

Analyzing Your Financial Ratios

Taken from http://www.va-interactive.com/inbusiness/editorial/finance/ibt/ratio_analysis.html

Overview

Any successful business owner is constantly evaluating the performance of his or her company, comparing it with the company's historical figures, with its industry competitors, and even with successful businesses from other industries. To complete a thorough examination of your company's effectiveness, however, you need to look at more than just easily attainable numbers like sales, profits, and total assets. You must be able to read between the lines of your financial statements and make the seemingly inconsequential numbers accessible and comprehensible.

This massive data overload could seem staggering. Luckily, there are many well-tested ratios out there that make the task a bit less daunting. Comparative ratio analysis helps you identify and quantify your company's strengths and weaknesses, evaluate its financial position, and understand the risks you may be taking.

As with any other form of analysis, comparative ratio techniques aren't definitive and their results shouldn't be viewed as gospel. Many off-the-balance-sheet factors can play a role in the success or failure of a company. But, when used in concert with various other business evaluation processes, comparative ratios are invaluable.

This discussion contains descriptions and examples of the eight major types of ratios used in financial analysis: Income, Profitability, Liquidity, Working Capital, Bankruptcy, Long-Term Analysis, Coverage, and Leverage.

Outline:

- I. Purposes and Considerations of Ratios and Ratio Analysis
- II. Types of Ratios
- III. Income Ratios
- IV. Profitability Ratios
- V. Net Operating Profit Ratios
- VI. Liquidity Ratios
- VII. Working Capital Ratios
- VIII. Bankruptcy Ratios
- IX. Long-Term Analysis
- X. Coverage Ratios
- XI. Total Coverage Ratios
- XII. Leverage Ratios
- XIII. Common-Size Statement
- XIV. Resources

I. Purposes and Considerations of Ratios and Ratio Analysis

Ratios are highly important profit tools in financial analysis that help financial analysts implement plans that improve profitability, liquidity, financial structure, reordering, leverage, and interest coverage. Although ratios report mostly on past performances, they can be predictive too, and provide lead indications of potential problem areas.

Ratio analysis is primarily used to compare a company's financial figures over a period of time, a method sometimes called trend analysis. Through trend analysis, you can identify trends, good and bad, and adjust your business practices accordingly. You can also see how your ratios stack up against other businesses, both in and out of your industry.

There are several considerations you must be aware of when comparing ratios from one financial period to another or when comparing the financial ratios of two or more companies.

- If you are making a comparative analysis of a company's financial statements over a certain period of time, make an appropriate allowance for any changes in accounting policies that occurred during the same time span.
- When comparing your business with others in your industry, allow for any material differences in accounting policies between your company and industry norms.
- When comparing ratios from various fiscal periods or companies, inquire about the types of accounting policies used. Different accounting methods can result in a wide variety of reported figures.
- Determine whether ratios were calculated before or after adjustments were made to the balance sheet or income statement, such as non-recurring items and inventory or pro forma adjustments. In many cases, these adjustments can significantly affect the ratios.
- Carefully examine any departures from industry norms.

II. Types of Ratios

Income
Profitability
Liquidity
Working Capital
Bankruptcy
Long-Term Analysis
Coverage
Leverage

III. Income Ratios

Turnover of Total Operating Assets

$$\frac{\text{Net Sales}}{\text{Total Operating Assets}^*} = \text{Turnover of Total Operating Assets Ratio}$$

Obviously, an increase in sales will necessitate more operating assets at some point (sales may rise without additional investment within a given range, however); conversely, an inadequate sales volume may call for reduced investment. Turnover of Total Operating Assets or sales to investment in total operating assets tracks over-investment in operating assets.

*Total operating assets = total assets - (long-term investments + intangible assets)

Note: This ratio does not measure profitability. Remember, over-investment may result in a lack of adequate profits.

Net Sales to Tangible Net Worth

$$\frac{\text{Net Sales}}{\text{Tangible Net Worth}^*} = \text{Net Sales to Tangible Net Worth Ratio}$$

This ratio indicates whether your investment in the business is adequately proportionate to your sales volume. It may also uncover potential credit or management problems, usually called "overtrading" and "undertrading."

Overtrading, or excessive sales volume transacted on a thin margin of investment, presents a potential problem with creditors. Overtrading can come from considerable management skill, but outside creditors must furnish more funds to carry on daily operations.

Undertrading is usually caused by management's poor use of investment money and their general lack of ingenuity, skill or aggressiveness.

*Tangible Net Worth = owner's equity - intangible assets

Gross Margin on Net Sales

$$\frac{\text{Gross Margin}^*}{\text{Net Sales}} = \text{Gross Margin on Net Sales Ratio}$$

By analyzing changes in this figure over several years, you can identify whether it is necessary to examine company policies relating to credit extension, markups (or markdowns), purchasing, or general merchandising (where applicable).

*Gross Margin = net sales - cost of goods sold

Note: An increase in gross margin may result from higher sales, lower cost of goods sold, an increase in the proportionate volume of higher margin products, or any combination of these variables.

Operating Income to Net Sales Ratio

$$\frac{\text{Operating Income}}{\text{Net Sales}} = \text{Operating Income to Net Sales Ratio}$$

This ratio reveals the profitability of sales resulting from regular business as well as buying, selling, and manufacturing operations.

Note: Operating income derives from ordinary business operations and excludes other revenue (losses), extraordinary items, interest on long-term obligations, and income taxes.

Acceptance Index

$$\frac{\text{Applications Accepted}}{\text{Applications Submitted}} = \text{Acceptance Index}$$

Obviously, a high sales volume that comes from just two or three major accounts is much riskier than the same volume coming from a large number of customers. Losing one out of three major accounts is disastrous, while losing one out of 150 is routine. A growing firm should try to spread this risk of dependency through active sales, promotion, and credit departments. Although the quality of customers stems from your general management policy, the quantity of newly opened accounts is a direct reflection on your sales and credit efforts.

Note: This index of effectiveness does not apply to every type of business.

IV. Profitability Ratios

Closely linked with income ratios are profitability ratios, which shed light upon the overall effectiveness of management regarding the returns generated on sales and investment.

Gross Profit on Net Sales

$$\frac{\text{Net Sales} - \text{Cost of Goods Sold}}{\text{Net Sales}} = \text{Gross Profit on Net Sales Ratio}$$

Does your average markup on goods normally cover your expenses, and therefore result in a profit? This ratio will tell you. If your gross profit rate is continually lower than your average margin, something is wrong! Be on the lookout for downward trends in your gross profit rate. This is a sign of future problems for your bottom line.

Note: This percentage rate can — and will — vary greatly from business to business, even those within the same industry. Sales, location, size of operations, and intensity of competition are all factors that can affect the gross profit rate.

V. Net Operating Profit Ratios

Net Profit on Net Sales

$$\frac{\text{EAT}^*}{\text{Net Sales}} = \text{Net Profit on Net Sales Ratio}$$

This ratio provides a primary appraisal of net profits related to investment. Once your basic expenses are covered, profits will rise disproportionately greater than sales above the break-even point of operations.

*EAT= earnings after taxes

Note: Sales expenses may be substituted out of profits for other costs to generate even more sales and profits.

Net Profit to Tangible Net Worth

$$\frac{\text{EAT}}{\text{Tangible Net Worth}} = \text{Net Profit to Tangible Net Worth Ratio}$$

This ratio acts as a complementary appraisal of net profits related to investment. This ratio sizes up the ability of management to earn a return.

Net Operating Profit Rate Of Return

$$\frac{\text{EBIT}}{\text{Tangible Net Worth}} = \text{Net Operating Profit Rate of Return Ratio}$$

Your Net Operating Profit Rate of Return ratio is influenced by the methods of financing you utilize. Notice that this ratio employs earnings before interest and taxes, not earnings after taxes. Profits are taken after interest is paid to creditors. A fallacy of omission occurs when creditors support total assets.

Note: If financial charges are great, compute a net operating profit rate of return instead of return on assets ratio. This can provide an important means of comparison.

Management Rate Of Return

$$\frac{\text{Operating Income}}{\text{Fixed Assets + Net Working Capital}} = \text{Management Rate of Return Ratio}$$

This profitability ratio compares operating income to operating assets, which are defined as the sum of tangible fixed assets and net working capital.

This rate, which you may calculate for your entire company or for each of its divisions or operations, determines whether you have made efficient use of your assets. The percentage should be compared with a target rate of return that you have set for the business.

Earning Power

$$\frac{\text{Net Sales}}{\text{Tangible Net Worth}} \times \frac{\text{EAT}}{\text{Net Sales}} = \text{Earning Power Ratio}$$

The Earning Power Ratio combines asset turnover with the net profit rate. That is, Net Sales to Tangible Net Worth (see "Income Ratios") multiplied by Net Profit on Net Sales (see ratio above). Earning power can be increased by heavier trading on assets, by decreasing costs, by lowering the break-even point, or by increasing sales faster than the accompanying rise in costs.

Note: Sales hold the key.

VI. Liquidity Ratios

While liquidity ratios are most helpful for short-term creditors/suppliers and bankers, they are also important to financial managers who must meet obligations to suppliers of credit and various government agencies. A complete liquidity ratio analysis can help uncover weaknesses in the financial position of your business.

Current Ratio

$$\frac{\text{Current Assets*}}{\text{Current Liabilities*}} = \text{Current Ratio}$$

Popular since the turn of the century, this test of solvency balances your current assets against your current liabilities. The current ratio will disclose balance sheet changes that net working capital will not.

*Current Assets = net of contingent liabilities on notes receivable

*Current Liabilities = all debt due within one year of statement data

Note: The current ratio reveals your business's ability to meet its current obligations. It should be supplemented with the other ratios listed below, however.

Quick Ratio

$$\frac{\text{Cash + Marketable Securities + Accounts Receivable (net)}}{\text{Current Liabilities}} = \text{Quick Ratio}$$

Also known as the "acid test," this ratio specifies whether your current assets that could be quickly converted into cash are sufficient to cover current liabilities. Until recently, a Current Ratio of 2:1 was considered standard. A firm that had additional sufficient quick assets available to creditors was believed to be in sound financial condition.

Note: The Quick Ratio assumes that all assets are of equal liquidity. Receivables are one step closer to liquidity than inventory. However, sales are not complete until the money is in hand.

Absolute Liquidity Ratio

$$\frac{\text{Cash + Marketable Securities}}{\text{Current Liabilities}} = \text{Absolute Liquidity Ratio}$$

A subsequent innovation in ratio analysis, the Absolute Liquidity Ratio eliminates any unknowns surrounding receivables.

Note: The Absolute Liquidity Ratio only tests short-term liquidity in terms of cash and marketable securities.

Basic Defense Interval

$$\frac{(\text{Cash + Receivables + Marketable Securities})}{(\text{Operating Expenses + Interest + Income Taxes}) / 365} = \text{Basic Defense Interval}$$

If for some reason all of your revenues were to suddenly cease, the Basic Defense Interval would help determine the number of days your company can cover its cash expenses without the aid of additional financing.

Receivables Turnover

$$\frac{\text{Total Credit Sales}}{\text{Average Receivables Owing}} = \text{Receivables Turnover Ratio}$$

Another indicator of liquidity, Receivables Turnover Ratio can also indicate management's efficiency in employing those funds invested in receivables. Net credit sales, while preferable, may be replaced in the formula with net total sales for an industry-wide comparison.

Note: Closely monitoring this ratio on a monthly or quarterly basis can quickly underscore any change in collections.

Average Collection Period

$$\frac{\text{(Accounts + Notes Receivable)}}{\text{(Annual Net Credit Sales) / 365}} = \text{Average Collection Period}$$

The Average Collection Period (ACP) is another litmus test for the quality of your receivables business, giving you the average length of the collection period. As a rule, outstanding receivables should not exceed credit terms by 10-15 days. If you allow various types of credit transactions, such as a retail outlet selling both on open credit and installment, then the ACP must be calculated separately for each category.

Note: Discounted notes which create contingent liabilities must be added back into receivables.

Inventory Turnover

$$\frac{\text{Cost of Goods Sold}}{\text{Average Inventory}} = \text{Inventory Turnover Ratio}$$

Rule of Thumb: Multiply your inventory turnover by your gross margin percentage. If the result is 100 percent or greater, your average inventory is not too high.

VII. Working Capital Ratios

Many believe increased sales can solve any business problem. Often, they are correct. However,, sales must be built upon sound policies concerning other current assets and should be supported by sufficient working capital.

There are two types of working capital: gross working capital, which is all current assets, and net working capital, which is current assets less current liabilities. Moody's Investors Service has listed net working capital since 1922.

If you find that you have inadequate working capital, you can correct it by lowering sales or by increasing current assets through either internal savings (retained earnings) or external savings (sale of stock). Following are ratios you can use to evaluate your business's net working capital.

Working Capital Ratio

Use "Current Ratio" in the section on "Liquidity Ratios."

This ratio is particularly valuable in determining your business's ability to meet current liabilities.

Working Capital Turnover

$$\frac{\text{Net Sales}}{\text{Net Working Capital}} = \text{Working Capital Turnover Ratio}$$

This ratio helps you ascertain whether your business is top-heavy in fixed or slow assets, and complements Net Sales to Tangible Net Worth (see "Income Ratios"). A high ratio could signal overtrading.

Note: A high ratio may also indicate that your business requires additional funds to support its financial structure, top-heavy with fixed investments.

Current Debt to Net Worth

$$\frac{\text{Current Liabilities}}{\text{Tangible Net Worth}} = \text{Current Debt to Net Worth Ratio}$$

Your business should not have debt that exceeds your invested capital. This ratio measures the proportion of funds that current creditors contribute to your operations.

Note: For small businesses a ratio of 60 percent or above usually spells trouble. Larger firms should start to worry at about 75 percent.

Funded Debt to Net Working Capital

$$\frac{\text{Long-Term Debt}}{\text{Net Working Capital}} = \text{Funded Debt to Net Working Capital Ratio}$$

Funded debt (long-term liabilities) = all obligations due more than one year from the balance sheet date

Note: Long-term liabilities should not exceed net working capital.

VIII. Bankruptcy Ratios

Many business owners who have filed for bankruptcy say they wish they had seen some warning signs earlier on in their company's downward spiral. Ratios can help predict bankruptcy before it's too late for a business to take corrective action and for creditors to reduce potential losses. With careful planning, predicted futures can be avoided before they become reality. The first five bankruptcy ratios in this section can detect potential financial problems up to three years prior to bankruptcy. The sixth ratio, Cash Flow to Debt, is known as the best single predictor of failure.

Working Capital to Total Assets

$$\frac{\text{Net Working Capital}}{\text{Total Assets}} = \text{Working Capital to Total Assets Ratio}$$

This liquidity ratio, which records net liquid assets relative to total capitalization, is the most valuable indicator of a looming business disaster. Consistent operating losses will cause current assets to shrink relative to total assets.

Note: A negative ratio, resulting from negative net working capital, presages serious problems.

Retained Earnings to Total Assets

$$\frac{\text{Retained Earnings}}{\text{Total Assets}} = \text{Retained Earnings to Total Assets Ratio}$$

New firms will likely have low figures for this ratio, which designates cumulative profitability. Indeed, businesses less than three years old fail most frequently.

Note: A negative ratio portends cloudy skies. However, results can be distorted by manipulated retained earnings (earned surplus) data.

EBIT to Total Assets

$$\frac{\text{EBIT}}{\text{Total Assets}} = \text{EBIT to Total Assets Ratio}$$

How productive are your business's assets? Asset values come from earning power. Therefore, whether or not liabilities exceed the true value of assets (insolvency) depends upon earnings generated.

Note: Maximizing rate of return on assets does not mean the same as maximizing return on equity. Different degrees of leverage affect these separate conclusions.

Sales to Total Assets

$$\frac{\text{Total Sales}}{\text{Total Assets}} = \text{Sales to Total Assets Ratio}$$

See "Turnover Ratio" under "Profitability Ratios."

This ratio, which uncovers management's ability to function in competitive situations while not excluding intangible assets, is inconclusive if studied by itself. But when viewed alongside Working Capital to Total Assets, Retained Earnings to Total Assets, and EBIT to Total Assets, it can confirm whether your business is in imminent danger.

Note: A result of 200 percent is more reassuring than one of 100 percent.

Equity to Debt

$$\frac{\text{Market Value of Common + Preferred Stock}}{\text{Total Current + Long-Term Debt}} = \text{Equity to Debt Ratio}$$

This ratio shows you by how much your business's assets can decline in value before it becomes insolvent.

Note: Those businesses with ratios above 200 percent are safest.

Cash Flow to Debt

$$\frac{\text{Cash Flow}^*}{\text{Total Debt}} = \text{Cash Flow to Debt Ratio}$$

Also, refer to "Debt Cash Flow Coverage Ratio" in the section on "Coverage Ratios."

Since debt does not materialize as a liquidity problem until its due date, the closer to maturity, the greater liquidity should be. Other ratios useful in predicting insolvency include Total Debt to Total Assets (see "Leverage Ratios" below) and Current Ratio (see "Liquidity Ratios").

*Cash flow = Net Income + Depreciation

Note: Because there are various accounting techniques of determining depreciation, use this ratio for evaluating your own company and not to compare it to other companies.

IX. Long-Term Analysis

Current Assets to Total Debt

$$\frac{\text{Current Assets}}{\text{Current} + \text{Long-Term Debt}} = \text{Current Assets to Total Debt Ratio}$$

This ratio determines the degree of protection linked to short- and long-term debt. More net working capital protects short-term creditors.

Note: A high ratio (significantly above 100 percent) shows that if liquidation losses on current assets are not excessive, long-range debtors can be paid in full out of working capital.

Stockholders' Equity Ratio

$$\frac{\text{Stockholders' Equity}}{\text{Total Assets}} = \text{Stockholders' Equity Ratio}$$

Relative financial strength and long-run liquidity are approximated with this calculation. A low ratio points to trouble, while a high ratio suggests you will have less difficulty meeting fixed interest charges and maturing debt obligations.

Total Debt to Net Worth

$$\frac{\text{Current} + \text{Deferred Debt}}{\text{Tangible Net Worth}} = \text{Total Debt to Net Worth Ratio}$$

Rarely should your business's total liabilities exceed its tangible net worth. If it does, creditors assume more risk than stockholders. A business handicapped with heavy interest charges will likely lose out to its better financed competitors.

X. Coverage Ratios

Times Interest Earned

$$\frac{\text{EBIT}}{I} = \text{Times Interest Earned Ratio}$$

EBIT = earnings before interest and taxes

I = dollar amount of interest payable on debt

The Times Interest Earned Ratio shows how many times earnings will cover fixed-interest payments on long-term debt.

XI. Total Coverage Ratios

$$\frac{\text{EBIT}}{I} + \frac{s}{1-h} = \text{Total Coverage Ratio}$$

I = interest payments

s = payment on principal figured on income after taxes (1 - h)

This ratio goes one step further than Times Interest Earned, because debt obliges the borrower to not only pay interest but make payments on the principal as well.

XII. Leverage Ratios

This group of ratios calculates the proportionate contributions of owners and creditors to a business, sometimes a point of contention between the two parties. Creditors like owners to participate to secure their margin of safety, while management enjoys the greater opportunities for risk shifting and multiplying return on equity that debt offers.

Note: Although leverage can magnify earnings, it exaggerates losses.

Equity Ratio

$$\frac{\text{Common Shareholders' Equity}}{\text{Total Capital Employed}} = \text{Equity Ratio}$$

The ratio of common stockholders' equity (including earned surplus) to total capital of the business shows how much of the total capitalization actually comes from the owners.

Note: Residual owners of the business supply slightly more than one half of the total capitalization.

Debt to Equity Ratio

$$\frac{\text{Debt + Preferred Long-Term}}{\text{Common Stockholders' Equity}} = \text{Debt to Equity Ratio}$$

A high ratio here means less protection for creditors. A low ratio, on the other hand, indicates a wider safety cushion (i.e., creditors feel the owner's funds can help absorb possible losses of income and capital).

Total Debt to Tangible Net Worth

If your business is growing, track this ratio for insight into the distributive source of funds used to finance expansion.

Debt Ratio

$$\frac{\text{Current + Long-Term Debt}}{\text{Total Assets}} = \text{Debt Ratio}$$

What percentage of total funds are provided by creditors? Although creditors tend to prefer a lower ratio, management may prefer to lever operations, producing a higher ratio.

Times Interest Earned

Refer to "Coverage Ratios"

XIII. Common-Size Statement

When performing a ratio analysis of financial statements, it is often helpful to adjust the figures to common-size numbers. To do this, change each line item on a statement to a percentage of the total. For example,

on a balance sheet, each figure is shown as a percentage of total assets, and on an income statement, each item is expressed as a percentage of sales.

This technique is quite useful when you are comparing your business to other businesses or to averages from an entire industry, because differences in size are neutralized by reducing all figures to common-size ratios. Industry statistics are frequently published in common-size form.

When comparing your company with industry figures, make sure that the financial data for each company reflect comparable price levels, and that it was developed using comparable accounting methods, classification procedures, and valuation bases.

Such comparisons should be limited to companies engaged in similar business activities. When the financial policies of two companies differ, these differences should be recognized in the evaluation of comparative reports. For example, one company leases its properties while the other purchases such items; one company finances its operations using long-term borrowing while the other relies primarily on funds supplied by stockholders and by earnings. Financial statements for two companies under these circumstances are not wholly comparable.

Example Common-Size Income Statement

Sales	100%	100%	100%
Cost of Sales	65%	68%	70%
Gross Profit	35%	32%	30%
Expenses	27%	27%	26%
Taxes	2%	1%	1%
Profit	6%	4%	3%

XIV. Resources

Books

Peter Atrill and Eddie McLaney, "Accounting and Finance for Non-Specialists" (Prentice Hall, 1997)

Leopold Bernstein, John Wild, "Analysis of Financial Statements" (McGraw-Hill, 2000)

Daniel L. Jensen, "Advanced Accounting" (McGraw-Hill College Publishing, 1997)

Martin Mellman et. al., "Accounting for Effective Decision Making" (Irwin Professional Press, 1994)

Eric Press, "Analyzing Financial Statements" (Lebahar-Friedman, 1999)

Magazines

Journal of Accountancy

The Practical Accountant