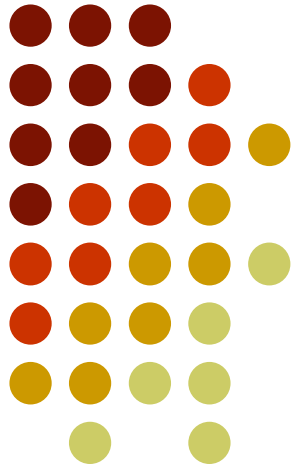
Analysis of Financial Statements

Chapter 5



Outline

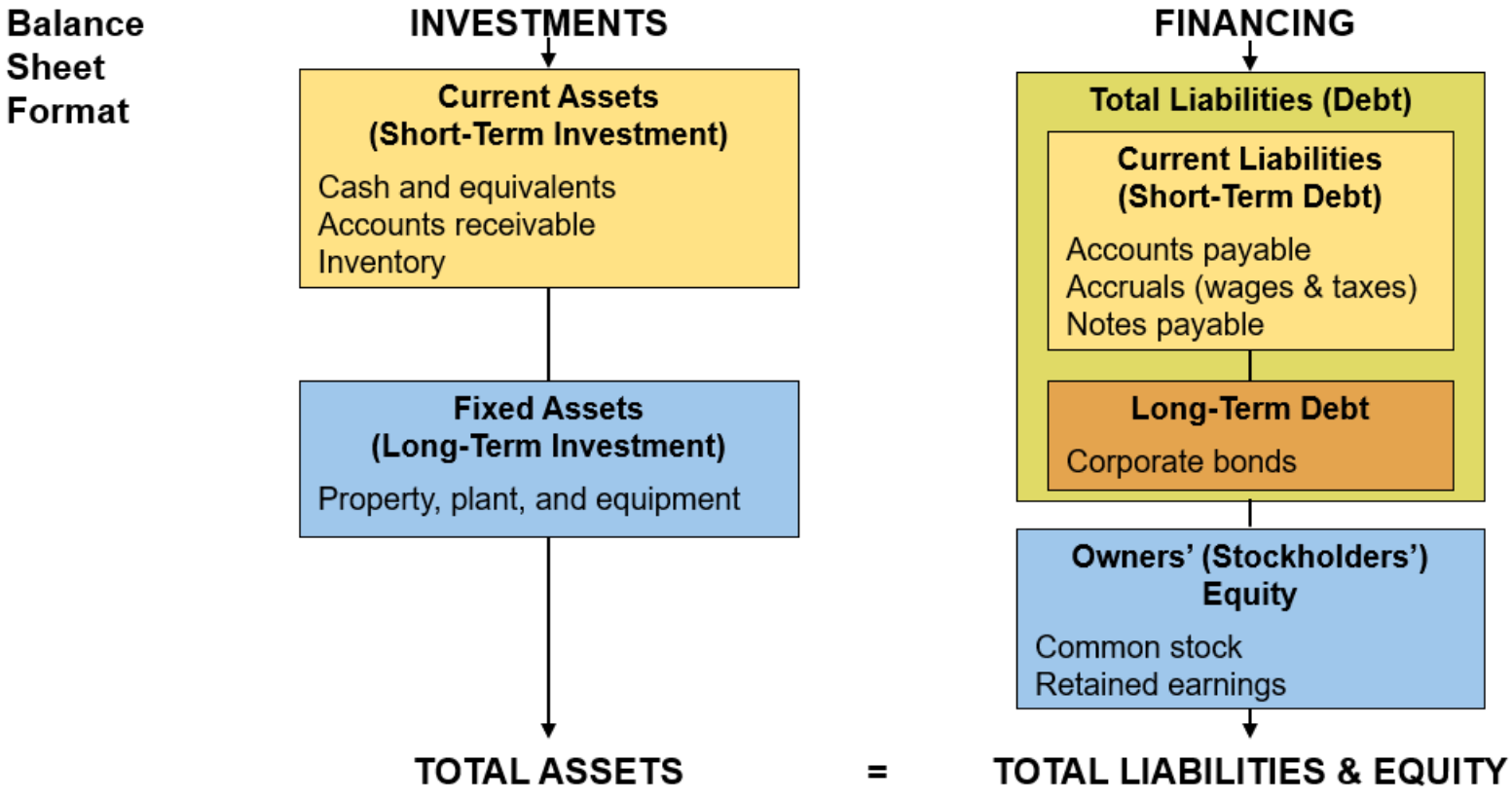
- Financial statements
  - Balance sheet
  - Income statement
  - Statement of cash flow
- Ratio analysis
- References: BF Chap 9; PF Chap 7

Financial Statement and Reports

- Annual report
  - A report issued annually by a corporation to its stockholders
  - Management's opinion of the past year's operations and the firm's future prospects
  - Basic financial statements
    - Balance sheet
    - Income statement
    - Statement of cash flows

Balance Sheet

- A statement of the firm's financial position at a specific point in time



Balance Sheet

- Points worth noting
  - Cash versus other assets
  - Accounting alternatives
    - FIFO (first-in, first-out) or LIFO (last-in, first-out)
    - Accelerated or straight-line depreciation
  - Breakdown of common equity account
    - Common stock
    - Paid-in capital
    - Retained earnings
  - Book values versus market values
  - The time dimension
    - Balance sheet is a snapshot of the firm's financial position at a specific point in time

Argile Textiles: Balance Sheet ($ million)

	2015		2014	
	Amount	Percent of Total Assets	Amount	Percent of Total Assets
Assets				
Cash and marketable securities	$ 10.0	2.4%	$ 20.0	5.3%
Accounts receivable	90.0	21.2	80.0	21.3
Inventories	135.0	31.7	101.0	26.9
Total current assets	$235.0	55.3%	$201.0	53.5%
Gross plant and equipment	345.0		300.0	
Less: Accumulated depreciation	(155.0)		(125.0)	
Net plant and equipment	$190.0	44.7	$175.0	46.5
Total assets	$425.0	100.0%	$376.0	100.0%
Liabilities and Equity				
Accounts payable	$ 15.0	3.5%	$ 8.0	2.1%
Accruals	30.0	7.1	27.0	7.2
Notes payable	20.0	4.7	18.0	4.8
Total current liabilities	$ 65.0	15.3%	$ 53.0	14.1%
Long-term bonds	152.0	35.8	128.0	34.0
Total liabilities	$217.0	51.1%	$181.0	48.1%
Common stock (11 million shares)	66.0	15.5	66.0	17.6
Retained earnings	142.0	33.4	129.0	34.3
Owners' equity	$208.0	48.9%	$195.0	51.9%
Total liabilities and equity	$425.0	100.0%	$376.0	100.0%
Book value per share = (Common stock)/Shares	$ 18.91		$ 17.73	
Market value per share (stock price)	$ 20.00		$ 20.00	
Additional Information				
Net working capital = Current assets − Current liabilties	$170.0		$148.0	
Net worth = Total assets − Total liabilities	$208.0		$195.0	

Note: Argile has no preferred stock, so owners' equity includes common equity only.

Income Statement

- A statement summarizing the firm's revenues and expenses over an accounting period, generally a quarter or a year
  - It indicates the firm's accounting profits or losses.
  - It is not a summary of cash receipts and disbursements.

Argile Textiles: Income Statement ($ million)

	2015		2014	
	Amount	Percent of Net Sales	Amount	Percent of Net Sales
Net sales	$750.0	100.0%	$700.0	100.0%
Cost of goods sold	(600.0)	80.0	(560.0)	80.0
Gross profit	$150.0	20.0	140.0	20.0
Fixed operating expenses except depreciation	(55.0)[a]	7.3	(50.0)	7.1
Earnings before interest, taxes, depreciation, and amortization (EBITDA)	$ 95.0	12.7	$ 90.0	12.9
Depreciation	(30.0)	4.0	(24.0)	3.4
Net operating income (NOI) = Earnings before interest and taxes (EBIT)	$ 65.0	8.7	$ 66.0	9.4
Interest	(20.0)	2.7	(18.0)	2.6
Earnings before taxes (EBT)	$ 45.0	6.0	48.0	6.9
Taxes (40%)	(18.0)	2.4	(19.2)	2.7
Net income	$ 27.0	3.6	$ 28.8	4.1
Preferred dividends[b]	0.0		0.0	
Earnings available to common shareholders (EAC)	$ 27.0		$ 28.8	
Common dividends	(14.0)		(13.0)	
Addition to retained earnings	$ 13.0		$ 15.8	
Per-Share Data (11 million shares)				
Earnings per share (EPS) = (Net income)/Shares	$ 2.45		$ 2.62	
Dividends per share (DPS) = (Common dividends)/Shares	$ 1.27		$ 1.18	

[a]Here, and throughout the text, parentheses are used to denote negative numbers.

[b]Argile has no preferred stock. The amount of preferred dividends, which is $0, is shown here to inidcate that preferred dividends are paid before common dividends.

Statement of Cash Flows

- A statement reporting the impact of a firm's operating, investing, and financing activities on cash flows over an accounting period
  - Sources of cash
    - Increase in liability or equity account
    - Decrease in an asset account
  - Uses of cash
    - Decrease in a liability or equity account
    - Increase in an asset account

Argile Textile: Cash Source and Uses, 2015 ($ million)

	Account Balance as of:		Change	
	12/31/15	12/31/14	Sources	Uses
Balance Sheet Changes				
Cash and marketable securities	$ 10.0	$ 20.0	$ 10.0	
Accounts receivable	90.0	80.0		$(10.0)
Inventory	135.0	101.0		(34.0)
Gross plant and equipment	345.0	300.0		(45.0)
Accounts payable	15.0	8.0	7.0	
Accruals	30.0	27.0	3.0	
Notes payable	20.0	18.0	2.0	
Long-term bonds	152.0	128.0	24.0	
Common stock (11 million shares)	66.0	66.0	—	—
Income Statement Information				
Net income	$ 27.0			
Add: depreciation	30.0			
Gross cash flow from operations	$ 57.0		57.0	
Dividend payment	14.0			(14.0)
Totals			$103.0	$103.0

Argile Textile: Statement of Cash Flow (for the period ending Dec. 31, 2015)

	Cash Flows	Net Amounts
Cash Flows from Operating Activities		
Net income	$ 27.0	
Additions (adjustments) to net income		
Depreciation[a]	30.0	
Increase in accounts payable	7.0	
Increase in accruals	3.0	
Subtractions (adjustments) from net income		
Increase in accounts receivable	(10.0)	
Increase in inventory	(34.0)	
Net cash flow from operations		$ 23.0
Cash Flows from Long-Term Investing Activities		
Acquisition of fixed assets		$(45.0)
Cash Flows from Financing Activities		
Increase in notes payable	$ 2.0	
Increase in long-term bonds	24.0	
Dividend payment	(14.0)	
Net cash flow from financing		$ 12.0
Net change in cash		$(10.0)
Cash at the beginning of the year		20.0
Cash at the end of the year		$ 10.0

[a]Depreciation is a noncash expense that was deducted when calculating net income. It must be added back to show the correct cash flow from operations.

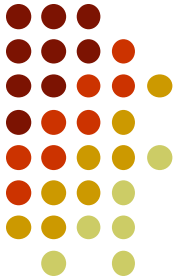
How do Investors Use Financial Statements?

- Working (operating) capital
  - Short-term financing
  - Short-term investing

$$\text{Net working capital} = \text{NWC} = \text{Current assets} - \text{Current liabilities}$$

$$\text{Net operating working capital} = \text{NOWC} = \left(\text{Current assets required for operations}\right) - \left(\text{Non-interest-bearing current liabilities}\right)$$

How do Investors Use Financial Statements?



- Operating cash flows
  - The cash flow that the firm would have available for investing in assets if it had no debt

$$\text{Operating cash flow} = [\text{NOI}(1-\text{Tax rate})] + \left(\text{Depreciation and amortization expense}\right)$$

$$= \left(\text{Net operating profit after taxes}\right) + \left(\text{Depreciation and amortization expense}\right)$$

How do Investors Use Financial Statements?

- Free cash flow
  - Measures the cash flow that the firm is free to pay to investors (both bondholders and stockholders) after considering the cash investments

$$\text{Free cash flow (FCF)} = \left(\begin{array}{c}\text{Operating}\\ \text{cash flow}\end{array}\right) - \text{Investments}$$

$$= \left(\begin{array}{c}\text{Operating}\\ \text{cash flow}\end{array}\right) - (\Delta \text{Fixed assets} + \Delta \text{NOWC})$$

How do Investors Use Financial Statements?

- Economic value added (EVA)
  - Based on the concept that the earnings from actions taken by a company must be sufficient to compensate the suppliers of funds – both the bondholders and the stockholders

$$\text{Economic value added (EVA)} = \text{NOI}(1 - \text{Tax rate}) - \left(\text{Invested capital} \times \text{After-tax cost of funds as a percent}\right)$$

Ratio Analysis

- Objective is to anticipate future financial conditions
- Starting point for planning future actions

Ratio Analysis – Liquidity Ratios

- Liquid asset
  - An asset that can be easily converted into cash without significant loss of its original value
- Liquidity ratios
  - Ratios that relate the firm's cash and other assets to its current liabilities
  - Indicate how well a firm can meet its current obligations

Ratio Analysis – Liquidity Ratios

- Current ratio

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

- Quick (acid test) ratio

$$\text{Quick ratio} = \frac{\text{Current assets - Inventory}}{\text{Current liabilities}}$$

Ratio Analysis – Asset Mgmt Ratios

- Asset management ratios
  - Ratios that measure how effectively a firm is managing its assets
- Inventory turnover ratio

$$= \frac{\text{Cost of goods sold}}{\text{Inventory}} = \frac{\text{Variable operating costs}}{\text{Inventory}}$$

Ratio Analysis – Asset Mgmt Ratios

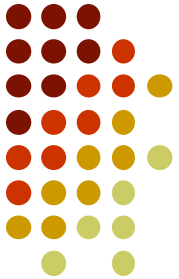
- Days sales outstanding (DSO)

$$= \frac{\text{Receivables}}{\text{Average sales per day}} = \frac{\text{Receivables}}{\left[\frac{\text{Annual sales}}{360}\right]}$$

- Fixed assets turnover ratio

$$= \frac{\text{Sales}}{\text{Net fixed assets}}$$

Ratio Analysis – Asset Mgmt Ratios



- Total assets turnover ratio

$$= \frac{\text{Sales}}{\text{Total assets}}$$

Ratio Analysis – Debt Mgmt Ratios

- Debt management ratios
  - Analyze the company's use of debt
- Financial leverage
  - The use of debt financing

Ratio Analysis – Debt Mgmt Ratios

- Debt ratio

$$= \frac{\text{Total liabilities}}{\text{Total assets}}$$

- Times-Interest-Earned (TIE) ratio

$$= \frac{\text{EBIT}}{\text{Interest Charges}}$$

Ratio Analysis – Debt Mgmt Ratios

- Fixed charge coverage ratio

$$= \frac{\text{EBIT} + \text{Lease payments}}{\left(\begin{array}{c}\text{Interest}\\ \text{charges}\end{array}\right) + \left(\begin{array}{c}\text{Lease}\\ \text{payments}\end{array}\right) + \left[\frac{\text{Sinking fund payment}}{(1\text{-Tax rate})}\right]}$$

  - Sinking fund
    - A required annual payment designed to reduce the balance of a bond or preferred stock issue
    - Must be paid with after-tax dollars

Ratio Analysis – Profitability Ratios

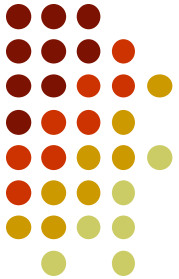
- Operating profit margin

$$= \frac{\text{EBIT}}{\text{Sales}}$$

- Net profit margin

$$= \frac{\text{Net income}}{\text{Sales}}$$

Ratio Analysis – Profitability Ratios



- Return on total assets (ROA)

$$= \frac{\text{Net income}}{\text{Total assets}}$$

- Return on equity (ROE)

$$= \frac{\text{Net income}}{\text{Equity}}$$

Ratio Analysis – Market Value Ratios

- Market value ratios
  - Ratios that relate the firm's stock price to its earnings and book value per share
- Earnings per share (EPS)

$$= \frac{\text{Net income available to common stockholders}}{\text{Number of common shares outstanding}}$$

Ratio Analysis – Market Value Ratios

- Price/Earnings (P/E) ratio

$$= \frac{\text{Market price per share}}{\text{Earnings per share}}$$

- Book value per share

$$= \frac{\text{Common equity}}{\text{Number of common shares outstanding}}$$

Ratio Analysis – Market Value Ratios

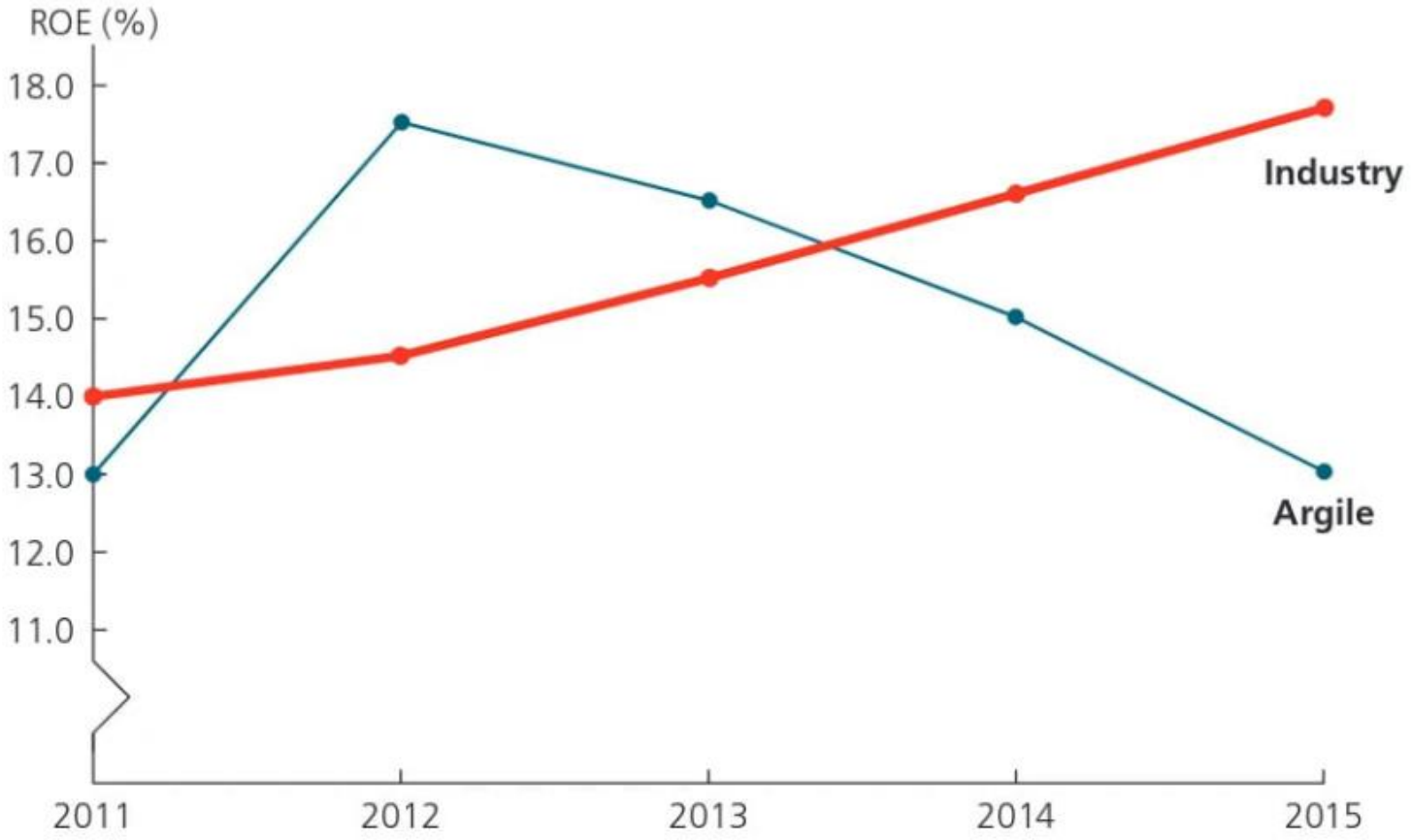
- Market/Book (M/B) ratio

$$= \frac{\text{Market price per share}}{\text{Book value per share}}$$

Ratio Analysis

- Trend analysis
  - An analysis of a firm's financial ratios over time
  - Used to determine whether a firm's financial position is improving or deteriorating

Trend Analysis: Argile's ROE, 2011-2015



Ratio Analysis

- Summary of ratio analysis: DuPont analysis
  - An analysis designed to show the relationships among return on investment, asset turnover, the profit margin, and leverage
- DuPont equation

$$\text{ROA} = \text{Net profit margin} \times \text{Total assets turnover}$$

$$= \frac{\text{Net income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Total Assets}}$$

DuPont Analysis

- DuPont equation

$$\text{ROE} = \text{ROA} \times \text{Equity multiplier}$$

$$= \frac{\text{Net income}}{\text{Total assets}} \times \frac{\text{Total assets}}{\text{Common equity}}$$

$$\text{ROE} = \left[\begin{pmatrix}\text{Profit}\\ \text{margin}\end{pmatrix} \times \begin{pmatrix}\text{Total assets}\\ \text{turnover}\end{pmatrix}\right] \times \begin{pmatrix}\text{Equity}\\ \text{multiplier}\end{pmatrix}$$

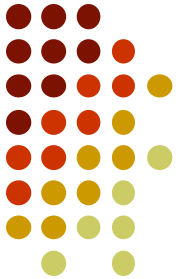
$$= \left[\frac{\text{Net income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Total assets}}\right] \times \left(\frac{\text{Total assets}}{\text{Common equity}}\right)$$

Ratio Analysis

- Comparative ratio analysis (benchmarking)
  - An analysis based on a comparison of a firm's ratios with those of other firms in the same industry at a particular point in time

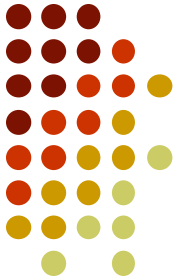
Ratio	Formula for Calculation	Computation	Ratio Value	Industry Average	Comment
Liquidity					
Current	$= \frac{\text{Current assets}}{\text{Current liabilities}}$	$\frac{\$235.0}{\$65.0}$	$= 3.6\times$	$4.1\times$	Low
Quick, or acid test	$= \frac{\text{Current assets} - \text{Inventory}}{\text{Current liabilities}}$	$\frac{\$100.0}{\$65.0}$	$= 1.5\times$	$2.1\times$	Low
Asset Management					
Inventory turnover	$= \frac{\text{Cost of goods sold}}{\text{Inventory}}$	$\frac{\$600.0}{\$135.0}$	$= 4.4\times$	$7.4\times$	Low
Days sales out-standing (DSO)	$= \frac{\text{Accounts receivable}}{\left[\frac{\text{Annual sales}}{360}\right]}$	$\frac{\$90.0}{\$2.08}$	$= 43.2$ days	32.1 days	Poor
Fixed assets turnover	$= \frac{\text{Sales}}{\text{Net fixed assets}}$	$\frac{\$750.0}{\$190.0}$	$= 3.9\times$	$4.0\times$	OK
Total assets turnover	$= \frac{\text{Sales}}{\text{Total assets}}$	$\frac{\$750.0}{\$425.0}$	$= 1.8\times$	$2.1\times$	Low
Debt Management					
Debt-to-total-assets	$= \frac{\text{Total liabilities}}{\text{Total assets}}$	$\frac{\$217.0}{\$425.0}$	$= 51.1\%$	42.0%	Poor
Times interest earned (TIE)	$= \frac{\text{EBIT}}{\text{Interest charges}}$	$\frac{\$65.0}{\$20.0}$	$= 3.3\times$	$6.5\times$	Low
Fixed charge coverage	$= \frac{\text{EBIT} + \text{Lease payments}}{\text{Interest charges} + \text{Lease payments} + \left[\frac{\text{Sinking fund payments}}{(1 - \text{Tax rate})}\right]}$	$\frac{\$70.0}{\$31.7}$	$= 2.2\times$	$5.8\times$	Low
Profitability					
Net profit margin	$= \frac{\text{Net income}}{\text{Sales}}$	$\frac{\$27.0}{\$750.0}$	$= 3.6\%$	4.9%	Poor
Return on total assets (ROA)	$= \frac{\text{Net income}}{\text{Total assets}}$	$\frac{\$27.0}{\$425.0}$	$= 6.4\%$	11.5%	Poor
Return on equity (ROE)	$= \frac{\text{Net income available to common stockholders}}{\text{Common equity}}$	$\frac{\$27.0}{\$208.0}$	$= 13.0\%$	17.7%	Poor
Market Value					
Price/Earnings (P/E)	$= \frac{\text{Market price per share}}{\text{Earnings per share}}$	$\frac{\$20.00}{\$2.45}$	$= 8.2\times$	$15.0\times$	Low
Market/Book (M/B)	$= \frac{\text{Market price per share}}{\text{Book value per share}}$	$\frac{\$20.00}{\$18.91}$	$= 1.1\times$	$2.5\times$	Low

Uses and Limitations of Ratio Analysis



1. Large firms operate divisions in different industries
   - Difficult to develop meaningful industry averages
2. If the goal is to be better than average, industry averages are not the target
   - Focus on the industry leaders' ratios

Uses and Limitations of Ratio Analysis



3. Inflation distorts balance sheets
   - Depreciation and inventory costs affect income statements
   - Comparative analysis of firm over time
   - Comparing firms of different ages
4. Seasonal factors distort ratios
   - Use monthly averages as base for inventory and receivables instead of one particular month

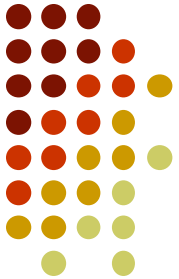
Uses and Limitations of Ratio Analysis

5. Window dressing techniques
   - Make financial statements appear better than they actually are
   - Borrowing “long-term” to be repaid quickly distorts liquidity ratios
6. Different accounting practices
   - Distorts comparisons
   - Inventory valuation
   - Depreciation methods

Uses and Limitations of Ratio Analysis

7. Difficult to generalize about “good” or “bad” ratios
   - High current ratio can indicate strong liquidity or excessive cash
   - High fixed assets turnover can indicate efficient use or undercapitalized

Uses and Limitations of Ratio Analysis



8. Firm may have some “good” ratios and others that look “bad”
   - Difficult to tell whether overall the company is strong or weak
   - Statistical procedures can analyze the net effects of a set of ratios

The most important and most difficult part of effective ratio analysis is the judgment that must be used to reach conclusions about a firm’s financial position.

Summary

- Financial statements
  - Balance sheet – a snapshot of firm's assets and how they are financed
  - Income statement – revenues earned and expenses incurred
  - Statement of cash flows – activities that generated funds and those that used funds
- How do investors utilize financial statements?
  - Help investors determine the financial position of the firm to help estimate cash flows the firm will generate in the future

Summary

- Ratio analysis
  - Used to evaluate the firm's current financial position and the direction this position is expected to take in the future
    - Investors form opinions about the safety of their investments
    - Managers plan actions that will correct the firm's weaknesses and take advantage of its strengths