

6.5: Financial Ratios

What you'll learn to do: use financial statements to calculate basic financial ratios to measure the profitability and health of a business

Financial ratios allow consumers of financial information to compare how companies are doing relative to their industry or even how they are faring from one period (month, quarter, year) to another. For the purposes of this course, you will be working with just a couple of these ratios—namely liquidity and profitability. There are lots of other financial ratios, but you can save those for a time when you take full courses in finance and accounting.

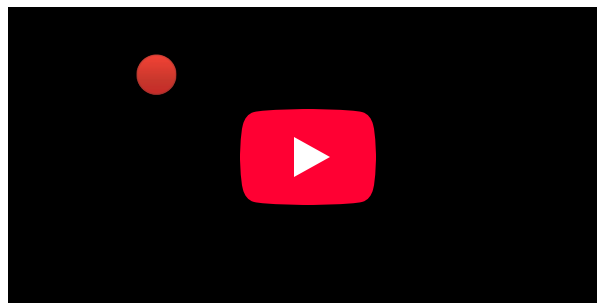
Learning Objectives

- Calculate the current ratio using information from financial statements
- Calculate inventory turnover using information from financial statements

Financial Ratio Analysis

Financial ratios allow us to look at profitability, use of assets, inventories, and other assets, liabilities, and costs associated with the finances of the business. We can also use them to learn how quickly people pay their bills, how long it takes the company to recover its costs for new equipment, how much cash the company has relative to its debt, and its return (profit) on every dollar the company invests. Financial ratios also enable a company to compare itself to other firms in the same industry and answer questions like “Are the other dog biscuit companies doing about the same as ours?”

Sometimes it's not enough to say that a company is in good or bad financial health, especially if you're trying to compare that company with another one. To make comparisons easier, it helps to assign numbers to “health.” The following video explains how that can be done.



Logical relationships exist between certain accounts or items in a company's financial statements. These accounts may appear on the same statement or on two different statements. We set up the dollar amounts of the related accounts or items in fraction form called ratios. These ratios include the following:

| Ratio | Use | Components |
|-----------------------------------|--|---|
| Liquidity ratio | indicate a company's short-term debt-paying ability | current (or working capital) ratio ; acid-test (quick) ratio ; cash flow liquidity ratio; accounts receivable turnover; number of day's sales in accounts receivable; inventory turnover ; and total assets turnover |
| Equity (long-term solvency) ratio | show the relationship between debt and equity financing in a company | equity (or stockholders' equity) ratio; and stockholders' equity to debt ratio |
| Profitability test | an important measure of a company's operating success | rate of return on operating assets; net income to net sales; net income to average common stockholders' equity; cash flow margin; earnings per share of common stock; times interest earned ratio; and times preferred dividends earned ratio |
| Market test | help investors and potential investors assess the relative merits of the various stocks in the marketplace | earnings yield on common stock; price-earnings ratio; dividend yield on common stock; payout ratio on common stock; dividend yield on preferred stock; and cash flow per share of common stock |

Many of these ratios are beyond the scope of this course; however, we will examine the ones in bold, above, which are key to evaluating any business.

Current (or Working Capital) Ratio

Working capital is the excess of current assets over current liabilities. The ratio that relates current assets to current liabilities is the **current (or working capital) ratio**. The current ratio indicates the ability of a company to pay its current liabilities from current assets, and thus shows the strength of the company's working capital position.

You can compute the current ratio by dividing current assets by current liabilities, as follows:

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

The ratio is usually stated as a number of dollars of current assets to one dollar of current liabilities (although the dollar signs usually are omitted). Thus, for Synotech in 2010, when current assets totaled USD 2,846.7 million and current liabilities totaled USD 2,285.2 million, the ratio is 1.25:1, meaning that the company has USD 1.25 of current assets for each USD 1.00 of current liabilities.

The current ratio provides a better index of a company's ability to pay current debts than does the absolute amount of working capital. To illustrate, assume that we are comparing Synotech to Company B. For this example, use the following totals for current assets and current liabilities:

| | Synotech | Company B |
|-------------------------|------------|-----------|
| Current assets (a) | \$ 2,846.7 | \$120.0 |
| Current liabilities (b) | 2,285.2 | 53.2 |
| Working capital (a – b) | \$ 561.5 | \$ 66.8 |
| Current ratio (a/b) | 1.25:1 | 2.26:1 |

Synotech has eight times as much working capital as Company B. However, Company B has a superior debt-paying ability since it has USD 2.26 of current assets for each USD 1.00 of current liabilities.

Short-term creditors are particularly interested in the current ratio since the conversion of inventories and accounts receivable into cash is the primary source from which the company obtains the cash to pay short-term creditors. Long-term creditors are also interested in the current ratio because a company that is unable to pay short-term debts may be forced into bankruptcy. For this reason, many bond indentures, or contracts, contain a provision requiring that the borrower maintain at least a certain minimum current ratio. A company can increase its current ratio by issuing long-term debt or capital stock or by selling noncurrent assets.

A company must guard against a current ratio that is too high, especially if caused by idle cash, slow-paying customers, and/or slow-moving inventory. Decreased net income can result when too much capital that could be used profitably elsewhere is tied up in current assets.

Acid-Test (Quick) Ratio

The current ratio is not the only measure of a company's short-term debt-paying ability. Another measure, called the **acid-test (quick) ratio**, is the ratio of quick assets (cash, marketable securities, and net receivables) to current liabilities. The formula for the acid-test ratio is the following:

$$\text{Acid test ratio} = \frac{\text{Quick assets}}{\text{Current liabilities}}$$

Short-term creditors are particularly interested in this ratio, which relates the pool of cash and immediate cash inflows to immediate cash outflows.

The acid-test ratios for 2010 and 2009 for Synotech follow:

| December 31 | | | |
|--------------------------|------------|------------|----------------------------------|
| (USD millions) | 2010 | 2009 | Amount of increase or (decrease) |
| Quick assets (a) | \$1,646.6 | \$1,648.3 | \$ (1.7) |
| Current liabilities (b) | 2,285.6 | 2,103.8 | 181.8 |
| Net quick assets (a – b) | \$ (639.0) | \$ (455.5) | \$(183.5) |
| Acid-test ratio (a/b) | .72:1 | .78:1 | |

In deciding whether the acid-test ratio is satisfactory, investors consider the quality of the marketable securities and receivables. An accumulation of poor-quality marketable securities or receivables, or both, could cause an acid-test ratio to appear deceptively favorable. When referring to marketable securities, poor quality means securities likely to generate losses when sold. Poor-quality receivables may be uncollectible or not collectible until long past due. The quality of receivables depends primarily on their age, which can be assessed by preparing an aging schedule or by calculating the accounts receivable turnover.

Inventory Turnover

A company's inventory turnover ratio shows the number of times its average inventory is sold during a period. You can calculate **inventory turnover** as follows:

$$\text{Inventory turnover} = \frac{\text{Cost of goods sold}}{\text{Average inventory}}$$

When comparing an income statement item and a balance sheet item, we measure both in comparable dollars. Notice that we measure the numerator and denominator in cost rather than sales dollars. Inventory turnover relates a measure of sales volume to the average amount of goods on hand to produce this sales volume.

Synotech's inventory on 2009 January 1, was USD 856.7 million. The following schedule shows that the inventory turnover decreased slightly from 5.85 times per year in 2009 to 5.76 times per year in 2010. To convert these turnover ratios to the number of days it takes the company to sell its entire stock of inventory, divide 365 by the inventory turnover. Synotech's average inventory sold in about 63 and 62 (365/5.76 and 365/5.85) in 2010 and 2009, respectively.

| December 31 | | | |
|----------------|------|------|----------------------------------|
| (USD millions) | 2010 | 2009 | Amount of increase or (decrease) |
| | | | |

| | | | |
|---------------------------------|-----------|-----------|---------|
| Cost of goods sold (a) | \$5,341.3 | \$5,223.7 | \$117.6 |
| Merchandise inventory: | | | |
| January 1 | \$929.8 | \$856.7 | \$ 73.1 |
| December 31 | 924.8 | 929.8 | (5.0) |
| Total (b) | \$1,854.6 | \$1,786.5 | \$ 68.1 |
| Average inventory (c) (b/2 = c) | \$927.3 | \$893.3 | |
| Turnover of inventory (a/c) | 5.76 | 5.85 | |

Other things being equal, a manager who maintains the *highest* inventory turnover ratio is the most efficient. Yet, other things are not always equal. For example, a company that achieves a high inventory turnover ratio by keeping extremely small inventories on hand may incur larger ordering costs, lose quantity discounts, and lose sales due to lack of adequate inventory. In attempting to earn satisfactory income, management must balance the costs of inventory storage and obsolescence and the cost of tying up funds in inventory against possible losses of sales and other costs associated with keeping too little inventory on hand.

Standing alone, a single financial ratio may not be informative. Investors gain greater insight by computing and analyzing several related ratios for a company. Financial analysis relies heavily on informed judgment. As guides to aid comparison, percentages and ratios are useful in uncovering potential strengths and weaknesses. However, the financial analyst should seek the basic causes behind changes and established trends.

Summary of Ratios

| Liquidity Ratios | Formula | Significance |
|------------------------------------|---|---|
| Current (or working capital) ratio | Current assets / Current liabilities | Test of debt-paying ability |
| Acid-test (quick) ratio | Quick assets (cash + marketable securities + net receivables) / Current liabilities | Test of immediate debt-paying ability |
| Inventory turnover | Cost of goods sold / Average inventory | Test of whether or not a sufficient volume of business is being generated relative to inventory |

Interpretation and Use of Ratios

Analysts must be sure that their comparisons are valid—especially when the comparisons are of items for different periods or different companies. They must follow consistent accounting practices if valid interperiod comparisons are to be made.

Also, when comparing a company's ratios to industry averages provided by an external source such as Dun & Bradstreet, the analyst should calculate the company's ratios in the same manner as the reporting service. Thus, if Dun & Bradstreet uses net sales (rather than cost of goods sold) to compute inventory turnover, so should the analyst.

Facts and conditions not disclosed by the financial statements may, however, affect their interpretation. A single important event may have been largely responsible for a given relationship. For example, competitors may put a new product on the market, making it necessary for the company to reduce the selling price of a product suddenly rendered obsolete. Such an event would severely affect net sales or profitability, but there might be little chance that such an event would happen again.

Analysts must consider general business conditions within the industry of the company under study. A corporation's downward trend in earnings, for example, is less alarming if the industry trend or the general economic trend is also downward.

Investors also need to consider the seasonal nature of some businesses. If the balance sheet date represents the seasonal peak in the volume of business, for example, the ratio of current assets to current liabilities may be much lower than if the balance sheet date is in a season of low activity.

Potential investors should consider the market risk associated with the prospective investment. They can determine market risk by comparing the changes in the price of a stock in relation to the changes in the average price of all stocks.

Potential investors should realize that acquiring the ability to make informed judgments is a long process and does not occur overnight. Using ratios and percentages without considering the underlying causes may lead to incorrect conclusions.

Even within an industry, variations may exist. Acceptable current ratios, gross margin percentages, debt to equity ratios, and other relationships vary widely depending on unique conditions within an industry. Therefore, it is important to know the industry to make comparisons that have real meaning.

Demonstration Problem

The balance sheet and supplementary data for Xerox Corporation follow:

Xerox Corporation Balance Sheet 20XX December 31(USD millions)

| | 20XX |
|---|-----------|
| Assets | |
| Cash | \$ 1,741 |
| Accounts receivable, net | 2,281 |
| Finance receivables, net | 5,097 |
| Inventories | 1,932 |
| Deferred taxes and other current assets | 1,971 |
| Total current assets | \$ 13,022 |
| Finance receivables due after one year, net | 7,957 |
| Land, buildings, and equipment, net | 2,495 |
| Investments in affiliates, at equity | 1,362 |
| Goodwill | 1,578 |
| Other assets | 3,061 |
| Total assets | \$ 29,475 |
| Liabilities and stockholders' equity | |
| Short-term debt and current portion of long-term debt | \$ 2,693 |
| Accounts payable | 1,033 |
| Accrued compensation and benefit costs | 662 |
| Unearned income | 250 |
| Other current liabilities | 1,630 |
| Total current liabilities | \$ 6,268 |
| Long-term debt | 15,404 |
| Liabilities for post-retirement medical benefits | 1,197 |
| Deferred taxes and other liabilities | 1,876 |
| Discontinued policyholders' deposits and other operations liabilities | 670 |
| Deferred ESOP benefits | (221) |
| Minorities' interests in equity of subsidiaries | 141 |
| Preferred stock | 647 |

| | |
|---|-----------|
| Common shareholders' equity (108.1 million) | 3,493 |
| Total liabilities and shareholders' equity | \$ 29,475 |

- Cost of goods sold, USD 6,197.
- Net sales, USD 18,701.
- Inventory, January 1, USD 2,290.
- Net interest expense, USD 1,031.
- Net income before interest and taxes, USD 647.
- Net accounts receivable on January 1, USD 2,633.
- Total assets on January 1, USD 28,531.

Compute the following ratios:

1. Current ratio.
2. Acid-test ratio.
3. Inventory turnover.

Solution to Demonstration Problem

1. Current ratio: $\frac{\text{Current Assets}}{\text{Current liabilities}} = \frac{\text{USD } 13,022,000,000}{\text{USD } 6,268,000,000} = 2.08 : 1$
2. Acid-test ratio: $\frac{\text{Quick Assets}}{\text{Quick liabilities}} = \frac{\text{USD } 9,119,000,000}{\text{USD } 6,268,000,000} = 1.45 : 1$
3. Inventory turnover: $\frac{\text{Net sales}}{\text{Average Inventory}} = \frac{\text{USD } 18,701,000,000}{\text{USD } 2,111,000,000} = 8.86 \text{ times}$

2,111 million is the average of 2,290 and 1,932 mm, the inventories at the beginning and end of the year.

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