

Structured Forecasting

7.1 INTRODUCTION

Forecasting the future financial statements represents the ultimate goal of all the analysis we have discussed thus far. You may go on to be an All-Star analyst on Wall Street, or you may go on to manage your uncle's convenience store, but regardless of where in the business world you work, at some point you will need to forecast the future income, the future assets necessary to produce the forecasted income, and the future mix of debt and equity necessary to fund the assets. In short, while we focus on equity valuation in this text, everyone in business needs to forecast future financial statements at some time. The next two chapters are aimed at teaching you how to go about this task.

From a theoretical perspective, equity valuation requires forecasts of the future cash distributions to equity holders. From a practical perspective, however, most analysts focus on forecasting net income. We begin this chapter by reconciling these two perspectives. We lay out a forecasting framework that builds forecasts of the complete set of financial statements in a systematic manner. This framework highlights the joint role of income statement and balance sheet forecasts in generating forecasts of cash distributions to equity holders.

We next discuss broad issues that arise in constructing forecasts for the purpose of valuing equity securities. Should we forecast quarterly financial statements or annual statements? How many years into the future do we need to forecast? What are reasonable assumptions for forecasts that are in the distant future? What balance sheet item should we use as the "plug" that equates assets to liabilities and equity? We close the chapter by showing you how *eVal* guides you through the forecasting process. With these preliminaries covered, Chapter 8 provides more detailed advice about forecasting each of the line items in the financial statements.

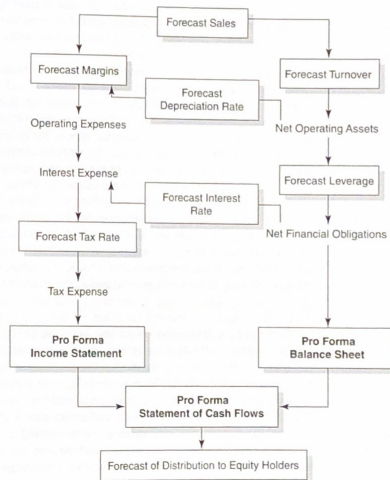
7.2 A SYSTEMATIC FORECASTING FRAMEWORK

The cash distributions a firm pays to its equity holders are the result of a complex and interrelated set of operating, investing, and financing activities. The only sound way to proceed is to first forecast each of these underlying

activities and then aggregate their financial implications into a forecast of the ultimate distributions to equity holders. We do this by building forecasts of both the income statement and the balance sheet. By forecasting both financial statements, we can take important interactions into consideration. A good example of the interplay between balance sheet forecasts and income statement forecasts is forecasted interest expense. Your forecast of interest expense on the income statement clearly depends on the amount of debt you forecast on the balance sheet. But the amount of your debt will also depend on your forecasts of the firm's net operating assets and capital structure. And your forecast of the net operating assets clearly depends on your forecast of sales growth. If we are going to keep track of all these interactions we clearly need to develop a systematic approach to forecasting.

Figure 7.1 illustrates our solution to this forecasting puzzle. The process begins with a forecast of sales. Sales are the primary input to the forecasting

FIGURE 7.1
Systematic
Forecasting
Framework



process for two reasons. First, recall that the sales transaction is the trigger for the recognition of value creation under GAAP. We forecast operating income by first forecasting sales and then forecasting all of the operating expenses necessary to generate the sales. Second, the sales forecast is our basic statement about how rapidly the firm will grow. This in turn drives our forecasts of the required levels of net operating assets to generate the sales growth and the required amounts of capital to finance the acquisition of the operating assets.

This two-pronged forecasting sequence is illustrated in Figure 7.1. On the left side of the figure we move from the sales forecast to the operating expense forecast by making assumptions about operating margins. On the right side of the figure we move from the sales forecast to the net operating asset forecast by making assumptions about turnover ratios. And the right side of the figure should pay attention to what the left side is saying! For example, growth in cost of goods sold typically requires growth in inventory. More generally, you should see that the forecasting process is like applying the Dupont ratio analysis in reverse. Instead of starting with the individual line items in the financial statements and then expressing them as ratios, we forecast the ratios directly and then back into what this implies for the individual line items in the forecast financial statements.

Armed with forecasts of operating expenses, and net operating assets (i.e., operating assets less operating liabilities), the next task is to forecast the net financial obligations. Our forecast of net operating assets indicates the total amount of invested capital that is required to support the future business activities. But we still need to forecast the mix of equity and non-equity financing that the firm will use to finance the forecasted level of invested capital. That is, we need to forecast the firm's future leverage. By applying leverage assumptions to the net operating assets, we obtain the required amount of non-equity forms of financing, such as short-term debt, long-term debt, minority interest, and preferred stock. At this point, you may be tempted to forecast common equity and thus complete the balance sheet. However, we have run out of degrees of freedom. We have forecast every item on the balance sheet except for common equity. Since the balance sheet must balance, we have already made an implicit forecast for common equity. Common equity is the plug that is found by subtracting the liabilities from the assets. This is an important point and one to which we return later in the chapter.

We have now forecasted all the line items on the balance sheet. We refer to this forecasted balance sheet as a *pro forma* balance sheet to distinguish it from the actual balance sheets that the firm reported in the past. We still have more work to do on the *pro forma* income statement. The three items we have omitted are depreciation expense, interest expense, and tax expense. We could not forecast depreciation earlier because it clearly depends on the amount of assets on the balance sheet, so we needed to forecast the asset balance first. Similarly, we couldn't forecast interest or taxes, because interest expense clearly depends on the amount of debt financing and tax expense clearly depends on the magnitude of the interest expense tax deduction. We

needed the balance sheet forecast of debt before we could construct these income statement forecasts. By applying our forecast of the interest rate to the amount of forecasted debt financing, we generate an interest expense forecast. By deducting our interest expense from our forecast of operating earnings, we generate a forecast of earnings before taxes. Applying a tax rate forecast to earnings before taxes gives our tax expense forecast.

At this point, we are pretty much done forecasting the income statement. You may note that there are still a number of income statement components that we haven't mentioned: items such as gains and losses in other income, extraordinary items, and discontinued operations. By their very nature, these items are nonrecurring and difficult to forecast. Therefore, ignoring them (i.e., assuming that they are zero) is often the best that we can do. One final item to consider for your income statement forecasts is preferred dividends. If preferred stock is one of the non-common-equity sources of financing represented on the balance sheet, then there will typically be a stated dividend on this stock that should be incorporated in your income statement forecasts. Recall that we are trying to value the common equity, so we must deduct cash distributions to preferred stock holders in order to derive the net cash distributions to common stock holders. The same holds true for minority interest, it typically comes with "minority interest in earnings" as shown on the income statement.

We now have both our *pro forma* balance sheet and our *pro forma* income statement. Armed with these two statements, the preparation of our *pro forma* statement of cash flows is a mechanical task. You should remember from your introductory accounting class that a statement of cash flows can be prepared using the information in the income statement and the beginning and ending balance sheets, so there is nothing left to forecast (if this is news to you, go back to Chapter 6). And, by referring to the financing section of the statement of cash flows, we can see how our *pro forma* income statements and balance sheets determine the cash distributions to common equity holders. It is worth emphasizing that we need information from both the *pro forma* income statement and the *pro forma* balance sheet to extract our forecasts of distributions to common equity holders. We can see this by recalling the clean surplus relation that we first introduced in Chapter 4:

$$\text{Distributions to Equity} = \text{Net Income} - \text{Increase in Equity}$$

We get the net income forecast from the *pro forma* income statement, but this alone isn't sufficient for our valuation model. To solve for cash distributions to common equity holders, we also have to deduct the increase in common equity, which is extracted from the beginning and ending balance sheets. This latter adjustment takes account of additional capital that is required to fund the net operating assets of the business. Wall Street analysts often miss this subtlety, focusing almost exclusively on net income. But the clean surplus relation makes it clear that we should be concerned with both how much income is generated and how much additional capital has to be invested to generate this income.

7.3 FORECASTING QUARTERLY VERSUS YEARLY FINANCIALS

Exchange-listed firms in most countries are required to prepare financial statements on a quarterly basis. However, for the purpose of building financial forecasts for input into a valuation model, quarterly forecasting is overkill. The value of a firm is determined by its results over the next 10 or 20 years, not the next few quarters. And in addition to providing unnecessary detail, quarterly forecasting requires careful consideration of seasonal effects in financial data. For example, retailers' sales and profits are usually greatest in the fourth quarter, which covers the end-of-year holiday period. A quarterly forecasting interval requires us to build these seasonal patterns into our forecasts. But given that our value estimate will be determined by many years of forecasts, detailed knowledge of the quarterly numbers has little impact on the final answer. As a consequence, most valuation models, including *eVal*, use an annual interval for building financial statement forecasts. For simplicity, this annual interval typically corresponds with the fiscal year that the company uses for financial reporting purposes.

Despite the use of an annual measurement interval in most valuation models, the quarterly financial statements are still useful. The most recent quarterly financial statements provide the most current information on a firm's performance and financial position. If we are currently in a firm's fourth fiscal quarter and we are attempting to forecast the income statement for the full fiscal year, then we should obviously use the financial statements from the first three quarters as a starting point. But it is very important to be aware of any seasonal effects in the data before extrapolating financial statement data from earlier quarters to later quarters. There are two useful techniques for incorporating seasonal patterns in income statement forecasting. The first is to sum together the most recent four quarters of financial statements. By doing so, you will have abstracted from any seasonal effects. The cumulative results for the four most recent fiscal quarters are often referred to as the *trailing twelve months (TTM)* or *last twelve months (LTM)* results. The second technique is to perform *year-over-year (YOY)* comparisons for the most recent quarters. This involves comparing the most recent quarters in the current fiscal year to the corresponding quarters in the previous fiscal year. For example, we compare the third fiscal quarter of the current year to the third fiscal quarter for the previous year. By doing so, we control for any seasonal patterns in the firm's performance. Similar considerations apply to forecasting the balance sheet for the end of the current fiscal year. While the most recent quarterly balance sheet is the timeliest, it may also reflect seasonal patterns in net operating asset balances. For example, most retailers build up inventory during the third fiscal quarter and run it down during the fourth fiscal quarter. If you simply extrapolate the third quarter inventory balances into the future you will overstate the inventory necessary to sustain the annual sales. YOY

comparisons of quarterly inventory changes are the best technique for controlling for such seasonal patterns.

Another role for quarterly financial statements in valuation is in assessing the ongoing performance of the company relative to your previous forecasts. You may not want to wait until the end of the year to find out whether or not a company is meeting your forecasts. Indeed, quarterly earnings announcements are one of the most important catalysts for a stock price revision, suggesting that market participants use information in the quarterly financial statements to update their forecasting models. For this reason, it is very useful to prepare explicit quarterly forecasts through the end of the current fiscal year.

7.4 FORECASTING HORIZON

Theoretically speaking, the valuation of an equity security requires us to estimate and discount all the future cash distributions for the infinite future. But, practically speaking, this would require way too many columns on our spreadsheet. Instead, we select a finite horizon over which to prepare explicit forecasts for each year and then we assume that after this point the financial statement line items settle down to a constant growth rate. In this way, we describe an infinite series of future cash distributions without having to explicitly derive an infinite number of pro forma financial statements. Oddly enough, the period at the end of the finite forecasting horizon is known as the "Terminal Period" even though the business itself is not expected to terminate. In later chapters, we will discuss how valuation formulas deal with the infinite series of future cash distributions. What we need to concern ourselves with in this chapter is the selection of an appropriate finite forecasting horizon.

The forecasting horizon should begin with the fiscal year that we are currently in and extend out to the point where we can no longer make a better forecast than to simply assume that all the financial statement line items will grow at the same rate as sales. To be more precise, the terminal period should begin when our forecasts meet the following four conditions. First, sales must settle down to a constant growth rate. Second, margins must remain constant. This condition, combined with the constant sales growth rate, ensures that operating expenses on the income statement grow at the same constant rate as sales. Third, turnover ratios must remain constant. This condition, combined with the constant sales growth rate, ensures that the net operating assets on the balance sheet grow at the same constant rate as sales. Fourth, financial leverage ratios must remain constant. This condition, combined with the constant sales growth rate, ensures that the financial obligations on the balance sheet grow at the same constant rate as sales. Together, these four conditions ensure that all the items in the income statement and balance sheet will grow at the same constant rates as sales. As a

result, cash distributions to equity holders will also grow at this same constant rate.

It is important to note that we do not expect all of these conditions to literally hold beyond the forecasting horizon. In reality, sales growth rates, margins, turnover and leverage ratios are all constantly changing and we expect them to continue to change beyond the forecasting horizon. But what is crucial is that we don't expect them to deviate from this constant growth rate in a systematic way. In other words, our forecasts in the terminal period should be unbiased estimates of where we expect these ratios to be in the long run.

How far out do we need to build explicit financial statement forecasts before it is reasonable to assume that things will settle down to this constant long-run equilibrium? It all depends on the nature of the business and the amount of information that is available to build the forecasts. At one extreme, we could be looking at a company in a mature industry with a well-established product, stable demand, a stable production technology, and stable input prices. Moreover, assume that the company offered no forward-looking information about expansion plans, there were no discernable industry trends, and you generally had every reason to believe that "more of the same" is the best description of the future. In such an extreme case it is reasonable to assume that the sales growth rate, margins, turnover and leverage ratios will remain constant at their recent levels. In this simple case, the finite forecasting period is non-existent and the first year in the forecast period is the terminal period. We generate the forecasted financial statements by naively extrapolating the past sales growth rate, margins, turnover and leverage ratios into the infinite future. This process is called "straight lining" because if sales growth, margins, turnover and leverage ratios did all stay constant at their current levels they would plot against time as a straight line. Straight lining is the default forecasting assumption built into *eVal*. We make this choice because, in the absence of additional information, it is the best that we can do. We'll take a closer look at *eVal*'s default forecasting assumptions at the end of this chapter.

In most circumstances, however, straight lining is a very naive forecasting technique. Instead, we should use what we have learned from our analysis of the past to build more sophisticated forecasts of the future. The length of the forecast horizon depends on how far into the future we can reasonably predict variation in the sales growth rate, margins, turnover and leverage ratios before they settle down to their long-run expected steady-state values. Sales growth won't settle to a steady growth rate until industrywide sales stabilizes and the firm's market share in the industry stabilizes. Thus, firms in start-up industries or firms that are gaining market share from competitors are likely to require longer forecasting horizons. Margins are a function of a firm's competitive advantage in the marketplace. Because it is very hard to sustain a competitive advantage for a long period of time, our forecast horizon should be long enough to capture the erosion of any competitive advantage, assuming this is what you believe will happen. Margins are also subject to

systematic accounting distortions. For example, a growing company in an R&D-intensive industry will tend to have its margins temporarily depressed due to the immediate expensing of R&D. Your forecast horizon needs to be long enough to allow any temporary accounting distortions to play out.

Turnover ratios tend to be fairly stable over time, being dictated primarily by the production technology of the firm. However, rapidly growing firms often enjoy economies of scale that lead to increasing turnover ratios as they grow, so you need to anticipate when these economies will be exhausted. Leverage ratios are typically more stable. A firm's target capital structure generally balances the cost of different types of capital, taking into account the tax benefits of debt and the risk of financial distress. Various factors can cause the actual capital structure to deviate from the target capital structure in the short run, but it is typically quite straightforward for a firm to get back to its target capital structure within a few years.

The above analysis points to two key determinants of the forecast horizon. First, it must be long enough for sales growth to settle down to its steady-state level. Second, it must be long enough for any anticipated erosion of any abnormal profits resulting from competitive advantage in the marketplace. In other words, the forecast horizon must be long enough for any abnormal sales growth and abnormal profits to dissipate. For this reason, the forecast horizon is sometimes referred to as the *competitive advantage period*. *eVal* gives you 10 years of finite-horizon forecasting columns before the terminal period. You can start the terminal period earlier simply by straight lining your forecasts earlier. Why no more than 10 years? We have found that both students and practicing security analysts are biased toward overestimating how long firms can sustain their competitive advantage. Typically, when a firm has a new product or new service innovation that enables it to generate abnormally high profits, analysts get excited and extrapolate the abnormally high profits far into the future, not realizing that other firms will be quick to imitate the innovation and compete away the abnormal profits. There are some rare exceptions to this rule, such as Microsoft, Coca-Cola, and McDonald's, but these are very unusual cases. In these exceptional cases, the firm has usually created a key proprietary asset that gives it some degree of monopoly power. If this is truly the case then it is reasonable to assume that the firm will sustain its abnormal profits indefinitely, and we can incorporate the abnormal profitability into the terminal value computation. We caution, however, that cases of indefinitely sustainable competitive advantage are rare.

7.5 TERMINAL PERIOD ASSUMPTIONS

Now that we are finished with the forecast horizon, we are ready to talk about the terminal period forecasting assumptions. Recall from the discussion above that the terminal period is the period in which we expect sales growth, margins, turnover and leverage ratios to settle down to their constant

steady state levels. The assumptions that we make about the levels of these variables will drive the terminal value computation and can have a great impact on our overall valuation results. It is therefore important that we choose plausible values for these terminal assumptions. This section provides some guidelines for plausible assumptions or, failing that, describes what assumptions might be considered ridiculous.

The first, most important, terminal value assumption is the terminal sales growth rate. We can offer you some pretty tight guidelines for this one. If a company were to grow faster than the rest of the economy forever, then it would gradually become a larger and larger proportion of the total economy. Past some point, it would basically take over the whole economy, and then the world, and then the universe! It therefore stands to reason that the terminal growth rate cannot be greater than the long-run expected economywide growth rate. Conversely, if a company were to grow more slowly than the economy forever, then it would gradually become a smaller and smaller proportion of the whole economy and eventually disappear. If your company produces a product that you think will eventually become obsolete, then such an assumption is reasonable. This is effectively the same as assuming the company is a finite-lived project. The most common terminal assumption is that the company will grow at the long-run expected economywide growth rate. This way, the company will maintain its size relative to the overall economy indefinitely.

Historically, the annual growth rate in the U.S. economy, as measured by the nominal GDP growth rate, has averaged around 6 percent, composed of roughly 4 percent real growth and 2 percent price inflation. However, the financial crisis of 2007–2008 sent both real growth and inflation plummeting into negative territory, albeit briefly. The long-term forecasts from the Congressional Budget Office and the Federal Reserve at the end of 2010 put real growth at 2–3 percent and inflation at 1–2 percent. So, in most cases, a terminal sales growth rate forecast should fall between 3 and 5 percent. If you want to think of the firm as a finite-lived project (or you are evaluating some specific finite-lived project), you can set the terminal growth rate to –100 percent in *eVal* and this will kill the firm (or project) in the terminal year. We use 3 percent as the default terminal value for Sales Growth in *eVal*. Finally, for reasons to be discussed in Chapter 9, your terminal Sales Growth assumption cannot exceed your cost of equity capital; if it does, you will get error messages.

Next, we must consider the terminal assumptions for margins, turnover and leverage ratios. Unfortunately, it is not possible to give tight guidelines for each of these assumptions. Recall from Chapter 5 that a company can trade off these performance drivers in an infinite number of ways. For example, more outsourcing will lead to higher turnover and lower margins, while greater product differentiation will lead to lower turnover and higher margins. This makes generalized guidelines impossible. Fortunately, we can offer more precise guidelines on the overall combination of assumptions that

you choose. As demonstrated in Chapter 5, margin, turnover, and leverage ratios combine to give return on equity (ROE). ROE is an accounting measure of the rate of return on investment, and competition tends to force rates of return toward the cost of capital. In fact, if the following two conditions are satisfied, then the terminal ROE should be identical to the cost of equity capital:

1. The firm is operating in a long-run competitive equilibrium, and
2. The accounting ROE provides a good measure of the economic rate of return on investment.

Under these conditions, the terminal margin, turnover and leverage assumptions must combine to give an ROE that is equal to the cost of capital.

What are plausible levels for ROE when we relax these assumptions? Let's relax the first assumption and consider a firm that has a source of competitive advantage that is sustainable indefinitely. In this case, the terminal ROE will be greater than the cost of capital. How much greater depends on how much of a competitive advantage the company is able to sustain. Here again, we caution that it is very difficult to sustain competitive advantage indefinitely. Make sure that you have a very good case for such a scenario before incorporating it into your valuation model. Finally, you should remember that a terminal rate of return that is more than about 10 percent above the cost of equity capital is simply unrealistic (we refer you back to Figure 5.4 to see just how unrealistic). Even if competition fails to drive away the abnormal return, the Federal Trade Commission and Department of Justice will prevent the abnormal return from becoming too large (as Microsoft found out).

Now let's relax the assumption that accounting ROE provides a good measure of the economic rate of return. As discussed in Chapter 4, there are many reasons why accounting rates of return can provide distorted measures of the economic rate of return. In Chapter 4, we classified these distortions according to whether they were temporary or permanent. Temporary accounting distortions reverse, and we simply need to extend the forecast horizon until these distortions have reversed. For example, if a firm is depreciating equipment too slowly, we simply need to forecast out as far as the equipment is retired, and then use more appropriate accounting assumptions for any new equipment. Permanent accounting distortions, in contrast, do not reverse. Even in steady state, these distortions lead to systematic misstatements in book value. Recall that permanently conservative accounting is quite common. GAAP require many investments that generate cash inflows over multiple future periods to be expensed in the period that they are incurred. The most common examples of such expenditures are R&D, marketing and administrative expenditures. Note that while the impact of immediate expensing washes out of the income number in steady state, it still causes book value of equity to understate invested capital. That is, the numerator of ROE is unbiased in steady state, but the denominator is systematically understated.

In the face of such accounting distortions, the best way to figure out whether your terminal ROE is reasonable is to do a pro forma capitalization of all expenditures that generate future benefits but are immediately expensed under GAAP. This requires you to identify all such expenditures, determine the period over which they are expected to generate future benefits, and then capitalize and amortize them over this period. Once you have done this, you should check that the resulting pro forma ROE is within a plausible range of the cost of capital, given any sustainable competitive advantage. An example helps illustrate the importance of making the pro forma adjustments. Pharmaceutical companies have historically generated ROEs that average about 30 percent, whereas the cost of capital in this industry has only been in the range of 10–15 percent. Is this evidence of monopoly profits? Possibly, but first we need to consider that pharmaceutical companies' annual R&D expenditures have averaged around 25 percent of the book value of equity. Now let's assume that these R&D expenditures generate benefits evenly over the next 12 years, so at any given point there is an average of 6 years worth of R&D investment missing from book value. This means we have omitted from book value capitalized R&D equal to about 150 percent of book value (25 percent per year times an average of 6 years). Hence, if ROE based on as-reported numbers is

$$ROE = \frac{NI}{BV} = 30\%,$$

then pro forma ROE (ROE') is equal to

$$ROE' = \frac{NI}{BKV(1 + 1.5)} = 12\%$$

which is in line with the cost of equity capital. No monopoly profits here!

Forecast Horizon and Terminal Value Assumptions for Kohl's

As discussed in Chapter 3, Kohl's long record of strong growth ended abruptly in 2008 and is expected to be more anemic moving forward. In Kohl's 2009 10-K filing they estimated sales growth of 4–6 percent for the next few years. In the next chapter we develop a detailed forecast for Kohl's that results in near-term sales growth of 5.1 percent and a terminal growth rate of 4.5 percent after 10 years. The detailed forecasts also have Kohl's increasing their ROE steadily from 13.6 percent to 18.7 percent, largely due to increased leverage, over a 10-year period. This is considerably higher than the 10 percent estimate of Kohl's cost of equity capital given in Chapter 9. Can the difference be justified by a sustainable competitive advantage or a continuing accounting distortion? We don't see a long-term accounting distortion for Kohl's, but we do see some competitive advantage. The retail market in the United States is being taken over by "big box" formats such as Kohl's, and smaller chains are being driven out of business. This implies a certain amount of monopoly power in the future to the surviving large companies. Consequently, we believe that Kohl's will be able to hang onto its operating margin.

7.6 THE BALANCE SHEET PLUG

When we build a forecast of the balance sheet that contains 20 line items, we have only 19 degrees of freedom. In other words, since the balance sheet must balance, the forecasts for the first 19 line items determine the forecast for the 20th line item. Generally, regardless of the number of line items on the balance sheet, the forecast of one line item will always have to be set to make sure that the balance sheet balances. We call this line item the balance sheet *plug*. But which line item should we select for the balance sheet plug? The net operating assets are determined by the level and nature of the firm's business activities and should therefore definitely require explicit forecasts, making them unsuitable as a plug. This leaves line items relating to financing activities. These line items are more suitable as a plug, because management can generally adapt them as circumstances require. In other words, management typically decides on their desired level of operating and investing activities and then picks a set of financing activities that provide sufficient capital to fund the operating and investing activities.

While most analysts would agree that the net operating assets should be forecasted directly, there is less agreement on which particular financing line item should be used as a plug. Some analysts use cash as the plug (with a negative cash balance representing a bank overdraft). This has two shortcomings:

1. It assumes that management will make no attempt to establish a financing policy that keeps their cash balance at the minimum level necessary to sustain their operating activities. This is a somewhat naive financing policy (but then again, it seems to be the one that Apple is using).
2. In the case of a bank overdraft, it presupposes that management would be able to secure an overdraft. In the case of a financially distressed firm, this may not be a reasonable supposition.

The other common choice is to plug to common equity. The appeal of this choice is that the common stockholders are the residual claimants of the firm and are thus the natural group to soak up any surpluses or deficits in the firm's financing activities. But this approach also has two shortcomings:

1. In the case of a financing surplus, plugging to common equity assumes that management will pay a big dividend or make a big stock repurchase. But many managers instead choose to either keep surplus cash or to reinvest it in new projects.
2. In the case of a financing deficit, plugging to common equity assumes that the firm will issue new equity. As with a bank overdraft, this presupposes that management would be able to access capital markets on acceptable terms.

There is no perfect answer to this problem. *eVal* plugs to common equity, but we warn you not to take the results of this assumption blindly. You should look at the plug amount and ask yourself whether the implied amount

of stock issued or repurchased really represents what you think management will do. If not, then you need to iterate back through the other line items in your forecasting model until you get a complete set of satisfactory forecasts. For instance, if you really believe that management will build a large cash balance rather than make distributions to investors (like Apple has), then turn up the forecasted cash until the plug to common equity implies no cash distributions to investors.

7.7 FORECASTING WITH *eVal*

Now let's take a look at how *eVal* guides you through the forecasting process. Start *eVal* and open the Forecasting Assumptions worksheet as shown in Figure 7.2. Reading across the columns of this worksheet you will see five years of historical data on each of the forecasting assumptions and 11 years of forecast data shaded in yellow. Your job is to fill in these yellow cells.

We will give you lots of detailed advice on filling in the yellow cells in the next chapter; for now we just want you to become familiar with the overall way that *eVal* organizes your forecasting inputs. Reading down the rows of this worksheet, you will see each of the forecasting assumptions laid out following the forecasting framework outlined in Figure 7.1. We begin with the sales growth rate assumption. If you look at the default forecasting

FIGURE 7.2
Forecasting Assumptions Sheet in *eVal*

Forecast Year End Date	Actual 2006-01-31	Actual 2007-01-31	Actual 2008-01-31	Actual 2009-01-31	Actual 2010-01-31	Forecast 2011-01-31	Forecast 2012-01-31
Implied Return on Equity	8.18%	8.18%	8.18%	8.18%	8.18%	8.18%	8.18%
Sales Growth	16.0%	6.0%	0.0%	0.0%	4.0%	4.0%	4.0%
Cost of Goods Sold/Sales	64.7%	63.0%	63.0%	63.1%	63.2%	63.2%	63.2%
R&D/Sales	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
S&M/Sales	22.4%	22.2%	22.0%	24.3%	24.4%	24.4%	24.4%
One/Amort/Dep/PP&E and Intang.	7.8%	7.3%	7.8%	8.2%	8.2%	8.2%	8.2%
Net Interest Expense/Avg Net Debt	6.7%	6.3%	6.3%	6.3%	6.3%	6.3%	6.3%
Non-Operating Income/Sales	0.1%	0.2%	0.2%	0.2%	0.1%	0.1%	0.1%
Effective Tax Rate	37.4%	37.8%	37.8%	37.8%	37.6%	37.6%	37.6%
Minority Interest/Net Income	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other Income/Sales	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fin. Items & Div. Cost. Stock	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Prep. Dividends/Avg Pref. Stock	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Balance Sheet Assumptions							
Working Capital Assumptions							
Ending Operating Cash/Sales	2.1%	4.0%	4.0%	4.1%	13.2%	13.2%	13.2%
Ending Receivables/Sales	12.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Ending Inventory/COGS	29.8%	26.2%	27.3%	27.1%	27.4%	27.4%	27.4%
Ending Other Current Assets/Sales	0.7%	1.2%	1.2%	1.4%	1.7%	1.7%	1.7%
Ending Accounts Payable/COGS	0.6%	6.4%	6.0%	6.8%	11.1%	11.1%	11.1%
Ending Taxes Payable/Sales	2%	1.5%	0.8%	0.6%	1.1%	1.1%	1.1%
Ending Other Current Liab/Sales	4.8%	4.7%	4.8%	5.0%	5.4%	5.4%	5.4%
Other Operating Asset Assumptions							
Ending Net PPE/Sales	33.9%	34.4%	39.9%	42.6%	40.9%	40.9%	40.9%
Ending Investments/Sales	0.0%	0.0%	0.0%	2.0%	1.9%	1.9%	1.9%
Ending Intangible/Sales	1.7%	1.6%	1.3%	1.3%	1.2%	1.2%	1.2%
Ending Other Assets/Sales	0.9%	0.4%	0.6%	0.7%	0.6%	0.6%	0.6%
Other Operating Liability Assumptions							
Other Liabilities/Sales	1.4%	1.9%	2.3%	2.5%	2.8%	2.8%	2.8%
Current Taxes/Sales	1.6%	1.6%	1.6%	2.0%	2.2%	2.2%	2.2%
Financing Assumptions							
Current Debt/Total Assets	1.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
Long-Term Debt/Total Assets	11.4%	11.5%	19.4%	16.1%	15.6%	15.6%	15.6%
Minority Interest/Total Assets	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Preferred Stock/Total Assets	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Dividend Payout Ratio	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

assumptions for sales growth, you will see that it makes a smooth progression over the forecast horizon from its value in the most recent historical year to a terminal year rate of 3 percent. If you change the sales growth forecast for the first year of the forecast period, *eVal* automatically smooths between this new growth rate and the terminal growth rate. The default *eVal* formula for most line items is similar, smoothing between the value in the first forecast period and the value in the terminal forecast period. Therefore, one approach to quickly entering the forecasting assumptions is to forecast the first year and the terminal year and let the formulas smooth out everything in between. Or you can enter the first few years of forecasts and let the formulas smooth from the last year you entered to your terminal year forecast (play with it a bit—you'll soon get the hang of it). Because *eVal* starts with the most recent year, you should be particularly wary of unusual changes in this year—go back and read the MD&A again!

The remaining income statement assumptions forecast the operating margins. The default assumption for most of the income statement items is to simply straight line their values from the most recent historical year. The exceptions to this rule are Other Income/Sales and Extraordinary Items and Discontinued Operations/Sales. These line items typically contain nonrecurring amounts, so a better default forecasting assumption is that they will be zero in all future periods. Of course, you should always take a close look at the exact nature of the items that have appeared here in the recent past and make your own assessment about the likelihood that they will recur in the future.

The balance sheet assumptions are listed further down the sheet and are presented in four groups. The working capital assumptions are basically forecasts of the turnover ratios, except that we put the balance sheet item in the numerator and divide by the corresponding flow variable (sales or cost of goods sold). This is basically the reciprocal of the turnover ratio. We have found that it is much more intuitive to put the balance sheet item in the numerator when we are trying to forecast the balance sheet item. Note also that we are forecasting the ending balance of the item rather than an average over the period (unlike the turnover ratios in *eVal*'s Ratio Analysis sheet that are based on average balance sheet amounts). While algebraically possible, forecasting the average balance and then backing into the implied ending balance can cause the forecasted ratios to oscillate in very disconcerting ways. Consistent with the way in which we compute turnover ratios, we express inventory and payables as a percentage of cost of goods sold and all of the other working capital accounts as a percentage of sales.

The next two groups of balance sheet forecasting assumptions are the non-current operating asset and noncurrent operating liability assumptions. As with the working capital assumptions, we forecast the ending balance of each of these line items as a percentage of sales. These assumptions fill out the asset side of the balance sheet and the operating portion of the liabilities (i.e., the net operating assets). All that is left on the balance sheet are the financial

obligations and equity, which are determined by your financing assumptions. The debt, minority interest and preferred stock assumptions are statements about the firm's leverage, expressed as a proportion of total assets. Having forecasted the assets, the liabilities, and the preferred stock, the common equity balance is determined; it is the *plug* that we discussed earlier.

Notice that you are allowed to forecast the dividend payout ratio. You may wonder how the ending balance in common equity can be determined if you are free to forecast any dividend you like. Doesn't a dividend reduce the common equity balance? Technically, yes, but since the common equity balance is already determined by your other assumptions, *eVal* adjusts the implied stock issuances or repurchases to exactly offset any dividend that you forecast. That is, your forecasted dividends reduce retained earnings, but *eVal* increases the balance in paid in capital by exactly the same amount so as to leave common equity unaffected. Play with it a bit and you will see what we mean.

eVal provides you with a few diagnostics to help judge the plausibility of your forecasting assumptions. First, up at the top of the Forecasting Assumptions worksheet you will find the Implied Return on Equity. Recall from section 7.5 that while it is difficult to provide plausible bounds for each of the individual balance sheet and income statement assumptions, they should all combine to give a return on equity figure that is within a plausible distance of the cost of capital. Second, by clicking on the Ratio Analysis and Cash Flow Analysis tabs, you can see the complete ratio and cash flow analyses implied by your assumptions. Do these forecasted ratios jibe with your views about the firm's future? One particularly important item to look at in the cash flow analysis is Net Issuance of Common Stock. As we discussed earlier, this is the amount computed by *eVal* in order to balance your balance sheet. A positive amount indicates the amount that will have to be raised through issuance of new stock; a negative amount indicates the amount that will be used to repurchase stock. You should ask yourself if the market conditions are conducive to raising new stock? Does management intend to use excess cash for stock repurchases? If not, then you need to iterate back through your forecasting assumptions until you have a more plausible scenario.

Suppose management told you that they expected the balance in PP&E to be \$100 million next year. To hit this amount on your forecasted balance sheet might be a bit tough—you would have to keep changing the PP&E/Sales forecast until you hit exactly \$100 million on the financial statements. It might be tempting at this point to simply toggle over to the Financial Statements sheet and type in \$100 million. While possible, we caution against this approach. By forecasting a balance directly, you overwrite all the checks and balances built into *eVal*. Further, even if you are sufficiently careful to keep your balance sheet balancing, it is very easy to enter individual line items that don't appear unreasonable, but together imply crazy financial statement ratios (see the Amazon case at the end of the book for an example). As one

small check, *eVal* will generate an error message if your balance sheet no longer balances, which is what would happen if all you did was change PP&E to \$100 million.

7.8 FORECASTING EPS

The forecasts discussed so far are all firm-level forecasts. However, investors in public corporations rarely buy the entire firm. Instead, they buy shares representing fractional interests in the firm. For this reason, it is common practice to express certain key forecasts on a *per-share* basis. Expressing forecasts on a per-share basis allows for direct comparisons with stock prices, which are also expressed on a per-share basis. Not surprisingly, the most common component of the financial statements to be expressed on a per-share basis is earnings. Earnings is the key accounting summary measure of firm performance and so it is useful to know just how much earnings a company is generating per share of outstanding common stock. Earnings-per-share (EPS) is the most commonly published forecast by security analysts. Moreover, the extent to which reported quarterly EPS differs from the consensus analyst forecast of EPS is probably the single most important determinant of firm-specific movements in stock price.

Given the prevalence of EPS forecasts in practice, it is useful to construct the forecasts of EPS implied by your forecast financial statements. By doing so, you can quickly evaluate whether your forecasts are more optimistic or pessimistic than the forecasts of other analysts following the firm. In theory, the computation of EPS forecasts is quite simple. We simply divide forecast earnings by the forecast weighted-average number of shares outstanding for the period. In practice, however, the forecasting of the weighted average number of shares outstanding is troublesome. There are two distinct problems:

1. Forecasting the number of shares that will be issued and/or repurchased between now and the end of each future forecasting period.
2. Forecasting the number of common stock equivalents that will be outstanding at the end of future forecasting periods.

The first problem arises because we do not know the future prices at which any stock issuances and repurchases will take place. Our forecasted financial statements tell us how many dollars of common equity we expect the firm to issue or repurchase in each future forecasting period. But in order to compute the associated number of shares, we need to know the prices at which these transactions will take place. This introduces a strange circularity into our computations. Remember that one of the main goals of financial statement forecasting is to figure out the value of a share of stock. But in order to forecast EPS, we first need to forecast the future price of a share of stock. If we already knew the latter, we probably wouldn't bother with the former! Fortunately, there is a pragmatic and internally consistent solution to this

circularity problem. *eVal* simply assumes that your forecasts of the future financial statements of the firm are correct and appropriately incorporated in the firm's stock price. The future stock price is then computed by taking the current intrinsic stock price generated by your forecasted financial statements, compounding it at the cost of equity capital, and subtracting any cash dividends paid. The computations are mundane and automated in *eVal*, so we won't bother with a more detailed description of them here.

The above solution is fine if the current market price of the stock is close to the intrinsic price generated by your forecasting model. But what if the current market price of the stock is very different from the price implied by your model? In this case, either your forecasting model is wrong, or the market price is wrong. If you conclude that the former is the case, then you should go back to the drawing board and build a better forecasting model. If you conclude that the latter is the case, then you have identified a mispriced stock. But before computing EPS forecasts, you need to consider the possibility that the firm could issue or repurchase shares of common stock in the future at a market price that differs from intrinsic value. Firms with mispriced stock can influence their own EPS (and intrinsic share price) by engaging in strategic transactions in their own stock. Firms with overpriced stock can increase EPS (and intrinsic share price) by issuing stock, while firms with underpriced stock can increase EPS (and intrinsic share price) by repurchasing stock. This is a complicated topic, and we defer a more complete discussion to Chapter 12. At this point, you should simply be aware that the procedure used by *eVal* to compute EPS does not consider such effects.

The second problem in computing EPS concerns the fact that analysts and investors most commonly forecast *diluted* EPS. If you are an accounting geek, you will remember that EPS comes in two varieties—basic and diluted. Basic EPS simply involves dividing earnings by a time-weighted average of shares outstanding. Diluted EPS involves dividing earnings by a time-weighted average shares outstanding plus common stock equivalents related to potentially dilutive securities, such as employee stock options and convertible bonds. These potentially dilutive securities represent contingent claims on common equity, and incorporating them helps in figuring out what is likely to be left for the existing common stockholders. Unfortunately, the forecasting of future common stock equivalents is very complicated and difficult to do with much accuracy. We therefore focus on forecasting basic EPS. We can, however, offer you some simple practical advice if you want to forecast diluted EPS. Take a look at the firm's most recent financial statements. The income statement should report both basic and diluted EPS. If these two numbers are very similar, then potentially dilutive securities are probably not that big of a deal, and so ignoring them is reasonable. If these two numbers differ by 5 percent or more, then common stock equivalents are important and should be considered. A good base case forecasting assumption is that the number of common stock equivalents related to potentially dilutive securities remains constant in the future. But if you are looking at a firm that

FIGURE 7.3
EPS Forecaster Sheet

Company Name	KOHL'S CORP		
Common Shares Outstanding at BS Date	307,000		
Equivalent Shares at Valuation Date	307,000		
Forecasted Price at Valuation Date	\$39.79		
Fiscal Year of Forecast	Forecast	Forecast	Forecast
	2011-01-31	2012-01-31	2013-01-31
Net Income	1,046,887	1,293,460	1,140,301
Common Equity Issued (Repurchased)	(891,779)	(724,931)	(769,408)
Forecasted Price at Year End	\$43.77	\$48.15	\$52.96
New Shares Issued (Repurchased)	(15,576)	(15,056)	(14,527)
Shares Outstanding at End of Year	291,424	276,368	261,841
Forecast EPS	\$3.50	\$3.85	\$4.24
Consensus Analyst Forecast of EPS			
Forecast Five Year Growth Rate in EPS	10%		
Consensus Analyst Forecast of Growth Rate			

Although not a necessary input for *eVal*, you find the analyst forecasts for your on yellow-shaded cells for comparison purposes.

To obtain analyst forecasts, click here.

plans to restructure its employee stock option plan or refinance its convertible debt, you need to pull out your intermediate accounting text and burn some midnight oil.

To make the above discussion more concrete, let's take a look at the EPS forecasts for Kohl's using the default forecasting assumptions in *eVal*. The EPS forecasts and associated computations are contained in the EPS Forecaster worksheet. This worksheet is reproduced in Figure 7.3 using a valuation date of January 31, 2010 and the default forecasting assumptions, with the result of an intrinsic value estimate of \$39.79/share. The key financial statement inputs to this sheet are the number of common shares outstanding at the most recent balance sheet date, the forecasted price of the company (based on *eVal*'s current forecasting assumptions), the forecast of net income for each future year, and the amount of common equity that is forecast to be issued (repurchased) in each future year. You can follow the formulas in the respective cells to trace each of these inputs back to their source worksheets.

The first computation in the EPS Forecaster worksheet is the forecast of the price at the end of each future year. The price is computed by taking the price at the end of the previous year, multiplying by one plus the cost of capital to reflect the expected return for the year, and subtracting the forecast dividend-per-share for the year. For our example, this works out to be $\$39.79 \times (1 + .10) - 0 = \$43.77/\text{share}$. The assumption is that this is the future price that shares will be issued or repurchased at. Armed with the forecasted price-per-share, the computation of EPS is straightforward. We first divide common equity issued (repurchased) for the year by forecast price for the year to obtain the number of new shares issued (repurchased) for the year. Next, we compute shares outstanding at the end of each year by adding (subtracting) shares issued (repurchased) for the year to the outstanding balance from the previous year. Finally, we divide net income by the average number of shares outstanding for the year to arrive at our EPS forecast.

In our example, the implied \$681,779 thousand stock repurchase translates into 15,576 shares repurchased, reducing the shares outstanding from 307,000 thousand to 291,424 thousand. The forecasted income of \$1,046,887 divided by the average of the beginning and ending shares outstanding results in an EPS forecast of \$3.50.

If all this work seems too pedantic just to get the denominator to your EPS calculation, then you can simply type the forecast number of shares directly into the EPS Forecaster worksheet (using, for example, the number of shares outstanding). The EPS Forecaster sheet stands alone, so changes here will not flow back to other parts of your *eVal* model.

One of the most important functions of the EPS Forecaster worksheet is to allow you to compare your EPS forecasts with the consensus analyst forecast. We provide a link at the bottom of the EPS Forecaster worksheet that takes you directly to the consensus earnings estimates provided at Yahoo.com. Whenever possible you should compare your forecasts to the consensus analyst EPS forecasts for each of the next two years, and for the five-year growth rate in EPS.

7.9 SUMMARY AND CONCLUSION

Forecasting is where the rubber meets the road in equity valuation. A valuation is only as good as the forecasts that support it. And good forecasts only come from a careful synthesis of the findings from your business, accounting, and financial analyses. It is important that you forecast the complete financial statements and that you use a systematic forecasting framework that maintains internal consistency in the resulting statements. It is also important that your forecasting assumptions lead to economically plausible statements about the future.

So far we have talked about forecasting from the 30,000-foot level. The next chapter gets down to the nitty-gritty of forecasting the individual line items on the financial statements.

7.10 CASES, LINKS, AND REFERENCES

Cases, links, and references relating to material in this chapter are presented at the end of Chapter 8 and should be reviewed after reading Chapter 8.

CHAPTER EIGHT

Forecasting Details

8.1 INTRODUCTION

The last chapter described our general framework for forecasting a firm's future financial performance. In this chapter we give more specific guidance about how to come up with a reasonable forecast for each specific line item. Obviously, we can't tell you what to forecast in every circumstance; rather, we try to give you a list of things to think about.

As you proceed through the income statement and balance sheet assumptions, you may be plagued by the following two thoughts. The first is that there is always more you could do to develop a better forecast of each item. There is an endless amount of data available—maybe a little more hunting will identify the perfect indicator of the future for the particular variable you are trying to forecast. The second doubt is that, even after all your hard work, you still feel uncertain about the resulting forecast. Both of these feelings are legitimate, but there is nothing we can do about them; the world is an uncertain place. We offer you a framework to guide you through the forecasting process and we offer you some guidance about what reasonable forecasts might be, but we don't have the crystal ball that perfectly predicts the future.

This chapter will walk you through the individual income statement and balance sheet assumptions that *eVal* uses to construct the forecast financial statements. For some of the forecasts it may help to build a more detailed model and then plug the forecasting assumptions implied by the detailed model into the appropriate income statement or balance sheet assumption in *eVal*. The easiest way to do this is to build your more detailed model further down the Forecasting sheet, or add a new sheet to *eVal*, and then link the result back to the appropriate yellow-celled forecasting assumption.

8.2 FORECASTING SALES GROWTH

If God offers to fill in one row of your spreadsheet, this is the one to ask for. Sales growth, or the lack of it, is a huge driver of value. You should bring everything you can to bear on this forecast. *eVal* shows the firm's past history of sales growth but this is only a starting point. Extreme levels of sales growth tend to mean-revert very quickly. Recall from Figure 5.1 that firms in the top

quintile of sales growth averaged 55 percent, but the same firms only averaged 24 percent sales growth the next year. So just because sales growth has been high in the past doesn't mean that sales growth will be high in the future.

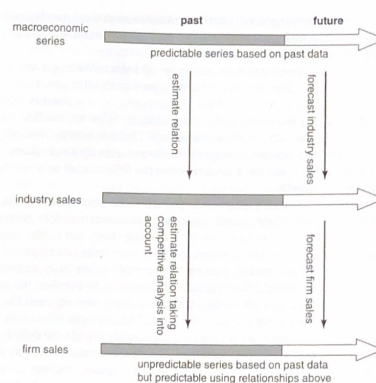
Obviously we can't give you a recipe for forecasting sales that will apply to all companies in all situations. What follows is a basic approach along with a list of things that you should consider for most companies. One approach is to start by forecasting industry sales growth. With this as a benchmark, you can then ask if the firm is likely to increase or decrease its share of industry sales. This exercise starts with macroeconomic data and works down to a firm-specific forecast. As we will see, such an approach works well when the firm is a large player in the industry. Alternatively, if the firm's industry is ill-defined, or the firm is a very small part of the industry, then it might be better to start at the firm level and only look to other companies for a few key comparisons.

Forecasting Industry Sales Growth

To build a forecast of industry sales growth, go back to Chapter 2 and look over the list of available macroeconomic data. What are the key drivers of sales in your industry? More importantly, what are the key indicators of *future* sales? For example, the aging of the baby boomers is a very predictable phenomenon that has huge implications for the health care sector. You could study past trends in personal expenditures on health care as a function of the median age of the population. As another example, suppose you are studying a house-building company in the south. The demand for houses is a function of many things, including age demographics, migration patterns across geographic regions, and interest rates. Governments around the world collect detailed statistics on all of these variables. You could estimate the relation between these variables and past housing demand in the south and then extrapolate this model to estimate the demand for future housing.

Building a model of industry sales that predicts the future is no easy task. And, even if you find a set of variables that predicts industry sales very well, your particular firm may buck the trend. Nevertheless, we encourage you to spend some time on this task. Even if your work doesn't result in a great predictor of industry sales, the exercise will help you identify the key drivers of sales and this should help to keep your long-term sales forecasts reasonable. Also keep in mind that your goal is to predict future sales, not explain past sales. A macroeconomic variable that moves concurrently with industry sales will make for a beautiful graph, but unless you can generate decent forecasts of the variable, it won't be much help in forecasting future sales. For example, it turns out that the return on the S&P 500 is a great concurrent predictor of demand for cruise vacations; apparently, when the market is up, the cruising segment of the population splurges on a great vacation. While this observation makes for a great graph, it is completely useless for predicting future demand for cruise vacations, unless you think you can predict future movements

FIGURE 8.1
Estimating Industry
and Firm Sales from
Macroeconomic Data



in the S&P 500. And if you can reliably predict future movements in the S&P 500 then you really don't need this book!

Figure 8.1 illustrates how you might think about linking macroeconomic data to industry sales and firm-specific sales. For this to be a useful exercise, you need two key relationships to be very strong. You need the macroeconomic data to be predictable in the future and you need the links between the macroeconomic data, the industry sales, and the firm sales to be strong. If both of these conditions are true then you can build a sales forecast by first predicting the macroeconomic series, then forecasting industry sales from the macro prediction, and then forecasting firm sales from the industry prediction. Demographic trends, for example, are very predictable macroeconomic phenomena. It would be foolish to ignore these trends if your firm's customers come from a particular slice of the demographic pie. In addition, a number of macroeconomic trends are linked to GDP growth. While GDP growth isn't a simple series to predict, economists put so much effort into forecasting it that you can get decent forecasts from the web (check out the Congressional Budget Office or the Conference Board links at the end of the chapter). As an example, personal consumption expenditures on durable goods (e.g., washing machines) tend to grow rapidly as the economy comes out of a recession. If the GDP forecasts indicate a recession is ending, then this is a powerful indicator of a large increase in sales of durable goods in the immediate future. On

the other hand, business investment in fixed goods takes much longer to start growing after a recession, so your prediction for an equipment supplier might be much more subdued.

Once you have a forecast of industry sales growth, the next task is to predict how this will relate to your particular firm's sales growth. At this step you need to consider the intensity of competition from alternative sources for the same products or services. Who are the firm's competitors and how intensely are they competing? The link between industry sales and firm sales is obviously stronger if the firm makes up a significant fraction of the industry. The link is weakest when the firm is small or when the industry is growing rapidly.

As an example, the growth in grocery store sales in the United States is remarkably stable, ranging between one and four percent in the last decade. No matter how much advertising stores put in the local newspapers, people can only eat so much. Grocery store sales would probably mirror population growth perfectly except that grocery stores have expanded their product lines to include pharmacies and home goods. Further, the past decade saw larger grocery store chains swallow up many smaller ones. The result is that Kroger, the largest grocer in the United States, grew sales at an average rate of about 6 percent in the past decade, roughly double the industry rate. Over the same period Whole Foods grew more than twice as fast as Kroger, as Americans discovered "whole" food. Kroger, which accounts for more than 13 percent of total grocery sales in the United States, can only deviate from the industry rate by so much because it is such a large part of the industry. Whole Foods, on the other hand, accounts for only about one percent of grocery sales, and so is far less governed by the overall industry growth rate.

The firm-specific facts that we discuss in the next section are typically the main drivers of sales for small and growing firms. In addition, firms with winning strategies may generate unusually large sales growth in the short run by stealing market share from other firms. But in the long run even these companies can't escape the economic forces of the industry.

Firm-Specific Influences on Sales Growth

There are many useful predictors of future sales that come from the firm itself. One significant indicator of future sales is the firm's current and future investments in operating capacity, especially in new sales locations or new products. Firms make investments to generate future income so, assuming the firm isn't making bad bets, these investments will be harbingers of future sales. As an example, you can divide retail sales growth into growth from opening new stores and growth from increased sales at existing outlets (with the latter known as same-store or comparable-store sales growth). California Pizza Kitchen can grow rapidly by opening up new restaurants all over the country, but the very nature of a restaurant puts severe limits on the amount of sales growth that can be generated from the existing locations. Only so many

people can squeeze into one booth. Retail companies frequently disclose their plans for new store openings over the next few years and you should use this information to estimate the contribution that new stores will make to total sales growth. You can then combine this with an estimate of the more modest contribution that same-store sales growth will make to arrive at the total sales growth rate.

This same logic extends well beyond forecasting in the retail sales business. Most investments are made to generate a sequence of future sales. When newly invested capital starts producing output, there should be a big burst of new sales, followed by a reasonably steady stream of future sales from that investment. It is therefore useful to distinguish between the large bursts of sales growth that come from newly invested capital and the much lower growth in sales, if any, that comes from the continued operation of previously invested capital.

You can frequently gain some useful information from the segment disclosure footnote in the financial statements. This footnote describes sales, profits, and investments by major product lines and geographic regions. This information can help focus your attention on the largest sources of sales for the firm and help to identify where they are investing for the future. The firm's MD&A (capital resources section) is also a good source of information about the firm's future growth prospects.

Forecasting future sales is very important but very difficult. Take this part of the forecasting task seriously, but also be mindful that some fraction of future sales is inherently unknowable. Floods, pestilence, technological innovation, and the inherent fickleness of the consumer all combine to make sales a truly random variable. Use all of your collected wisdom to make educated guesses, and to put reasonable bounds on your estimates, but then move on.

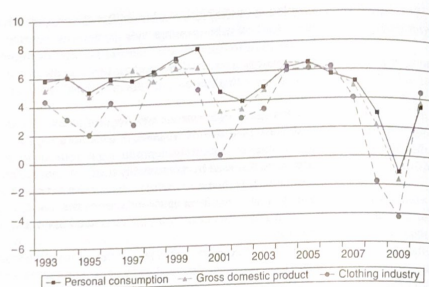
Finally, we would like to repeat the warning from the previous chapter. Do NOT make the terminal year forecast of sales growth very large—7 percent might be a maximum. Think about what it would mean to forecast a large growth rate into perpetuity; as the company grows faster than the world economy it would slowly but surely take over the entire planet. So unless you mean to forecast this type of world domination, don't use a big sales growth forecast in the terminal period.

A Sales Forecast for Kohl's

We will illustrate our approach to forecasting sales using Kohl's. Since Kohl's is only a small part of a huge industry, the macro approach to forecasting sales might not be very fruitful, at least for the next few years. In the short run, we should forecast their sales based on estimates of their new store growth. However, in the long run Kohl's will be subject to the undeniable fact that the clothing and accessories industry is a relatively stable and slowly growing industry. We will start by looking for the drivers of industry sales growth to guide our terminal period forecast but then develop our

FIGURE 8.2
Clothing and
Accessories Industry
Sales Growth Drivers

Source: Bureau of Census
Retail Sales Survey and
Bureau of Economic Analysis
NIPA Tables



more immediate sales forecasts for Kohl's based primarily on company-specific data.

Figure 8.2 illustrates how sales growth in the clothing and accessories industry is related to growth in the gross domestic product and particularly to growth in personal consumption expenditures. While growth in clothing and accessories sales is more volatile than growth in personal consumption expenditures or GDP, all three series basically move together and average to about the same amounts over time. In addition, consumer expenditure survey data from the Bureau of Labor Statistics shows that the percent of personal consumption expenditures on apparel has remained between 3.8 and 4.1 percent over the past few years. Forecasted growth in GDP is therefore likely to be a good predictor of growth in the clothing and accessories industry.

The Congressional Budget office estimated that nominal GDP growth (real GDP growth plus price inflation) was 3.8 percent in 2010 and would fall to 3.7 in 2011 and then increase to about 4.5 percent in 2012 and remain there. Given the correspondence between GDP growth and growth in the clothing and accessories industry, we can use this as our industry forecast. Although Kohl's may grow faster or slower than the industry in the short run, we will assume that it eventually will be governed by these industry growth forecasts.

Turning to company-specific information, we learn from Kohl's 10-K that they currently have 1,058 stores spread across the United States, having opened about 58 stores per year since their initial public offering in 1992. They also state that they opened 54 stores in 2009, expect to open 30 new stores in 2010, and plan to continue opening stores at this more modest rate

into the future. So one estimate for Kohl's is that they will grow their stores by 2.8 percent for the next few years (30/1,058). Another approach might be to estimate how many stores a fully built-out system would contain. We note that in the Midwest, Kohl's most developed region, they are averaging 5.1 stores per million people. Extrapolating to the United States population of 305 million, this suggests a mature system of about 1,555 stores (as a point of comparison, Target has 1,740 stores). This would imply about 4 percent growth in stores over the next 10 years.

New stores certainly contribute to growth in sales, but in the retail environment an equally important statistic is the growth in sales from stores that have been open at least a year, known as comparable store sales, or simply "comps." In their 2009 MD&A Kohl's discloses that their comps were 0.4 percent, the result of a 1.4 percent improvement due to the closure of their competitor Dillard's and a 1.0 percent reduction due to cannibalized sales from their own existing stores by newly opened stores. The net result of 0.4 percent comp growth is the result of a simple calculation, but the two underlying causes cannot be verified. How could they possibly know that a new customer walked through their door because her favorite Dillard's closed, or a former Kohl's customer *didn't* walk through the door because a new Kohl's opened closer to her home? Nonetheless, if we believe that Kohl's management has this type of insight, then we might want to use the fact that they forecast in the MD&A that 2010 comp growth will be 1–3 percent, and total sales growth will be 4–6 percent.

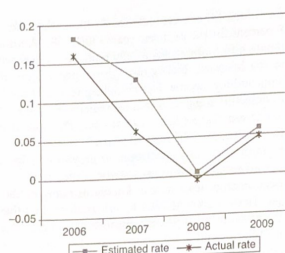
There are many ways to weave the new store growth estimate and the comparable store growth estimate together into a forecast of future sales. If we are willing to assume that old stores and new stores generate sales at the same rate then a valid approach is to simply compound the two growth rates together. That is

$$\text{Total Sales Growth} = (1 + \text{growth rate in stores}) \\ (1 + \text{growth rate in comps}) - 1$$

Figure 8.3 shows the estimated and corresponding actual sales growth rates at Kohl's for the past four years, where the estimate is made by inserting the actual store growth and comp growth statistics into the formula above. Notice that the actual sales growth is a bit less than the estimated growth in each year, suggesting that perhaps the new stores do not reach maturity instantly, as the model above assumes. However, given that Kohl's is planning on slowing their new store growth considerably, the complication of estimating separate sales for new versus old stores is unlikely to yield a significant improvement.

Putting all this together, we forecast that new store growth will be 3 percent per year for the next 10 years, and comp growth will be 2 percent per year for the next 10 years, for a compounded growth rate for sales of 5.06 percent. We will round up to 5.1 percent in *et al.* After 10 years we forecast that the terminal growth rate in sales will equal the estimated growth in GDP of 4.5 percent.

FIGURE 8.3
Kohl's Estimated and Actual Sales Growth Rates



8.3 EXPENSE FORECASTS

As a roadmap to the expense forecasts, Figure 8.4 shows the Income Statement Assumptions section of *eVal's* Forecasting Assumptions sheet. Having completed the sales growth forecasts, now it is time to think about how expenses are going to eat away at those revenues.

Many expenses move directly with sales, such as Cost of Goods Sold and Selling, General and Administrative expenses, and so we forecast these expenses as a percentage of sales. However, just because the forecast input is a percentage of sales doesn't mean that you should forecast it as a *constant* percent of sales. Firms may enjoy economies of scale as they grow or they may implement cost management programs; both would lower these expense ratios. In addition, remember that a sales price increase has the same effect as lowering expenses when it comes to forecasting expenses as a percent of sales.

FIGURE 8.4 Income Statement Assumptions for Kohl's

Fiscal Year End Date	Actual 07-01-31	Actual 08-01-31	Actual 09-01-31	Actual 10-01-31	Forecast 11-01-31	Forecast 12-01-31
Implied Return on Equity	0.192	0.185	0.138	0.136	0.130	0.128
Income Statement Assumptions						
Sales Growth	16.0%	6.0%	-0.5%	4.6%	5.1%	5.1%
Cost of Goods Sold/Sales	63.6%	63.5%	63.1%	62.2%	62.0%	62.0%
R&D/Sales	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SG&A/Sales	22.2%	22.8%	24.3%	24.4%	24.4%	24.4%
Dep&Amort/Avg PP&E and Intang.	7.5%	7.3%	7.8%	8.2%	8.5%	8.9%
Net Interest Expense/Avg Net Debt	6.7%	8.3%	6.8%	6.5%	6.5%	6.5%
Non-Operating Income/Sales	0.2%	0.2%	0.2%	0.1%	0.0%	0.0%
Effective Tax Rate	37.0%	37.8%	37.9%	37.6%	37.6%	37.6%
Minority Interest/After Tax Income	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other Income/Sales	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Ext. Items & Disc. Ops./Sales	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Pref. Dividends/Avg Pref. Stock	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

In some cases, the account balances rather than sales levels are the drivers of the income statement items. For example, there is a very strong relation between the Debt on the balance sheet and the Interest Expense on the income statement—the debt balance times the interest rate equals the interest expense. So for interest expense and some other items, the forecast of the income statement item is based on its relation to a specific balance sheet item.

When forecasting a firm's expense ratios you should always compare them with their industry peers. You can often find these statistics at Yahoo! Finance.

Cost of Goods Sold

The ratio of Cost of Goods Sold (COGS) to sales describes how much of every sales dollar is spent directly on providing the product or delivering the service. When forecasting this item think about how the firm's products or services are viewed in the product market. Can they charge a price premium over their competitors? Is this premium sustainable in the long run? The effects of competition are first seen in this line item: As a firm is forced to lower its prices in response to competitors' price reductions, this ratio will increase. Are there manufacturing efficiencies to be gained that will lower production costs? As the firm grows, do you anticipate it getting sufficiently large that it can demand lower prices from its suppliers (as Walmart does)? Much of the ratio analysis of profitability that we discussed in Chapter 5 is designed to help you forecast this item. In addition, you may find some guidance for this forecast by reading the firm's MD&A and earnings announcements. Note that the discussion in the MD&A may be pitched in terms of the Gross Profit Margin, defined as

$$\text{Gross Profit Margin} = 1 - (\text{COGS}/\text{Sales})$$

Finally, remember that a pure price increase, with no other changes, will increase the gross profit margin, which reduces the COGS/Sales ratio.

Along with the firm's own past, the COGS/Sales ratio of a few close competitors is a good place to start when forecasting this ratio. If the firm has a low COGS/Sales ratio relative to its peers then you need to think about whether or not it can sustain this advantage. If you are analyzing a young firm with no clear cost structure exhibited in the data, then using a more mature firm's COGS/Sales ratio in your forecasts is a good idea. If the firm has exhibited some economies to scale that have caused the COGS/Sales ratio to decline in recent years then ask yourself how much longer you expect this trend to continue. If you believe that economies of scale are a significant factor for your firm, then you should refer to the discussion about estimating them in the section on Selling, General and Administrative expenses below.

Research and Development Expenses

While there is no necessary relation between Research and Development (R&D) expenses and sales, many firms budget their R&D expenditures in

exactly this way. For instance, Gillette has a stated goal of growing R&D expenditures at the same rate as sales, so the ratio of R&D to sales should remain constant for Gillette. Be particularly cognizant of the stage in a firm's life cycle when forecasting this item. Start-up firms will invest a much larger fraction of their sales in R&D with the intent of bringing this percentage down over time. Also, there may be a relation between the firm's R&D spending and the price premium implied in your COGS forecast. A firm whose strategy is to continually develop new products and sell them at a premium will have a higher R&D to sales ratio and a lower COGS to sales ratio than a firm who copies other firms' products and sells them at a discount. For example, a hallmark of IBM is its research and development activity—it has produced the largest number of patents granted per year for any firm in the world for the last 17 years' running. This strategy is reflected in its ratios: IBM's ratio of R&D Expense to sales has been within a tenth of 6 percent every year for the past five years, and its gross margin hangs around 45 percent. In contrast, Dell Computer invests only 1 percent of its revenue in R&D but its gross margin is only 17 percent—clearly a different strategy than at IBM.

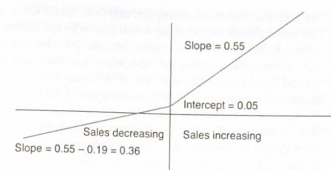
You should be aware of opportunistic accounting related to R&D on software. Software development costs can be capitalized as an asset once the product is "technologically feasible"—whatever that means, so these expenditures will not show up in R&D expense immediately. Given the vagueness of this definition, companies have considerable flexibility when choosing whether to allocate software expenditures to R&D, in which case they are expensed immediately, or to software development, in which case they are classified as an asset and then amortized to expense over a number of years.

Selling, General and Administrative Expenses

Selling, General and Administrative (SG&A) expenses have some components that move directly with sales, such as commissions paid to the sales force, and other components that are only weakly related to sales, such as the clerical staff salaries. Over short horizons, many costs in this category are almost completely fixed, like rent on facilities, property taxes, or utility bills for the administrative headquarters. The fixed components will give this ratio economies of scale, so it may decline as a percentage of sales as sales grow. Working against this effect, however, is the fact that many of these expenditures are highly discretionary. For example, when sales are high the firm may invest in management training programs but when sales are low they may cut back on these types of discretionary expenditures. Examine how this ratio has changed in the past in response to changes in the sales growth rate for evidence of economies of scale. In addition, the MD&A discussion might give you some clues about future movements in this ratio. In particular, cost-cutting initiatives are frequently aimed at this line item.

If you believe there are significant economies of scale in SG&A or any other line item, you may want to quantify the effect more precisely. To do this, start by plotting the percentage change in SG&A on the percentage change in

FIGURE 8.5
Economies of Scale and "Sticky Costs" in U.S. Economy from 1979–1998 (adapted from Anderson, Banker, and Janakiraman (*Journal of Accounting Research* 2003)). Both scales are in percentage changes.



sales each year and then examine the chart for two patterns. Assuming there is a discernable upward pattern, is the slope significantly less than one? If so, then your company is exhibiting economies of scale in SG&A. Next, does it appear that the slope of the line is flatter when the percentage change in sales is negative? If so, then SG&A is exhibiting "sticky" costs. It is often harder to cut costs in bad times than it is to increase costs in good times. Consequently, when sales are declining, economies of scale cause costs to hang around and "sticky" costs hang around even more. Both effects are illustrated in Figure 8.5. The figure shows the result of the following estimation:

$$\% \text{ change in SG\&A} = a + b \times \% \text{ change in Sales} + c \times \text{Indicator if Sales declined} \times \% \text{ change in Sales} + \text{error}$$

If $b = 1$ then there are no economies of scale and costs increase in direct proportion to sales. More commonly $b < 1$, meaning that the firm enjoys economies of scale. If $c < 0$ then the slope of the line is even lower for sales decreases, capturing the "sticky" cost phenomenon.

We tend to think of economies of scale as a good thing—when sales increase costs do not increase as rapidly. However, when sales decline the sword cuts the other way—costs do not decline as rapidly. And the "sticky cost" phenomenon shown in Figure 8.5 makes matters even worse. As the figure illustrates, a 10 percent reduction in sales is estimated to result in only a 3.6 percent reduction in SG&A. It is this effect that often brings on bankruptcy, as illustrated in the "Tale of Two Movie Theaters" case at the end of the textbook.

Depreciation and Amortization

The ratio of Depreciation and Amortization to Average (Net) Property, Plant and Equipment (PP&E) and Intangibles is forecasted based on the relation between the balance sheet amounts and the income statement amounts. For firms using straight-line depreciation and replacing assets at roughly the same rate as they depreciate them, this ratio is approximately constant and equal to one over half the average useful life of the assets. Why half? Because in steady state,

the assets are roughly halfway through their useful life, so net PP&E is roughly half gross PP&E. But remember that this rule only applies for stable firms. For a growing firm, the ratio is smaller, because the existing assets are less than half way through their useful life, and hence less than half depreciated. But you should make sure that as the firm's growth rate slows, you trend this forecasting assumption to one over half the average useful life of the assets.

Another problem that frequently arises when forecasting Depreciation and Amortization is that the line item is not shown on the income statement and so is coded as zero by the standardized data providers. For example, Intel doesn't list depreciation/amortization expense on their income statement and consequently you get a ratio of 0 percent for this item when loaded into *eVal* (from the Case Data sheet). If you get the actual financial statements you can typically find the depreciation and amortization amounts on the Statement of Cash Flows but this is of only limited value, because you don't know the income statement line item that the company lumped these expenses into. They could be included as part of COGS, as part of SG&A or, most likely, divided between these two line items. If you know which line item contains the depreciation and amortization expense then you can correct the financial statements in *eVal* by moving the balance to the "depreciation and amortization" line item. Otherwise, all you can do is skip this item and pick it up implicitly in your forecasts of COGS and SG&A.

To forecast the Depreciation and Amortization expense ratio, you need to think about the type of assets that the firm must deploy to generate sales and how long these assets are expected to last. The footnote that describes the firm's accounting policies typically gives the useful lives of their major types of assets. If the firm primarily uses just one type of asset, then this disclosure is a great guide for your forecast (e.g., if the asset has a 10-year useful life and is in steady state, then you should forecast 20 percent), but more commonly all you learn is that buildings have a 20-40 year life, equipment has a 5-10 year life, and computers have a 2-4 year life. In addition, the intangible asset goodwill is not amortized at all. Instead it is treated as a permanent asset (like land) and each year the accountants ask if it has been "impaired." The consequence of this accounting treatment is that it is virtually impossible to forecast when the consumption of goodwill will show up as an expense in the financial statements. Practically speaking, all you can do is try and match the forecast impairment of the goodwill to its expected future life.

Interest Expense

The ratio of Interest Expense to Average Debt is the firm's average interest rate on all of its debt. The past rate at which the firm has borrowed is a good indicator of their future borrowing rate, unless you forecast a large change in either the firm's default risk or macro level interest rates. You may also want to read the debt footnote and see what rate the firm has borrowed at most recently. As a reminder, we warned you in Chapter 5 to beware of interest

income that is netted against the company's interest expense. This will make the past interest expense look extremely low when computed as a percent of average debt. If this is the case, then you should find the amount of interest income and move it into the nonoperating income line item on the financial statements. Another complication arises if a firm has convertible debt. Convertible debt carries a lower interest rate because of the value of the conversion option. The easiest method of dealing with this problem is to assume that the firm will issue straight debt in future years at the going market rate of interest (see Chapter 12 for more detail on this issue).

Nonoperating Income

Nonoperating Income includes such things as dividends or interest income received on investments, the write-down of assets, and other miscellaneous income. Because this item represents a mix of many things, none of which have obvious drivers, we ask you to forecast it as a percent of sales with the idea that the amounts for these items vary roughly with the firm's size. If the past amounts of nonoperating income are significant then you should go back to the actual financial statements and figure out what is in this item.

If the nonoperating income is interest or dividends from a financial asset you need to think about whether that asset will exist in the future. For example, a firm might have an unusually large cash balance if it has recently raised capital but not yet spent it, and this cash balance will generate some interest income. If you believe that the cash will soon be invested in operating assets, then the interest income will soon disappear. Alternatively, the asset might be an investment in another company that was made for strategic reasons and is not expected to change in the near future. In this case, the dividend income or equity method income is likely to continue into the future, but will bear no relation to the level of company sales. In this case you will want to forecast the nonoperating income as a dollar amount and then express this amount as a fraction of sales. The general point is that income rarely falls from the sky, even nonoperating income; rather, it takes assets to produce it. Make sure that you know where these assets are on the balance sheet—they may be in Cash and Marketable Securities, they may be in Investments or they may be lumped in with something else—and keep track of the relation between the balance of these assets and your forecast of nonoperating income.

Other items that frequently show up as part of nonoperating income are asset write-downs, impairment charges, and restructuring charges (note that expenses are entered as negative numbers in *eVal*). While all of these charges sound like one-time events, it is actually quite common for companies to record expenses like these year after year. If you see a string of impairment and restructuring expenses in a firm's past financial statements, then it is very likely that they will continue in the future. In effect, the company is moving normal operating charges into this line item, hoping you will ignore them. If this is the case, then your forecasts should treat them as recurring expenses. In addition,

if you anticipate a significant asset write-down in the future, possibly because you believe the company's accounting is currently too aggressive, then you should work out more precisely how the write-down will affect this ratio.

Effective Tax Rate

A firm's Effective Tax Rate is the ratio of the tax expense to earnings before income taxes (EBT). As a ballpark figure, the statutory federal tax rate for most firms in the United States is 35 percent. (The lowest corporate tax rate among the G7 nations is in Canada at 15 percent.) To this, you add a few percentage points for state and local taxes and possibly deduct a few percentage points for the tax advantages that come from having foreign operations, if your company should be so lucky. The firm's tax footnote contains a great table that explains why the effective tax rate differs from the statutory rate. In accounting language, the items appearing in this table are called "permanent differences" to distinguish them from the "timing differences" that create deferred taxes, as discussed later. You should look through this table with an eye for things that might change in the future. For example, if a company is planning to move its operations from California, with a flat corporate tax rate of 8.84 percent, to Wyoming, with no state corporate income tax, it will save 8.84 percent on its effective tax rate (but it will give up the ocean view).

If the firm is losing money (pre-tax), then its current effective tax rate may be a very poor indicator of its future tax rate. Suppose, for example, that you are examining a young company that has yet to show a profit. The company's losses create net operating loss carryforwards that can be used to reduce taxes in the future if and when it becomes profitable, but can only be booked as assets in the year of the loss under strict conditions. So our young company will probably have an effective tax rate close to zero. But if you forecast that the company will become profitable, then you need to trend the effective tax rate toward the statutory tax rate. We hate to send you there, but the only place you can learn about all this stuff is in the tax footnote. Grab your flashlight and carry a stick.

Minority Interest

Minority Interest, also called Non-Controlling Interest, represents the claim on the income of the consolidated firm of minority shareholders in subsidiaries. For most firms this is zero because they own 100 percent of their subsidiaries, so there are no minority shareholders to make a claim, and you can skip to the next item. However, ignoring this line item for firms that actually have a minority interest can lead to big mistakes, so we include a line for it on *eVal's* Forecasting Assumptions sheet. For an example, load Verizon into *eVal* from the Case Data sheet and note that minority interest is almost 49 percent of after-tax income. Verizon owns 55 percent of Verizon Wireless, while Vodafone owns the other 45 percent minority portion of the joint venture. Consequently, the consolidated Verizon after-tax income includes 100 percent

of Verizon Wireless, but because they don't actually own all of Verizon Wireless, they need to show the minority interest expense. We ask you to forecast the minority interest amount as a percent of after-tax income. But since the size of the minority interest claim varies with the subsidiaries income and not the parent company's income, there is no necessary reason that this line item will remain constant. It is generally very difficult to get much information about the subsidiaries income, however, so this scaling variable is the best we can do. If the subsidiary's income moves roughly with the parent's income, then this percentage will be fairly constant.

Other Income

Other Income is a bit of a catchall line item. This item differs from nonoperating income because it is after tax. You might find the after-tax effects of investment gains/losses or equity method investments here. If this item is non-zero then you really need to read the actual financial statements to figure out what the company or standardized data providers have put here and whether you believe it will continue in the future. As with nonoperating income, we ask you to forecast this as a percent of sales simply to capture the idea that these items tend to increase with the size of the firm, not because sales is really the driver of these costs. This line item is also a good place to tuck any major adjustments that you might make to the financial statements. For instance, if you want to forecast a large write-off, possibly because you think the company's accounting practices are aggressive, then you can enter the after-tax effect on this line item and keep it nicely separated from the rest of your forecasts.

Preferred Dividends

The ratio of Preferred Dividends to Average Preferred Stock is quite similar to the ratio of Interest Expense to Debt discussed earlier. This ratio gives the preferred dividend payout percentage, which can usually be found in the financial statement footnotes, or can be inferred from the statement of shareholders' equity. For some firms you may notice that their balance sheet shows preferred stock outstanding yet shows 0 percent for this ratio in the past data. This occurs because some standardized data providers do not give the preferred stock dividend in their database, so our default entry is zero. If you see a historical balance of preferred stock, then you should get the firm's complete financial statements to look up the historical dividend percentage and input the preferred dividends manually on the Financial Statements sheet in *eVal*. Note that the dividend on preferred stock is distinct from the dividend on common stock, which we will discuss shortly.

Some Final Thoughts about Forecasting the Income Statement

The results of your income statement assumptions are forecasts of the firm's entire sequence of future income statements. For each line item, you should think once again about the transition from the firm's most recent historical

performance to its performance in the next few years, and then its transition to your terminal year forecasts. As a rough guide, you might think of the near-term performance as being driven by firm-specific activities, such as a rapid expansion plan or a cost-cutting initiative, while the long-term performance as being driven by industrywide and economywide forces, such as the GDP growth rate. Do your forecasts paint a reasonable picture of how the firm might evolve? You will undoubtedly feel more confident about your near-term forecasts than your long-term forecasts; this is simply the reality of forecasting in an uncertain world.

You aren't completely done with your income statement assumptions. These assumptions combine with your balance sheet assumptions to generate implied financial ratios and cash flow forecasts, and these forecasts might be implausible. If this is the case, as it often is after just the first pass, then you need to revisit your income statement assumptions once again.

Expense Forecasts for Kohl's

As an example, we will develop a set of expense forecasts for Kohl's. In framing these forecasts, you may want to refer back to the ratio analysis of Kohl's in Chapter 5.

As noted in Chapter 5, Kohl's has shown a steady improvement in its gross margin over the past few years. They attribute the most recent margin improvement to a shift in sales mix to more private labels and exclusive brands that command higher margins. While Kohl's expects this trend to continue, we note that they are probably getting to the top of their potential margin given that Nordstrom has a gross margin of 41.8 percent, and is clearly higher on the fashion food chain than Kohl's. In the MD&A, Kohl's management forecasts that the gross margin will improve 20 to 30 basis points, so we forecast that the COGS/Sales ratio will drop from 62.2 percent in fiscal 2009 to 62 percent in fiscal 2010 and then remain constant thereafter. Margins significantly higher than this would surely invite entry and imitation from competitors.

In contrast to the steadily improving gross margin's, Kohl's SG&A/Sales ratio has gotten worse each year. This, combined with generally increasing sales, shows that Kohl's has not been enjoying any economies of scale in SG&A. In fact, the past data exhibit dis-economies to scale! Further, as we noted in Chapter 5, the most recent increase in SG&A/Sales was attributed to increased compensation expense. It is unlikely that this was a one-time event, so we forecast that Kohl's will maintain their SG&A/Sales ratio at the 2009 rate of 24.4 percent. It would be nice to forecast some improvement in this item, but Kohl's is coming out of a recessionary period where it is likely that any costs that could be cut already have been cut. In the 2009 MD&A, Kohl's says that they expect SG&A to increase 4–5 percent and Sales to increase 4–6 percent. Together this might suggest a slight improvement in the SG&A/Sales

ratio. But given the complete lack of economies of scale in the past data, we aren't buying it; we forecast 24.4 percent to the terminal period.

Kohl's ratio of Depreciation and Amortization to the average balance of *net* PP&E and Intangibles is 8.2 percent in the most recent year and has fluctuated between 7.3 percent and 8.2 percent over the past five years. Although Kohl's has added significantly to assets in the past few years, it expects to slow its growth considerably in the future. As they mature, the accumulated depreciation should approach the 50 percent level of a stable company (i.e., the assets are, on average, half way through their useful lives). From the financial statement footnotes we learn that the ratio of depreciation and amortization expense to average *gross* PP&E is about .06, implying that the assets have on average about a 17-year useful life. Given that the bulk of the PP&E is buildings, which have a relatively long life, this seems like a reasonable estimate. When Kohl's is in steady state and its asset mix is approximately halfway through its useful life at all times, the ratio of Depreciation and Amortization to *net* PP&E will be one over half of the useful life, or approximately 12 percent. We forecast that this ratio will increase smoothly from its current level of 8.2 percent to a terminal value of 12 percent. Note that you can enter this quickly by putting 12 percent in the terminal column and letting *eVal* do the smoothing in between.

Kohl's most recent Interest Expense as a percentage of the average Debt balance is 6.5 percent and has fluctuated in the narrow range of 6.3 percent and 6.8 percent in the past few years. Their debt footnote shows that almost all their borrowing is plain vanilla senior debt with no call provisions or convertibility provisions that might complicate the picture, and with a weighted average interest rate of 6.55 percent. Kohl's stated in their MD&A that they can fund their planned store growth with existing cash flows, and therefore have no intentions of borrowing more in the immediate future. Consequently, it seems very likely that their effective interest rate will remain right around 6.5 percent.

The \$10 million of nonoperating income for Kohl's in fiscal 2009 is due to interest income on their cash and cash-equivalents, and on their long-term investment in auction-rate securities (backed by your student loans!). Although *eVal* shows this amount as a percent of sales on the forecasting assumptions sheet, sales are clearly not the driving force behind interest revenue. We forecast that this amount will go to zero and remain there in the future. It has never been more than .2 percent of sales, and as Kohl's settles into a mature slow-growth phase they can manage their cash balance to a lower level with the result that interest revenue will disappear. As discussed later, the auction-rate securities became illiquid in the aftermath of the financial crisis, but the interest continues to be paid by the United States government. Kohl's intention is to slowly liquidate these securities or hold them to maturity when they can be redeemed at par.

Finally, Kohl's effective tax rate is 37.6 percent and has never deviated from this amount by more than a few tenths of a percent. From a tax perspective,

Kohl's is a simple business. They have no foreign operations, their mix of stores across different states (and state tax rates) isn't changing much in the future, and they don't make the kind of investments that generate large investment tax credits (like R&D). Consequently, we see no reason why this rate should change in the future. The tax footnote reveals details of an ongoing game between Kohl's and the taxing authority. Every year they are audited and every year some adjustment is made. This is common for any large corporation. But, at the end of the day, any adjustment that might be required is insignificant to Kohl's effective tax rate.

8.4 BALANCE SHEET FORECASTS

The next set of assumptions construct the balance sheet forecasts. They are organized into assumptions about the net operating assets, consisting of working capital, other operating assets and other operating liabilities; and assumptions about financial obligations. The net operating assets are forecasted as a percent of sales (or as a percent of COGS) because these assets generate the sales. In contrast, the financial obligations are forecasted as a percent of total assets. As a guide to the balance sheet assumptions, Figure 8.6 shows the forecasting assumptions sheet in *eVal*.

FIGURE 8.6 Balance Sheet Assumptions for Kohl's

Balance Sheet Assumptions					
Working Capital Assumptions					
Ending Operating Cash/Sales	4.0%	4.1%	13.2%	13.2%	13.2%
Ending Receivables/Sales	0.0%	0.0%	0.0%	0.0%	0.0%
Ending Inventories/COGS	27.3%	27.1%	27.4%	27.4%	27.4%
Ending Other Current Assets/Sales	1.2%	1.4%	1.7%	1.7%	1.7%
Ending Accounts Payable/COGS	8.0%	8.5%	11.1%	11.1%	11.1%
Ending Taxes Payable/Sales	0.8%	0.6%	1.1%	1.1%	1.1%
Ending Other Current Liab/Sales	4.8%	5.0%	5.8%	5.8%	5.8%
Other Operating Asset Assumptions					
Ending Net PP&E/Sales	39.5%	42.6%	40.9%	40.9%	40.9%
Ending Investments/Sales	0.0%	2.0%	1.9%	1.9%	1.9%
Ending Intangibles/Sales	1.3%	1.5%	1.2%	1.2%	1.2%
Ending Other Assets/Sales	0.6%	0.7%	0.8%	0.8%	0.8%
Other Operating Liability Assumptions					
Other Liabilities/Sales	2.3%	2.5%	2.8%	2.8%	2.8%
Deferred Taxes/Sales	1.6%	2.0%	2.2%	2.2%	2.2%
Financing Assumptions					
Current Debt/Total Assets	0.1%	0.1%	0.1%	0.1%	0.1%
Long-Term Debt/Total Assets	19.4%	18.1%	15.6%	15.6%	15.6%
Minority Interest/Total Assets	0.0%	0.0%	0.0%	0.0%	0.0%
Preferred Stock/Total Assets	0.0%	0.0%	0.0%	0.0%	0.0%
Dividend Payout Ratio	0.0%	0.0%	0.0%	0.0%	0.0%

8.5 WORKING CAPITAL ASSUMPTIONS

Working capital requirements are driven largely by the operating cycle of the firm. Consequently, all the forecast assumptions in this section are linked to either sales or COGS. A firm's past working capital requirements, and your forecasts of its future requirements, are a statement about the firm's operating efficiency. An improvement in operating efficiency means the firm can generate the same level of sales with fewer net assets tied up in working capital.

Operating Cash

Every firm requires some amount of operating cash. A typical amount might be 3 percent of Sales, but firms vary widely in their holdings of cash and cash equivalents. If your firm has traditionally held a large amount of cash relative to their peers, then they probably don't need all this cash for daily operations; rather, part of the balance is really an investment in financial assets. As we discussed in Chapter 5, if the past operating cash balance appears larger than you think necessary for operations, you need to get the actual financial statements and make an estimate as to how much of the line item is really operating cash and how much is an investment in financial assets. Once you have an estimate of the amount of true operating cash and the amount of financial assets, you have a few choices about how to proceed. Assuming you think the firm is going to hang onto the financial assets, you can continue to forecast a high ratio of operating cash to sales and then include the interest income from the financial assets in nonoperating income. Alternatively, you can reclassify the financial assets into the 'Investments' line item and forecast its balance separately. (Recall that, despite the title, *eVal* classifies nonoperating income as operating and not financing.)

A bolder alternative for dealing with excess cash is to effect a pro forma liquidation of it in the first forecast period. For example, assume that a firm has been recently running its cash balance at 10 percent of sales, but only reasonably requires cash equal to 3 percent of sales in order to run its operations smoothly. Within *eVal* you can simply choose to set the operating cash/sales assumption to 3 percent for all future years. Because equity is the plug on the balance sheet, this will effectively force a large cash distribution to equity holders in the first year of the forecast period, either in the form of a stock repurchase or a cash dividend (the latter requiring you to also change the dividend payout assumption). On the surface this might seem absurd since it is probably unlikely that the firm will distribute the cash next period. But, from a valuation perspective, so long as the firm is generating a competitive return on its excess cash balance, the present value of a future stream of interest income should be equivalent to the liquidation value of the cash, and so either approach should yield a similar valuation. From a pedagogical perspective, liquidating the excess cash immediately has the advantage of getting it out of the picture so that we can focus on forecasting the operating variables.

For this reason, the liquidation alternative is a common choice in a traditional discounted cash flow valuation. We nevertheless caution that if the firm is not expected to generate a competitive return on its cash balance, or if it is instead expected to waste the cash buying other assets that yield a poor return (corporate jet anyone?), then the liquidation alternative will overvalue the excess cash balance.

Receivables

The ratio of Receivables to Sales depends directly on the company's credit policy and its customers' ability to pay. A ratio of 0.25, for instance, means the average receivable was outstanding for one quarter of a year, or about 90 days. This is approximate because sales and collections fluctuate through the year, but you get the idea. Insofar as receivable credit is effectively granting the customer an interest-free loan, this is an important strategic decision the firm makes, and one you should think carefully about when forecasting. If the firm's past values of this ratio are constant then this reflects a consistent collections policy that is unlikely to change in the near future. However, if the ratio is changing significantly or differs drastically from competitors' ratios, then you will need to investigate further. Ask yourself, "What is the firm's relative bargaining power with its customers?" A small firm that supplies a large firm might see a favorable Receivables to Sales ratio disappear quickly when economic times get tight.

A good example of this phenomenon is the "Can Salton Swing?" case at the end of the chapter. Salton used to be the sole maker of the famous George Foreman Grill ("it's a lean, mean grillin' machine!"). They sold the bulk of their grills to a few large retail chains, like Kmart and Walmart, who are not generally known for the generous terms they provide their suppliers. Indeed, as the George Foreman Grill became a small appliance hit between 1998 and 2001, Salton saw the average time it took to collect its receivables go from 41 days to 73 days and its inventory holding period go from 113 days to 143 days as these big customers slowly put on the squeeze.

Inventories

The ratio of Inventories to COGS is very similar to the Receivables ratio, except that both the numerator and the denominator are computed using historical costs rather than selling prices. The other principle difference is that the company can acquire inventories without selling them, which would increase the numerator without the commensurate increase in the denominator. For that reason an increasing Inventory to COGS ratio is traditionally considered to be a warning sign that the company is having trouble selling its goods. Of course, the common retort is that they are stocking up for a new product release that will send sales skyrocketing. When forecasting this ratio think about why it might differ from its historical past. Do you anticipate the company implementing a just-in-time inventory handling system and thus

lowering the required amount of inventory? Alternatively, do you anticipate that the firm's customers or suppliers have so much bargaining power that they will force the firm to hold the inventory for increasingly long periods? Was there some unusual event in the most recent fiscal year that caused the ratio to differ significantly from its normal level?

As discussed in Chapter 4, a firm attempting to manipulate its income upward may delay the recognition of expenses by failing to write off obsolete inventory. Effectively they hold this expense in inventory for too long, with the result that the inventory turnover ratio falls. Later, when they write the inventory off, the ratio instantly improves. If you see evidence of this behavior in the inventory turnover ratio, you might want to investigate the firm's inventory accounting a bit further.

Other Current Assets

Other Current Assets include tax refunds, prepaid expenses, and other miscellaneous items. We ask you to forecast this item as a percent of sales because it tends to increase with the size of the firm, so this ratio should be fairly stable. However, if this is a large amount you really need to look at the published financial statements and see what is included in this line item and decide if it does indeed move with sales.

Accounts Payable

The ratio of Accounts Payable to COGS is the mirror image of the Receivables ratio for the firm's suppliers (with respect to their accounts with the company). It reveals how quickly the firm is paying for the inventory it purchased and sold. Since this is an interest-free loan to the firm, the higher this ratio, the more free credit the company is receiving. You may forecast that the ratio will increase if you believe that the firm has sufficient power over its suppliers that it can delay paying its bills. When times get tight in the automotive industry, for example, the Big 3 automakers don't renegotiate the contract terms with their suppliers—they simply delay paying their suppliers for long periods.

Taxes Payable and Other Current Liabilities

Taxes Payable frequently shows up as a current liability simply because the firm owes taxes as of the end of the fiscal quarter but they don't have to pay them until a later date. Other Current Liabilities includes dividends declared but not yet paid, customer deposits, unearned revenue and other miscellaneous liabilities that will be paid within a year. We ask you to forecast these items as a percent of sales because they tend to increase with the size of the firm, so this ratio should be fairly stable. But, as with Other Current Assets, if the amounts in these categories are significant, you should read the financial statements to see precisely what they are and decide if you think the past ratios are good predictors of the future.

8.6 OTHER OPERATING ASSETS AND LIABILITIES

The key issue for this set of assumptions is determining the size of the firm's future investment in long-lived assets necessary to produce the forecasted sales. Consequently, these items are forecasted as a percent of sales. Your forecasts of these ratios are a statement about the firm's expected production technology. If the firm outsources much of its production, its investment in assets will be significantly smaller than the investment that is necessary for a more vertically integrated operation. Of course, since outsourcing captures a smaller portion of the value chain, the firm should earn correspondingly smaller margins.

PP&E

To forecast the ratio of PP&E to Sales you should consider the firm's existing capacity relative to your forecast of sales growth. Firms tend to add capacity in large lumps, so as you analyze the firm's past ratio of PP&E to Sales, be aware of whether the past ratio amounts were generated by assets operating at full or partial capacity. A good source of information for forecasting this item is the discussion of liquidity and capital resources in the MD&A; in fact, firms often give estimates of future capital expenditures here. And capital-intensive industries, such as steel or automaking or airlines, often give capacity utilization statistics included in their Selected Data Schedule (Item 6 on the 10-K). Finally, you can get industry-level statistics on growth rates in investments in different classes of assets from the Bureau of Economic Analysis Fixed Asset tables.

It is common for PP&E to rise rapidly during a company's early years and then remain relatively constant thereafter. But note that this pattern does not imply that the ratio of PP&E to Sales will rise and then flatten out. If the company's sales are also rising rapidly in the early years, this ratio could remain constant throughout the growth and maturity phases of a firm's life cycle. What you really need to think about is whether there are significant economies to scale that the firm will enjoy as it grows. As California Pizza Kitchen expands across the country its investment in PP&E will necessarily grow at the same rate as sales because there are very few scale economies in a restaurant chain (i.e., having a restaurant in Nebraska has little effect on the investment required to open a restaurant in Oregon). Alternatively, after Iridium put the necessary satellites in place for its global phone system, sales grew significantly without significant additional investment in PP&E.

Suppose you are lucky enough to have the firm tell you their planned future capital expenditures (and you believe them). Given the beginning balance of PP&E, your forecasted amount of depreciation, and the company's estimate of its capital expenditures, the ending PP&E amount is determined (equivalently, your forecast of ending PP&E determines capital expenditures). The easiest way to get this information into *eVal* is to play around with your PP&E/Sales forecast until the capital expenditures line on the Cash Flow Analysis sheet corresponds with the company's estimate.

Investments

Investments are primarily made up of equity holdings by the firm in other companies. If this amount is significant for your company, then read the financial statements and figure out exactly what this investment represents. We forecast this item as a percent of sales but there may be no structural reason for the size of the investment to be related to sales. Consider two examples. About 10 percent of Coca-Cola's total assets are investments in other companies, primarily bottlers of Coke. We would expect that the scale of the bottling companies would rise and fall with sales of Coke, so forecasting as a percent of consolidated sales is probably a good idea. In contrast, Apple Computer holds over \$25 billion in long-term marketable securities at the end of fiscal 2010, which is about a third of their total assets. The footnotes reveal that these investments are roughly half in government securities and half in corporate securities, with a combined average interest rate of 3.44 percent. These investments do not play a role in supporting Apple's sales and so their ratio to sales could vary substantially over time.

Intangibles

Intangibles are all those assets that can't be physically touched. To be recognized in the accounting system, the intangible must usually have been acquired in an arm's length transaction by the firm. So *purchased* patents, copyrights, licenses, and trademarks would be included, but *internally developed* versions of the same things are not. What you really need to forecast is *purchased* intangibles but, unfortunately, companies that purchase lots of intangible assets generally develop lots of them internally as well. To make matters worse, the biggest purchased intangible is "goodwill," defined to be the excess of the purchase price in a corporate acquisition over the fair market value of the identifiable assets (tangible and intangible) received. Because it is only created by an acquisition, goodwill tends to arrive in large and unpredictable lumps. Goodwill, plus the rather arbitrary distinction between purchased and internally developed intangible assets, makes forecasting intangibles very difficult. As with investments, there is no particular reason why this item should remain a constant percent of sales; we use this ratio only because larger firms tend to have more intangibles than smaller firms.

Intangible assets without specific lives, like goodwill, are not amortized. Rather, the firm performs periodic impairment tests to see if the fair value is less than the book value. How the firm decides when an intangible has become impaired is rather arbitrary. Basically, if the future cash flows related to the intangible look bleak, then an expense is recorded to write the asset down. These large expenses often get recorded only after everyone knows something bad has happened. For example, Quaker Oats bought Snapple at the end of 1994 for approximately \$1.7 billion, and Snapple was on the Quaker Oats books for \$1.7 billion at the end of 1996. Although management repeatedly mentioned the poor performance of the Snapple brand in the 1996 10-K

filing, they concluded that they did not believe a write-down was necessary at that time. The loss was not recognized until 1997 when they sold the Snapple brand for a mere \$300 million.

Other Assets and Other Liabilities

Other Assets includes many items; some examples are long-term receivables, preopening expenses for retail stores and pension assets. Other Liabilities include pension liabilities and other miscellaneous noncurrent liabilities. See the financial statement footnotes for specifics if your firm has a significant amount for these items.

Deferred Taxes

To forecast deferred taxes you need to think about the firm's tax timing differences. You may have noticed that when we forecasted the firm's effective tax rates, we considered permanent differences that caused the rate to differ from the federal statutory rate of 35 percent, but did not take into consideration the timing of the tax payments. Timing differences arise because the taxing authority's rules for when a deduction can be taken differ from the financial accounting rules for when an expense is recognized. For example, a firm might have accelerated tax deductions because of an investment in a certain type of asset. In this case, not only does the firm get to deduct the cost of the investment, but they also get to deduct most of it in the first few years of the asset's useful life. Accountants capture the net effect of these timing differences in the balance of deferred taxes, so named because accelerated deductions today mean higher taxes tomorrow when the deductions run out. The firm's specific deferred tax items are described in the footnotes to the financial statements. A common source for deferred tax liabilities is the timing difference between depreciation on PP&E and the tax deductions for these investments. Early in the life of an asset this will result in deferred tax liabilities (representing the future increase in tax payments when the accelerated tax deductions for the PP&E are exhausted); later this effect will reverse and the liability will shrink back to zero. But as long as the firm is replacing its assets, this liability will remain. If the firm maintains its assets at a fixed level then the deferred taxes will remain a constant percentage of total assets; the ratio will increase slightly if the asset base is growing. But if you forecast that the firm will shrink its asset base, this ratio will fall dramatically. This is because, without new acquisitions of assets, new tax deductions are not generated, causing tax payments to increase and the liability to fall.

Some Final Thoughts about Forecasting the Net Operating Assets

The key statistic coming out of the working capital, other asset and other liability assumptions is the Net Operating Asset Turnover ratio (defined as Sales over Net Operating Assets), which is given on the Ratio Analysis sheet in *eVal*. This statistic summarizes your forecasts of the net operating assets that a firm will need to put in place in order to create the sales that you

forecasted. Because a firm's asset turnover is largely determined by its production technology, this ratio does not usually change radically over short periods. Therefore, if your forecasts show this ratio changing dramatically, go back and make sure that you have good reasons for the specific forecasts you have made.

Forecasting Net Operating Assets for Kohl's

Recall from Chapter 5 that Kohl's delivered a lower RNOA than Nordstrom and Ross Stores largely because of their slower net operating asset turnover. The question in this chapter is whether we expect Kohl's to close the gap with the other two companies. We begin with line-by-line forecasts for Kohl's operating assets and then consider what this implies for their future net operating asset turnover ratio.

Kohl's investments in new stores have been slowing in recent years, and Kohl's has been hoarding the resulting free cash flow. The cash balance grew from a constant 4 percent of sales in 2005–2008 to 13.2 percent of sales at the end of fiscal 2009. They certainly don't need this much cash to operate the business, so we bring the level back to 4 percent in our forecasts. This is also consistent with the levels at Nordstrom and Ross Stores prior to the recession. In addition, we have a management forecast of next year's cash from operations that we can use later to validate our cash balance forecast.

Kohl's biggest working capital account is inventory. Kohl's talks extensively about its inventory management policy in the 2009 10-K. Management believes that their new distribution centers, plus some diligent work on their own part, will help improve their inventory management. Working against this optimism is the observation from Chapter 5 that their days inventory have increased from 89 days to about 100 days in the past few years. The net result is that we do not forecast any drastic change in this ratio going forward. Assuming that 2009 was anomalous because of the drastic decline in store sales, we forecast the ending inventory/COGS ratio to equal 26.6 percent, the average of 2005–2008 levels. This implies a 97-day inventory holding period.

The second biggest working capital item is accounts payable. The ratio of accounts payable to COGS has increased significantly in 2009 to 11.1 percent. The probable cause is that Kohl's could successfully squeeze their suppliers during economic hard times by extending the time they took to pay. We forecast that this trend will continue. Both Ross Stores and Nordstrom have averaged about 12 percent in the past, so we forecast 12 percent for Kohl's going forward.

The next biggest working capital item is "Other Current Liabilities," which are mostly gift cards that Kohl's has sold but have not yet been redeemed. This liability should have a constant relation with sales, and it has been relatively stable in the past, so we see no reason to change it going forward. Similarly, we leave the remaining working capital accounts at the same level as 2009.

The biggest asset for Kohl's is Property, Plant and Equipment (PP&E). As you may recall from Chapter 5, this was the asset that caused Kohl's to report a net operating asset turnover ratio that was significantly lower than Nordstrom and Ross Stores. If we thought that Kohl's stores were still maturing, then we might be able to forecast an improvement in this ratio. Unfortunately, it doesn't take long for a retail establishment to hit steady state. Further, a large part of the recent increase in PP&E was due to new distribution centers. While these are necessary investments, and will hopefully improve the inventory turnover ratio in the future, they do not generate sales. As a consequence, we do not foresee any significant improvement in the PP&E/Sales ratio going forward. We have one juicy detail that we can use to make a very accurate PP&E/Sales forecast: Kohl's discloses in the MD&A that they expect capital expenditures to total about \$900 million in 2010. This, combined with our earlier forecast of \$627.431 million depreciation and a beginning balance of \$7,018 million, we can solve for an ending balance of PP&E of \$7,290.569 million. Dividing this ending balance by the forecast of \$18,054.087 million for sales gives a ratio of 40.4 percent, which is very close to the 40.9 percent ratio from the previous year.¹

At this point we also get a nice reality check on our forecasts. Kohl's discloses that they expect that cash from operations less capital expenditures will total approximately \$900 million in 2010, so cash from operations should be about \$1,800 million. If we toggle to the cash flow analysis sheet in *eVal*, we see that our forecasts imply cash from operations of just over \$1,850 million. This means our working capital forecasts, including our ending cash balance forecast, look reasonable.

The remaining operating assets and liabilities are not particularly consequential. Kohl's 10-K shows that the investments line item is composed of auction rate securities, and their discussion of this item reveals that they intend to slowly liquidate these investments as the market becomes more liquid or as they mature. We therefore forecast that the balance of Investments/Sales will decrease to zero over 10 years. The 10-K also shows that the intangibles line item is composed of favorable lease rights. These arrived on the balance sheet as Kohl's bought out the lease rights on other stores that they later remodelled and opened under their own name. Because the major growth phase of Kohl's appears to be over, we do not expect any new investments in these assets. Consequently, we also reduce this line item to zero over 10 years. We leave the remaining operating assets and liabilities at the same ratio to sales as in 2009.

The net results of the operating asset forecasts is a net operating asset turnover ratio of approximately two in the next year and very small improvements thereafter. This is an improvement over 2009 but is still not as good as the ratio at Nordstrom or Ross Stores.

¹Excel geeks can find this quickly by using Goal Seek to make the Capital Expenditures cell on the cash flows sheet equal \$900,000 thousand by changing the Ending PP&E/Sales cell on the Forecasting Assumptions sheet.

8.7 FINANCING ASSUMPTIONS

The main consideration for this set of assumptions is the firm's long-term capital structure. What mix of debt and equity will the firm employ to support the level of net operating assets that you have forecasted? The optimal capital structure for a firm takes into account the risk that debt financing brings with it, as well as its tax advantages. Volumes have been written in corporate finance textbooks about optimal capital structure. When forecasting this item you should examine the firm's capital structure in the recent past, and the capital structure of other firms in the same industry. In the liquidity section of the MD&A, firms will sometimes discuss their target capital structure; if so, you should consider this in your forecasts. Each of the items in this section is forecasted as a percent of total assets.

Current Debt and Long-Term Debt

Current debt is short-term borrowing plus the current portion of long-term debt that is due within a year. Long-term debt, combined with the current debt above, is the firm's total debt financing. These liabilities, unlike the other noncurrent liabilities above, are represented by contractual interest-bearing claims to debt capital providers. As such, they are financing liabilities rather than operating liabilities. Details of a firm's debt contracts are given in the footnotes to the financial statements. Particularly noteworthy are the discussion of short-term borrowing, the allocation of total debt to current and non-current portions, and the schedule of future maturities of existing debt.

Minority Interest

Minority interest, also called non-controlling interest, represents the claim of shareholders in the firm's partially owned subsidiaries. There is no immediate reason why this amount should remain a constant percentage of Total Assets other than larger firms tend to have larger minority interests, if they have them at all. You could make a more informed estimate of this amount if you knew that the firm intended to acquire a less-than-100 percent interest in another company, or if you knew the firm would not be making any more acquisitions of less than 100 percent, so that this amount might decline as a fraction of total assets. But, in all honesty, it is hard enough to forecast a firm's future acquisition activity without having to also estimate the percentage of ownership they will acquire when they acquire less than 100 percent.

Preferred Stock

Preferred stock is more like long-term debt than equity when it comes to forecasting the value of the firm's common equity. Details of the preferred stock holdings can be found in the financial statement footnotes. You may want to forecast that this item remains a constant dollar value, rather than a constant percentage of total assets, unless the firm specifically says that it intends to continue issuing preferred stock.

Some Final Thoughts on Forecasting the Financing Ratios

The end result of this set of forecasts will be a leverage ratio, defined either as total capital to equity or debt to equity. Like the net operating asset turnover ratio, these ratios tend to be very stable for a firm over time, probably because the optimal capital structure of a firm is driven by fairly stable economic factors. Do not fall into the trap of believing (and forecasting) that a firm will increase its return on equity simply by borrowing to increase its leverage. Remember that more debt begets more interest expense; increasing leverage only increases ROE if the return the firm earns on the new capital exceeds the after-tax cost of debt. Note that the Forecasting Assumptions sheet in *eVal* automatically takes this into account—you forecast the interest rate in the income statement assumptions and this amount is applied to the forecasted debt balance.

You have now constructed the forecasted balance sheets for your company. The turnover ratio assumptions determine the net operating assets and the financing assumptions determine the financial obligations. The common equity is therefore determined: common equity = net operating assets – financial obligations.

Dividend Payout Ratio

The dividend payout ratio shown historically is the percent of net income that is paid out as cash dividends. But note that your preceding forecasts completely determine future net income and future total common equity. Hence, your forecasting assumptions already imply the net amount of flows to or from common equity holders. The dividend payout ratio assumption determines what retained earnings will be, but with a compensating adjustment to paid in capital that sets common equity to the level implied by your previous forecasting assumptions. That is, since the future equity balances are already determined, this assumption can only change the composition of the equity. Nonetheless, it is a useful item to forecast, because later, when performing a cash flow analysis, you will be asked to think about the reasonableness of the firm's implied stock issuance activity, and the more that a firm pays out in dividends, the more it needs to issue in new equity to finance future growth.

Forecasting Kohl's Financial Obligations

As noted in Chapter 5, Kohl's currently has a relatively low debt to equity ratio, less than 0.3. Our comparison firms do not help much with this statistic: Ross Stores has a debt/equity ratio of less than 0.2 while Nordstrom has a ratio of 1.67 (recall that it was this leverage that helped Nordstrom deliver an ROE of over 30 percent). Kohl's management might be tempted to raise their ROE by increasing their leverage, given that they have a positive spread between RNOA and the net borrowing cost. But a significant increase in leverage would likely cause their future borrowing rate to increase as well. There is no discussion in Kohl's MD&A about changes in leverage, and it has been relatively constant for the past few years. In fact, they disclose that they have no plans for additional

borrowing in 2010, and plan to pay off \$400 million in debt using cash from operations in 2011. For this reason, we have little choice but to make our forecasts so that there is no change in the dollar amount of total debt in 2010 and it drops by \$400 million in 2011. For convenience, we zero out the current portion of debt and run our forecasts through the long-term portion. This results in ratios of 17.3 percent and 13.3 percent in 2010 and 2011, respectively. Beyond this point, we believe that as Kohl's reaches a mature stage of slow growth, it will slowly raise its leverage ratio to enjoy some benefits of financial leverage. We increase the ratio of debt to total assets to 30 percent over 10 years, a level that approaches Nordstrom's current leverage ratio.

8.8 PRO FORMA ANALYSIS OF FORECASTS

Wait! You aren't done yet! Once you get to the bottom of *eVal*'s Forecasting Assumptions sheet you have completed your *first pass* at forecasting a complete set of financial statements. However, you now need to do some ratio and cash flow analysis on these future financial statements to see how reasonable they really are. Go back to the Ratio Analysis and Cash Flow Analysis sheets in *eVal* and look at what your forecasts imply for the future ratios and cash flows? Is this what you meant to forecast? Are the implied ROEs and margins consistent with industry norms? If the turnover or leverage ratios are changing significantly, make sure that this is what you really mean, because typically these ratios are relatively stable over time.

Pro Forma Analysis of Kohl's Forecasts

If you have been busy inputting the Kohl's forecasts that we have made in the previous sections then you can now examine the implications of those forecasts by returning to the Ratio Analysis and Cash Flow Analysis sheets. From the Cash Flow Analysis sheet we already noted that our forecasted cash from operations is approximately equal to the amount given by Kohl's in their MD&A discussion. Beyond that, the big thing that jumps out from the Cash Flow Analysis sheet is the \$2,500 million stock repurchase that our forecasts imply. Basically, the forecasts imply more than \$900 million in excess cash flow after the capital expenditures. In addition, we forecast an approximately \$1,600 million reduction in the cash balance. Is this reasonable? It might seem excessive, but we note from the 10-K that Kohl's board of directors authorized a \$2,500 million stock repurchase plan in 2008, of which only \$261 million has been used. If the board believes the stock is undervalued, they might well undertake a large stock repurchase. Another way to get to the same point would be if Kohl's initiates a regular cash dividend. If you still feel this implied cash distribution to the equity holders is unreasonable then you might want to adjust the forecasts. The next most reasonable alternative would be to forecast an early retirement of long-term debt, which Kohl's also discusses as a possible use of excess cash.