FORMULAS

Operating Cycle

Operating cycle is the number of days a company takes in realizing its inventories in cash. It equals the time taken in selling inventories plus the time taken in recovering cash from trade receivables. It is called operating cycle because this process of producing/purchasing inventories, selling them, recovering cash from customers, using that cash to purchase/produce inventories and so on is repeated as long as the company is in operations.

Operating cycle is a measure of the operating efficiency and working capital management of a company. A short operating cycle is good as it tells that the company's cash is tied up for a shorter period.

Another useful measure used to assess the operating efficiency of a company is the cash cycle (also called the cash conversion cycle).

Formula

Operating Cycle = Days' Sales of Inventory + Days Sales Outstanding

Days sales of inventory equals the average number of days in which a company sells its inventory. Days sales outstanding on the other hand, is the period in which receivables are realized in cash.

An alternate expanded formula for operating income is as follows:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Operating Cycle = | 365 | × Average Inventories + | 365 | × Average Accounts Receivable |
|  |  |

\*EXAMPLE NEEDED.

**Liquidity**

The first ratios we'll take a look at in this tutorial are the liquidity ratios attempt to measure a company's ability to pay off its short-term debt obligations. This is done by comparing a company's most (or, those that can be easily converted to cash), its short-term liabilities.

In general, the greater the coverage of liquid assets to short-term liabilities the better as it is a clear signal that a company can pay its debts that are coming due in the near future and still fund its ongoing operations. On the other hand, a company with a low coverage rate should raise a red flag for investors as it may be a sign that the company will have difficulty meeting running its operations, as well as meeting its obligations.

The biggest difference between each ratio is the type of assets used in the calculation. While each ratio includes the more conservative ratios will exclude some current assets as they aren't as easily converted to cash.

The ratios that we'll look at are the cash ratios and we will also go over the which goes into how the company turns its inventory into cash.

To find the data used in the examples in this section, please see the Securities and Exchange Commission's website .

 Current ratio

The CR is a popular financial ratio used to test a company's (also referred to as its current or WC position) by deriving the proportion of current assets available to cover current liabilities.

The concept behind this ratio is to ascertain whether a company's short-term assets (cash, cash equivalents, marketable securities, receivables and inventory) are readily available to pay off its short-term liabilities (notes payable, current portion of term debt, payables, accrued expenses and taxes). In theory, the higher the current ratio, the better.

**Formula**:

|  |
| --- |
| http://i.investopedia.com/inv/articles/site/currentratio.gif |

 **Components:**

|  |
| --- |
| http://i.investopedia.com/inv/articles/site/Liquiditycurrent.gif |

As of December 31, 2005, with amounts expressed in millions, Zimmer Holdings' current assets amounted to $1,575.60 (balance sheet), which is the numerator; while current liabilities amounted to $606.90 (balance sheet), which is the denominator. By dividing, the equation gives us a current ratio of 2.6.

**Variations:**None

**Commentary**:
The current ratio is used extensively in financial reporting. However, while easy to understand, it can be misleading in both a positive and negative sense - i.e., a high current ratio is not necessarily good, and a low current ratio is not necessarily bad (see chart below).

Here's why: Contrary to popular perception, the ubiquitous current ratio, as an indicator of liquidity, is flawed because it's conceptually based on the liquidation of all of a company's current assets to meet all of its current liabilities. In reality, this is not likely to occur. Investors have to look at a company as a going concern. It's the time it takes to convert a company's working capital assets into cash to pay its current obligations that is the key to its liquidity. In a word, the current ratio can be "misleading."

A simplistic, but accurate, comparison of two companies' current position will illustrate the weakness of relying on the current ratio or a working capital number (current assets minus current liabilities) as a sole indicator of liquidity:

|  |  |  |
| --- | --- | --- |
| -- | Company ABC | Company XYZ |
| Current Assets | $600 | $300 |
| Current Liabilities | $300 | $300 |
| Working Capital | $300 | $0 |
| Current Ratio | 2.0 | 1.0 |

Company ABC looks like an easy winner in a liquidity contest. It has an ample margin of current assets over current liabilities, a seemingly good current ratio, and working capital of $300. Company XYZ has no current asset/liability margin of safety, a weak current ratio, and no working capital.

However, to prove the point, what if: (1) both companies' current liabilities have an average payment period of 30 days; (2) Company ABC needs six months (180 days) to collect its account receivables, and its inventory turns over just once a year (365 days); and (3) Company XYZ is paid cash by its customers, and its inventory turns over 24 times a year (every 15 days).

In this contrived example, Company ABC is very illiquid and would not be able to operate under the conditions described. Its bills are coming due faster than its generation of cash. You can't pay bills with working capital; you pay bills with cash! Company's XYZ's seemingly tight current position is, in effect, much more liquid because of its quicker cash conversion.

When looking at the current ratio, it is important that a company's current assets can cover its current liabilities; however, investors should be aware that this is not the whole story on company liquidity. Try to understand the types of current assets the company has and how quickly these can be converted into cash to meet current liabilities. This important perspective can be seen through the CCC. By digging deeper into the current assets, you will gain a greater understanding of a company's true liquidity.

 The quick ratio

The QR- aka the quick assets ratio or the ATR is a liquidity indicator that further refines the current ratio by measuring the amount of the most current assets there are to cover current liabilities. The quick ratio is more conservative than the current ratio because it excludes inventory and other current assets, which are more difficult to turn into cash. Therefore, a higher ratio means a more liquid current position.

**Formula:**

|  |
| --- |
| http://i.investopedia.com/inv/articles/site/quickratio.gif |

 **Components:**

|  |
| --- |
| http://i.investopedia.com/inv/articles/site/Liquidityquickr.gif |

As of December 31, 2005, with amounts expressed in millions, Zimmer Holdings' quick assets amounted to $756.40 (balance sheet); while current liabilities amounted to $606.90 (balance sheet). By dividing, the equation gives us a quick ratio of 1.3.

**Variations:**Some presentations of the quick ratio calculate quick assets (the formula's numerator) by simply subtracting the inventory figure from the total current assets figure. The assumption is that by excluding relatively less-liquid (harder to turn into cash) inventory, the remaining current assets are all of the more-liquid variety. Generally, this is close to the truth, but not always.

Zimmer Holdings is a good example of what can happen if you take the aforementioned "inventory shortcut" to calculating the quick ratio:

Standard Approach: $233.2 plus $524.2 = $756 ÷ $606.9 =1.3

Shortcut Approach: $1,575.6 minus $583.7 = $991.9 ÷ $606.9 = 1.6

Restricted cash, prepaid expenses and deferred income taxes do not pass the test of truly liquid assets. Thus, using the shortcut approach artificially overstates Zimmer Holdings' more liquid assets and inflates its quick ratio.

**Commentary:**As previously mentioned, the quick ratio is a more conservative measure of liquidity than the current ratio as it removes inventory from the current assets used in the ratio's formula. By excluding inventory, the quick ratio focuses on the more-liquid assets of a company.

The basics and use of this ratio are similar to the current ratio in that it gives users an idea of the ability of a company to meet its short-term liabilities with its short-term assets. Another beneficial use is to compare the quick ratio with the current ratio. If the current ratio is significantly higher, it is a clear indication that the company's current assets are dependent on inventory.

While considered more stringent than the current ratio, the quick ratio, because of its accounts receivable component, suffers from the same deficiencies as the current ratio - albeit somewhat less. To understand these "deficiencies", readers should refer to the commentary section of the CR Chapter. In brief, both the quick and the current ratios assume a liquidation of accounts receivable and inventory as the basis for measuring liquidity.

While theoretically feasible, as a going concern a company must focus on the time it takes to convert its working capital assets to cash - that is the true measure of liquidity. Thus, if accounts receivable, as a component of the quick ratio, have, let's say, a conversion time of several months rather than several days, the "quickness" attribute of this ratio is questionable.

Investors need to be aware that the conventional wisdom regarding both the current and quick ratios as indicators of a company's liquidity can be misleading.

**The Cash ratio**

The cash ratio is an indicator of a company's liquidity that further refines both the CR and the QR by measuring the amount of cash, cash equivalents or invested funds there are in current assets to cover current liabilities.

**Formula:**

|  |
| --- |
| http://i.investopedia.com/inv/articles/site/cashratio.gif |

**Components:**

|  |
| --- |
| http://i.investopedia.com/inv/articles/site/Liquiditycashr.gif |

As of December 31, 2005, with amounts expressed in millions, Zimmer Holdings' cash assets amounted to $233.20 (balance sheet); while current liabilities amounted to $606.90 (balance sheet). By dividing, the equation gives us a cash ratio of 0.4

**Variations:**None

**Commentary:**The cash ratio is the most stringent and conservative of the three short-term LR (current, quick and cash). It only looks at the most liquid short-term assets of the company, which are those that can be most easily used to pay off current obligations. It also ignores inventory and receivables, as there are no assurances that these two accounts can be converted to cash in a timely matter to meet current liabilities.

Very few companies will have enough cash and cash equivalents to fully cover current liabilities, which isn't necessarily a bad thing, so don't focus on this ratio being above 1:1.

The cash ratio is seldom used in financial reporting or by analysts in the fundamental analysis of a company. It is not realistic for a company to purposefully maintain high levels of cash assets to cover current liabilities. The reason being that it's often seen as poor asset utilization for a company to hold large amounts of cash on its balance sheet, as this money could be returned to shareholders or used elsewhere to generate higher returns. While providing an interesting liquidity perspective, the usefulness of this ratio is limited.

**THE CASH CONVERSION CYCLE**

This liquidity metric expresses the length of time (in days) that a company uses to sell inventory, collect receivables and pay its accounts payable. The (CCC) measures the number of days a company's cash is tied up in the the production and sales process of its operations and the benefit it gets from payment terms from its creditors. The shorter this cycle, the more liquid the company's WC position is. The CCC is also known as the "cash" or "operating" cycle.

**Formula:**

|  |
| --- |
| http://i.investopedia.com/inv/articles/site/ccc.gif |

**Components:**DIO is computed by:

1. Dividing the cost of sales (income statement) by 365 to get a cost of sales per day figure;
2. Calculating the average inventory figure by adding the year's beginning (previous yearend amount) and ending inventory figure (both are in the balance sheet) and dividing by 2 to obtain an average amount of inventory for any given year; and
3. Dividing the average inventory figure by the cost of sales per day figure.

For Zimmer's FY 2005 (in $ millions), its DIO would be computed with these figures:

|  |  |
| --- | --- |
| (1) cost of sales per day  | 739.4 ÷ 365 = 2.0  |
| (2) average inventory 2005 | 536.0 + 583.7 = 1,119.7 ÷ 2 = 559.9 |
| (3) days inventory outstanding | 559.9 ÷ 2.0 = 279.9  |

DIO gives a measure of the number of days it takes for the company's inventory to turn over, i.e., to be converted to sales, either as cash or accounts receivable.

DSO is computed by:

1. Dividing net sales (income statement) by 365 to get a net sales per day figure;
2. Calculating the average accounts receivable figure by adding the year's beginning (previous yearend amount) and ending accounts receivable amount (both figures are in the balance sheet) and dividing by 2 to obtain an average amount of accounts receivable for any given year; and
3. Dividing the average accounts receivable figure by the net sales per day figure.

For Zimmer's FY 2005 (in $ millions), its DSO would be computed with these figures:

|  |  |
| --- | --- |
| (1) net sales per day | 3,286.1 ÷ 365 = 9.0 |
| (2) average accounts receivable | 524.8 + 524.2 = 1,049 ÷ 2 = 524.5  |
| (3) days sales outstanding | 524.5 ÷ 9.0 = 58.3 |

DSO gives a measure of the number of days it takes a company to collect on sales that go into accounts receivables (credit purchases).

DPO is computed by:

1. Dividing the cost of sales (income statement) by 365 to get a cost of sales per day figure;
2. Calculating the average accounts payable figure by adding the year's beginning (previous yearend amount) and ending accounts payable amount (both figures are in the balance sheet), and dividing by 2 to get an average accounts payable amount for any given year; and
3. Dividing the average accounts payable figure by the cost of sales per day figure.

For Zimmer's FY 2005 (in $ millions), its DPO would be computed with these figures:

|  |  |
| --- | --- |
| (1) cost of sales per day | 739.4 ÷ 365 = 2.0 |
| (2) average accounts payable | 131.6 + 123.6 = 255.2 ÷ 125.6 |
| (3) days payable outstanding | 125.6 ÷ 2.0 = 63 |

DPO gives a measure of how long it takes the company to pay its obligations to suppliers.

CCC computed:
Zimmer's cash conversion cycle for FY 2005 would be computed with these numbers (rounded):

|  |  |
| --- | --- |
| DIO | 280 days |
| DSO | +58 days |
| DPO | -63 days |
| **CCC** | **275 days** |

#### **Variations:**Often the components of the cash conversion cycle - DIO, DSO and DPO - are expressed in terms of turnover as a times (x) factor. For example, in the case of Zimmer, its days inventory outstanding of 280 days would be expressed as turning over 1.3x annually (365 days ÷ 280 days = 1.3 times). However, actually counting days is more literal and easier to understand when considering how fast assets turn into cash. **Commentary:**An often-overlooked metric, the cash conversion cycle is vital for two reasons. First, it's an indicator of the company's efficiency in managing its important working capital assets; second, it provides a clear view of a company's ability to pay off its current liabilities. It does this by looking at how quickly the company turns its inventory into sales, and its sales into cash, which is then used to pay its suppliers for goods and services. Again, while the quick and current ratios are more often mentioned in financial reporting, investors would be well advised to measure true liquidity by paying attention to a company's cash conversion cycle. The longer the duration of inventory on hand and of the collection of receivables, coupled with a shorter duration for payments to a company's suppliers, means that cash is being tied up in inventory and receivables and used more quickly in paying off trade payables. If this circumstance becomes a trend, it will reduce, or squeeze, a company's cash availabilities. Conversely, a positive trend in the cash conversion cycle will add to a company's liquidity.By tracking the individual components of the CCC (as well as the CCC as a whole), an investor is able to discern positive and negative trends in a company's all-important working capital assets and liabilities. For example, an increasing trend in DIO could mean decreasing demand for a company's products. Decreasing DSO could indicate an increasingly competitive product, which allows a company to tighten its buyers' payment terms. As a whole, a shorter CCC means greater liquidity, which translates into less of a need to borrow, more opportunity to realize price discounts with cash purchases for raw materials, and an increased capacity to fund the expansion of the business into new product lines and markets. Conversely, a longer CCC increases a company's cash needs and negates all the positive liquidity qualities just mentioned.Note: In the realm of free or low-cost investment research websites, the only one we've found that provides complete CCC data for stocks is which also requires a paid premier membership subscription. **Current Ratio Vs. The CCC**The obvious limitations of the current ratio as an indicator of true liquidity clearly establish a strong case for greater recognition, and use, of the cash conversion cycle in any analysis of a company's working capital position.Nevertheless, corporate financial reporting, investment literature and investment research services seem to be stuck on using the current ratio as an indicator of liquidity. This circumstance is similar to the financial media's and the general public's attachment to the Dow Jones Industrial Average. Most investment professionals see this index as unrepresentative of the stock market or the national economy. And yet, the popular Dow marches on as the market indicator of choice.The current ratio seems to occupy a similar position with the investment community regarding financial ratios that measure liquidity. However, it will probably work better for investors to pay more attention to the cash-cycle concept as a more accurate and meaningful measurement of a company's liquidity.

#### **Profitability Ratios**

**There are three main ratios that can be used to measure the profitability of a business:**

1. The gross profit margin.
2. The net profit margin.
3. Return on Capital Employed (R.O.C.E).

#### The gross profit margin

This measures the gross profit of the business as a proportion of the sales revenue. It is calculated using the following formula:



**For example**, if a business has gross profit of £4 million and sales revenue of £6 million, then the gross profit margin would be:



This means that for every £1 of sales revenue, £0.67 remains after all direct expenses have been deducted. This money then contributes towards covering the other expenses of the business.

The business would want this margin to be as high as possible, since a high margin will leave more profit for covering the remaining expenses and, if the business is a 'company', for covering the dividend payments to shareholders.

#### The net profit margin

This measures the net profit of the business as a proportion of the sales revenue. It is calculated using the following formula:



**For example**, if a business has gross profit of £1 million and sales revenue of £6 million, then the net profit margin would be:



This means that for every £1 of sales revenue, 16.7 pence remains after all direct and indirect expenses have been deducted. This money then contributes towards covering the corporation tax that must be paid on profits to the Inland Revenue and, if the business is a 'company', covering the dividend payments to shareholders.

Any profit which remains is kept in the business for re-investment and is called '**retained profit**'. Again, the business would want this margin to be as high as possible, allowing both large dividend payments to shareholders and a significant amount of profit to be retained for growth.

#### Return on Capital Employed (R.O.C.E)

This is often referred to as the '**primary accounting ratio**' and it expresses the annual percentage return that an investor would receive on their capital. It basically relates the profit to the size of the business and it is calculated using the following formula:



**For example**, if a business had a net profit of £2.2m and a capital employed of £7.6m, then the Return on Capital Employed figure would be:



This means that for every £1 of capital invested in the business, the annual return would be 28.9 pence. Capital employed is equal to shareholders' funds plus long-term liabilities, and it is the final line in the balance sheet (remember that it is the same value as 'assets employed').

Clearly an investor would like to receive as high a R.O.C.E. as possible, although the figure would need to be compared to last year's return, to competitors' returns and to the returns on other investments.

# Activity Ratios: Accounts Receivable Turnover, Inventory Turnover, Total Asset Turnover

**Activity ratios** measure company sales per another asset account—the most common asset accounts used are accounts receivable, inventory, and total assets. Activity ratios measure the efficiency of the company in using its resources. Since most companies invest heavily in accounts receivable or inventory, these accounts are used in the denominator of the most popular activity ratios.

**Accounts receivable** is the total amount of money due to a company for products or services sold on an open credit account. The **accounts receivable turnover** shows how quickly a company collects what is owed to it and indicates the liquidity of the receivables.

|  |  |  |
| --- | --- | --- |
| **Accounts Receivable Turnover**  | **=** | **Total Credit Sales****Accounts Receivable** |

Closely related to the accounts receivable turnover rate is the **average collection period** in days, equal to 365 days divided by the accounts receivable turnover:

|  |  |  |
| --- | --- | --- |
| **Average Collection Period** | **=** | **365 Days****Accounts Receivable Turnover**  |

Analysts frequently use the average collection period to measure the effectiveness of a company's ability to collect payments from its credit customers. Generally, the average collection period should not exceed the credit terms that the company extends to its customers.

For a company to be profitable, it must be able to manage its inventory, because it is money invested that does not earn a return until the product is sold. A higher inventory turnover ratio indicates more effective cash management and reduces the incidence of inventory obsolescence. The best measure of inventory utilization is the **inventory turnover ratio** (aka **inventory utilization ratio**), which is the total annual sales or the cost of goods sold divided by the cost of inventory.

|  |  |  |
| --- | --- | --- |
| **Inventory Turnover**  | **=** | **Total Annual Sales or Cost of Goods Sold****Inventory Cost** |

Using the **cost of goods sold** in the numerator is a more accurate indicator of inventory turnover, allowing a more direct comparison with other companies, since different companies would have different markups to the sale price, which would overstate the actual inventory turnover.

In seasonal businesses, where the amount of inventory can vary widely throughout the year, the average inventory cost is used in the denominator.

## Example 1: Calculating Inventory Turnover

There are 2 companies selling widgets in 2 locations. Big City Widget Seller sells widgets for $4 in its high priced market. Rural Widget Seller sells widgets for $2 in its low priced market. Both companies sell 12,000,000 widgets annually, hold 1,000,000 widgets in inventory, and the cost of goods for the widgets is $1 for both companies.

Using the annual sales for the numerator:

* Big City Widget Seller Inventory Turnover = $4 × 12,000,000 / $1,000,000 = 48
* Rural Widget Seller Inventory Turnover = $2 × 12,000,000 / $1,000,000 = 24

It would seem that Big City Widget Seller has much better inventory management, but using the cost of goods sold would indicate otherwise:

* Big City Widget Seller Inventory Turnover = $12,000,000 / $1,000,000 = 12 = Rural Inventory Turnover

In the above example, which numerator is chosen for the inventory turnover will result in a large difference in ratios. But since the inventory turnover is a measure of how often the inventory has been turned over (hence the name!), only with the cost of goods sold in the numerator will yield the correct turnover rate, and allow direct comparisons among different companies. Since financial ratios are used for the express purpose of comparing different companies, why use annual sales? Because, unfortunately, most major compilers of financial data have used total annual sales, so this is the ratio that is most widely used.

Closely related to inventory turnover is the **days in inventory**, equal to 365 days divided by the inventory turnover:

|  |  |  |
| --- | --- | --- |
| **Days in Inventory** | **=** | **365 Days** **Inventory Turnover** |

## Example 2: Calculating Days in Inventory

For the 2 companies in Example 1, using inventory turnover based on cost of goods sold:

* Days in Inventory = 365 Days ÷12 ≈ 30 Days

Note that, in this case, using inventory sales will yield not only different results for the 2 widget sellers, but they would both be incorrect:

* Big-City Widget Seller: Days in Inventory = 365 Days ÷ 48 ≈ 8 Days
* Rural Widget Seller: Days in Inventory = 365 Days ÷ 24 ≈ 15 days

The **total asset turnover** measures the return on each dollar invested in assets and is equal to the **net sales**, which is total sales minus cash sales minus returns and allowances, divided by the average total assets:

Net Sales = Total Sales – Cash Sales – Returns and Allowances

If there are no pronounced seasonal variations, then average total sales can be calculated by adding the total assets at the beginning of the year to the total assets at year-end, then dividing by 2:

|  |  |  |
| --- | --- | --- |
| **Average Total Assets**  | **=** | **Assets at Beginning of Year + Assets at End of Year****2** |

|  |  |  |
| --- | --- | --- |
| **Total Asset Turnover**  | **=** | **Net Sales****Average Total Assets** |

It shows how much revenue is generated for each dollar invested in assets.

# Financial Leverage Ratios

Financial leverage ratios, sometimes called equity or debt ratios, measure the value of equity in a company by analyzing its overall debt picture. These ratios either compare debt or equity to assets as well as shares outstanding to measure the true value of the equity in a business.

In other words, the financial leverage ratios measure the overall debt load of a company and compare it with the assets or equity. This shows how much of the company assets belong to the shareholders rather than creditors. When shareholders own a majority of the assets, the company is said to be less leveraged. When creditors own a majority of the assets, the company is considered highly leveraged. All of these measurements are important for investors to understand how risky the capital structure of a company and if it is worth investing in.

Here are the most common financial leverage ratios.

# Debt Ratio

Debt ratio is a SR that measures a firm's total liabilities as a percentage of its total assets. In a sense, the debt ratio shows a company's ability to pay off its liabilities with its assets. In other words, this shows how many assets the company must sell in order to pay off all of its liabilities.

This ratio measures the FL of a company. Companies with higher levels of liabilities compared with assets are considered highly leveraged and more risky for lenders.

This helps investors and creditors analysis the overall debt burden on the company as well as the firm's ability to pay off the debt in future, uncertain economic times.

## Formula

The debt ratio is calculated by dividing total liabilities by total assets. Both of these numbers can easily be found the balance sheet .Here is the calculation:



Make sure you use the total liabilities and the total assets in your calculation. The debt ratio shows the overall debt burden of the company—not just the current debt.

## Analysis

The debt ratio is shown in decimal format because it calculates total liabilities as a percentage of total assets. As with many solvency ratios, a lower ratios is more favorable than a higher ratio.

A lower debt ratio usually implies a more stable business with the potential of longevity because a company with lower ratio also has lower overall debt. Each industry has its own benchmarks for debt, but .5 is reasonable ratio.

A debt ratio of .5 is often considered to be less risky. This means that the company has twice as many assets as liabilities. Or said a different way, this company's liabilities are only 50 percent of its total assets. Essentially, only its creditors own half of the company's assets and the shareholders own the remainder of the assets.

A ratio of 1 means that total liabilities equals total assets. In other words, the company would have to sell off all of its assets in order to pay off its liabilities. Obviously, this is a highly leverage firm. Once its assets are sold off, the business no longer can operate.

The debt ratio is a fundamental solvency ratio because creditors are always concerned about being repaid. When companies borrow more money, their ratio increases creditors will no longer loan them money. Companies with higher debt ratios are better off looking to equity financing to grow their operations.

## Example

Dave's Guitar Shop is thinking about building an addition onto the back of its existing building for more storage. Dave consults with his banker about applying for a new loan. The bank asks for Dave's balance to examine his overall debt levels.

The banker discovers that Dave has total assets of $100,000 and total liabilities of $25,000. Dave's debt ratio would be calculated like this:



As you can see, Dave only has a debt ratio of .25. In other words, Dave has 4 times as many assets as he has liabilities. This is a relatively low ratio and implies that Dave will be able to pay back his loan. Dave shouldn't have a problem getting approved for his loan.

# Debt to Equity Ratio

The debt to equity ratio is a financial, liquidity ratio that compares a company's total debt to total equity. The debt to equity ratio shows the percentage of company financing that comes from creditors and investors. A higher debt to equity ratio indicates that more creditor financing (bank loans) is used than investor financing (shareholders).

## Formula

The debt to equity ratio is calculated by dividing total liabilities by total equity. The debt to equity ratio is considered a balance sheet ratio because all of the elements are reported on the balance sheet.



## Analysis

Each industry has different debt to equity ratio benchmarks, as some industries tend to use more debt financing than others. A debt ratio of .5 means that there are half as many liabilities than there is equity. In other words, the assets of the company are funded 2-to-1 by investors to creditors. This means that investors own 66.6 cents of every dollar of company assets while creditors only own 33.3 cents on the dollar.

A debt to equity ratio of 1 would mean that investors and creditors have an equal stake in the business assets.

A lower debt to equity ratio usually implies a more financially stable business. Companies with a higher debt to equity ratio are considered more risky to creditors and investors than companies with a lower ratio. Unlike equity financing, debt must be repaid to the lender. Since debt financing also requires debt servicing or regular interest payments, debt can be a far more expensive form of financing than equity financing. Companies leveraging large amounts of debt might not be able to make the payments.

Creditors view a higher debt to equity ratio as risky because it shows that the investors haven't funded the operations as much as creditors have. In other words, investors don't have as much skin in the game as the creditors do. This could mean that investors don't want to fund the business operations because the company isn't performing well. Lack of performance might also be the reason why the company is seeking out extra debt financing.

## Example

Assume a company has $100,000 of bank lines of credit and a $500,000 mortgage on its property. The shareholders of the company have invested $1.2 million. Here is how you calculate the debt to equity ratio.



# Equity Ratio

The equity ratio is an investment leverage or SR that measures the amount of assets that are financed by owners' investments by comparing the total equity in the company to the total assets.

The equity ratio highlights two important financial concepts of a solvent and sustainable business. The first component shows how much of the total company assets are owned outright by the investors. In other words, after all of the liabilities are paid off, the investors will end up with the remaining assets.

The second component inversely shows how leveraged the company is with debt. The equity ratio measures how much of a firm's assets were financed by investors. In other words, this is the investors' stake in the company. This is what they are on the hook for. The inverse of this calculation shows the amount of assets that were financed by debt. Companies with higher equity ratios show new investors and creditors that investors believe in the company and are willing to finance it with their investments.

## Formula

The equity ratio is calculated by dividing total equity by total assets. Both of these numbers truly include all of the accounts in that category. In other words, all of the assets and equity reported on the balance sheet are included in the equity ratio calculation.



## Analysis

In general, higher equity ratios are typically favorable for companies. This is usually the case for several reasons. Higher investment levels by shareholders shows potential shareholders that the company is worth investing in since so many investors are willing to finance the company. A higher ratio also shows potential creditors that the company is more sustainable and less risky to lend future loans.

Equity financing in general is much cheaper than debt financing because of the interest expenses related to debt financing. Companies with higher equity ratios should have less financing and debt service costs than companies with lower ratios.

As with all ratios, they are contingent on the industry. Exact ratio performance depends on industry standards and benchmarks.

## Example

Tim's Tech Company is a new startup with a number of different investors. Tim is looking for additional financing to help grow the company, so he talks to his business partners about financing options. Tim's total assets are reported at $150,000 and his total liabilities are $50,000. Based on the accounting equation, we can assume the total equity is $100,000. Here is Tim's equity ratio.



As you can see, Tim's ratio is .67. This means that investors rather than debt are currently funding more assets. 67 percent of the company's assets are owned by shareholders and not creditors. Depending on the industry, this is a healthy ratio.

#### Shareholders Ratios

**There are five main ratios that can be used by shareholders in order to assess the worth of a particular company and their shares:**

1. Earnings per share (E.P.S).
2. Price/ Earnings (P/E) ratio.
3. Dividend per share.
4. Dividend yield.
5. Dividend cover.

#### Earnings per share (E.P.S)

This measures the company's potential dividends that it could pay to shareholders. It is calculated using the following formula:



**For example**, if a company has profit after tax of £12m and it has issued 40 million ordinary shares, then its E.P.S. would be:



This means that every ordinary share could pay a dividend of 30 pence IF all the profit after tax is distributed as dividends. However, it is most likely that some of the profit after tax will be kept in the company for re-investment (this is called retained profit).

Clearly the shareholders would want as much of the profit after tax as possible to be payable to themselves.

#### Price Earnings (P/E) ratio

This measures the market price of the share as a proportion of the earnings per share calculated above. It is calculated using the following formula:



**For example**, if the current market price for a company's share is £1.50, and the earnings per share is 30 pence, then the P/E ratio would be:



This answer indicates that it would take an investor 5 years to recover the cost of the share. This figure would need to be compared to other companies' P/E ratios before a judgement could be made.

In general, the higher the P/E ratio, then the better the expectations of the company's future profitability. However, the share price of the company is likely to fluctuate frequently, and therefore the P/E ratio of the share will not be the same for very long - this can make it difficult to compare the P/E ratio with other companies.

#### Dividends per share

This measures the size of the dividends that the company actually pays to its shareholders. It is calculated using the following formula:



**For example**, if a company has profit after tax of £12m (and issues 25% of this as dividends) and it has issued 40 million ordinary shares, then its dividend per share would be:



This means that every ordinary share would pay a dividend of 7.5 pence. The remaining £9m of profit after tax would be retained for future investment. Clearly, the shareholders would want the dividend per share to be as high as possible, in order to maximise their return on their investment.

#### Dividend Yield

This shows the dividend per share expressed as a percentage of the market price of the share. It is calculated using the following formula:



**For example**, if a company had a dividend per share of 7.5 pence, and a market price of £1.50, then the dividend yield would be:



This is **not a very high return** for the risk involved in investing money in shares. This figure would need to be compared to other investments (e.g. other companies, banks, etc) to see if it is providing a competitive return.

#### Dividend cover

This measures how many more times the dividends could have been paid out of the profit after tax. It is calculated using the following formula:



**For example**, if a business had profit after tax of £12m and it paid total dividends of £3m, then the dividend cover would be:



This means that the company did not pay the shareholders a significant proportion of the profit after tax in the form of dividends - the company has actually only paid a quarter of their profit after tax as dividends.

This means that the company kept much of the profit after tax as retained profit for re-investment.

**Formulas of shareholder ratios**

# Earnings Per Share

Earning per share, also called net income per share, is a market prospect ratio that measures the amount of net income earned per share of stock outstanding. In other words, this is the amount of money each share of stock would receive if all of the profits were distributed to the outstanding shares at the end of the year.

Earnings per share is also a calculation that shows how profitable a company is on a shareholder basis. So a larger company's profits per share can be compared to smaller company's profits per share. Obviously, this calculation is heavily influenced on how many shares are outstanding. Thus, a larger company will have to split its earning amongst many more shares of stock compared to a smaller company.

## Formula

Earnings per share or basic earnings per share is calculated by subtracting preferred dividends from net income and dividing by the weighted average common shares outstanding. The earnings per share formula looks like this.



You'll notice that the preferred dividends are removed from net income in the earnings per share calculation. This is because EPS only measures the income available to common stockholders. Preferred dividends are set-aside for the preferred shareholders and can't belong to the common shareholders.

Most of the time earning per share is calculated for year-end financial statements. Since companies often issue new stock and buy back treasury stock throughout the year, the weighted average common shares are used in the calculation. The weighted average common shares outstanding is can be simplified by adding the beginning and ending outstanding shares and dividing by two.

## Analysis

Earning per share is the same as any profitability or market prospect ratio. Higher earnings per share is always better than a lower ratio because this means the company is more profitable and the company has more profits to distribute to its shareholders.

Although many investors don't pay much attention to the EPS, a higher earnings per share ratio often makes the stock price of a company rise. Since so many things can manipulate this ratio, investors tend to look at it but don't let it influence their decisions drastically.

## Example

Quality Co. has net income during the year of $50,000. Since it is a small company, there are no preferred shares outstanding. Quality Co. had 5,000 weighted average shares outstanding during the year. Quality's EPS is calculated like this.



As you can see, Quality's EPS for the year is $10. This means that if Quality distributed every dollar of income to its shareholders, each share would receive 10 dollars.

# Dividend Yield Ratio

The dividend yield is a financial ratio that measures the amount of cash dividends distributed to common shareholders relative to the market value per share. The dividend yield is used by investors to show how their investment in stock is generating either cash flows in the form of dividends or increases in asset value by stock appreciation.

Investors invest their money in stocks to earn a return either by dividends or stock appreciation. Some companies choose to pay dividends on a regular basis to spur investors' interest. These shares are often called income stocks. Other companies choose not to issue dividends and instead reinvest this money in the business. These shares are often called growth stocks.

Investors can use the dividend yield formula to help analyze their return on investment in stocks.

## Formula

The dividend yield formula is calculated by dividing the cash dividends per share by the market value per share.



Cash dividends per share are often reported on the financial statements but they are also reported as gross dividends distributed. In this case, you'll have to divide the gross dividends distributed by the average outstanding common stock during that year.

The shares' market value is usually calculated by looking at the open stock exchange price as of the last day of the year or period.

## Analysis

Investors use the dividend yield formula to compute the cash flow they are getting from their investment in stocks. In other words, investors want to know how much dividends they are getting for every dollar that the stock is worth.

A company with a high dividend yield pays its investors a large dividend compared to the fair market value of the stock. This means the investors are getting highly compensated for their investments compared with lower dividend yielding stocks.

A high or low dividend yield is relative to the industry of the company. As I mentioned above, tech companies rarely give dividends at all. So even a small dividend might produce a high dividend yield ratio for the tech industry. Generally, investors want to see a yield as high as possible.

## Example

Stacy's Bakery is an upscale bakery that sells cupcakes and baked goods in Beverly Hills. Stacy's is listed on a smaller stock exchange and the current market price per share is $15. As of last year, Stacy paid $15,000 in dividends with 1,000 shares outstanding. Stacy's yield is computed like this.



As you can see, Stacy's yield is one dollar. This means that Stacy's investors receive 1 dollar in dividends for every dollar they have invested in the company. In other words, the investors are getting a 100 percent return on their investment every year Stacy maintains this dividend level.

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