

income is reduced by the income tax savings associated with the tax deductibility of interest expense. These tax savings are referred to as the interest tax shield and must be removed to avoid double-counting their positive impact on net income (it is already reflected in the provision for income taxes used in the calculation of net income).

Some investment professionals believe that a similar unlevering adjustment should be made to the ROS ratio, as follows:

$$\text{Return on sales} = \frac{\text{Net income} + [\text{Interest} (1 - \text{Tax rate})]}{\text{Net sales}}$$

Unlevering ROS allows the financial analyst to focus on the effectiveness of a company's operating decisions, independent of the effectiveness of its financing decisions. Incorporating the unlevered ROS ratio into the calculation of ROA yields the following formulation:

$$\begin{aligned} \text{Unlevered return on assets} &= \text{Unlevered return on sales} \times \text{Total asset turnover} \\ \text{ROA} &= \frac{\text{Net income} + [\text{Interest} (1 - \text{Tax rate})]}{\text{Net sales}} \times \frac{\text{Net sales}}{\text{Total assets}} \\ &= \frac{\text{Net income} + [\text{Interest} (1 - \text{Tax rate})]}{\text{Total assets}} \end{aligned}$$

Unlevering ROS also facilitates a reformulation of the ROE Model, as follows:⁴

$$\text{ROE} = \text{Unlevered ROS} \times \text{Asset turnover} \times \text{Financial leverage} \times \text{Common equity share of operating earnings}$$

where the **common equity share of operating earnings** (CSOE) is defined as:

$$\text{CSOE} = \frac{\text{Net income}}{\text{Net income} + \text{Interest} (1 - \text{Tax rate})}$$

and represents the portion of a company's operating earnings allocable to the common shareholders.

Incorporating CSOE into the ROE model yields the following:

$$\text{ROE} = \frac{\text{Net income} + [\text{Interest} (1 - \text{Tax rate})]}{\text{Net sales}} \times \frac{\text{Net sales}}{\text{Total assets}} \times \frac{\text{Total assets}}{\text{Shareholders' equity}} \times \frac{\text{Net income}}{\text{Net income} + [\text{Interest} (1 - \text{Tax rate})]}$$

When a company is all (or substantially) equity financed, the unlevered ROA and ROS ratios collapse to their familiar levered form, as does the ROE Model:

$$\text{Return on equity} = \text{Return on sales} \times \text{Asset turnover} \times \text{Financial leverage}$$

APPENDIX 4B: Pro Forma Financial Statements

Lenders, managers, investment professionals, and shareholders are often interested in how a firm might perform in the future under various economic scenarios. For example, lenders might be interested in assessing whether Under Armour's business can generate sufficient cash in the future to make the principal payments on a proposed bank loan. But how can you forecast the future, and especially, how can you forecast a firm's ability to repay debt? The past is often an excellent guide to the future because many financial variables remain relatively constant from one year to the next and many financial variables maintain a relatively stable relationship with sales or total assets over time.

Forecasted financial statements are called **pro forma statements**—that is, financial statements prepared on an “as if” basis using assumptions about what might happen in the future. Excel™ spreadsheets are handy devices for preparing pro forma financial statements because it is possible to build a spreadsheet in such a manner as to easily change the underlying assumptions to see what will happen under alternative operating scenarios.

The process of preparing pro forma financial statements typically involves five steps:

1. Forecast sales, cost of goods sold, gross profit, and other operating expenses on the income statement, and the cash balance on the balance sheet.

⁴ The development of the ROE Model using unlevered ratios is generally attributed to C. Stickney and T. Selling, “The Effects of Business Environment and Strategy on a Firm's Rate of Return on Assets,” *Financial Analysts' Journal* (1989).



Takeaway 5

Construct pro forma financial statements to evaluate a company's ability to generate future earnings and cash flows.