Credit Analysis

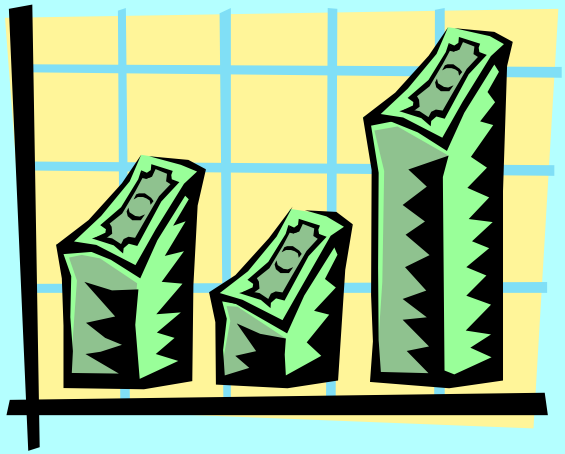
Liquidity and Working Capital

Basics

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 and Working Capital

Basics

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**

Liquidity and Working Capital

Current Assets

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**

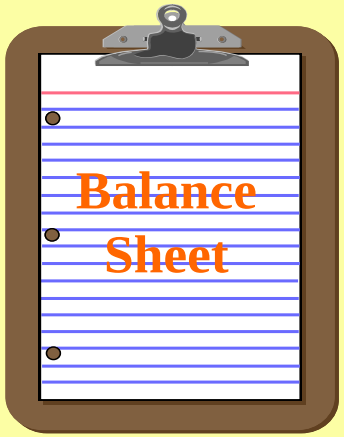
Inventories **-- items held for sale in the normal course of business**

Prepaid expenses **-- advance payments for services and supplies**

Liquidity and Working Capital

Current Assets

Classification as current asset depends on:



1. Manament'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

Liquidity and Working Capital

Current Liabilities

Classification as current liability depends on:

1. Manament'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)

Liquidity and Working Capital

Working Capital

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

Liquidity and Working Capital

Working Capital

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

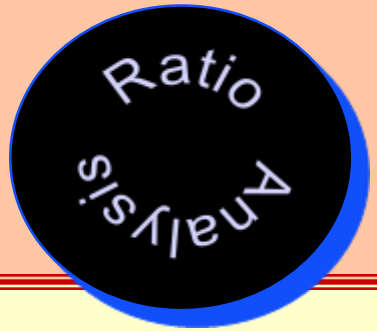
Liquidity and Working Capital

Current Ratio

$$\textit{Current}\ \text{ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

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

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**

Liquidity and Working Capital

Current Ratio

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

Liquidity and Working Capital

Current Ratio

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

Liquidity and Working Capital

Current Ratio

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**

Liquidity and Working Capital

Current Ratio - Applications

Comparative Analysis

Two useful tools in analyzing the trend in the current ratio

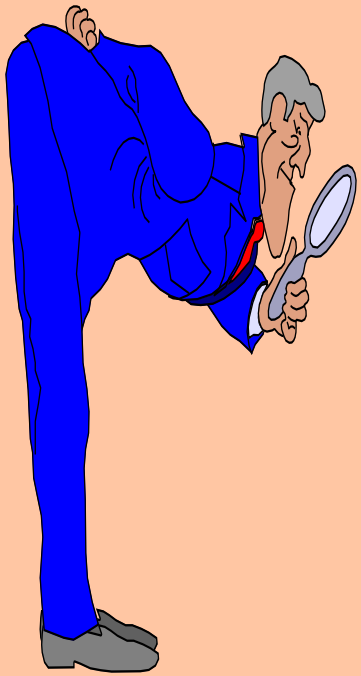
Trend analysis -- components of working capital and the current ratio are converted to indexes and examined over time

Common-size analysis -- composition of current assets is examined over time

Liquidity and Working Capital

Current Ratio - Applications

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

Current Ratio - Applications

Rule of Thumb Analysis (2:1)

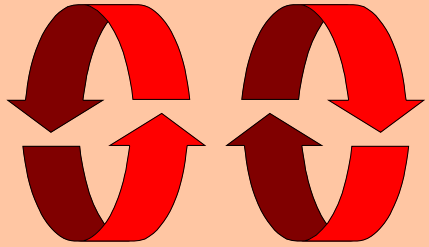
> 2:1 → superior coverage of current liabilities (but not too high, suggesting inefficient use of resources and reduced returns)

< 2:1 → deficient coverage of current liabilities

Liquidity and Working Capital

Current Ratio - Applications

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

Liquidity and Working Capital

Current Ratio - Applications

Net Trade Cycle—Illustration

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

Sales for Year 1	$360,000
Receivables	40,000
Inventories*	50,000
Accounts payable†	20,000
Cost of goods sold (including depreciation of $30,000)	320,000

*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:

$$\text{Purchases per day} = \$240{,}000 \div 360 = \$666.67$$

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

$$\text{Accounts receivable} = \frac{\$40{,}000}{\$360{,}000 \div 360} = 40.00 \text{ days}$$

$$\text{Inventories} = \frac{\$50{,}000}{\$320{,}000 \div 360} = \underline{56.24} \text{ days}$$

$$96.24 \text{ days}$$

$$\text{Less: Accounts payable} = \frac{\$20{,}000}{\$666.67} = \underline{30.00} \text{ days}$$

$$\text{Net trade cycle (days)} = \underline{\underline{66.24}} \text{ days}$$

Liquidity and Working Capital

Current Ratio - Applications

Sales Trend Analysis

Trend *analysis* — review of sales trend across time

Liquidity and Working Capital

Cash-Based Ratio of Liquidity

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

Liquidity and Working Capital

Cash-Based Ratio of Liquidity

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

Operating Activity Analysis of Liquidity

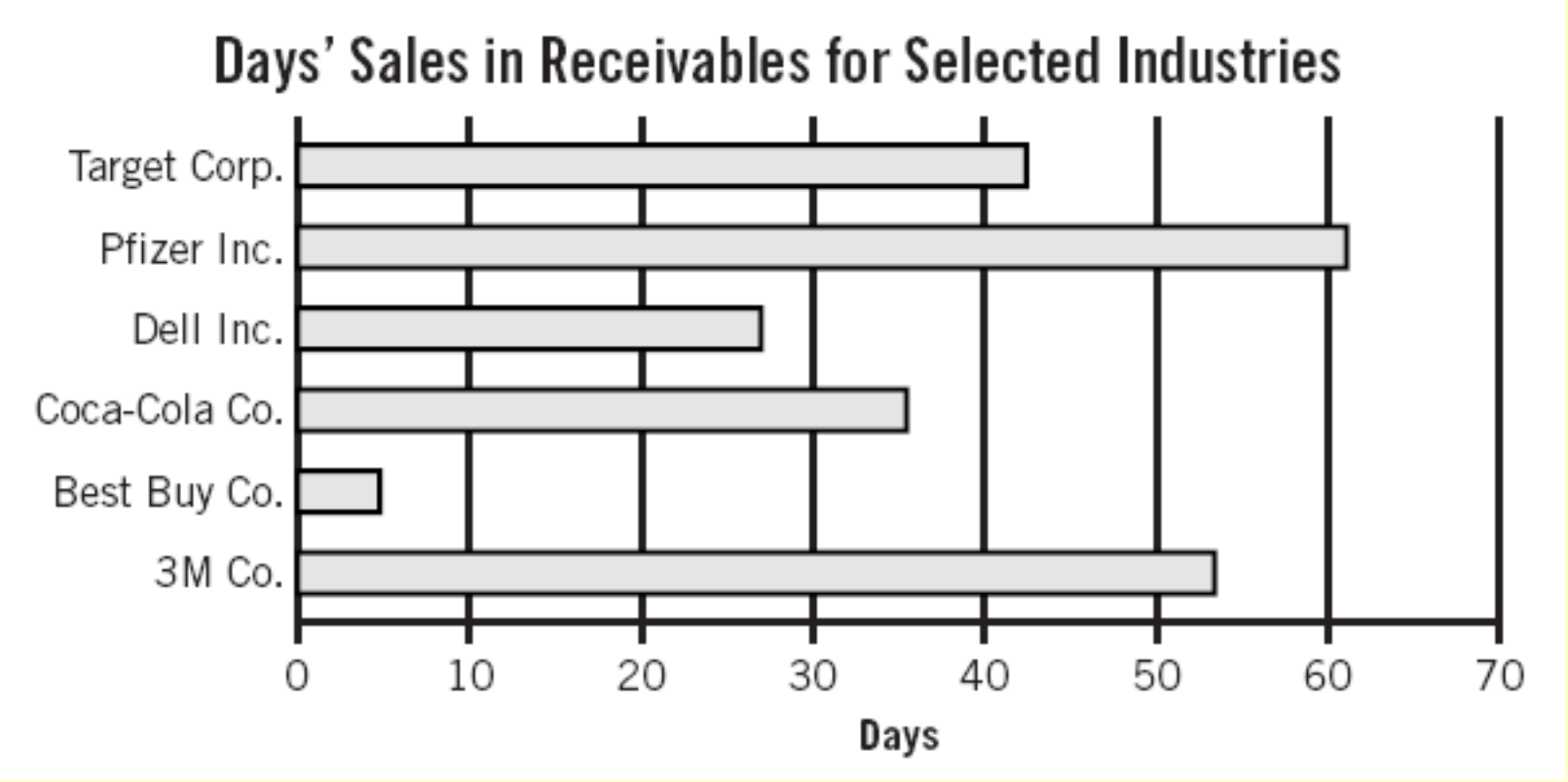
Accounts Receivable Liquidity

Accounts Receivable Turnover

$$\frac{\text{Net sales on credit}}{\text{Average accounts receivable}}$$

Operating Activity Analysis of Liquidity

Accounts Receivable Liquidity



Operating Activity Analysis of Liquidity

Accounts Receivable Liquidity

Days' Sales in Receivables

$$\text{Days Sales in Receivables} = \text{Account Receivable} \div \frac{\text{Sales}}{360}$$

Operating Activity Analysis of Liquidity

Accounts Receivable Liquidity

Average Collection Period (alternative view)

$$\text{Average Collection Period} = \frac{360}{\text{Accounts Receivable Turnover}}$$

Operating Activity Analysis of Liquidity

Accounts Receivable Liquidity

Temporal Trend Analysis

Trend in:

1. Collection period over time
2. $$\frac{\text{Provision for doubtful accounts}}{\text{Gross accounts receivable}}$$

Operating Activity Analysis of Liquidity

Inventory Turnover

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

Operating Activity Analysis of Liquidity

Inventory Turnover

Days' Sales in Inventory

Inventories ÷ (Cost of goods sold / 360)

Shows the number of days required to sell *ending* inventory **Days to Sell Inventory**

Useful in assessing purchasing and production policies—shows the number of days a company takes in selling *average* inventory for that year

Operating Activity Analysis of Liquidity

Inventory Turnover - Illustration

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

$$\text{Days' sales in inventory} = \frac{\$400{,}000}{\$1{,}200{,}000/360} = 120 \text{ days}$$

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

Operating Activity Analysis of Liquidity

Inventory Turnover

Days' Purchases in Accounts Payable

$$\text{Days' purchases in accounts payable} = \frac{\text{Accounts payable}}{\text{Purchases} \div 360}$$

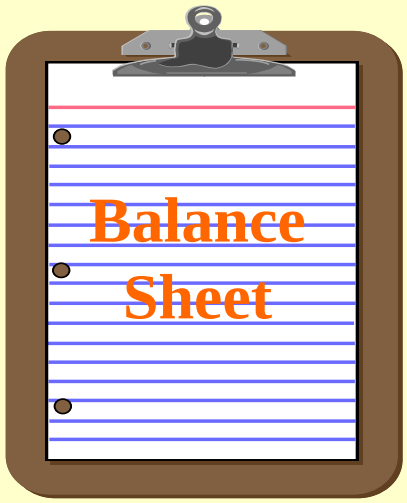
Measures the extent accounts payable represent current and not overdue obligations

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

Additional Liquidity Measures

Financial Flexibility

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

Additional Liquidity Measures

Management's Discussion and Analysis

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**

Additional Liquidity Measures

What-If Analysis

What-if analysis -- technique to trace through the effects of changes in conditions or policies on the cash resources of a company

Additional Liquidity Measures

What-If Analysis - Illustration

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

Cash	$ 70,000
Accounts receivable	150,000
Inventory	65,000
Accounts payable	130,000
Notes payable	35,000
Accrued taxes	18,000
Fixed assets	200,000
Accumulated depreciation	43,000
Capital stock	200,000

The following additional information is reported for Year 1:

Sales	$750,000
Cost of sales	520,000
Purchases	350,000
Depreciation	25,000
Net income	20,000

- 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

Additional Liquidity Measures

What-If Analysis - Illustration

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)	768,750
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		
Accounts payable, December 31, Year 2	(244,000)*(c)*	$ 543,000	
Notes payable, January 1, Year 2	$ 35,000		
Notes payable, December 31, Year 2	(50,000)	(15,000)	
Accrued taxes		18,000	
Cash expenses*(d)*		203,500	749,500
Cash, December 31, Year 2			$ 89,250
Cash balance desired			50,000
Cash excess			$ 39,250

Explanations:

(a)

(b) 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.

(c)

(d) Gross profit ($825,000 – $572,000) $ 253,000

Less: Net income $ 24,500*

Depreciation 25,000 (49,500)

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

Facts

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

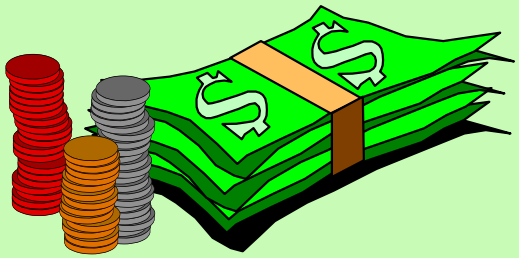
Capital Structure

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

Basic of Solvency

Motivation for Debt

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**

Basic of Solvency

Financial Leverage

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** — omplying 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

Trading on the Equity—Returns for Different Earnings Levels ($ millions) *Exhibit 10.2*

	Assets	FINANCING SOURCES: Debt	FINANCING SOURCES: Equity	Operating Income before Taxes	10% Debt Interest	Taxes (40%)	Net Income	NOPAT [operating income × (1 − 40%)]	RETURN ON: Net Operating Assets (RNOA)*	RETURN ON: Equity† (ROE)
Year 1										
Risky, Inc	$1,000	$400	$ 600	$200	$40	$64	$ 96	$120	12%	16%
Safety, Inc	1,000	0	1,000	200	0	80	120	120	12	12
Year 2										
Risky, Inc.	1,000	400	600	100	40	24	36	60	6	6
Safety, Inc.	1,000	0	1,000	100	0	40	60	60	6	6
Year 3										
Risky, Inc.	1,000	400	600	50	40	4	6	30	3	1
Safety, Inc.	1,000	0	1,000	50	0	20	30	30	3	3

*Return on net operating assets = NOPAT/Net Operating Assets.
†Return on equity = Net income/Shareholders' equity.

Basic of Solvency

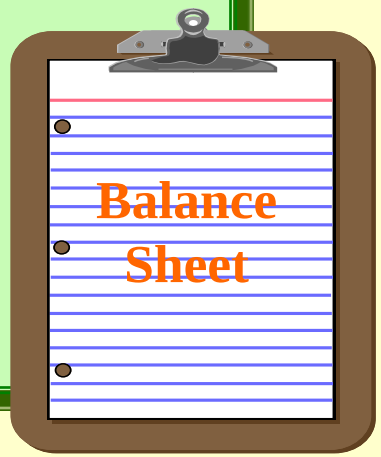
Financial Leverage- Illustrating Tax Deductibility of Interest

Year 2	Risky, Inc.	Safety, Inc.
Income before interest and taxes	$100	$100
Interest (10% of $400)	(40)	0
Income before taxes	60	100
Taxes (40%)	(24)	(40)
Net income	36	60
Add back interest paid to bondholder	40	0
Total return to security holders (debt and equity)	$ 76	$ 60

Basic of Solvency

Adjustments for Capital Structure - Liabilities

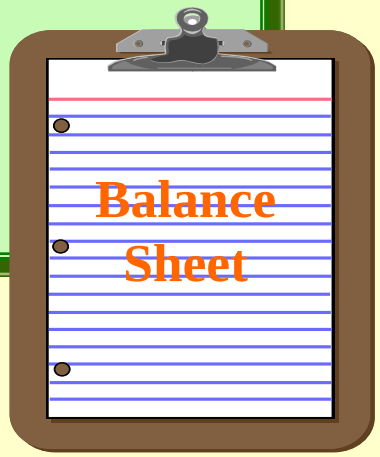
Potential accounts needing adjustments	Chapter reference
Deferred Income Taxes — Is it a liability, equity, or some of both?	3 & 6
Operating Leases -- capitalize non-cancelable operating leases?	3
Off-Balance-Sheet Financing	**3**
Pensions and Postretirement Benefits	**3**
Unconsolidated Subsidiaries	**5**
Contingent Liabilities	**3 & 6**
Minority Interests	**5**
Convertible Debt	**3**
Preferred Stock	3



Basic of Solvency

Adjustments for Capital Structure - Assets

Potential accounts needing adjustments	Chapter reference
Inventories—LIFO Reserve?	**4**
Marketable Securities	**4**
Intangible Assets	**4 & 5**



Capital Structure and Solvency

Long-Term Projections

Projection of Future Cash Inflows and Outflows

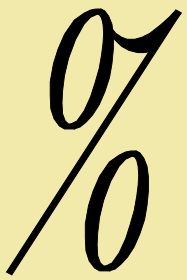
Reflects on risk for a levered company's capital structure
Prepare a Statement of Forecasts of Cash Inflows and Outflows

Chapter 9 described and illustrated long-term cash flow forecasts

Capital Structure and Solvency

Common-Size Statements

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**

Capital Structure and Solvency

Capital Structure Measures

Total Debt to Total Capital (also called **total debt ratio**)

$$\frac{\text{Total debt}}{\text{Total capital}}$$

Capital Structure and Solvency

Capital Structure Measures

Total Debt to Equity Capital

$$\frac{\text{Total debt}}{\text{Shareholders' equity}}$$

Capital Structure and Solvency

Capital Structure Measures

Long -Term Debt to Equity Capital (also called Debt to Equity)

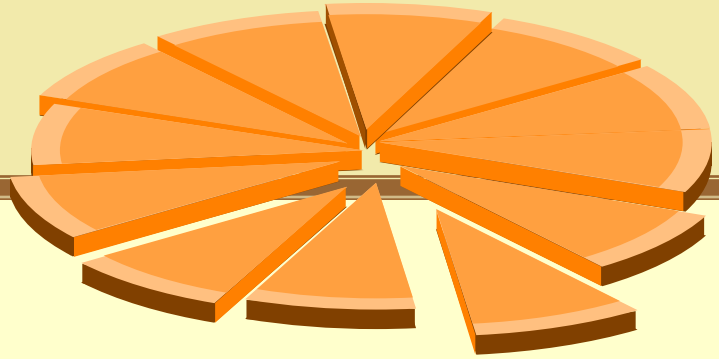
$$\frac{\text{Long-term debt}}{\text{Shareholders' equity}}$$

Capital Structure and Solvency

Capital Structure Measures

Short-Term Debt to Total Debt

Equity Capital at Market Value



Capital Structure and Solvency

Interpretation of Capital Structure Measures

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

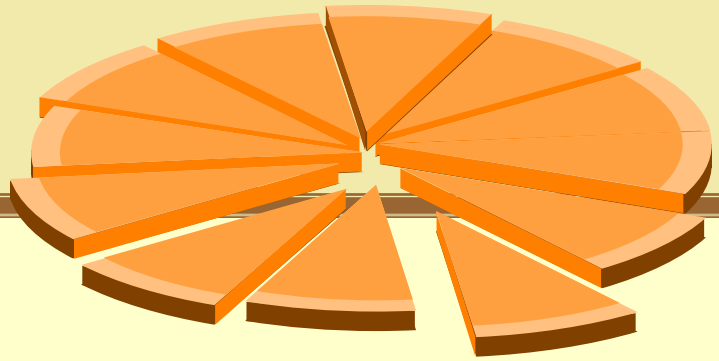
- **Debt maturities (amount and timing)**
- **Interest costs**
- **Risk-bearing factors (earnings persistence, industry performance, and asset composition)**

Capital Structure and Solvency

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

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

(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 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.

Earning Coverage

Earnings to Fixed Charges - Illustration

COMPUTECH CORPORATION
Income Statement

Net sales		**$ 13,400,000**
Income of less than 50%-owned affiliates (all[nb]undistributed)		**600,000**
Total revenue		**$ 14,000,000**
Cost of goods sold	**$ 7,400,000**	
Selling, general, and administrative expenses	**1,900,000**	
Depreciation (excluded from above costs)3	**800,000**	
Interest expense1—net	**700,000**	
Rental expense2	**800,000**	
Share of minority interests in consolidated income4	**200,000**	**11,800,000**
Income before taxes		**$ 2,200,000**
Income taxes:		
Current	**$ 800,000**	
Deferred	**300,000**	**(1,100,000)**
Income before extraordinary item		**$ 1,100,000**
Extraordinary gain (net of $67,000 tax)		**200,000**
Net income		**$ 1,300,000**
Dividends:		
On common stock	**$ 200,000**	
On preferred stock	**400,000**	**600,000**
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:

$$\frac{\$2{,}200\,(a)+\$700\,(b \text{ and } c)+\$300\,(d)+\$80\,(e)-\$600\,(g)+\$200^{*}}{\$840\,(h)+\$60\,(c)+\$300\,(d)} = 2.40$$

**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

Tiimes Interest Earned

Times interest earned ratio

$$\frac{\text{Income} + \text{Tax expense} + \text{Interest expense}}{\text{Interest expense}}$$

Earning Coverage

Cash Flow to Fixed Charges

Cash Flow to Fixed Charges Ratio

$$\frac{\text{Pre-tax operating cash flow} + \text{Adjustments (b)} - \text{(g)}}{\text{Fixed charges}}$$

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:*

$$\frac{\text{Pre-tax income} + \text{Adjusted (b)} - \text{(g)}}{\text{Fixed charges} + \left(\frac{\text{Preferred dividends}}{1 - \text{Tax rate}} \right)}$$

Earning Coverage

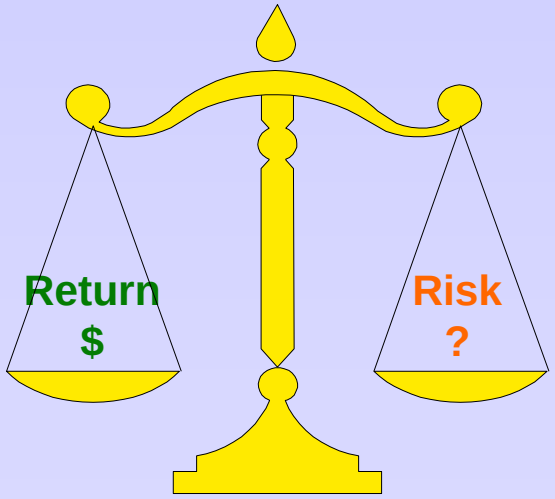
Interpreting Earnings Coverage

- 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

Earning Coverage

Capital Structure Risk and Return

- 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

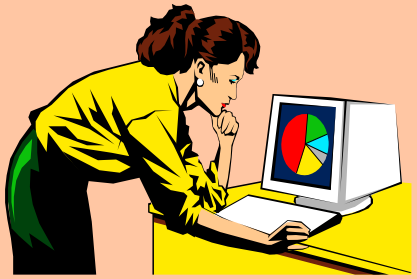


Rating Debt Obligations—Appendix 10A

Rating Criteria

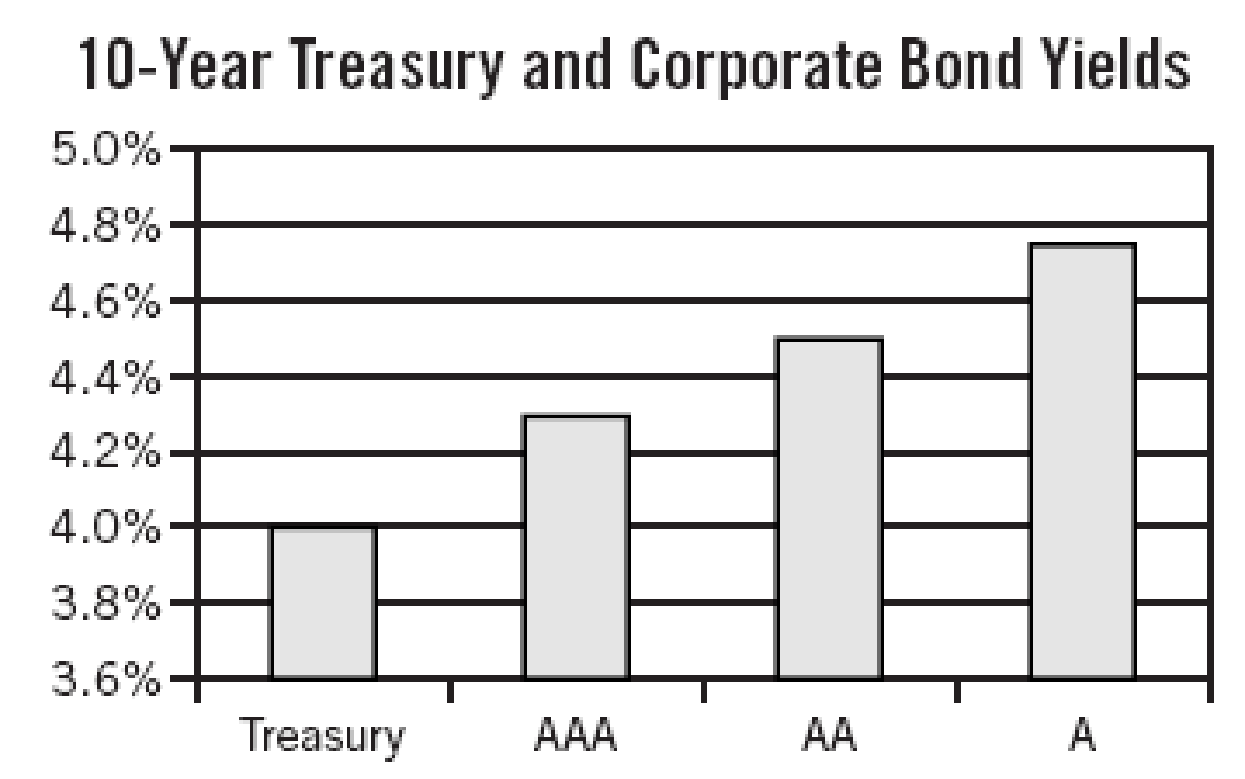
Criteria determining a specific rating involve both *quantitative* and *qualitative* factors

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



Rating Debt Obligations—Appendix 10A

Ratings and Yields



Rating Debt Obligations—Appendix 10A

Rating Criteria

Bond Quality Ratings

Rating Grades	*Standard & Poor's*	*Moody's*
Highest grade	AAA	Aaa
High grade	AA	Aa
Upper medium	A	A
Lower medium	BBB	Baa
Marginally speculative	BB	Ba
Highly speculative	B	B, Caa
Default	D	Ca, C

Predicting Financial Distress—Appendix 10B

Altman Z-Score

$$Z = 0.717X_1 + 0.847X_2 + 3.107X_3 + 0.420X_4 + 0.998X_5$$

***X*1 = Working capital/Total assets**
***X*2 = Retained earnings/Total assets**
***X*3 = Earnings before interest and taxes/Total assets**
***X*4 = Shareholders' equity/Total liabilities**
***X*5 = 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