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:

$$\frac{\text{Unlevered return}}{\text{on assets}} = \frac{\text{Unlevered return}}{\text{on sales}} \times \frac{\text{Total asset}}{\text{turnover}}$$

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

$$= \frac{\text{Net income} + [\text{Interest } (1 - \text{Tax rate})]}{\text{Total assets}}$$

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

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

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:

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

eLectures

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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.

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[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).

60-day loan from a local bank using its outstanding receivables as collateral. Under the loan agreement, Global Markets would be charged 13 percent annual interest on the outstanding loan and would pledge receivables equal to 122 percent of the loan amount (a loan-to-value ratio of 82 percent).

Required

Compare the cost under each financing option. Which option is better for the company? Why?

TA 5, 6 **P5.29** **Improving Cash Flow Through Receivable Management.** Star Communications designs, manufactures, and sells telecommunication equipment, and provides services associated with their installation, operation, and maintenance in China, India, Korea, and Vietnam. During 2016, the company's share price traded as high as $23 per share; but, in January, 2016, the company disclosed that it would file its Form 10-K with the U.S. Securities and Exchange Commission late due to material internal control problems identified by its independent auditor. One of the identified concerns related to the company's recording of revenue and the related accounts receivable. In response, the company's share price sank to $6 per share. Following are selected financial data from Star Communications 2015 annual report:

	2015	2014
Net sales.	$2.56 billion	$1.78 billion
Accounts receivable (net).	0.81 billion	0.37 billion

Required ~~Star Communications'~~

1. Calculate ~~UTStarcom's~~ receivable collection period for 2014 and 2015. Is the company's receivable management decreasing in quality, improving, or about the same?
2. If the company could improve its receivable collection period to the industry average of 60 days, how much additional cash flow from accounts receivable would have been generated in 2014 and 2015?

CORPORATE ANALYSIS

TA 2, 4, 5 **CA5.30** **The Procter & Gamble Company.** The 2015 annual report of the **Procter & Gamble Company (P&G)** is available at www.pginvestor.com. After reviewing P&G's annual report, respond to the following questions:

a. When does P&G recognize revenue from its product sales?
b. Has net sales for P&G been rising or falling? By how much? Assume the growth in net sales realized from 2014 to 2015 will continue. How much will net sales be in 2016?
c. When does P&G recognize its sales discounts and sales product returns?
d. Calculate P&G's receivable turnover ratio and receivable collection period for 2014 and 2015. Are these ratios improving?
e. Assume that P&G's allowance for uncollectible accounts was $180 million at year-end 2014 and $205 million at year-end 2015. Calculate the ratio of the allowance for uncollectible accounts to gross accounts receivable for 2014 and 2015. Did this ratio improve? If so, what does that indicate?
f. Using your forecast of net sales for 2016 from question (*b*), and your 2015 receivable turnover ratio from question (*d*), forecast the balance of accounts receivable for 2016 (assuming that receivable turnover remains the same from 2015 to 2016).

TA 2, 4, 5 **CA5.31** **Internet-based Analysis.** Consider a publicly held company whose products you are familiar with. Some examples might include:

Company	Product	Corporate Website
• **Johnson & Johnson**.	• Band-Aids	• www.jnj.com
• **Microsoft Corporation**.	• Windows software	• www.microsoft.com
• **Apple Corporation**	• Cellular phones	• www.apple.com
• **Intel Corporation**	• Pentium processors	• www.intel.com
• **Kimberly-Clark Corporation**.	• Kleenex	• www.kimberly-clark.com

Access the company's public website and search for its most recent annual report. (Some companies will provide access to their financial data through an "investor relations" link, while others will provide a direct link to their "annual reports.") After locating your company's most recent annual report, open the file and review its contents. After reviewing the annual report for your selected company, prepare answers to the following questions: