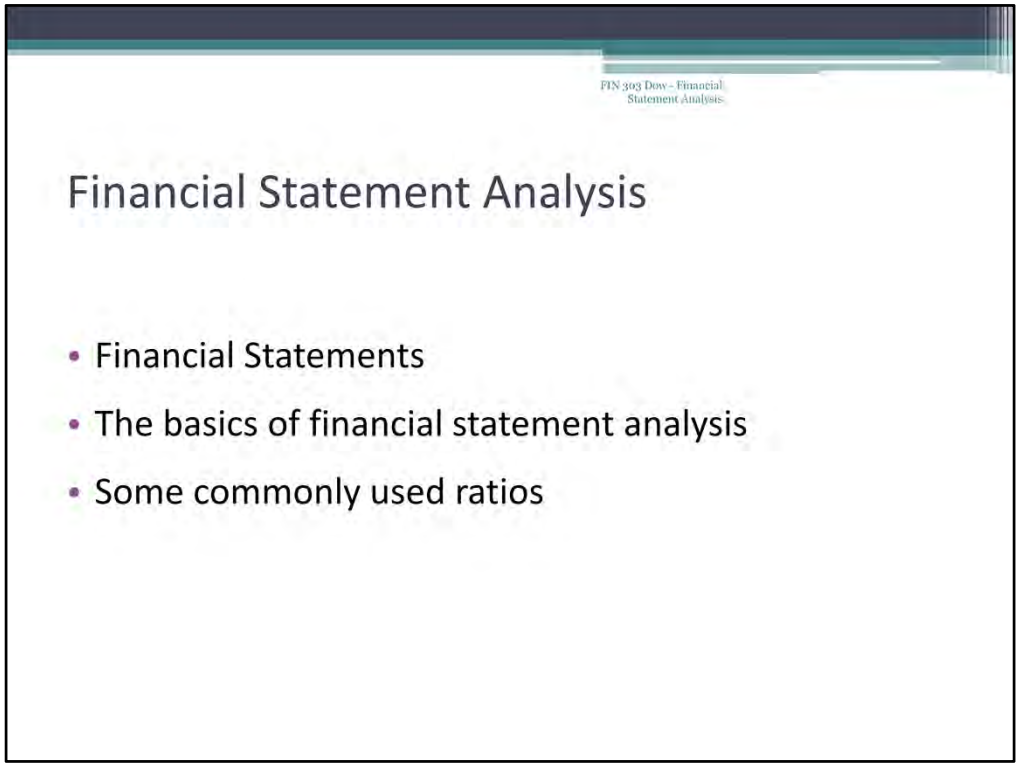
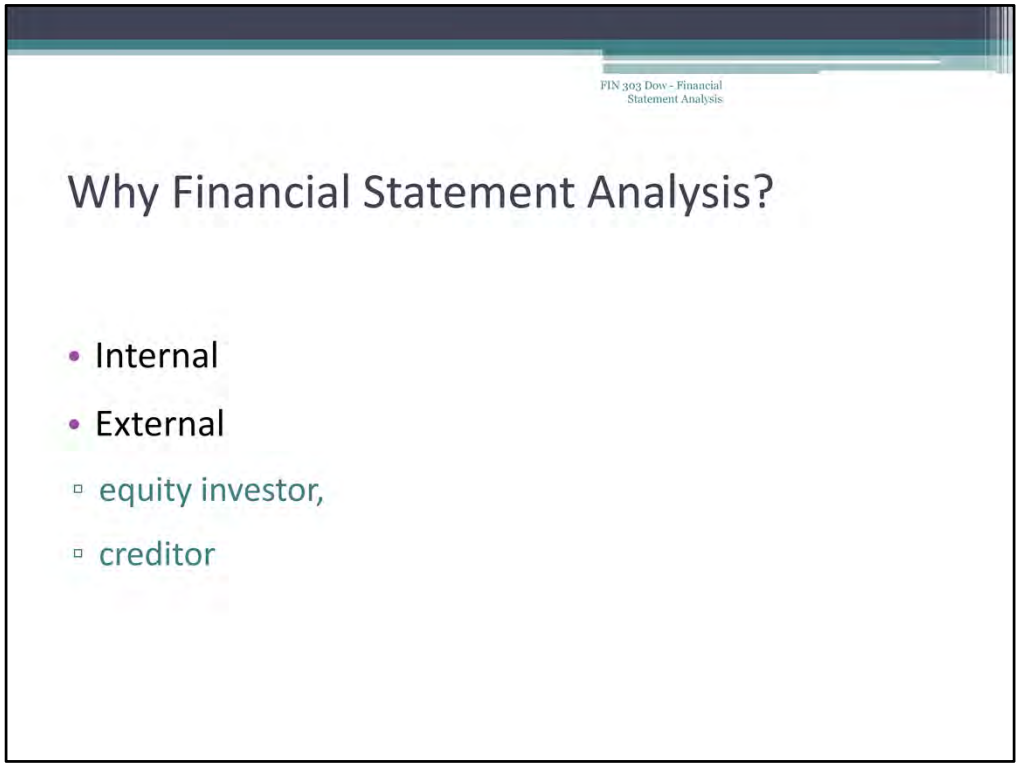
FIN 303 Hybrid – Professor Dow

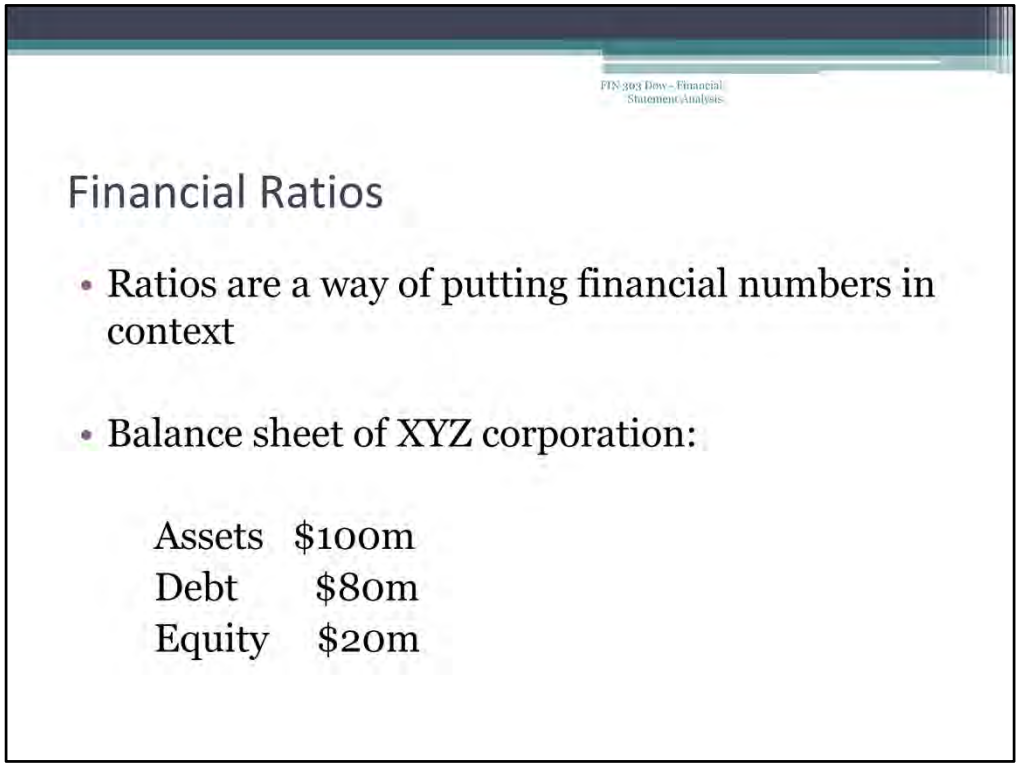
Financial Statement Analysis



Financial statement analysis is pretty much just what it says – the study of a company's financial statements to determine the past and future performance of the company. At this point you should be familiar with the three basic financial statements: The income statement, the balance sheet and the statement of cash flows. In this presentation, we'll look at how you can use information from these statements. In practice, financial statement analysis can be very involved, with the particulars depending on the specific industry that the company is in. For this presentation, we will focus on the basic process of financial statement analysis



Financial statements are important for a number of reasons. Companies have to keep records to determine their tax obligations. Internally, managers in the company might be interested in questioning how efficiently the company is run and whether there might be some way to improve that. External investors would also be interested in the financial condition of the company. Someone who is interested in buying the company's stock might want to know how profitable a company is and how that might change in the future. A bank that is considering lending the company money to finance an expansion would want to know if the company will be able to repay the loan in the future.



When studying financial statements, it's typical to express the numbers as ratios. In fact, sometimes financial ratio analysis is used in place of financial statement analysis. The reason for this is that ratios put the numbers in context which makes them more informative. To see how this works, let's look at an example involving debt.

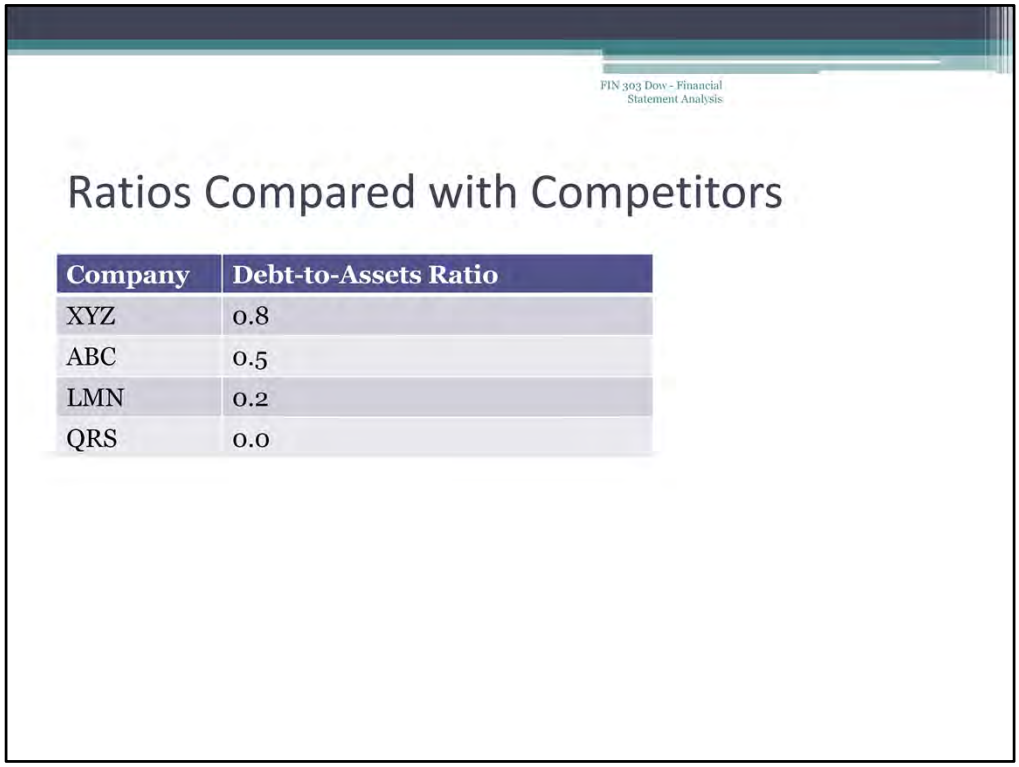
We are potential investors in XYZ Corp and we want to know if it has an excessive amount of debt. As we'll see later in the course, how much debt a company should have is actually a complicated question, but at this point we just want some idea whether the company has a lot of debt or not.

We go to balance sheet and we see that XYZ Corp in 2015 had $80 million worth of debt. Is that a lot? It depends. If this is a small company with earnings of $2 million annually we'd certainly be concerned about whether it could pay. On the other hand, if this is a very large company, with most of its financing coming from equity rather than debt, we might not be so concerned.

To put the debt in context we'll compare the amount of debt with the total assets of the company. Since assets on the financial statement will equal the sum of equity and liabilities, this will tell us the relative importance of debt in financing the company.

Calculating the Debt-to-Assets ratio we get a number of 0.8. That is, 80% of the company's financing comes through debt.

But now we're left with the question, is 80% too much? We need to pursue things further.



One way to put things in context is to compare XYZ's ratio with those of its competitors. It's typically better to compare XYZ with competitor companies rather than with all companies in general since competitors will likely face a similar business environment. For example, they may face a similar level of earnings risk during an economic downturn which can be important in determining the appropriate level of debt.

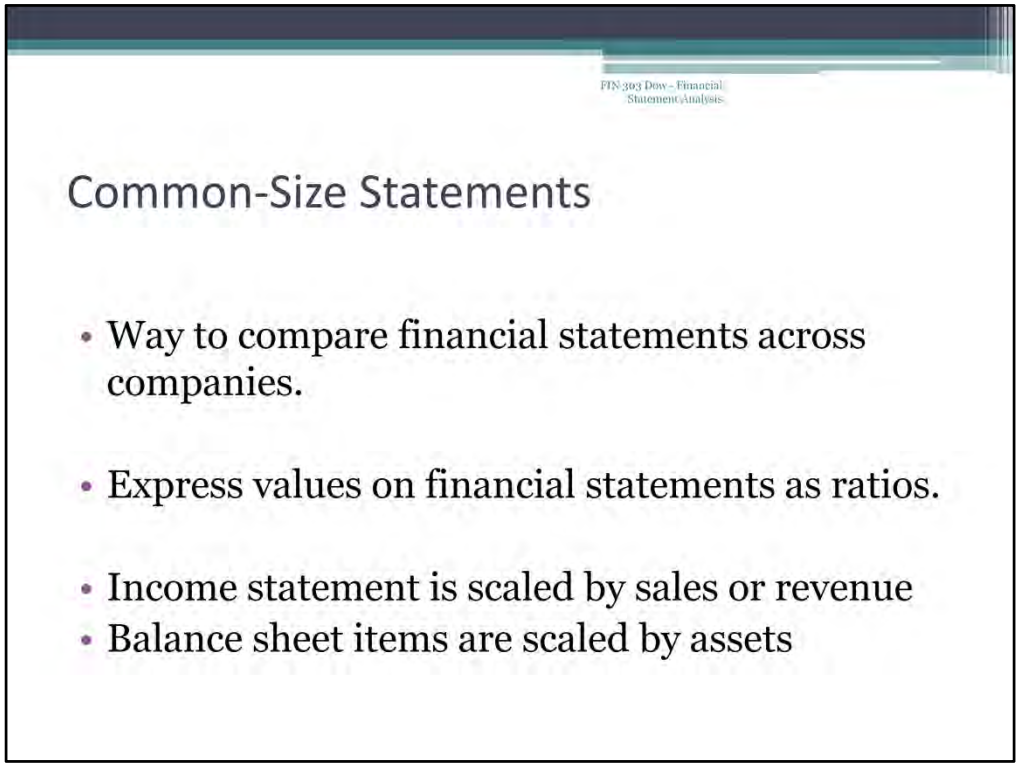
Here is the Debt-to-Assets ratio for XYZ and its three main competitors. We see that XYZ is using more debt than the other firms. Is that bad in itself? Not necessarily, but it does suggest that we ought to take a closer look.

If we found that XYZ had the same amount of debt as its competitors, would that mean everything is OK? Again, not necessarily, the entire industry might have too much or too little debt, but comparing XYZ with its competitors provides some insight into the company's strategy towards debt.

Ratios Compared Over Time

	2011	2012	2013	2014	2015
XYZ	0.3	0.3	0.6	0.7	0.8

Another way to put financial ratios in context is to see how they've changed over time and whether there is any trend. In this case we see that XYZ corporation's use of debt has been increasing over time. It's likely that a continued increase would be unsustainable so we would want to look at why the debt has increased in the past and whether the company expects to increase their use of debt in the future.



An convenient way to compare the financial statements of different companies is to convert all the dollar amounts on the financial statements to financial ratios. On the income statement, we divide each item by the amount of sales or revenue. Balance sheet items are divided by the amount of assets. Financial statements that are scaled this way are called common-size statements.

Example of common-size statements

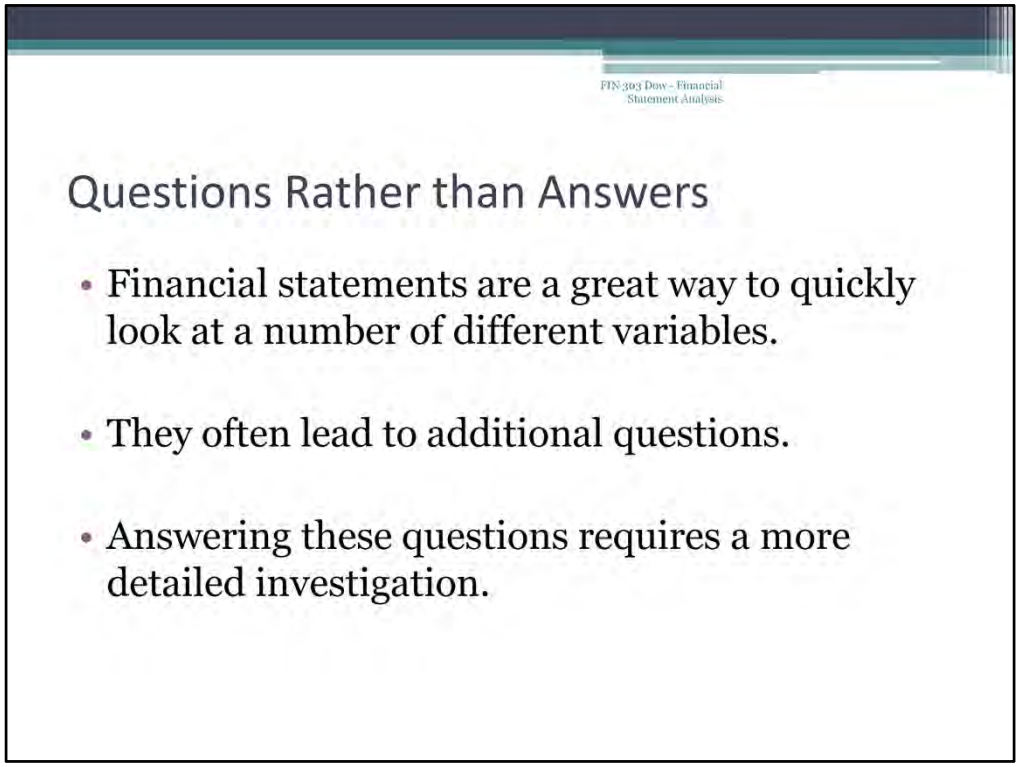
Standard Financial Statements

	XYZ	DEF
Revenue	25	100
Costs	20	85
Earnings	5	15
Assets	100	400
Liabilities	80	160
Equity	20	240

Common-Size Financial Statements

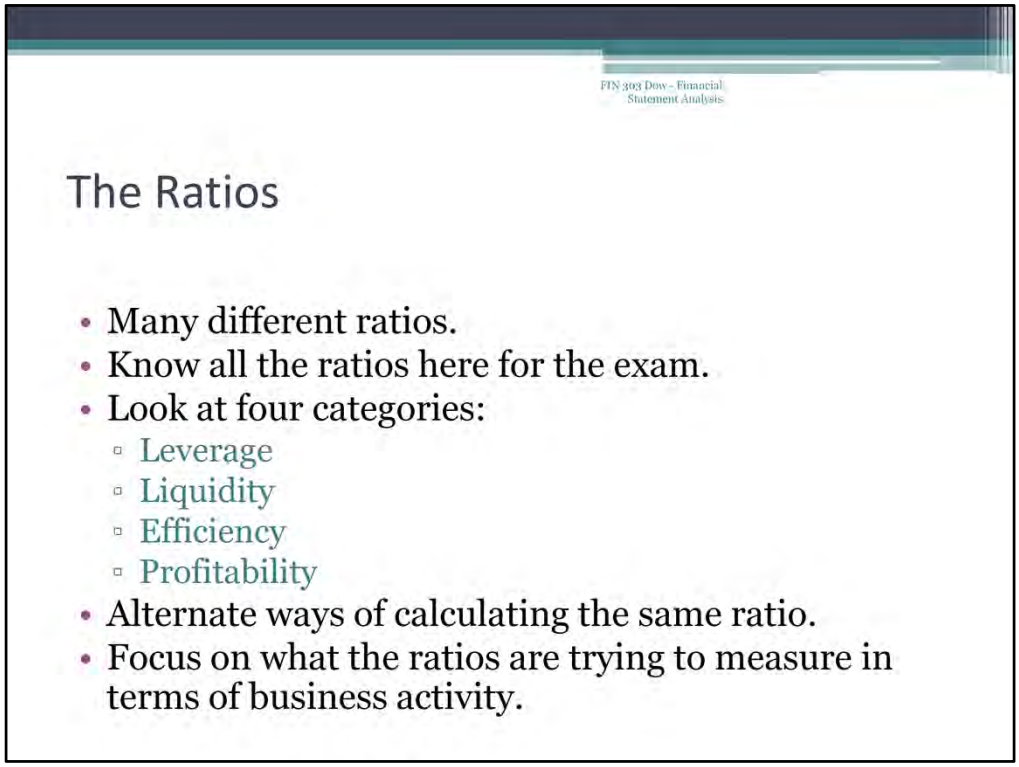
	XYZ	DEF
Revenue	1.0	1.0
Costs	0.8	0.85
Earnings	0.2	0.15
Assets	1.0	1.0
Liabilities	0.8	0.4
Equity	0.2	0.6

In this example we are comparing two companies, XYZ and DEF. DEF is a much larger company with three times the earnings and twice the amount of debt. But we want to know which company has the higher profit margin and the most debt *controlling for size*. The common-size financial statements on the right give the answer. We divide the income statement items by revenue which shows that the profit margin (earnings/revenue) is greater for XYZ even though the dollar amount of its profits are less. We divide the balance sheet items by assets which shows that DEF uses proportionately less debt even though the dollar amount of debt is greater.



Financial ratios by themselves almost never completely answer the question we're interested in. In fact, they're often better at generating questions than providing answers. Once we've used the financial statements to identify potential issues, we can investigate in more detail which may require additional items from the financial statements and also information that we can't get from the financial statements.

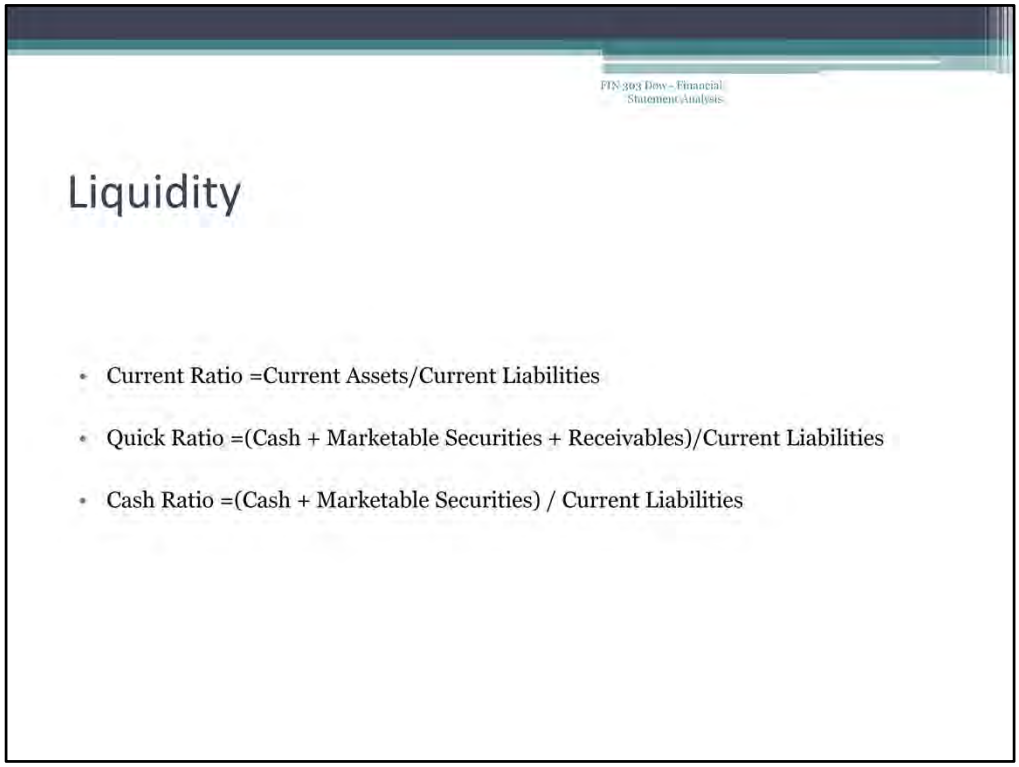
In the previous slides, our investigation of the financial statements of XYZ corporation shows that it has a significant amount of debt compared with its competitors and the amount of debt is increasing over time. Since this is a concern, we would want to investigate this issue more thoroughly by assessing its ability to make the interest payments on debt in the future and by determining the management's intentions about increasing or reducing debt in the next few years.



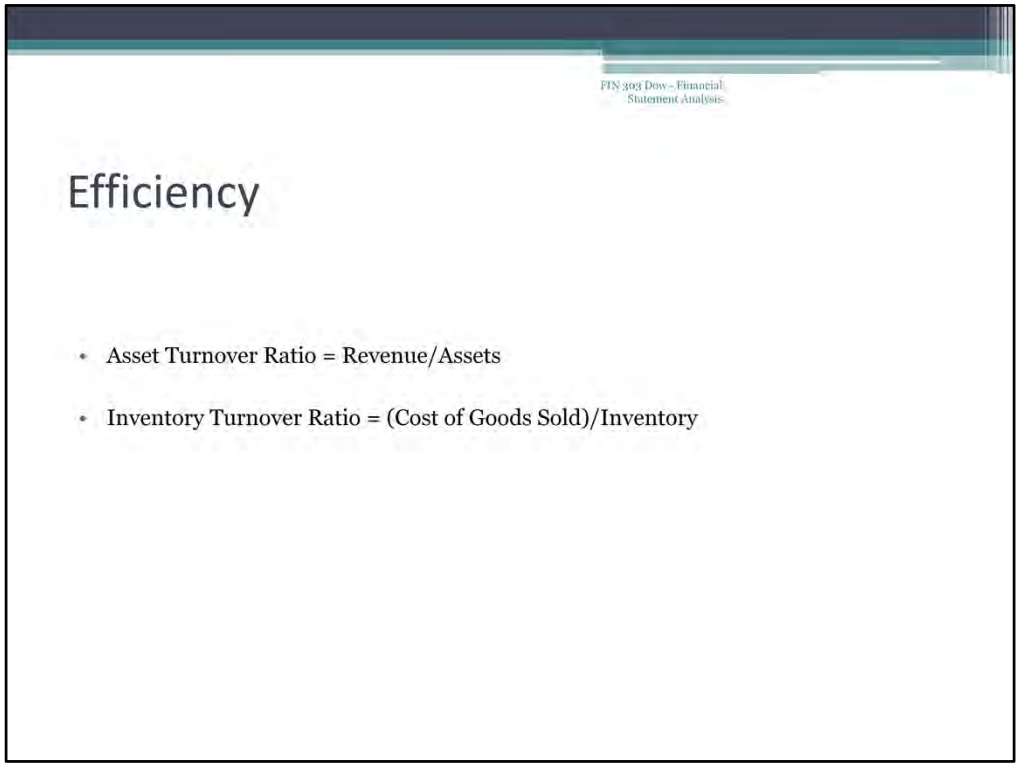
There are literally hundreds of different financial ratios used in practice – fortunately, you don't need to know them all. For purposes of the exam, you do need to know all the ratios in this presentation (know the ratio given the name, know the name given the ratio, be able to calculate the ratio given financial statements). We put the ratios into four major categories depending on the issue the ratio is designed to address: (1) how much debt does the company have (leverage ratios), (2) what is the position of the company in terms of short-term cash flows (liquidity ratios), (3) how efficiently does the company manage its assets (efficiency ratios) and (4) how profitable is the company (profitability ratios).

Sometimes there are slightly different ways to calculate the same ratio. You only need to know the definitions presented here, but be aware that you might see different versions in other classes or when you are out in the business world.

It's important to remember that financial ratios are designed to help you understand how well a company is operating and so for each ratio you need to know which business question it is addressing.



Liquidity ratios measure the ability of a company to pay short-term debts using short-term assets. The simplest ratio divides the current assets by the current liabilities. A larger number is better and a number greater than 1 indicates that the company's current assets exceed its current liabilities. A problem with this measure is that current assets include inventories and receivables, which may be overvalued in the financial statements since there is no guarantee that inventory will be sold at the expected price or that receivables will actually be collected. An alternate ratio is the quick ratio (or sometimes the acid-test ratio) which removes inventories from current assets. Even more conservative is the cash ratio which removes both inventories and receivables leaving just cash and cash-like items. Since a firm will like sell *some* of the inventory and collect *some* of the receivables, the cash ratio is probably too conservative while to current ratio is too optimistic. If short-term cash flows are an issue, it would be better to go beyond the liquidity ratios and look directly at the cash budget and the assumptions that are built-in there.

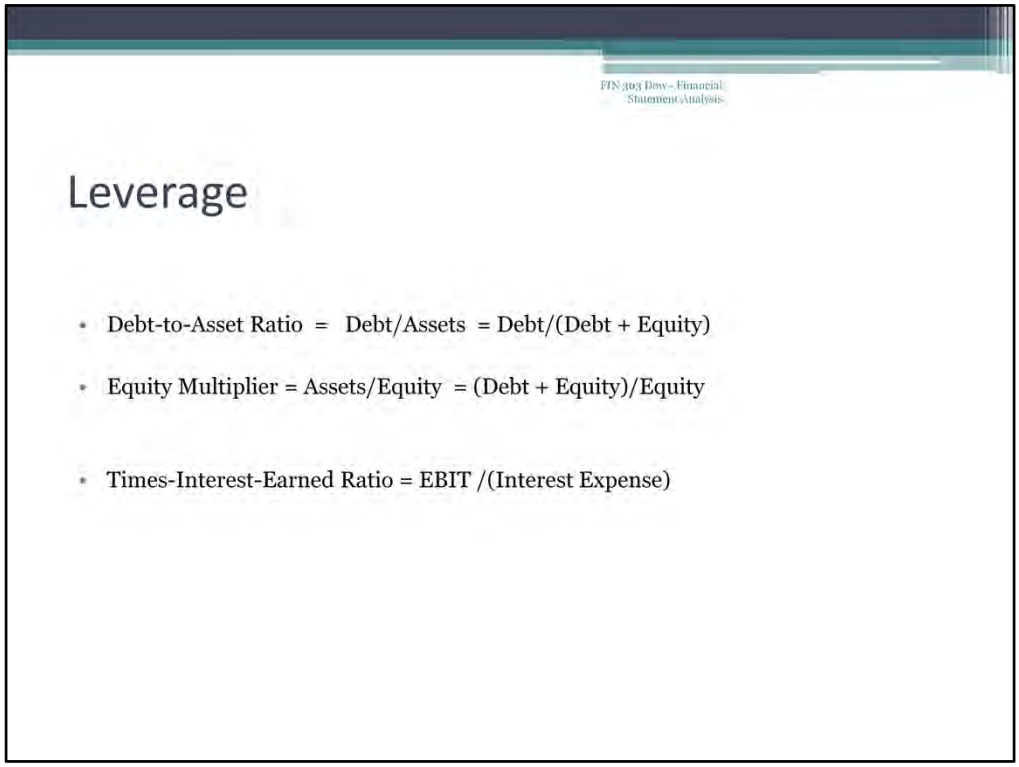


Efficiency ratios look at how efficiently a company uses it's assets. Since assets are costly, the fewer assets a company can use the better, as long as it doesn't affect its ability to sell its product. Here are two commonly used efficiency ratios.

The asset turnover ratio looks at the efficiency of using assets in general (or sometimes it's restricted to long-term assets). The more revenue a company can generate for a given level of assets, the more efficiently its using its assets. Of course, different industries require different amounts of assets and so you want to compare companies in the same industries.

The inventory turnover ratio looks at how efficiently a company uses its inventory. It typically uses costs of goods sold instead of revenue to separate the effect of inventory costs from profit margin (the difference between the sales value of a product and what it costs to produce) since the cost of inventory is closely tied to the costs of goods.

Revenue and costs-of-goods-sold numbers come from the income statement and so are the values over a year. Assets and inventory numbers are from the balance sheet and so are for a point in time. To make the numbers comparable, the values of assets and inventory are typically calculated as the average over the year (which you can estimate as the average of the assets at the end of the previous year and the assets at the end of the current year).



There are two basic ways that we can use financial ratios to investigate a company's use of debt. The first approach compares the amount of equity with the amount of debt, which can be done in several different ways. The debt-to-asset ratio shows the percentage of assets financed through debt. The equity multiplier shows how much equity is used to support the amount of assets. The more debt a company uses, the more assets it can support with a given amount of equity. In other words, debt multiplies the amount of activities of the company that can be supported by a dollar's worth of equity (which is why we refer to debt ratios as leverage ratios, they increase the power of equity).

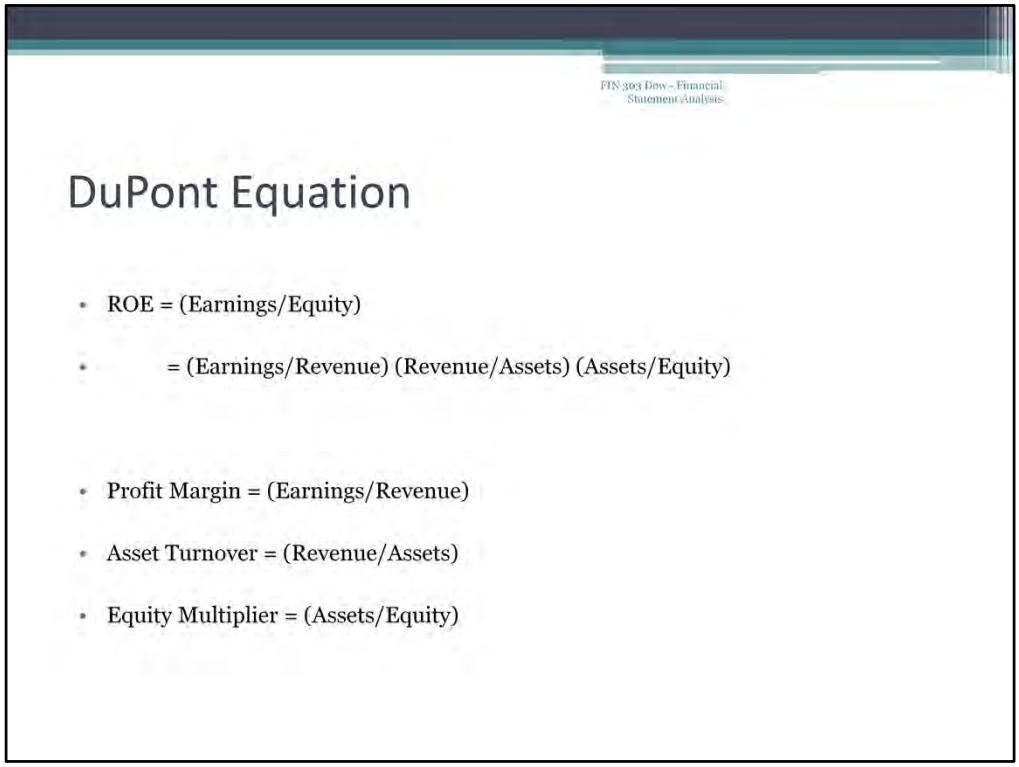
An alternate approach to measuring the importance of debt is to look at the ability of a company to make interest payments on its debt. An example of this kind of ratio is the times-interest-earned ratio. It compares the ability of a company to make payments on its debt (EBIT) with the company's interest expense. A higher number is better since it means that the company has more earnings it can use to make its interest payments. EBIT (earnings before interest and taxes) is used because we want to exclude the interest payments from earnings (since we're trying to see if the earnings can make those interest payments) and taxes (since interest is an expense before taxes). There are alternate ratios that use cash flow measures in the numerator.

Generally, leverage ratios assume that having more debt is a bad thing for a company. As we'll see in the section of the course on capital structure, there are also some advantages to having debt, so when evaluating a company's use of debt in practice, you'll have to go beyond simply looking at the leverage ratios.

One of the central questions for financial analysts is whether a firm is profitable. There are a variety of ways of measuring profitability but we will focus on two commonly used approaches. The first emphasizes the margin that we earn on each unit we sell. This is called profit margin and in its most general form is calculated as earnings divided by revenue (there are variations on this but they all take the form of some measure of earnings scaled by some measure of the amount of business the company does). From an investor's standpoint this is not completely satisfactory since the bottom line for an investor is not how much a company earns on each sale but how much it earns for each dollar invested in the company. Return on equity measures the earnings per dollar of equity investment and so is a better measure of bottom-line performance.

Return on equity uses historical data for both earnings and equity. This tells us the return that investors received historically, but if we're considering making an investment now, we want to know about it's profitability going forward. The stock market provides some information about this since we expect the company's stock price to reflect expectations about future profitability. The market analog to return on equity is the earnings yield. If we take ROE and divide both the numerator and denominator by the number of shares we get (earnings per share)/(book equity per share). The market value of a share is just the price per share. Replacing book equity per share with price per share gives us the earnings yield: (earnings per share) / (price per share). So if a company has earnings of $3 per share and a share costs $30, then the earnings yield on a dollar invested in the company is 10%.

Sometimes investors will talk about the cost of investing in a company in terms of its P/E ratio. This is just the inverse of the earnings yield and so is directly tied into expectations about the future profitability of the company.



The DuPont equation breaks down the return on equity ratio to provide a better understanding of where a company's profits are coming from. In the basic version of the DuPont equation, ROE equals the product of the profit margin, asset turnover and equity multiplier. One way a company can be profitable is by having a higher-than-average profit margin. This reflects a strong market position where the company can charge a price greater than cost without having their customers stolen away by competitors. If we are analyzing a company with a high ROE due to the profit margin, we'll want to examine it's market position to see if there might be threats from competitors in the future which would force the company to lower its prices and reduce it's profit margin.

Even if companies have thin profit margins, they can still be profitable in other ways. Asset turnover represents how efficiently a company uses its assets (if a company can generate the same amount of revenue with fewer assets, it can reduce its financing costs). An example of this might be a grocery store which doesn't earn much on each unit sold but it makes it up in volume. If we were analyzing a company in this kind of industry that was underperforming in terms of profitability we would want to compare its asset turnover ratio with its competitors to see if we could find efficiencies.

A third way to profitability would be use more debt and less equity, which increases the equity multiplier. However, unlike with equity, debt has to be repaid even if the company is in the middle of tough times which makes this a very risky strategy. If a company's profitability is primarily driven by its equity multiplier, we need to pay careful attention to its ability to pay its debts in the future.