Chapter 15

Lecture Notes

Chapter theme: This chapter focuses on financial statement analysis which managers use to assess the financial health of their companies. It includes **examining trends in key financial data**, **comparing financial data across companies**, and **analyzing financial ratios**.

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1. **Limitations of financial statement analysis**
   1. **Comparing financial data across companies**
      1. **Differences in accounting methods between companies sometimes make it difficult to compare their financial data**. For example:
         1. If one company values its inventory using the **LIFO method** and another uses the **average cost method**, then direct comparisons of financial data such as inventory valuations and cost of goods sold may be **misleading**.

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* + - * 1. Even with this limitation in mind, comparing financial ratios with other companies or industry averages **can provide useful insights**.

#### Looking beyond ratios

* + 1. Ratios should not be viewed as an end, but rather as a **starting point**. They raise many questions and point to opportunities for further analysis, but they **rarely answer questions by themselves**.

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* + - 1. In addition to ratios, other sources of data should also be considered such as **industry trends**, **technological changes**, **changes in consumer tastes**, **changes in broad economic factors**, and **changes within the company itself**.

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*Helpful Hint: Reinforce the limitations of relying on financial statements by identifying events that would make financial statements doubtful as a predictor of the future. Such an event would be a change in oil prices that occurs after the financial statements are issued. An increase in oil prices would be favorable for companies with large stocks of petroleum and unfavorable for companies that use large quantities of petroleum feedstocks in their manufacturing processes.*

1. **Statements in comparative and common-size form**

*Learning Objective 1: Prepare and interpret financial statements in comparative and common-size form.*

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#### Key concept

* + 1. An item on a balance sheet or income statement has **little meaning by itself**. The meaning of the number can be enhanced by **drawing comparisons**. This chapter discusses three types of comparisons.

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* + - 1. **Dollar and percentage changes on statements** (**horizontal analysis**).
      2. **Common-size statements** (**vertical analysis**).
      3. **Ratios**.

#### Dollar and percentage changes on statements

* + 1. Horizontal analysis (also known as **trend analysis**) involves analyzing financial data **over time**.

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* + - 1. Quantifying **dollar changes** over time serves to highlight the changes that are the most important **economically**.
      2. Quantifying **percentage changes** over time serves to highlight the changes that are the most **unusual**.
    1. **Clover Corporation – an example**

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* + - 1. Assume the comparative asset account balances from the balance sheet as shown.

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* + - * 1. The dollar change in account balances is calculated as shown. Notice, last year serves as the **base year**.

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* + - * 1. The percentage change in account balances is calculated as shown.

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* + - * 1. The dollar (**$11,500**) and percentage (**48.9%**) changes in the **cash account** are computed as shown.

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* + - * 1. The dollar and percentage changes for the remaining asset accounts are as shown.

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* + - 1. We could do this for the liabilities and stockholders’ equity, but instead let’s look at the **income statement**.

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* + - * 1. Assume Clover has the comparative income statement amounts as shown.

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* + - * 1. The dollar and percentage changes for each account are as shown. Notice:

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1. Sales increased by **8.3%** yet net income **decreased** by **21.9%.**

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1. There were increases in cost of goods sold (**14.3%**) and operating expenses (**2.1%**) that offset the increase in sales.

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* + 1. Horizontal analysis can be even more useful when data from a number of years are used to compute **trend percentages**.

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* + - 1. To compute a trend percentage, a base year is selected and the **data for all years are stated in terms of a percentage of that base year**.

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* + - * 1. The equation for computing a trend percentage is as shown.

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* + 1. **Berry Products – an example**
       1. Assume the financial results as shown for **2010-2014**. Notice:

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* + - * 1. **The base year is 2010** and its amounts will equal **100%**.
      1. The **2011 results** restated in trend percentages would be computed as shown.

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* + - 1. The trend percentages for the remaining years would be as shown. Notice:

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* + - * 1. **Cost of goods sold is increasing faster than sales**.
      1. The trend percentages can also be used to construct a graph as shown.

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#### Common-size statements

* + 1. Vertical analysis focuses on the relations among financial statement items **at a given point in time**. A common-size financial statement is a vertical analysis in which **each financial statement item is expressed as a percentage**.

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* + - 1. In **balance sheets**, all items are usually expressed as a **percentage of total assets**.

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* + - 1. In **income statements**, all items are usually expressed as a **percentage of sales**.

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* + 1. **Clover Corporation – an example**

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* + - 1. Let’s revisit the **comparative income statements** as shown. Notice:

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* + - * 1. As previously mentioned, **sales is usually the base and is expressed as 100%**.
      1. The **operating costs (or selling and administrative expenses) as a percentage of sales** for last year (**26.2%**) and this year (**24.8%**) are calculated as shown.

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* + - 1. The common-size percentages for the remaining items on the income statement are as shown.

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*Quick Check – horizontal versus vertical analysis*

32-33

1. **Norton Corporation − data for calculating ratios**

#### We are going to examine ratios that managers use to better understand organizational performance.

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* + 1. To facilitate our discussion, we are going to use financial data for this year and last year from Norton Corporation:
       1. The asset sides of Norton’s balance sheets are as shown.

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* + - 1. The liabilities and stockholders’ equity sides of Norton’s balance sheets are as shown.

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* + - 1. Norton’s income statements are as shown.

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*Helpful Hint: To exercise students’ understanding of ratios, after defining each ratio, ask students whether an increase in the ratio would generally be considered good news or bad news and why.*

*Helpful Hint: Impress on students that the ratios discussed in this chapter cannot be analyzed in a vacuum. Comparisons with industry averages and prior years are essential.*

1. **Ratio analysis – assessing liquidity**

*Learning Objective 2: Compute and interpret financial ratios that managers use to assess liquidity.*

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#### The data and ratios that managers use to assess liquidity include working capital, the current ratio, and the acid-test (quick) ratio. The information shown for Norton Corporation will be used to calculate the aforementioned liquidity ratios.

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* + 1. **Working capital**
       1. The **excess of current assets over current liabilities is known as working capital**.
          1. Working capital is **not free**. It must be financed with long-term debt and equity. Therefore, managers often seek to **minimize** working capital.

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* + - * 1. A large and growing working capital balance **may not be a good sign**. For example, it could be the result of unwarranted growth in inventories.
      1. Norton Corporation’s working capital (**$23,000**) is calculated as shown.

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* + 1. **Current ratio**
       1. The current ratio is computed as shown.
          1. It measures a company’s **short-term debt paying ability**.

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* + - * 1. **It must be interpreted with care**. For example, a declining ratio may be a sign of **deteriorating financial condition**, or it might result from **eliminating obsolete inventories** or other stagnant current assets.
      1. Norton Corporation’s current ratio of **1.55** is calculated as shown.

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* + 1. **Acid-test (quick) ratio**
       1. The acid-test ratio is computed as shown.
          1. It is a **more rigorous** measure of short-term debt paying ability because it only includes **cash**, **marketable securities**, **accounts receivable**, and **current notes receivable**.

44

* + - * 1. It measures a company’s ability to meet its obligations **without having to liquidate its inventory**.
      1. Norton Corporation’s acid-test (quick) ratio of **1.19** is computed as shown.
         1. Each dollar of liabilities should be backed by **at least $1 of quick assets**. Norton satisfies this condition.

1. **Ratio analysis – asset management**

*Learning Objective 3: Compute and interpret financial ratios that managers use for asset management purposes.*

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A. **Managers compute a variety of ratios for asset management purposes.** The information shown for Norton Corporation will be used to calculate **the asset management ratios**.

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* + 1. **Accounts receivable turnover**
       1. The accounts receivable turnover is calculated as shown.

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* + - * 1. It measures how **quickly credit sales are converted to cash**.
        2. Norton Corporation’s accounts receivable turnover of **26.7** times is computed as shown.

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* + - 1. A related measure called the **average collection period** is computed as shown.
         1. It measures **how many days, on average, it takes to collect an account receivable**. It should be interpreted **relative to the credit terms offered to customers**.

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* + - * 1. Norton Corporation’s average collection period of **13.67 days** is computed as shown.
    1. **Inventory turnover**
       1. The inventory turnover is computed as shown.
          1. It measures how many times a company’s inventory **has been sold and replaced during the year**.
          2. It should **increase** for companies that adopt **just-in-time methods**.

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* + - * 1. It should be interpreted **relative to a company’s industry**. For example, grocery stores turn their inventory over **quickly**, whereas jewelry stores tend to turn their inventory over **slowly.**

1. If a company’s inventory turnover is **less than** its industry average, it either has **excessive inventory** or the **wrong sorts of inventory.**
   * + - 1. Norton Corporation’s inventory turnover of **12.73** times is computed as shown.

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* + - 1. A related measure called the **average sale period** is computed as shown.
         1. It measures the number of days being taken, on average, to **sell the entire inventory one time**.

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* + - * 1. Norton Corporation’s average sale period of **28.67 days** is computed as shown.

*Helpful Hint: Ask students to intuitively answer what happens to the turnover ratios when accounts receivable or inventory increase. Stress that understanding the ratio is preferred to memorizing the formula.*

* + 1. **Operating cycle**
       1. The operating cycle is calculated as shown.

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* + - * 1. It measures the **elapsed time from when inventory is received from suppliers to when cash is received from customers**.
        2. Norton Corporation’s operating cycle is **42.34 days**.

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* + 1. **Total asset turnover**
       1. The total asset turnover is calculated as shown.

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* + - * 1. It measures how efficiently a company’s assets are being used to generate sales. This ratio expands beyond current assets **to include noncurrent assets**.
        2. Norton Corporation’s total asset turnover for this year is **1.53**.

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1. **Ratio analysis – debt management**

*Learning Objective 4: Compute and interpret financial ratios that managers use for debt management purposes.*

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A. **Managers compute a variety of ratios for debt management purposes.** The information shown for Norton Corporation will be used to calculate its **debt management ratios**.

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#### Times interest earned ratio

* + - 1. The times interest earned ratio is calculated as shown.
         1. It is the **most common measure** of a company’s ability to protect its long-term creditors.

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* + - * 1. It is based on earnings **before interest and income taxes** because that is the amount of earnings that is available for making interest payments.
        2. A ratio of **less than 1 is inadequate.**
      1. Norton Corporation’s times interest earned ratio of **11.5 times** is computed as shown.
    1. **Debt-to-equity ratio**
       1. The debt-to-equity ratio is computed as shown.
          1. It indicates the **relative proportions** of debt and equity on a company’s balance sheet.
          2. Creditors and stockholders have different views when defining the optimal debt-to-equity ratio.

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1. **Stockholders** like a **lot of debt** if the company’s rate of return on its assets **exceeds** the rate of return paid to creditors.
2. **Creditors** prefer **less debt** and more equity because equity represents a **buffer of protection**.
   * + - 1. In practice, **debt-to-equity ratios from 0.0 to 3.0 are common**.
       1. Norton Corporation’s debt-to-equity ratio of **0.48** is computed as shown.

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* + 1. **The equity multiplier**
       1. The equity multiplier is computed as shown.
          1. It indicates the portion of a company’s assets that are funded by equity.

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* + - * 1. It focuses on **average amounts** maintained throughout the year rather than amounts at one point in time.
      1. Norton Corporation’s equity multiplier of **1.56** is computed as shown.

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1. **Ratio analysis – assessing profitability**

*Learning Objective 5: Compute and interpret financial ratios that managers use to assess profitability.*

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A. The information shown for Norton Corporation will be used to calculate its **profitability ratios**.

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#### Gross margin percentage

* + - 1. The gross margin percentage is calculated as shown.

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* + - * 1. It should be more stable for retailing companies than for other companies because the cost of goods sold in retailing companies excludes fixed costs.
      1. Norton Corporation’s gross margin percentage for this year of **71.6%** is computed as shown.

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#### Net profit margin percentage

* + - 1. The net profit margin percentage is calculated as shown.

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* + - * 1. In addition to cost of goods sold, it also looks at how selling and administrative expenses, interest expense, and income tax expense influence performance.
      1. Norton Corporation’s net profit margin percentage for this year of **10.9%** is computed as shown.

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* + 1. **Return on total assets**
       1. The return on total assets is computed as shown.
          1. **Adding interest expense back** to net income enables the return on assets to be **compared** for companies with different amounts of debt or over time for a single company that has changed its mix of debt and equity.

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* + - 1. Norton Corporation’s return on assets for this year (**18.19%**) is computed as shown.
    1. **Return on equity**
       1. The return on equity is computed as shown.
          1. This measure indicates how well the company used the owners’ investments to earn net income.

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* + - 1. Norton Corporation’s return on equity for this year (**25.91%**) is computed as shown.
      2. The return on equity can also be computed using the **DuPont formula** shown on this slide.

71

* + 1. **Financial leverage**
       1. Financial leverage results from the **difference** between the rate of return the company earns on **investments in its own assets** and the rate of return that the company must **pay its creditors**.

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* + - * 1. **Positive financial leverage** exists if the rate of return on the company’s assets **exceeds** the rate of return the company pays its creditors. In this case, having some debt in a company’s capital structure can **benefit** shareholders.
        2. **Negative financial leverage** exists if the rate of return on the company’s assets is less than the rate of return the company pays its creditors. In this case, the common stockholder suffers by having debt in the capital structure.

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73-74

*Quick Check – financial leverage*

1. **Ratio analysis – assessing market performance**

*Learning Objective 6: Compute and interpret financial ratios that managers use to assess market performance.*

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A. The information shown for Norton Corporation will be used to calculate its **market performance ratios**.

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* + 1. **Earnings per share**
       1. Earnings per share is computed as shown.
          1. The **average** number of common shares outstanding is computed by adding the shares outstanding at the **beginning of the year** to the shares outstanding at the **end of the year** and **dividing by two.**

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* + - * 1. Managers analyze this ratio because earnings form the basis for **dividend payments** and future **increases in the value of shares of stock**.
      1. Norton Corporation’s earnings per share for this year (**$2.42**) is computed as shown.

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* + 1. **Price-earnings ratio**
       1. The price-earnings ratio is computed as shown.
          1. A higher price-earnings ratio means that investors are willing to pay a **premium** for a company’s stock because of its **optimistic future growth prospects**.

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* + - 1. Norton Corporation’s price-earnings ratio for this year (**8.26 times**) is computed as shown.
    1. **Dividend payout ratio**
       1. The dividend payout ratio is computed as shown.
          1. Investors who seek **market price growth** would like this ratio to be **small**, whereas investors who seek **dividends** prefer it to be **large**.

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* + - 1. Norton Corporation’s dividend payout ratio for this year (**82.6%**) is computed as shown.
    1. **Dividend yield ratio**
       1. The dividend yield ratio is computed as shown.

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* + - * 1. This ratio measures the investor’s rate of return (**in the form of cash dividends only**) when buying common stock at the current market price.
      1. Norton Corporation’s dividend yield ratio for this year (**10%**) is computed as shown.

81

* + 1. **Book value per share**
       1. The book value per share is computed as shown.
          1. It measures the amount that would be **distributed to holders of each share of common stock** if all assets were sold at their **balance sheet carrying amounts** and if all **creditors were paid off**. This measure is based entirely on **historical cost**.

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* + - 1. Norton Corporation’s book value per share at the end of this year (**$8.55**) is computed as shown. Notice:
         1. The book value per share of **$8.55** does not equal the market value per share of **$20**. This is because the **market price reflects expectations about future earnings and dividends**, whereas **the book value per share is based on historical cost**.

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1. **Summary of ratios and sources of comparative ratio data**

#### This slide contains a listing of published sources that provide comparative ratio data organized by industry.

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