

AGENDA: FINANCIAL STATEMENT ANALYSIS

- A. Comparative analysis of financial statements.
 - 1. Trend analysis. (Horizontal analysis)
 - 2. Common-size statements. (Vertical analysis)
- B. Ratio analysis—the common stockholder
 - 1. Earnings per share
 - 2. Gross margin percentage
 - 3. Price-earnings ratio
 - 4. Dividend payout ratio
 - 5. Dividend yield ratio
 - 6. Return on total assets
 - 7. Return on common stockholders' equity
 - 8. Book value per share
- C. Ratio analysis—the short-term creditor
 - 1. Working capital
 - 2. Current ratio
 - 3. Acid-test (quick) ratio
 - 4. Accounts receivable turnover and average collection period
 - 5. Inventory turnover and average sale period
- D. Ratio analysis—the long-term creditor
 - 1. Times interest earned ratio
 - 2. Debt-to-equity ratio

FINANCIAL STATEMENT ANALYSIS

Few figures on financial statements have much significance by themselves. The relationship of one figure to another and the amounts and directions of changes are important.

Several techniques are commonly used to help analyze financial statements:

- Dollar and percentage changes.
- Common-size statements.
- Ratios.

Trend Percentages

Trend percentages state several years' financial data in terms of a base year.

EXAMPLE: Translate the following data into trend percentages, using Year 1 as the base year. (All dollar amounts are in thousands.)

	<i>Year 4</i>	<i>Year 3</i>	<i>Year 2</i>	<i>Year 1</i>
Sales.....	\$650	\$600	\$550	\$500
Accounts receivable	\$70	\$52	\$44	\$40

These data in trend percentage form would be:

	<i>Year 4</i>	<i>Year 3</i>	<i>Year 2</i>	<i>Year 1</i>
Sales.....	130%	120%	110% *	100%
Accounts receivable ...	175%	130%	110%	100%

* $\$550 \div \$500 = 110\%$, and so forth.

COMPARATIVE STATEMENTS

EXAMPLE: Comparative financial statements covering the last two years for Molin Corporation follow (dollar amounts are in thousands).

Comparative Statements of Financial Position

	<i>This</i>	<i>Last</i>	<i>Change</i>	
	<i>Year</i>	<i>Year</i>	<i>Amount</i>	<i>Percent</i>
<i>Assets</i>				
Current assets:				
Cash.....	\$ 90	\$ 300	\$ (210)	(70.0)
Accounts receivable.....	800	500	300	60.0
Inventory.....	1,400	900	500	55.6
Prepaid expenses	<u>60</u>	<u>60</u>	<u>0</u>	0.0
Total current assets	2,350	1,760	590	33.5
Plant and equipment, net	<u>2,650</u>	<u>2,240</u>	<u>410</u>	18.3
Total assets.....	<u>\$5,000</u>	<u>\$4,000</u>	<u>\$1,000</u>	25.0
<i>Liabilities and Stockholders' Equity</i>				
Liabilities:				
Current liabilities	\$1,400	\$ 750	\$ 650	86.7
Bonds payable, 10%.....	<u>600</u>	<u>600</u>	<u>0</u>	0.0
Total liabilities	<u>2,000</u>	<u>1,350</u>	<u>650</u>	48.1
Stockholders' equity:				
Preferred stock, \$25 par, 7.5%	400	400	0	0.0
Common stock, \$10 par.....	500	500	0	0.0
Retained earnings	<u>2,100</u>	<u>1,750</u>	<u>350</u>	20.0
Total stockholders' equity.....	<u>3,000</u>	<u>2,650</u>	<u>350</u>	13.2
Total liabilities and stockholders' equity.....	<u>\$5,000</u>	<u>\$4,000</u>	<u>\$1,000</u>	25.0

COMPARATIVE STATEMENTS (continued)*Comparative Income Statements*

	<i>This</i>	<i>Last</i>	<u><i>Change</i></u>	
	<i>Year</i>	<i>Year</i>	<i>Amount</i>	<i>Percent</i>
Sales.....	\$9,000	\$8,000	\$1,000	12.5
Cost of goods sold	<u>5,930</u>	<u>5,100</u>	<u>830</u>	16.3
Gross margin.....	3,070	2,900	170	5.9
Selling and administrative expenses	<u>2,160</u>	<u>2,040</u>	<u>120</u>	5.9
Net operating income.....	910	860	50	5.8
Interest expense.....	<u>60</u>	<u>60</u>	<u>0</u>	0.0
Net income before taxes	850	800	50	6.3
Income taxes (40%)	<u>340</u>	<u>320</u>	<u>20</u>	6.3
Net income.....	<u>\$ 510</u>	<u>\$ 480</u>	<u>\$ 30</u>	6.3

Comparative Retained Earnings Statements

	<i>This</i>	<i>Last</i>	<u><i>Change</i></u>	
	<i>Year</i>	<i>Year</i>	<i>Amount</i>	<i>Percent</i>
Retained earnings, beginning	\$1,750	\$1,420	\$330	23.2
Add net income	<u>510</u>	<u>480</u>	<u>30</u>	6.3
Total	<u>2,260</u>	<u>1,900</u>	<u>360</u>	18.9
Deduct dividends paid:				
Preferred stock.....	30	30	0	0.0
Common stock	<u>130</u>	<u>120</u>	<u>10</u>	8.3
Total dividends	<u>160</u>	<u>150</u>	<u>10</u>	6.7
Retained earnings, end	<u>\$2,100</u>	<u>\$1,750</u>	<u>\$350</u>	20.0

COMMON-SIZE STATEMENTS

Common-size financial statements restate all items as a percentage of total assets (balance sheet) or of sales (income statement).

*Common-Size Statements of Financial Position
(Balance sheet items are stated as a percentage of Total Assets)*

	<i>This</i>	<i>Last</i>	<i>Common-Size</i>	
			<i>This</i>	<i>Last</i>
	<i>Year</i>	<i>Year</i>	<i>Year</i>	<i>Year</i>
<i>Assets</i>				
Current assets:				
Cash.....	\$ 90	\$ 300	1.8	7.5
Accounts receivable.....	800	500	16.0	12.5
Inventory.....	1,400	900	28.0	22.5
Prepaid expenses.....	<u>60</u>	<u>60</u>	<u>1.2</u>	<u>1.5</u>
Total current assets.....	2,350	1,760	47.0	44.0
Plant and equipment, net.....	<u>2,650</u>	<u>2,240</u>	<u>53.0</u>	<u>56.0</u>
Total assets.....	<u>\$5,000</u>	<u>\$4,000</u>	<u>100.0</u>	<u>100.0</u>
<i>Liabilities and Stockholders' Equity</i>				
Liabilities:				
Current liabilities.....	\$1,400	\$ 750	28.0	18.8
Bonds payable, 10%.....	<u>600</u>	<u>600</u>	<u>12.0</u>	<u>15.0</u>
Total liabilities.....	<u>2,000</u>	<u>1,350</u>	<u>40.0</u>	<u>33.8</u>
Stockholders' equity:				
Preferred stock, \$25 par, 7.5%.....	400	400	8.0	10.0
Common stock, \$10 par.....	500	500	10.0	12.5
Retained earnings.....	<u>2,100</u>	<u>1,750</u>	<u>42.0</u>	<u>43.7</u>
Total stockholders' equity.....	<u>3,000</u>	<u>2,650</u>	<u>60.0</u>	<u>66.2</u>
Total liabilities and stockholders' equity.....	<u>\$5,000</u>	<u>\$4,000</u>	<u>100.0</u>	<u>100.0</u>

COMMON-SIZE STATEMENTS (continued)

Common-Size Income Statements

(All income statement items are stated as a percentage of Sales.)

	<i>Common-Size Percentages</i>			
	<i>This</i>	<i>Last</i>	<i>This</i>	<i>Last</i>
	<i>Year</i>	<i>Year</i>	<i>Year</i>	<i>Year</i>
Sales.....	\$9,000	\$8,000	100.0	100.0
Cost of goods sold	<u>5,930</u>	<u>5,100</u>	<u>65.9</u>	<u>63.7</u>
Gross margin.....	3,070	2,900	34.1	36.3
Selling and administrative expenses	<u>2,160</u>	<u>2,040</u>	<u>24.0</u>	<u>25.5</u>
Net operating income.....	910	860	10.1	10.8
Interest expense.....	<u>60</u>	<u>60</u>	<u>0.7</u>	<u>0.8</u>
Net income before taxes	850	800	9.4	10.0
Income taxes (40%)	<u>340</u>	<u>320</u>	<u>3.8</u>	<u>4.0</u>
Net income.....	<u>\$ 510</u>	<u>\$ 480</u>	<u>5.7</u>	<u>6.0</u>

Gross Margin Percentage

The gross margin percentage is often monitored by managers and investment analysts. It is computed as follows:

$$\text{Gross margin percentage} = \frac{\text{Gross margin}}{\text{Sales}}$$

For this year, the gross margin percentage was:

$$\text{Gross margin percentage, this year} = \frac{\$3,070}{\$9,000} = 34.1\%$$

RATIO ANALYSIS—THE COMMON STOCKHOLDER

Earnings per Share

Earnings per share (EPS) refers to the earnings that are available to the owners of common stock after preferred dividends have been paid. Earnings per share is defined as follows:

$$\text{Earnings per share} = \frac{\text{Net income} - \text{Preferred dividends}}{\text{Average common shares outstanding}}$$

To compute Molin Corporation's EPS, first determine the average common shares that were outstanding during the year.

	<i>This Year</i>	<i>Last Year</i>
Common stock (\$000)	\$500	\$500
÷ Par value per share.....	\$10	\$10
= Shares outstanding (000).....	50	50

$$\text{Average common shares outstanding} = (50 + 50)/2 = 50$$

$$\begin{aligned} \text{Earnings per share} &= \frac{\text{Net income} - \text{Preferred dividends}}{\text{Average common shares outstanding}} \\ &= \frac{\$510 - \$30}{50 \text{ shares}} = \$9.60 \text{ per share} \end{aligned}$$

Price-Earnings Ratio

The relation between the market price of a share of stock and the stock's current earnings per share is often stated in terms of a price-earnings ratio. Assume that Molin Corporation's stock is now selling for \$72 per share.

$$\begin{aligned}\text{Price-earnings ratio} &= \frac{\text{Market price per share}}{\text{Earnings per share}} \\ &= \frac{\$72.00}{\$9.60} = 7.5\end{aligned}$$

Dividend Payout Ratio

The dividend payout ratio shows what portion of current earnings were paid out as dividends to common stockholders. The dividend this year was \$2.60 per share (\$130 thousand ÷ 50 thousand shares), and last year it was \$2.40 per share (\$120 thousand ÷ 50 thousand shares).

$$\begin{aligned}\text{Dividend payout ratio} &= \frac{\text{Dividends per share}}{\text{Earnings per share}} \\ &= \frac{\$2.60}{\$9.60} = 27.1\%\end{aligned}$$

There is no "right" dividend payout ratio, although companies in the same industry tend to have similar dividend payout ratios.

Dividend Yield Ratio

The dividend yield ratio measures the cash return being provided by a stock.

$$\begin{aligned}\text{Dividend yield ratio} &= \frac{\text{Dividends per share}}{\text{Market price per share}} \\ &= \frac{\$2.60}{\$72.00} = 3.6\%\end{aligned}$$

A low dividend payout ratio and a low dividend yield ratio indicate that the company is retaining its earnings for internal reinvestment.

Return on Total Assets

The return on total assets is a measure of how well assets have been employed by management.

$$\begin{aligned}\text{Return on total assets} &= \frac{\text{Net income} + [\text{Interest expense} \times (1 - \text{Tax rate})]}{\text{Average total assets}} \\ &= \frac{\$510 + [\$60 \times 0.60]}{(\$5,000 + \$4,000)/2} = 12.1\%\end{aligned}$$

By adding interest expense back to net income, the return on assets is not influenced by the way in which the assets were financed.

Return on Common Stockholders' Equity

Common stockholders' equity consists of total stockholders' equity less preferred stock.

$$\begin{aligned} \text{Return on common stockholders' equity} &= \frac{\text{Net income} - \text{Preferred dividends}}{\text{Average total stockholders' equity} - \text{Average preferred stock}} \\ &= \frac{\$510 - \$30}{(\$2,600 + \$2,250)/2} = 19.8\% \end{aligned}$$

Because the return on common stockholders' equity is greater than the return on total assets, financial leverage is positive in both years.

Book Value per Share

Book value per share shows the amount of common stockholders' equity per share of common stock.

$$\begin{aligned} \text{Book value per share} &= \frac{\text{Common stockholders' equity}}{\text{Number of common shares outstanding}} \\ &= \frac{\text{Total stockholders' equity} - \text{Preferred stock}}{\text{Number of common shares outstanding}} \\ &= \frac{\$3,000 - \$400}{50 \text{ shares}} = \$52 \text{ per share} \end{aligned}$$

RATIO ANALYSIS—THE SHORT-TERM CREDITOR

Working Capital

The excess of current assets over current liabilities is known as working capital. Molin Corporation's working capital is:

$$\begin{aligned}\text{Working capital} &= \text{Current assets} - \text{Current liabilities} \\ &= \$2,350 - \$1,400 = \$950\end{aligned}$$

Working capital is viewed as a cushion of protection for short-term creditors.

Current Ratio

The relation between current assets and current liabilities can also be expressed in terms of the current ratio:

$$\begin{aligned}\text{Current ratio} &= \frac{\text{Current assets}}{\text{Current liabilities}} \\ &= \frac{\$2,350}{\$1,400} = 1.68\end{aligned}$$

A declining current ratio may be a sign of a deteriorating financial condition.

Acid-Test Ratio

The acid-test ratio (or quick ratio) provides a more rigorous test than the current ratio of a company's ability to settle its short-term liabilities.

$$\begin{aligned} \text{Acid-test ratio} &= \frac{\text{Cash} + \text{Marketable securities} + \text{Accounts receivable} + \text{Short-term notes receivable}}{\text{Current liabilities}} \\ &= \frac{\$90 + \$0 + \$800 + \$0}{\$1,400} = 0.64 \end{aligned}$$

Accounts Receivable Turnover

The accounts receivable turnover indicates how quickly accounts receivables are collected.

$$\begin{aligned} \text{Accounts receivable turnover} &= \frac{\text{Sales on account}}{\text{Average accounts receivable balance}} \\ &= \frac{\$9,000}{(\$800 + \$500)/2} = 13.8 \end{aligned}$$

$$\begin{aligned} \text{Average collection period} &= \frac{365 \text{ days}}{\text{Accounts receivable turnover}} \\ &= \frac{365 \text{ days}}{13.8} = 26.4 \text{ days} \end{aligned}$$

Inventory Turnover

The inventory turnover ratio measures how quickly inventory is converted into sales. Assume that Molin Corporation's inventory balance was \$700 thousand at the beginning of last year.

$$\begin{aligned}\text{Inventory turnover} &= \frac{\text{Cost of goods sold}}{\text{Average inventory balance}} \\ &= \frac{\$5,930}{(\$1,400 + \$900)/2} = 5.2\end{aligned}$$

$$\begin{aligned}\text{Average sale period} &= \frac{365 \text{ days}}{\text{Inventory turnover}} \\ &= \frac{365 \text{ days}}{5.2} = 70.2 \text{ days}\end{aligned}$$

RATIO ANALYSIS—THE LONG-TERM CREDITOR

Times Interest Earned

The times interest earned ratio is a widely used measure of the ability of a company's operations to provide protection for long-term creditors.

$$\begin{aligned}\text{Times interest earned} &= \frac{\text{Earnings before interest and taxes}}{\text{Interest expense}} \\ &= \frac{\$910}{\$60} = 15.2\end{aligned}$$

Debt-To-Equity Ratio

The debt-to-equity ratio measures the amount of assets being provided by creditors for each dollar of assets being provided by owners.

$$\begin{aligned}\text{Debt-to-equity ratio} &= \frac{\text{Total liabilities}}{\text{Stockholders' equity}} \\ &= \frac{\$2,000}{\$3,000} = 0.67\end{aligned}$$

There is no "right" amount of debt for a company to carry. Because different industries face different risks, the level of debt that is appropriate will vary from industry to industry.