

13.12: Financial Ratio Analysis

Learning Objectives

- Explain how financial ratios are used
- Calculate the current ratio using information from financial statements
- Calculate the acid-test (quick) ratio using information from financial statements
- Calculate inventory turnover using information from financial statements



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.” By using liquidity ratios to assess risk and equity ratios to assess profitability (as well as other ratios), you can easily assess and compare different companies.

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:

Financial Ratios

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

Ratio	Use	Components
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.

? Practice Question

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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:

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}} \quad (13.12.1)$$

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:

Current Ratio Values for Synotech and Company B

Current Ratio Variables	Synotech	Company B
Current assets (variable a)	\$ 2,846.7	\$120.0
Current liabilities (variable 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.

? Practice Question

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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:

$$\text{Acid Test Ratio} = \frac{\text{Quick Assets}}{\text{Current Liabilities}} \quad (13.12.2)$$

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 (dollar values are in USD millions):

Synotech Acid Test Values for 2010 and 2009

Period Ending (all amounts in USD Millions)	December 31, 2010	December 31, 2009
Quick assets (variable a)	\$1,646.6	\$1,648.3
Current liabilities (variable b)	2,285.6	2,103.8
Net quick assets (a – b)	\$ (639.0)	\$ (455.5)
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.

? Practice Question

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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:

$$\text{Inventory Turnover} = \frac{\text{Cost of Goods Sold}}{\text{Average Inventory}} \quad (13.12.3)$$

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 is about 63 and 62 (365/5.76 and 365/5.85) in 2010 and 2009, respectively.

Inventory Turnover Variables	2010	2009
Cost of goods sold (variable a)	\$5,341.3	\$5,223.7

Merchandise inventory:

January 1	\$929.8	\$856.7
December 31	\$924.8	\$929.8
Total Merchandise Inventory (variable b)	\$1,854.6	\$1,786.5
Average inventory (variable 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.

? Practice Question

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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. All values shown are in USD Millions.

Xerox Corporation	
Balance Sheet	
December 31, 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

Supplementary data for Xerox:

- 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.

Answers

1. Current ratio:

$$\frac{\text{Current Assets}}{\text{Current Liabilities}} = \frac{\text{USD } 13,022,000,000}{6,268,000,000} = 2.08:1 \quad (13.12.4)$$

2. Acid-test ratio:

$$\frac{\text{Quick Assets}}{\text{Current Liabilities}} = \frac{\text{USD } 9,119,000,000}{6,268,000,000} = 1.45:1 \quad (13.12.5)$$

3. Inventory turnover:

$$\frac{\text{Net Sales}}{\text{Average Inventory}} = \frac{\text{USD } 18,701,000,000}{2,111,000,000} = 1.45:1 \quad (13.12.6)$$

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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