affected by its desired inventory investment and the relation between credit terms from suppliers and those extended to customers.
Net Trade Cycle—Illustration

Selected financial information from Technology Resources, Inc., for the end of Year 1 is reproduced below:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales for Year 1</td>
<td>$360,000</td>
</tr>
<tr>
<td>Receivables</td>
<td>40,000</td>
</tr>
<tr>
<td>Inventories*</td>
<td>50,000</td>
</tr>
<tr>
<td>Accounts payable†</td>
<td>20,000</td>
</tr>
<tr>
<td>Cost of goods sold</td>
<td></td>
</tr>
<tr>
<td>(including depreciation of $30,000)</td>
<td>320,000</td>
</tr>
</tbody>
</table>

*Beginning inventory is $100,000.
†We assume these relate to purchases included in cost of goods sold.

We estimate Technology Resources’ purchases per day as:

\[
Purchases \text{ per day} = \frac{240,000}{360} = \$666.67
\]

The net trade cycle for Technology Resources is computed as (in days):

\[
\begin{align*}
\text{Accounts receivable} & = \frac{40,000}{360,000} \div 360 = 40.00 \text{ days} \\
\text{Inventories} & = \frac{50,000}{320,000} \div 360 = 56.24 \text{ days} \\
\text{Less : Accounts payable} & = \frac{20,000}{666.67} = 30.00 \text{ days} \\
\text{Net trade cycle (days)} & = 66.24 \text{ days}
\end{align*}
\]
Liquidity and Working Capital

Current Ratio - Applications

Sales Trend Analysis

Trend analysis — review of sales trend across time
Liquidity and Working Capital

**Cash to Current Assets Ratio**

\[
\frac{\text{Cash} + \text{Cash equivalents} + \text{Marketable securities}}{\text{Current assets}}
\]

Larger the ratio, the more liquid are current assets.
Cash to Current Liabilities Ratio

\[
\frac{\text{Cash} + \text{Cash equivalents} + \text{Marketable securities}}{\text{Current liabilities}}
\]

Larger the ratio, the more cash available to pay current obligations
Accounts Receivable Liquidity

Accounts Receivable Turnover

\[
\text{Net sales on credit} \div \text{Average accounts receivable}
\]
Operating Activity Analysis of Liquidity

Accounts Receivable Liquidity

Days’ Sales in Receivables for Selected Industries

- Target Corp.
- Pfizer Inc.
- Dell Inc.
- Coca-Cola Co.
- Best Buy Co.
- 3M Co.
Days’ Sales in Receivables

DaysSales in Receivables = Account Receivable ÷ \( \frac{Sales}{360} \)
Operating Activity Analysis of Liquidity

Accounts Receivable Liquidity

**Average Collection Period (alternative view)**

\[
\text{Average Collection Period} = \frac{360}{\text{Accounts Receivable Turnover}}
\]
Temporal Trend Analysis

Trend in:

1. Collection period over time

2. Provision for doubtful accounts
   Gross accounts receivable
Inventory Turnover

\[
\frac{\text{Cost of goods sold}}{\text{Average inventory}}
\]

Measures the average rate of speed inventories move through and out of a company.
Days’ Sales in Inventory

\[
\text{Inventories ÷ (Cost of goods sold / 360)}
\]

Shows the number of days required to sell \textit{ending inventory} \textbf{Days to Sell Inventory}

Useful in assessing purchasing and production policies—shows the number of days a company takes in selling \textit{average} inventory for that year.
Selected financial information from Macon Resources for Year 8 is reproduced below:

Sales .................. $1,800,000
Cost of goods sold ....... 1,200,000
Beginning inventory ...... 200,000
Ending inventory.......... 400,000

Days’ sales in inventory = \( \frac{400,000}{\frac{1,200,000}{360}} \) = 120 days
Operating Activity Analysis of Liquidity

Inventory Turnover

Conversion Period (Operating Cycle):

Days’ to Sell Inventory + Collection Period

Measure of the speed with which inventory is converted to cash
Operating Activity Analysis of Liquidity

Liquidity of Current Liabilities

Quality of Current Liabilities

• Must be judged on their degree of urgency in payment

• Must be aware of unrecorded liabilities having a claim on current funds
Days’ Purchases in Accounts Payable

Days’ purchases in accounts payable = \( \frac{\text{Accounts payable}}{\text{Purchases} \div 360} \)

Measures the extent accounts payable represent current and not overdue obligations
Additional Liquidity Measures

Asset Composition

Composition of current assets is an indicator of working capital liquidity.

Use of common-size percentage comparisons facilitates this analysis.
Additional Liquidity Measures

**Acid-Test (Quick) Ratio**

\[
\frac{\text{Cash} + \text{Cash equivalents} + \text{Marketable securities} + \text{Accounts receivable}}{\text{Current liabilities}}
\]

Is a more stringent test of liquidity vis-à-vis current ratio.
Additional Liquidity Measures

Cash Flow Measures

Cash Flow Ratio

\[
\frac{\text{Operating cash flow}}{\text{Current liabilities}}
\]

A ratio of 0.40 or higher is common for healthy companies.
Financial flexibility - ability of a company to take steps to counter unexpected interruptions in the flow of funds.

Focus of analysis:

- Ability to borrow from various sources
- To raise equity capital
- To sell and redeploy assets
- To adjust the level and direction of operations to meet changing circumstances
- Levels of prearranged financing and open lines of credit
MD&A requires a discussion of liquidity — including:

- Known trends
- Demands
- Commitments
- Uncertainties
- Ability to generate cash
- Internal and external sources of liquidity
- Any material unused sources of liquid assets
What-if analysis -- technique to trace through the effects of changes in conditions or policies on the cash resources of a company
What-If Analysis - Illustration

Background Data—Consolidated Technologies at December 31, Year 1:

<table>
<thead>
<tr>
<th>Asset</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash</td>
<td>$70,000</td>
</tr>
<tr>
<td>Accounts receivable</td>
<td>150,000</td>
</tr>
<tr>
<td>Inventory</td>
<td>65,000</td>
</tr>
<tr>
<td>Accounts payable</td>
<td>130,000</td>
</tr>
<tr>
<td>Notes payable</td>
<td>35,000</td>
</tr>
<tr>
<td>Accrued taxes</td>
<td>18,000</td>
</tr>
<tr>
<td>Fixed assets</td>
<td>200,000</td>
</tr>
<tr>
<td>Accumulated depreciation</td>
<td>43,000</td>
</tr>
<tr>
<td>Capital stock</td>
<td>200,000</td>
</tr>
</tbody>
</table>

The following additional information is reported for Year 1:

<table>
<thead>
<tr>
<th>Category</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>$750,000</td>
</tr>
<tr>
<td>Cost of sales</td>
<td>520,000</td>
</tr>
<tr>
<td>Purchases</td>
<td>350,000</td>
</tr>
<tr>
<td>Depreciation</td>
<td>25,000</td>
</tr>
<tr>
<td>Net income</td>
<td>20,000</td>
</tr>
</tbody>
</table>

- Anticipates 10 percent growth in sales for Year 2
- All revenue and expense items are expected to increase by 10 percent, except for depreciation, which remains the same
- All expenses are paid in cash as they are incurred
- Year 2 ending inventory is projected at $150,000
- By the end of Year 2, predicts notes payable of $50,000 and a zero balance in accrued taxes
- Maintains a minimum cash balance of $50,000
Case 1: Consolidated Technologies is considering a change in credit policy where ending accounts receivable reflect 90 days of sales. What impact does this change have on the company’s cash balance? Will this change affect the company’s need to borrow? Our analysis of this what-if situation is as follows:

Cash, January 1, Year 2: $70,000

Cash collections:
- Accounts receivable, January 1, Year 2: $150,000
- Sales: 825,000
- Total potential cash collections: $975,000
- Less: Accounts receivable, December 31, Year 2: (206,250) (a)
- Total cash available: $838,750

Cash disbursements:
- Accounts payable, January 1, Year 2: $130,000
- Purchases: 657,000 (b)
- Total potential cash disbursements: $787,000
- Notes payable, January 1, Year 2: $35,000
- Notes payable, December 31, Year 2: (50,000) (c)
- Accrued taxes: 18,000
- Cash expenses (d): 203,500
- Cash, December 31, Year 2: $89,250

Cash balance desired: 50,000
Cash excess: $39,250

Explanations:
(a) Year 2 cost of sales*: $520,000 × 1.1 = $572,000
Ending inventory (given): 150,000
Goods available for sale: $722,000
Beginning inventory: (65,000)
Purchases: $657,000
* Excluding depreciation.
(b) Gross profit ($825,000 – $572,000): $253,000
Less: Net income: 24,500 (d)
Depreciation: 25,000 (c)
Other cash expenses: $203,500
*110 percent of $20,000 (Year 1 N.I.) + 10 percent of $25,000 (Year 1 depreciation).
Basic of Solvency

Solvency -- long-run financial viability and its ability to cover long-term obligations

Capital structure -- financing sources and their attributes

Earning power — recurring ability to generate cash from operations

Loan covenants – protection against insolvency and financial distress; they define default (and the legal remedies available when it occurs) to allow the opportunity to collect on a loan before severe distress
Basic of Solvency

Equity financing
- Risk capital of a company
- Uncertain and unspecified return
- Lack of any repayment pattern
- Contributes to a company’s stability and solvency

Debt financing
- Must be repaid with interest
- Specified repayment pattern

When the proportion of debt financing is higher, the higher are the resulting fixed charges and repayment commitments
From a shareholder’s perspective, debt financing is less expensive than equity financing because:

1. Financial Leverage -- Interest on most debt is fixed, and provided interest is less than the return earned from debt financing, the excess return goes to equity investors.

2. Tax Deductibility of Interest -- Interest is a tax-deductible expense whereas dividends are not.
**Leverage** -- use of debt to increase net income

Leverage:
- Magnifies both managerial success (profits) and failure (losses)
- Increases risks
- Limits flexibility in pursuing opportunities
- Decreases creditors’ protection against loss

Companies with leverage are said to be **trading on the equity** — implying a company is using equity financing to obtain debt financing in a desire to reap returns above the cost of debt.
## Basic of Solvency

### Financial Leverage - Illustration

<table>
<thead>
<tr>
<th>Year</th>
<th>FINANCING SOURCES</th>
<th>Operating Income before Taxes</th>
<th>10% Debt Interest</th>
<th>Taxes (40%)</th>
<th>Net Income</th>
<th>NOPAT [operating income \times (1 - 40%)]</th>
<th>RETURN ON</th>
<th>Net Operating Assets (RNOA)*</th>
<th>Equity (ROE)†</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Risky, Inc.</strong></td>
<td>1,000</td>
<td>$400</td>
<td>$600</td>
<td>$200</td>
<td>$40</td>
<td>$64</td>
<td>$96</td>
<td>$120</td>
<td>12%</td>
</tr>
<tr>
<td><strong>Safety, Inc.</strong></td>
<td>1,000</td>
<td>0</td>
<td>1,000</td>
<td>200</td>
<td>0</td>
<td>80</td>
<td>120</td>
<td>120</td>
<td>12</td>
</tr>
<tr>
<td><strong>Year 2</strong></td>
<td>1,000</td>
<td>400</td>
<td>600</td>
<td>100</td>
<td>40</td>
<td>24</td>
<td>36</td>
<td>60</td>
<td>6</td>
</tr>
<tr>
<td><strong>Risky, Inc.</strong></td>
<td>1,000</td>
<td>0</td>
<td>1,000</td>
<td>100</td>
<td>0</td>
<td>40</td>
<td>60</td>
<td>60</td>
<td>6</td>
</tr>
<tr>
<td><strong>Safety, Inc.</strong></td>
<td>1,000</td>
<td>400</td>
<td>600</td>
<td>50</td>
<td>40</td>
<td>4</td>
<td>6</td>
<td>30</td>
<td>3</td>
</tr>
<tr>
<td><strong>Year 3</strong></td>
<td>1,000</td>
<td>0</td>
<td>1,000</td>
<td>50</td>
<td>0</td>
<td>20</td>
<td>30</td>
<td>30</td>
<td>3</td>
</tr>
</tbody>
</table>

*Return on net operating assets = NOPAT/Net Operating Assets.
†Return on equity = Net income/Shareholders’ equity.
Basic of Solvency

Financial Leverage- Illustrating Tax Deductibility of Interest

<table>
<thead>
<tr>
<th>Year 2</th>
<th>Risky, Inc.</th>
<th>Safety, Inc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income before interest and taxes</td>
<td>$100</td>
<td>$100</td>
</tr>
<tr>
<td>Interest (10% of $400)</td>
<td>(40)</td>
<td>0</td>
</tr>
<tr>
<td>Income before taxes</td>
<td>60</td>
<td>100</td>
</tr>
<tr>
<td>Taxes (40%)</td>
<td>(24)</td>
<td>(40)</td>
</tr>
<tr>
<td>Net income</td>
<td>36</td>
<td>60</td>
</tr>
<tr>
<td>Add back interest paid to bondholder</td>
<td>40</td>
<td>0</td>
</tr>
<tr>
<td>Total return to security holders (debt and equity)</td>
<td>$76</td>
<td>$60</td>
</tr>
</tbody>
</table>
## Basic of Solvency

### Adjustments for Capital Structure - Liabilities

<table>
<thead>
<tr>
<th>Potential accounts needing adjustments</th>
<th>Chapter reference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Deferred Income Taxes</strong> — Is it a liability, equity, or some of both?</td>
<td>3 &amp; 6</td>
</tr>
<tr>
<td><strong>Operating Leases</strong> -- capitalize non-cancelable operating leases?</td>
<td>3</td>
</tr>
<tr>
<td><strong>Off-Balance-Sheet Financing</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>Pensions and Postretirement Benefits</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>Unconsolidated Subsidiaries</strong></td>
<td>5</td>
</tr>
<tr>
<td><strong>Contingent Liabilities</strong></td>
<td>3 &amp; 6</td>
</tr>
<tr>
<td><strong>Minority Interests</strong></td>
<td>5</td>
</tr>
<tr>
<td><strong>Convertible Debt</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>Preferred Stock</strong></td>
<td>3</td>
</tr>
</tbody>
</table>
### Basic of Solvency

#### Adjustments for Capital Structure - Assets

<table>
<thead>
<tr>
<th>Potential accounts needing adjustments</th>
<th>Chapter reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inventories—LIFO Reserve?</td>
<td>4</td>
</tr>
<tr>
<td>Marketable Securities</td>
<td>4</td>
</tr>
<tr>
<td>Intangible Assets</td>
<td>4 &amp; 5</td>
</tr>
</tbody>
</table>
Projection of Future Cash Inflows and Outflows

Reflects on risk for a levered company’s capital structure
Prepare a Statement of Forecasts of Cash Inflows and Outflows

Chapter 9 described and illustrated long-term cash flow forecasts
Capital structure composition analysis

- Performed by constructing a common-size statement of liabilities and equity
- Reveals relative magnitude of financing sources
- Allows direct comparisons across different companies
- Two Variations—(1) Use ratios, and (2) Exclude current liabilities
Total Debt to Total Capital (also called **total debt ratio**)
Total Debt to Equity Capital

\[
\frac{\text{Total debt}}{\text{Shareholders’ equity}}
\]
Long-Term Debt to Equity Capital (also called Debt to Equity)

\[
\frac{\text{Long-term debt}}{\text{Shareholders’ equity}}
\]
Capital Structure and Solvency

Capital Structure Measures

Short-Term Debt to Total Debt

Equity Capital at Market Value
Common-size and ratio analyses of capital structure mainly reflect capital structure *risk*.

Capital structure measures serve as *screening devices*.

Extended analysis focuses financial condition, results of operations, and future prospects.

Prior to long-term solvency analysis, we perform liquidity analysis to be satisfied about near-term survival.

Additional analyses include examination of:

- Debt maturities (amount and timing)
- Interest costs
- Risk-bearing factors (earnings persistence, industry performance, and asset composition)
Asset-Based Measures of Solvency

Asset Composition Analysis

Tool in assessing the risk exposure of a capital structure
Typically evaluated using common-size statements
Capital Structure and Solvency

Asset-Based Measures of Solvency

Asset Coverage

- Assets provide protection to creditors--earning power and liquidation value
- Base for additional financing
- Useful ratios include:
  - Fixed assets to equity capital
  - Net tangible assets to long-term debt
  - Total liabilities to net tangible assets
Earning Coverage

Earnings to Fixed Charges

Earnings to fixed charges ratio

\[
\frac{\text{Earnings available for fixed charges}}{\text{Fixed charges}}
\]
Additional Liquidity Measures

Earnings to Fixed Charges

\[(a)\] Pre-tax income from continuing operations plus \[(b)\] Interest expense plus \\
\[(c)\] Amortization of debt expense and discount or premium plus \[(d)\] Interest portion of operating rent expenses plus \[(e)\] Tax-adjusted preferred stock dividend requirements of majority-owned subsidiaries plus \[(f)\] Amount of previously capitalized interest amortized in the period minus \[(g)\] Undistributed income of less than 50-percent-owned subsidiaries or affiliates plus \[(b)\] Total interest incurred plus \[(c)\] Amortization of debt expense and discount or premium plus \[(d)\] Interest portion of operating rent expenses plus \[(e)\] Tax-adjusted preferred stock dividend requirements of majority-owned subsidiaries

\[(a)\] Pre-tax income before discontinued operations, extraordinary items, and cumulative effects of accounting changes.
\[(b)\] Interest incurred less interest capitalized.
\[(c)\] Usually included in interest expense.
\[(d)\] Financing leases are capitalized so the interest implicit in these is already included in interest expense. However, the interest portion of long-term operating leases is included on the assumption that many long-term operating leases narrowly miss the capital lease criteria, but have many characteristics of a financing transaction.
\[(e)\] Excludes all items eliminated in consolidation. The dividend amount is increased to pre-tax earnings required to pay for it. Computed as [Preferred stock dividend requirements]/[1 + Income tax rate]. The income tax rate is computed as [Actual income tax provision]/[Income before income taxes, extraordinary items, and cumulative effect of accounting changes].
\[(f)\] Applies to nonutility companies. This amount is not often disclosed.
\[(g)\] Minority interest in income of majority-owned subsidiaries having fixed charges can be included in income.
\[(h)\] Included whether expensed or capitalized.

For ease of presentation, two items (provisions) are left out of the ratio above:

1. Losses of majority-owned subsidiaries should be considered in full when computing earnings.
2. Losses on investments in less than 50-percent-owned subsidiaries accounted for by the equity method should not be included in earnings unless the company guarantees subsidiaries’ debts.
**Computech Corporation**

**Income Statement**

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net sales</td>
<td>$13,400,000</td>
</tr>
<tr>
<td>Income of less than 50%-owned affiliates (all undistributed)</td>
<td>$600,000</td>
</tr>
<tr>
<td>Total revenue</td>
<td>$14,000,000</td>
</tr>
<tr>
<td>Cost of goods sold</td>
<td>$7,400,000</td>
</tr>
<tr>
<td>Selling, general, and administrative expenses</td>
<td>$1,900,000</td>
</tr>
<tr>
<td>Depreciation (excluded from above costs)</td>
<td>$800,000</td>
</tr>
<tr>
<td>Interest expense—net</td>
<td>$700,000</td>
</tr>
<tr>
<td>Rental expense</td>
<td>$800,000</td>
</tr>
<tr>
<td>Share of minority interests in consolidated income</td>
<td>$200,000</td>
</tr>
<tr>
<td>Income before taxes</td>
<td>$2,200,000</td>
</tr>
<tr>
<td>Income taxes:</td>
<td></td>
</tr>
<tr>
<td>Current</td>
<td>$800,000</td>
</tr>
<tr>
<td>Deferred</td>
<td>$300,000</td>
</tr>
<tr>
<td>Income before extraordinary item</td>
<td>$1,100,000</td>
</tr>
<tr>
<td>Extraordinary gain (net of $67,000 tax)</td>
<td>$200,000</td>
</tr>
<tr>
<td>Net income</td>
<td>$1,300,000</td>
</tr>
</tbody>
</table>

**Dividends:**

- On common stock: $200,000
- On preferred stock: $400,000

**Earnings retained for the year**: $700,000

**Selected notes to the financial statements:**

1. Interest expense is composed of the following:
   - Interest incurred (except items below) $740,000
   - Amortization of bond discount $60,000
   - Interest portion of capitalized leases $100,000
   - Interest capitalized (200,000)
   - Interest expense $700,000

2. Interest implicit in noncapitalized leases amounts to $300,000.
3. Depreciation includes amortization of previously capitalized interest of $80,000.
4. These subsidiaries have fixed charges.

**Additional information (during the income statement period):**

- Increase in accounts receivable $310,000
- Increase in inventories $180,000
- Increase in accounts payable $140,000
- Decrease in accrued taxes $20,000

**Earnings to fixed charges ratio:**

\[ \frac{200(a) + 700(b and c) + 300(d) + 80(f) - 600(g) + 200(h)}{840(h) + 60(c) + 300(d)} = 2.40 \]

*Note: The SEC permits including in income the minority interest in the income of majority-owned subsidiaries having fixed charges. This amount is added to reverse a similar deduction from income.*
Earning Coverage

**Times Interest Earned**

**Times interest earned ratio**

\[
\frac{\text{Income} + \text{Tax expense} + \text{Interest expense}}{\text{Interest expense}}
\]
Cash Flow to Fixed Charges Ratio

\[
\frac{\text{Pre-tax operating cash flow} + \text{Adjustments (b) – (g)}}{\text{Fixed charges}}
\]
Earning Coverage

Cash Flow to Fixed Charges - Illustration

Fixed charges needing to be added back to CampuTech’s pre-tax cash from operations:

- Pre-tax cash from operations: $2,290,000
- Interest expensed (less bond discount added back above): $640,000
- Interest portion of operating rental expense: $300,000
- Amount of previously capitalized interest amortized during period* -
  Total numerator: $3,230,000

*Assume included in depreciation (already added back).

Fixed charges for the ratio’s denominator are:

- Interest incurred: $900,000
- Interest portion of operating rentals: $300,000
- Fixed charges: $1,200,000

CompuTech’s cash flow to fixed charges ratio is: \[
\frac{3,230,000}{1,200,000} = 2.69
\]
Earning Coverage

Earnings Coverage of Preferred Dividends

Earnings coverage of preferred dividends ratio:

\[
\frac{\text{Pre-tax income} + \text{Adjusted (b)\text{–(g)}}}{\text{Fixed charges} + \left(\frac{\text{Preferred dividends}}{1 - \text{Tax rate}}\right)}
\]
Earnings-coverage measures provide insight into the ability of a company to meet its fixed charges.

High correlation between earnings-coverage measures and default rate on debt.

Earnings variability and persistence is important.

Use earnings before discontinued operations, extraordinary items, and cumulative effects of accounting changes for single year analysis — but, include them in computing the average coverage ratio over several years.
A company can increase risks (and potential returns) of equity holders by increasing leverage.

Substitution of debt for equity yields a riskier capital structure.

Relation between risk and return in a capital structure exists.

Only personal analysis can reflect one’s unique risk and return expectations.
Criteria determining a specific rating involve both *quantitative* and *qualitative* factors

- Asset protection
- Financial resources
- Earning power
- Management
- Debt provisions
- Other: Company size, market share, industry position, cyclical influences, and economic conditions
Ratings and Yields

10-Year Treasury and Corporate Bond Yields

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## Bond Quality Ratings

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**Rating Criteria**

Rating Debt Obligations—Appendix 10A
Predicting Financial Distress—Appendix 10B

Altman Z-Score

\[ Z = 0.717X_1 + 0.847X_2 + 3.107X_3 + 0.420X_4 + 0.998X_5 \]

- **X1** = Working capital/Total assets
- **X2** = Retained earnings/Total assets
- **X3** = Earnings before interest and taxes/Total assets
- **X4** = Shareholders’ equity/Total liabilities
- **X5** = Sales/Total assets

- **Z < 1.20** implies a high probability of bankruptcy
- **Z > 2.90** implies a low probability of bankruptcy
- **1.20 < Z < 2.90** implies an ambiguous area