

Financial Ratios

SUBMITTED BY: Michael Moore, University of Pennsylvania

SUBJECT(S): Accounting, Management

GRADE LEVEL(S): 9, 10, 11, 12

≡ OVERVIEW:

This lesson continues to look at the role of financial documents in investment analysis. Using the three main financial statements (income statement, balance sheet, statement of cash flow), students are introduced to financial ratios. In this lesson, students will learn how to calculate different financial ratios in order to better understand a firm's liquidity, operating efficiency and risk.

≡ RELATED ARTICLES:

- [“Strengths, Weaknesses, Opportunities, Threats: The SWOT Analysis”](#)
- [“Research Strategies for New Investors”](#)
- [“Portfolio Managers: The Challenge Is Picking More than One Winning Stock”](#)
- [“Portfolio Management: Making Decisions about Your Investments”](#)
- [“Financial Ratios: Evaluating a Company's Health and Worth”](#)
- [“Career Spotlight: Inside Actuarial Science”](#)

NBEA Standard(s):

- Accounting: Financial Reports
- Accounting: Financial Analysis
- Accounting: Interpretation and Use of Data
- Management: Industry Analysis

- Finance: Financial Decision Making

Common Core Standard(s): A-REI

Objectives/Purposes: The purpose of this lesson is for students to understand and apply different financial ratios. In particular, students will learn how to calculate a current ratio, a net profit margin, a return on equity and a debt-equity ratio. Along with these four primary ratios, students will be introduced to other measures for calculating the liquidity, operating efficiency and risk of a firm.

Knowledge@Wharton Article: [“Finance & Accounting’ for the Rest of Us: A Conversation with Richard A. Lambert”](#)

Tying It All Together:

The lesson is divided into five parts: (1) Introduction, (2) Guided Reading, (3) Definitions, (4) Practice, and finally (5) Closing

Introduction (5 mins)

In this lesson, we will be looking even more closely at the major financial documents filed by publicly traded companies. Specifically, this lesson focuses on how investors create financial ratios based on financial documents to better understand potential investments. Before introducing students to these ratios, it is important to once again provide a background for the students.

During the lesson introduction, have the class briefly go over the three main financial statements once more. What are the three financial statements? (income statement, balance sheet, statement of cash flows.) Have students explain what information each statement provides and why that information would be useful to potential investors.

Once students have spent some time thinking about the role of financial documents, teachers should start steering the discussion towards *decision-making*. Financial analysts use these three financial statements to influence their decision-making. Financial statements serve as the evidence of a company’s internal health.

Guided Reading (5-10 mins)

To continue this discussion of evidence and decision-making, have students read through the Knowledge@Wharton article “‘Finance & Accounting’ for the Rest of Us: A Conversation with Richard A. Lambert.” After students read, encourage them to think about financial decision-making. What tools does the author recommend? What information do managers and investors need?

Definitions (20-25 mins)

With evidence and decision-making in mind, today we will be looking at financial health in even more detail. In particular, we will be looking at three major signs of financial health: 1) liquidity, 2) operating efficiency, and 3) risk.

Teachers should feel free to introduce these three topics through direct instruction or through guided questions (e.g. What kinds of things do you want to know before investing?)

Liquidity is a term that investors use to describe how easily something can be sold. For example, a brand new iPhone is probably more liquid than a five-year-old Nokia phone. The Nokia phone is out of date, and therefore less likely to sell. The iPhone, on the other hand, is more “liquid”. Thinking in investment terms, liquidity refers to a company’s ability to meet short-term financial obligations. In other words, the more liquid a company is, the easier it can pay off debts.

Investors have created multiple formulas to try and calculate the liquidity of different companies. If a company has very low liquidity, it is at risk — the company does not have enough money to pay off its immediate debts. If a company has very high liquidity, there may also be concerns. A company with high liquidity may have too much cash on hand. That cash could be invested to make more money in the long run.

There are many measures of liquidity (see attached sheet for more information on each). Today we will focus on one specific measure of liquidity, the **current ratio**. The current ratio is a simple equation:

$$\text{Current ratio} = \text{Current Assets} / \text{Current Liabilities}$$

In other words, the current ratio is a ratio of assets that are expected to be sold (i.e. turned into cash) within the next year to the number of liabilities that are due in the next year. Put even more simply, the current ratio is a ratio of money immediately on hand to money immediately owed: the higher the ratio, the more liquid the company.

Operating Efficiency refers to the way in which managers use the company's assets and capital to create profits. An efficient company makes larger profits with fewer resources. An inefficient company needs more resources to make a modest profit.

As with liquidity, there are many different ways to calculate operating efficiency. Today we will look at two: **net profit margin** and **return on equity**.

Net profit margin is calculated by dividing net income by net sales:

Net profit margin = net income / net sales

In other words, a profit margin tells us what percent of our total sales comes back as pure profit, after having paid all the expenses. If a company has a high profit margin, that tells investors that the company gets a large return from each sale. If a company has a low profit margin, then company expenses (relative to sales) are high. The larger the profit margin, the more efficient the company.

Return on equity is a measure of net income divided by total equity:

Return on equity = net income / average total equity

Whereas the profit margin tells us what percent of sales return as profit, this measure tells us what percent of investor equity (or ownership) returns as profits. In other words, a highly efficient company would have a very high return on equity: a little equity would produce a large income. On the other hand, the lower the return on equity, the less efficient the company. A low return on equity means that the company needs many resources (lots of equity) to produce even a modest return (i.e. income).

Finally, along with liquidity and operating efficiency, investors often look at the **risk** associated with a company. The measure of risk we will look at today is the debt-equity ratio.

The **debt-equity ratio** is defined as total long-term debt divided by total equity:

Debt-equity ratio = total long-term debt / equity

This ratio gives us an idea of what proportion of a company's capital comes from debt. The higher the debt equity, the more risky a company's financial position. A larger debt-equity ratio means more of a company's value (equity) is derived from long-term financial obligations that may or may not be paid off in the future.

Practice (10-15 mins)

After this lengthy introduction, the teacher should have the class practice producing and analyzing different financial ratios. This can be done as a class or in small groups. During this part of the lesson, have students continue to look at the 10-K filings from Apple Incorporated (available [online](#)). In this filing, the main financial documents start on page 43.

NOTE: The 10-K and 10-Q filings are very long documents that contain large amounts of information. For this and all other lessons, students only need to focus on the 3 financial documents (income statement, statement of cash flow, and balance sheet). In the Apple filing, these span ONLY pages 43-46. If you plan to print these documents out for class, print only pages 43-46.

$$2011 \text{ Current Ratio} = 44,988 / 27,970$$

$$= 1.61$$

$$2010 \text{ Current Ratio} = 41,675 / 20,722$$

$$= 2.011$$

From 2010 to 2011, the Current Ratio for Apple dropped somewhat considerably. What does this mean? Why might this have happened? (There was a large increase in accrued expenses. This could be a warning sign that the company cannot control expenses, or it could mean the company used 2011 to grow its business into new areas. Additionally, the cash from 2010 to 2011 drop considerably. What does the statement of cash flows tell us about what Apple did with its cash?)

$$2011 \text{ Net Profit Margin} = 25,922 / 108,249$$

$$= .24$$

$$2010 \text{ Net Profit Margin} = 14,013 / 65,225$$

$$= .21$$

$$2011 \text{ Return on Equity} = 25,922 / [(76,615 + 47,791)/2]$$

$$= 25,922 / (124,406/2)$$

$$= 25,922 / 62,203$$

$$= .42$$

From 2010 to 2011, the net profit margin for Apple increased slightly. In 2011, Apple made more profit from each sale (on average) than in 2012. This is a good sign for investors. The return on equity is also fairly high (42%). Also a good sign.

$$\text{2011 Debt-Equity Ratio} = (10,100+1,686) / 76,615$$

$$= 11,786 / 76,615$$

$$=.15$$

$$\text{2010 Debt-Equity Ratio} = (5,531+1,139) / 47,791$$

$$= 6,670 / 47,791$$

$$= .14$$

The debt-equity ratio for Apple stayed relatively the same both years. In both years the ratio was very low, suggesting that Apple does not have a problem managing its long-term obligations.

Closing (5 mins)

Close the lesson by discussing the value of all three types of analysis (liquidity, operating efficiency and risk). What do financial ratios add to our ongoing discussion about investment decision-making? Are these ratios even worth calculating? Why or why not? Encourage students to start thinking about the value of different ratios in understanding and evaluating a business as an investment opportunity.

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