

# Using Ratio Analysis to Measure Business Performance

*Expert knowledge means success*



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Note: This publication has not been updated since it was last published. Some of the hyperlinks may have changed and may need updating. In addition, some of the information in this publication may be out of date.

## Introduction

The significance of the movement in the figures in the balance sheet and profit and loss account of your business can often be highlighted by the use of ratios.

Financial ratio analysis is a business tool. It uses the power of comparison - either with the same business in previous trading periods or with others in the industry. Sometimes, when using benchmarking techniques, it's useful to make a comparison with "best in world" whether in the same industry or not.

The ratios that are used come from one or more pieces of information in a company's financial statements (their "annual accounts"). The level and historical trends of these ratios can be used to draw conclusions about a company's performance, its financial condition, its operations and attractiveness as an investment.

The advantage of ratio analysis is that it uses comparison to other data and standards. It creates a level playing field of comparing like with like to see how a business has performed.

One of the simplest ratios used is that of gross margin (or gross profit) percentage - this is the gross margin (before overheads and business expenses) that a business earns on its sales.

Example:

- A Sales are £500,000
- B Cost of Sales is £350,000
- C Gross margin is £150,000 (A less B)
- D The gross margin percentage is 30% (C as a percentage of A)

*Note: Sales and Cost of Sales are always quoted as net of VAT for a VAT-registered business*

On its own, a financial ratio has little value - but in context (i.e. by comparing it with something else) it can give a reader of financial statements an excellent picture of a company's situation and the trends that are developing.

In the example on the previous page, a gross margin of 30% doesn't mean very much but if most competitors of the business have

margins of 20%, it's clear that this business is much more profitable at the gross margin level than its industry peers. This is a good sign and if we also know that the margin has been increasing steadily for the last few years, this would also be a favourable sign that management of the business has implemented both effective business policies and strategies.

## Ratio Categories

An overview of some of the categories of ratios is given below:

- Leverage Ratios - the extent that debt (borrowings) is used in a company's financing structure.
- Liquidity Ratios - showing the short-term financial situation or solvency of a company.
- Operational Ratios - using sales turnover measures to show how effective a company is in its operations and use of assets.
- Profitability Ratios - using margin analysis (the most popular ratio being the gross margin percentage) to show the return on sales and capital employed.
- Solvency Ratios - indicating a company's ability to generate cashflow and meet its debts.

## Ratio Focus

Bankers and others, who interpret financial ratios, focus on the "downside" risk since they gain none of the upside from an improvement in operations. The best they can expect is that the money they advance will be repaid and to ascertain a company's financial risk, they pay great attention to liquidity and leverage ratios.

Investors and their analysts look more to the operational and profitability ratios, to see what future profits will accrue for the benefit of shareholders.

When analysing the financial results of a company, or comparing several companies it is tempting to become so involved in calculating a wide variety of financial ratios that the original purpose is lost. Remember that the key questions to ask are:

- Is the business profitable?
- Can the business pay its bills?
- Is the Company Solvent?
- How is the business financed?

- How does this year compare to last year?
- How does our performance compare to our competitors?
- How does the business compare to the industry norms?
- Are the Products Selling?

These key questions indicate that the financial health of a company is dependent on a combination of profitability, short-term liquidity and long-term liquidity. In the past, most emphasis was placed on profitability but today liquidity has increased in importance.

Some of these questions are dealt with below:

## Is the Company Solvent?

**Current Ratio** = Current Assets Divided by Current Liabilities

*A measure of the ability to pay short-term debts. A current ratio of current assets to current liabilities of less than 2 to 1 is generally considered to be unsatisfactory.*

**Quick Ratio** = Cash + Marketable Securities + Receivables divided by Current Liabilities

*A measure of the immediate ability to pay short-term debt. A ratio of quick assets to current liabilities of at least 1 to 1 is considered desirable.*

## Are the Products Selling?

**Stock (Inventory) Turnover** = Cost of Sales Divided by Average Stock Held

*A measure of the appropriateness of inventory levels in terms of time required to sell or "turn over stock/ inventory.*

## Are Receivables Being Collected on Time?

**Receivables Turnover** = Sales Divided by Average Accounts Receivable

*A measure of the receivable position and approximate average collection time.*

## Can the Company Cover its Interest Payments?

**Times Interest Earned** = Income Before Taxes + Interest Expense Divided by Interest Expense

*A measure of the ability to cover interest payments.*

## How Efficient are the Operations?

**Rate Earned on Total Assets** = Net Income Divided by Average Total Assets

*A measure of the effectiveness of asset utilisation.*

## How's Management Doing?

**Return on Equity** = Net Income Divided by Average Owners' Equity

*A measure of the return earned on owners' equity.*

## Has the Company Borrowed Wisely?

**Total Debt to Equity** = Total Liabilities Divided by Owners' Equity

*A measure of the use of debt to finance operations. The higher the ratio, the higher the leverage the entity has used to fund operations.*

**Long-Term Debt to Equity** = Long-Term Debt Divided by Owners' Equity

*A measure of the extent to which long-term debt is used to finance operations.*

**Total Debt to Total Assets** = Total Debt Divided by Total Assets

*A measure of asset funding provided by creditors.*

**Equity to Total Assets** = Owners' Equity Divided by Total Assets

*A measure of funding provided by owners which reflects financial strength and cover for creditors.*

## Measuring Liquidity

In considering the liquidity of a business, people often refer to its "Working Capital position". This can be called the short-term credit analysis. Working Capital is the excess of Current Assets over Current Liabilities.

## Other liquidity and efficiency ratios

**Current ratio** - establishes the relationship between current assets and current liabilities. It measures a company's ability to meet its current obligations.

*Formula: Current Assets Divided by Current Liabilities*

**Quick ratio** - sometimes analysts calculate the ratio between the liquid (quick) assets and current liabilities. Quick current assets are cash, marketable securities and debtors (receivables). It may provide a better reading on a firm's ability to meet current obligations than the current ratio.

*Formula: (Total of: Current Assets less Stock and Prepaid Assets) Divided by Current Liabilities*

**Stock or Inventory turnover** - calculated by dividing average stock/inventory into cost of goods sold. This allows a measurement of any disproportionate amount of inventory.

*Formula: Average Inventory Divided by Cost of Goods Sold*

**Average collection period** - calculated by dividing the year's sales into trade debtors (receivables) and multiplying this times 365. This average collection period tends to measure if the recovery is adequate, slow or past due.

*Formula: (Trade Receivables / Sales) multiplied by 365 days.*

## Example

The importance of liquidity is emphasised in this example - Do you think that a business can be both profitable and on the verge of bankruptcy at the same time? It certainly can... There's a saying - "turnover is vanity, cashflow is sanity". This is absolutely true as you'll see below.

Businesses are allowed to enter money in their accounting records as turnover or goods purchased as soon as the transaction takes place - even though receipt from the customer or payment to the supplier doesn't take place until later.

Let's take the following case study. The business kicks off in January with £100,000 of finance from Fred Brightlight. Fred is the founder and he borrowed this money by taking out a bigger mortgage on his home. His customers asked if they could pay after 60 days and since Fred could get 90 days credit from his suppliers, he readily agreed. For the first three months, the business seemed to be solvent but in month four, when Fred had to pay his suppliers, he found himself in deep trouble and the business was broke.

	Month 1	Month 2	Month 3	Month 4
Opening cash in hand	£100,000	£62,000	£12,000	£15,000
Money received from customers	£0	£0	£40,000	£40,000
Money paid to suppliers	£0	£0	£0	£85,000
Wages paid	£20,000	£22,000	£24,000	£24,000
Rent	£3,000	£3,000	£3,000	£3,000
Van, Computer and Equipment purchased	£15,000	£25,000	£10,000	£0
Cash left at end of the month	£62,000	£12,000	£15,000	LIQUIDATION - Trading ceases. No money left. £57,000 overdrawn

## Main Ratios Used

Below you will find the usual ratios used in the analysis of a business by bankers, investors, business analysts and, most importantly, by good business managers.

These ratios will help you to understand your business better and hopefully improve your margins, operating efficiency and profitability.

RATIO	HOW IS IT CALCULATED?	WHAT DOES IT MEAN?
Gross Profit Margin	This is calculated by expressing the difference between the sales and cost of sales (the gross profit) as a percentage of sales or turnover.	<p>This ratio measures the performance of the business at its prime level of operations and is therefore of crucial importance. It indicates the contribution that the sales activity makes to the operating costs of the business.</p> <p>An increasing ratio may mean that there is better control of buying or manufacturing costs but it could also mean that sales prices have risen either because the market can bear higher sales prices or inflation temporarily allows advantage to be taken.</p> <p>A decreasing ratio may mean that there are problems with cost or production control or that sales prices have been cut as a result of competitive pressure.</p> <p>Sometimes a gross loss is suffered in which case the margin will be negative and it will contribute to the overall loss.</p>
Trading Overheads	<p>This ratio is arrived at by taking the totals of the trading and operating overheads and expressing them as a percentage of turnover.</p> <p>It can also be calculated for individual items of overhead such as labour, interest, marketing and so on.</p>	<p>This measures the percentage of turnover that is used up by operating costs that are more fixed than variable in nature.</p> <p>It is possible to arrive at a rough break-even level of sales by calculating the exact level of sales and the contribution from it, which will exactly meet the operating expenses.</p>
Profit Margin	This is calculated by taking the profit before tax and expressing it as a percentage of sales or turnover.	This measures performance of the business before deduction of tax, (and sometimes depreciation and extraordinary items).
Return on capital employed	This is calculated by taking profit (before interest and tax) and expressing it as a percentage return on net assets (total assets less total liabilities).	It is important to take profit before interest and tax so as to eliminate the distorting effects of variable interest and tax rates.
Return on shareholder's funds	This is calculated by taking profit (after tax) and expressing it as a percentage return on shareholder's funds.	This should show management's ability to operate a profitable business providing adequate or high returns to shareholders.

RATIO	HOW IS IT CALCULATED?	WHAT DOES IT MEAN?
Current ratio	This ratio is determined by taking the total of the current assets of the business and dividing them by the total of the current liabilities, (creditors of the business that fall due within 12 months of the balance sheet date). The ratio is often expressed against a measurement of 1 – e.g. 3:1.	This shows how many times current liabilities are covered by current assets and gives an indication of the ability to pay current debts without having to liquidate fixed assets or raise longer-term funds.  The inherent dangers within this ratio are that it shows the position only at a particular point in time and also that it ignores asset quality and convertibility into cash.
Debt to assets employed	This is calculated by taking total liabilities as a percentage of total assets.	This ratio shows the degree to which assets are funded by external creditors.  The lower the ratio, the greater is the degree of comfort for creditors against loss in the event of liquidation.
Debt to equity	This is calculated by taking total liabilities as a percentage of shareholder's funds.	This ratio measures how much external financing the business has taken as a percentage of funds provided by shareholders. It compares all the debts of a business against permanent capital in it and shows how well the business has managed to leverage funding from outside but take care - a high ratio means high leverage and high risk.
Interest cover	This is taken by expressing profit before tax and interest as a percentage of the interest cost.	This ratio measures the degree of certainty that interest will be covered by earnings and the amount of decline that can take place without impinging on the ability to pay the annual interest cost.
Sales to assets	This is taken by expressing sales over total assets employed	It shows management's ability to manage and control assets - to gain value from this ratio, you need to analyse figures in greater detail, ie by evaluating sales against receivables, stock and fixed assets.
Asset cover	This is arrived at by taking current and fixed assets and dividing them by all liabilities.	This shows how many times the total tangible assets of the business (intangible assets are ignored from the calculation) cover total external liabilities. The higher the figure then the greater the degree of safety to creditors and the providers of debt finance. Where group and related <b>company loans or directors' loans are viewed as quasi-capital</b> , it may be appropriate to exclude these funds from liabilities because they may really be tantamount to the fixed capital of the business.
Acid Test (or Quick Ratio)	This is arrived at by dividing the liquid assets of the business (cash plus immediately disposable, investments, debtors and bills receivable) by the current liabilities.	This ratio shows how many times liquid assets cover current liabilities and indicates the ability to <b>pay current debts from cash and "near cash" assets</b> .  Unfortunately, this ratio can be misleading since it doesn't take into account the timing of collectability of receivables.

RATIO	HOW IS IT CALCULATED?	WHAT DOES IT MEAN?
Stock Turn	This is arrived at by taking the total of the stock of raw materials, finished goods and work in progress and dividing them by the total of the cost of sales of the business and multiplying the answer by the number of trading days in the accounting period.	This ratio is expressed in number of days and indicates the speed of stock turnover expressed as <b>the number of days' sales invested in stock</b> and work in progress.  An increase may indicate management inefficiency or perhaps a deliberate policy to cope with an expected sales surge or as a hedge against stock supplies. Watch out for work in progress included in this calculation - stocks are easier to dispose of than work in progress in a distress situation.
Credit Given	The total of the debtors and bills receivable of the business are divided by the turnover and multiplied by the number of days in the accounting period.	This represents the number of day's credit given to customers or clients of the business. Where the business trades substantially for cash, care should be exercised in interpreting the outcome but the trend is nevertheless important.  Remember that the longer a receivable remains uncollected, the greater is the risk that it will be irrecoverable.
Credit Taken	This is arrived at by taking the creditors and bills payable of the business and dividing it by the cost of sales and multiplying that answer by the number of days in the accounting period. Alternatively the denominator can be the turnover or sales of the business.	This shows how quickly the business pays its creditors. In the event that the purchases figure is not available the alternative use of turnover or sales may provide a useful indication but it is a less technically accurate method of assessment and care should be exercised in interpreting the outcome. Where the figure for trade creditors as opposed to total creditors is separately identifiable from the accounts, that figure should be used rather than total creditors and bills payable.
Debt To Equity	This takes the loans and external finance of the business (as opposed to creditors) and divides the total by the net assets or total of capital reserves. The answer is expressed against the figure of 1 - for example, 5:1.	This measures the gross level of debt finance against <b>shareholders' equity</b> . Depending upon their nature, it may be appropriate to ignore such items as hire purchase, intra-group loans, <b>directors' loans etc. so as to reflect "outside" debt</b> to equity. Equally there may be a case for <b>including these "inside" debts</b> with the net assets and <b>shareholders' equity as they may be regarded</b> as effectively the same.
Repayment Commitments	This is arrived at by taking the cost of interest and other finance charges which appear in the accounts and adding to it the capital repayments in an accounting period and dividing the total by the profit of the business before tax and depreciation and expressing the total as a percentage.	This measures the percentage of funds generated from ordinary activities before tax and depreciation, which are committed to servicing the interest on and repayment of debt. The lower the percentage then the greater degree of safety for the lender.

RATIO	HOW IS IT CALCULATED?	WHAT DOES IT MEAN?
<p>Index of Sustainable Growth</p> <p>Developed by Robert L. Higgins</p>	<p>This uses the following formula:  <math>G \text{ (for sustainable growth)} = (X1 (1 - X2) (1 + X3)) / (X4 - (X1 (1 - X2) (1 + X3)))</math></p> <p>Where:  <math>X1 = \text{Profit Margin} = (\text{Income before Taxes} / \text{Sales}) \text{ multiplied by } 100</math>  <math>X2 = \text{Dividend Payout Ratio} = \text{Total Dividends} / \text{Net Income}</math>  <math>X3 = \text{Leverage} = \text{Liabilities} / \text{Equity}</math>  <math>X4 = (\text{Assets} / \text{Sales}) \text{ multiplied by } 100</math></p>	<p>This index helps determine the level of growth of sales beyond which external capital will be needed. In other words, when planning for a specific growth in sales, one must be aware of whether external financing will be needed. If Sales growth forecast are above G:</p> <ul style="list-style-type: none"> <li>- External financing (equity or debt) should be sought after,</li> <li>- Or the profit margin should be improved,</li> <li>- Or the distribution of dividends should be lower,</li> <li>- Or the level of assets should be lower (lease instead of buy).</li> </ul>
<p>Bankruptcy Index</p> <p>Developed by Edward I. Altman</p>	<p><math>Z = 1.2 (X1) + 1.4 (X2) + 3.3 (X3) + 0.6 (X4) + 1.0 (X5)</math></p> <p>Where:  <math>X1 = (\text{Working capital} = \text{Current assets} - \text{Current Liabilities}) / \text{total assets}</math>  <math>X2 = \text{Retained earnings} / \text{total assets}</math>  <math>X3 = \text{EBIT} / \text{total assets}</math>  <math>X4 = (\text{Market value of equity} = \text{Market Price per share multiplied by number of stocks}) / \text{total debt}</math>  <math>X5 = \text{Asset turnover} = \text{Sales} / \text{Total Assets}</math></p>	<p>This is a formula used to predict a company's likelihood of going bankrupt within one or two years. The Z-score is reputed (not surprisingly) for becoming more accurate as a firm nears bankruptcy. As a general rule, a score below 1.81 is worrying while a score above 2.99 is comfortable. Edward Altman developed the "ALTMAN Z-SCORE" by examining 85 manufacturing companies. Later, additional "Z-Scores" were developed for private manufacturing companies (Z-Score - Model A) and another for general/service firms (Z-Score - Model B).</p> <p>A "Z-Score" is only as valid as the data from which it was derived i.e. if a company has altered or falsified their financial records/books, a "Z-Score" derived from those "cooked books" is of lesser use.</p>

## Further Information

This guide is for general interest - it is always essential to take advice on specific issues.

We believe that the facts are correct as at the date of publication, but there may be certain errors and omissions for which we cannot be responsible.

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Publication issued or updated on: 24 January 2012

Ref: 357

