

Accounting Notes

Financial Analysis

Financial Statement Analysis:

Horizontal Analysis - This type of analysis studies the changes in the items on the financial statement, in both dollar amount and as percentages, for successive accounting periods. The earliest year is known as the “base year”. The base year amounts are what is used to get your percentages.

$$\text{Percent of Change} = \frac{\text{Amount of change (in dollars)}}{\text{Amount for the base year}}$$

Steps in performing a Horizontal Analysis:

Step 1: Compute the dollar amount of change from the base year to the next year by subtracting the base year amount.

Step 2: Compute the percent of change from the base year, as shown above.

Example:

Income Statement				
	2000	1999	Increase (Decrease)	
			Amount (\$)	Percent (%)
Net Sales	102,500	77,500	25,000 ¹	32.3% ²
Cost of Goods Sold	61,500	50,375	11,125	22.1%
Gross Profit	41,000	27,125	13,875	51.2%
Operating Expenses	27,100	12,125	14,975	123.5%
Net Income	13,900	15,000	(1,100)	(7.33%)

¹ $(\$102,500 - 77,500) = \$25,000$

² $(\$25,000 / 77,500) = 0.3225 = 32.3\%$

A Horizontal Analysis can also be done for a series of years using trend percentages. The trend percentages are computed by selecting a year to serve as the base year, usually the earliest year. Then the amounts for every other year are divided by the base year amounts to get a percentage. The percentages for the base year will always be 100%.

Example:

Income Statement				
	2000	1999	1998	1997
Net Sales	15,065	13,767	11,984	10,571
Cost of Goods Sold	3,965	3,637	3,122	2,717
Gross Profit	11,100	10,130	8,862	7,854
Operating Expenses	8,225	5,310	4,714	3,654
Net Income	2,875	4,820	4,148	4,200

After the amounts are converted to percentages, the Income Statement will look like the one below.

Income Statement				
	2000 ¹	1999	1998	1997
Net Sales	142.5%	130.2%	113.4%	100%
Cost of Goods Sold	145.9%	133.9%	114.9%	100%
Gross Profit	141.3%	129.0%	112.8%	100%
Operating Expenses	225.1%	145.3%	129.0%	100%
Net Income	68.5%	114.8%	98.8%	100%

¹ Percentages for 2000

$$(15,065 \div 10,571) = 1.4251 \approx 142.5\%$$

$$(3,965 \div 2,717) = 1.4593 \approx 145.9\%$$

$$(11,100 \div 7,854) = 1.4132 \approx 141.3\%$$

$$(8,225 \div 3,654) = 2.2509 \approx 225.1\%$$

$$(2,875 \div 4,200) = 0.6845 \approx 68.5\%$$

Vertical Analysis: This type of analysis reveals the relationship of each financial statement item to the base amount. For the Income Statement, the Net Sales is used as the base amount and all other items on the Income Statement are expressed as a percentage of Net Sales. For the Balance Sheet, the Total Assets is used as the base amount.

Examples:

Income Statement		
	Amount	Percentage ¹
Net Sales	193,000	100%
Cost of Goods Sold	50,759	26.3%
Gross Profit	142,241	73.7%
Operating Expenses	90,903	47.1%
Net Income	51,338	26.6%

¹ Calculations to find percentages

$$193,000 / 193,000 = 1.000 = 100\%$$

$$50,759 / 193,000 = 0.263 = 26.3\%$$

$$142,241 / 193,000 = 0.737 = 73.7\%$$

$$90,903 / 193,000 = 0.471 = 47.1\%$$

$$51,338 / 193,000 = 0.266 = 26.6\%$$

Balance Sheet		
	Amount	Percentage
Assets		
Cash	1,681	11.4%
Receivables	2,651	18.1%
Inventory	1,669	11.4%
↓	↓	↓
Total Assets	14,685	100%
Liabilities		
Accounts Payable	\$2,125	14.5%
Wages Payable	3,100	21.1%
Total Liabilities	\$5,225	35.6%
Owner's Equity		
Capital	9,460	64.4%
Total Liabilities & Owner's Equity	\$14,685	100%

Calculating Financial Ratios:

Measuring a company's ability to pay its current liabilities

1) Working Capital = Current Assets - Current Liabilities

Example: Current Assets are \$153,598 and Current Liabilities are \$75,935

Working Capital = \$153,598 - 75,935 = \$77,663

2) Current Ratio = Current Assets ÷ Current Liabilities

The company's ability to pay is current liabilities using their current assets. A ratio of 2.0 or better is considered to be good.

Example: Using same information from the previous example

Current Ratio = \$153,598 / 75,935 = 2.02

3) Acid-Test (Quick) Ratio = (Cash + ST Investments + Net Current Receivables) ÷ Current Liabilities

The company's ability to pay its current liabilities if they were to become due immediately. A ratio of .9 to 1.0 is average.

Example: Cash is \$23,975, Short Term Investments are \$35,000, Net Current Receivables are \$27,800 and Current Liabilities are \$75,935.

$$\begin{aligned}\text{Acid-Test Ratio} &= (\$23,975 + 35,000 + 27,800) / 75,935 \\ &= 86,775 / 75,935 \\ &= 1.14\end{aligned}$$

Measuring a company's ability to sell inventory and collect receivables:

1) Inventory Turnover = (Cost of Goods Sold) ÷ (Average Inventory)

Shows the number of times a company sells its average inventory during the year. To calculate the average inventory add the beginning and ending inventory balances together and then divide by two. The Inventory Turnover is dependent on the type of business. Businesses that sell perishable goods should have a much higher turnover than businesses that sell non-perishable goods.

Example: Inventory on December 31, 1999 is \$145,000, Inventory on December 31, 2000 is \$130,000, and Cost of Goods Sold is \$325,000.

$$\begin{aligned}\text{Inventory Turnover} &= \$325,000 / [(145,000 + 130,000) / 2] \\ &= 325,000 / [275,000 / 2] \\ &= 325,000 / 137,500 \\ &= 2.36\end{aligned}$$

2) Accounts Receivable Turnover = (Net Credit Sales) ÷ (Average Net Accounts Receivable)

Shows a company's ability to collect cash from its credit customers. Average Accounts Receivable is calculated the same way as the average inventory above. Generally the higher the turnover the better.

Example: Net Credit Sales were \$450,000, Accounts Receivable on December 31, 1999 was \$57,900, and Accounts Receivable on December 31, 2000 was \$43,876.

$$\begin{aligned}\text{Accounts Receivable Turnover} &= \$450,000 / [(57,900 + 43,876) / 2] \\ &= 450,000 / [101,776 / 2] \\ &= 450,000 / 50,888 \\ &= 8.84\end{aligned}$$

3) Days Sales in Receivables = Average Net Accounts Receivable ÷ (Net Sales ÷ 365)

The number of days in which Sales remain in Accounts Receivable. The lower the number, the better off a company's cash flows will be.

Example: Using the same information from the previous example.

$$\begin{aligned}\text{Days Sales in Receivables} &= [(57,900 + 43,876) / 2] / (450,000 / 365) \\ &= [101,776 / 2] / 1232.8767 \\ &= 50,888 / 1232.8767 \\ &= 41.276 = 41 \text{ days}\end{aligned}$$

Measuring a company's ability to pay Short and Long Term Debt:

1) Debt Ratio = Total Liabilities ÷ Total Assets

Shows the percentage of assets financed by debt.

Example: Total Liabilities are \$56,000 and Total Assets are \$278,500

$$\begin{aligned}\text{Debt Ratio} &= 56,000 / 278,500 \\ &= 0.2011 \\ &= 20.11\%\end{aligned}$$

2) Times Interest Earned Ratio = Income from Operations ÷ Interest Expense

Shows the number of times Operating Income can cover the Interest Expense. A ratio of 2.0 to 3.0 is average.

Example: Income from Operations is \$120,000 and Interest Expense is \$19,500

$$\begin{aligned}\text{Times Interest Earned Ratio} &= \$120,000 / 19,500 \\ &= 6.15\end{aligned}$$

Measuring a company's profitability:

1) Rate of Return on Net Sales = Net Income ÷ Net Sales

Shows the percentage of each Sales dollar that is earned as Net Income.

Example: Net Income for the year was \$111,300 and Net Sales were \$1,020,500.

$$\begin{aligned}\text{Rate of Return on Net Sales} &= \$111,300 / 1,020,500 \\ &= 0.1091 \\ &= 10.91\%\end{aligned}$$

2) Rate of Return on Assets = (Net Income + Interest Expense) ÷ Average Total Assets

Shows how profitably a company has used its assets.

Example: Net Income for the year is \$111,300, Interest Expense is \$19,500, Total Assets on December 31, 1999 was \$675,000, and Total Assets on December 31, 2000 was \$750,000.

$$\begin{aligned}\text{Rate of Return on Assets} &= (\$111,300 + 19,500) / [(675,000 + 750,000) / 2] \\ &= 130,800 / [1,425,000 / 2] \\ &= 130,800 / 712,500 \\ &= 0.1836 \\ &= 18.36\%\end{aligned}$$

3) Rate of Return on Common Stockholders Equity = (Net Income - Preferred Dividends) ÷ (Average Common Stockholders Equity)

Shows how much income was earned with the common stockholder's investment.

Example: Net Income for the year is \$111,300, there are 25,000 shares of 5% Preferred Stock (par value \$10) outstanding, Common Stockholder's Equity on December 31, 1999 is \$514,000, and Common Stockholder's Equity on December 31, 2000 is \$530,000.

First the Preferred Dividends must be calculated:

$$25,000 \text{ shares} * \$10 \text{ par value} * 5\% = \$12,500$$

Now the Rate of Return can be calculated:

$$\begin{aligned}\text{Rate of Return on CS Equity} &= (\$111,300 - 12,500) / [(514,000 + 530,000) / 2] \\ &= 98,800 / (1,044,000 / 2) \\ &= 98,800 / 522,000 \\ &= 0.1893 \\ &= 18.93\%\end{aligned}$$

4) Earnings per Share of Common Stock = (Net Income - Preferred Dividends) ÷ number of shares of common stock outstanding

The net income per one share of common stock.

Example: Using the same information as in the previous example and the fact that there are 265,000 shares of common stock outstanding.

$$\begin{aligned}\text{Earnings per Share of Common Stock} &= (\$111,300 - 12,500) / 265,000 \\ &= 98,800 / 265,000 \\ &= \$0.37\end{aligned}$$

Measuring a company's stock as an investment:

1) Price/Earnings Ratio = Market Price per share \div Earnings per share

This ratio gives you the market price of \$1 of earnings.

Example: Using the Earnings per share calculated in the previous example and the fact that the current Market Price per share is \$10.25

$$\begin{aligned}\text{Price/Earning Ratio} &= \$10.25 / \$0.37 \\ &= 27.70\end{aligned}$$

2) Dividend Yield = Dividends per share \div Market Price per share

Shows the percentage of the market price returned to the stockholder as a dividend.

Example: The current Market Price per share is \$10.25 and the Dividends paid per share were \$1.50

$$\begin{aligned}\text{Dividend Yield} &= \$1.50 / \$10.25 \\ &= 0.1463 \\ &= 14.63\%\end{aligned}$$