



CHAPTER 17

FINANCIAL PLANNING AND FORECASTING

Forecasting Apple's Future

In early 2005, corporations were reporting 2004 earnings and giving security analysts "guidance" to help them forecast earnings for 2005 and beyond. If analysts forecast earnings properly, then there will be fewer of the "negative surprises" that cause stock prices to plummet, so corporate executives try to help analysts forecast more accurately. Providing good guidance obviously requires that firms accurately forecast their own results.

Apple Computer illustrates the link between earnings forecasts and stock prices. Back in 1998 the company appeared to be in serious trouble, and its stock fell to \$5. However, new products that were being developed came to fruition in 2000, leading to improved earnings and a stock price increase to \$35. But then profits declined again in 2002 and 2003, and its price again plunged, this time to \$7. Nevertheless, the iPod was under development, and when it came out it produced high sales and profits, plus a "halo effect" that boosted Apple's reputation and thus its computer sales. The stock price roared up from \$7 to \$45.

In early 2005, the central issue was this: Would iPod's sales continue to be strong and help the company's computer sales, or would they pull back due to a saturated market and new competitive products? In July 2005 part of the answer was revealed—Apple announced blockbuster earnings, up five-fold from the previous year, and both iPod and computer sales remained extremely strong. The company had forecasted quarterly EPS of \$0.28, but the actual figure was \$0.37, more than 30 percent higher. Moreover, about the time the earnings results were released, reports came out that Apple was planning a new version of the iPod, one designed to handle movies as well as music.

Stock price volatility is not desirable. It creates great uncertainty, which investors dislike, so if Apple's management could provide better guidance and thus reduce volatility, the stock price would benefit. Of course, good guidance depends on good management forecasts, and no guidance at all is better than one based on bad forecasts. Our task in this chapter is to explain how financial forecasts are made and then used by management, both to provide guidance to analysts and, more importantly, to help judge the results of alternative operating decisions, which are really the key determinants of a stock's long-run value.

Apple Computer

Putting Things In Perspective

Managers make **pro forma, or projected, financial statements** and then use them in five ways: (1) Pro forma statements can be used to help estimate the effect of proposed operating changes, as with Apple's decision to go ahead with the video iPod. If the pro forma results look good, charge ahead, but if they look bad, hold back. (2) As noted, the projected statements can help managers provide better guidance to security analysts and thus reduce stock price volatility. (3) The forecasts can be used to help top management establish reasonable targets for the operating managers. Serious problems are created if managers' bonuses are based on targets that are unrealistically high, and good forecasts can help avoid this problem. (4) Pro forma statements are used to anticipate the firm's future financing needs. How much money will be needed for planned investments; how much of those funds will be generated internally; and, consequently, how much cash must the company plan to raise or how much will be available for dividends, stock repurchases, or other investments? (5) The pro forma results can be analyzed, individual problem areas can be identified, and then corrective actions can be taken. With these issues in mind, we explain how to create and use forecasted financial statements.

Pro Forma (Projected) Financial Statements

Financial statements that forecast the company's financial position and performance over a period of years.

17.1 STRATEGIC PLANNING

Financial planning should be done within the context of a well-articulated strategic plan that contains a number of elements. First, the plan should begin with a *mission statement*. For example, the first sentence of PepsiCo's mission statement says that its goal is to "increase the value of our shareholders' investment" but also to consider the effects of its actions on customers and the environment. This corporate focus on creating wealth for stockholders is common in the United States and in developed countries around the world.

The second key element in the strategic plan is a statement of the firm's *corporate scope*, which means the lines of business it plans to pursue and the geographic areas in which it will operate. Studies show that investors generally value focused firms more highly than diversified ones.¹ However, if a firm is successful in combining a group of diversified businesses so that they help one another, as GE has done, this can produce synergistic effects that raise the value of the overall enterprise.² In any event, the stated corporate scope should make good business sense and be consistent with the firm's capabilities.

¹ See, for example, Philip G. Berger and Eli Ofek, "Diversification's Effect on Firm Value," *Journal of Financial Economics*, Vol. 37, no. 1 (1995), pp. 39–66; and Larry Lang and René Stulz, "Tobin's Q, Corporate Diversification, and Firm Performance," *Journal of Political Economy*, Vol. 102, Issue 6 (1994), pp. 1248–1280.

² Synergy means a situation where the whole is greater than the sum of the parts, and it's sometimes called the $2 + 2 = 5$ effect. GE has 11 diverse business units, ranging from jet engines to financial services to its Universal-NBC entertainment unit. This diversification provides stability

A third key element in the corporate plan is the *statement of corporate objectives*, which sets forth the specific goals that operating managers are expected to meet. Most firms have both qualitative and quantitative objectives. For example, a firm might have as its objectives a sales growth rate of 8 percent, the maintenance of an A or better bond rating, an ROE in the upper quartile of its industry, and shareholder returns in the top quarter of the S&P 500 companies. In its latest annual report, GE indicated that it had a number of such goals, including the goal of generating \$20 billion of operating cash flow per year, which would be used for dividends, stock repurchases, and investments to grow the business. Each of GE's 11 business units has a profitability goal and a cash flow goal, and executive compensation is based on achieving these objectives. GE's stockholders will, of course, also benefit if the executives meet their goals.

A set of *corporate strategies* that spell out how the firm plans to achieve its goals is the fourth element in the corporate plan. For example, Nucor Corporation, which is now the U.S. steel company with the highest market value, had as its corporate strategy a plan to build electric furnaces to make steel products from scrap rather than from iron ore as the other steel companies did. Nucor's strategy led to a huge stock price increase at a time when the old-guard steel companies were going down the tube. Southwest Airlines had a strategy of providing one class of efficient, low-cost service between major metropolitan areas, with nonunion labor, which was a very different approach from that of most other airlines. Southwest has flourished while most other airlines have either gone bankrupt or are teetering on the brink of bankruptcy. These examples demonstrate the importance of a good strategic plan.

A detailed *operating plan* for each unit is the fifth component of the overall corporate plan. Here each unit's management is given detailed implementation guidance, based on the corporate strategy, to help it achieve the corporate objectives. Operating plans can be developed for any time horizon, but most companies use a five-year horizon. The plan explains in considerable detail who is responsible for each particular function, when specific tasks are to be accomplished, what the sales and profit targets are, and the like.

The *financial plan* is the final element of the overall corporate plan. A separate plan is set forth for each unit, and those plans are then consolidated to show the projected results for the entire corporation. The heart of the financial plan is a set of projected financial statements, with a number of ratios based on those statements, for the separate units and the consolidated firm. The base-case projections show the results that are expected if all the forecast assumptions are exactly right. However, things rarely go exactly according to plan, so results under alternative scenarios are provided. For example, the firm's base-case assumptions might call for a strong economy, but another 9/11-type terrorist attack, or \$100-a-barrel oil, could change circumstances substantially. Therefore, the financial plan should be designed to give management an indication of what would happen if another such event should occur.

The financial statements are also used to examine the effects of alternative strategies and operating plans. A company such as Southwest Airlines can use its financial model to simulate results with different strategies under different economic conditions. Southwest concluded that high jet-fuel costs were a distinct possibility and that a run-up would have a tremendous adverse effect on costs and profits. Based on these forecasts, it decided to hedge its fuel costs (that

Footnote 2 continued

that has resulted in a triple-A bond rating and a relatively low cost of capital, which apparently benefits all the businesses. A number of academic studies dispute this conclusion, but in spite of that criticism, GE's stockholders have enjoyed remarkable results over the years, probably because their management has done such an exceptionally good job of running the corporation.

is, in effect buy fuel ahead of time) and also to invest in the most fuel-efficient aircraft that were available. Those strategies turned out to be exactly right, and effective financial planning and forecasting helped management make the right decisions.



In what five ways do managers use pro forma financial statements?

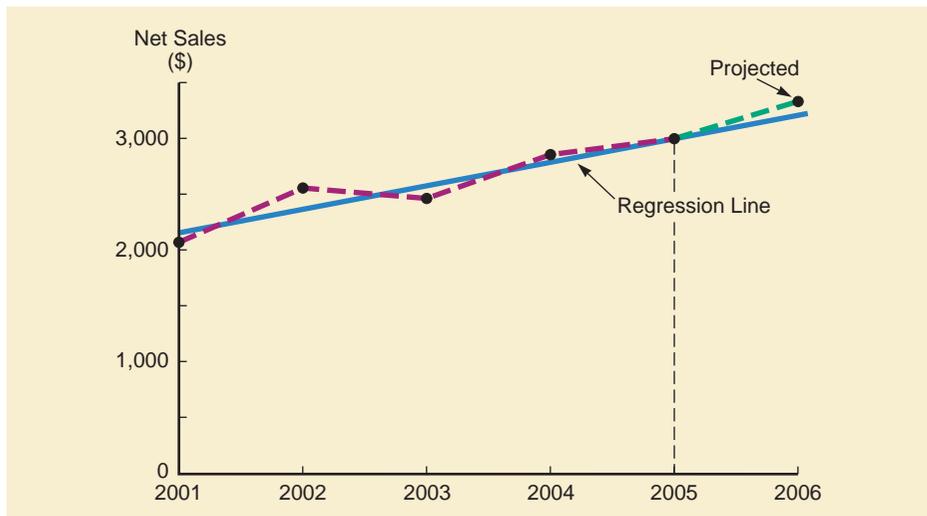
Briefly describe each of these corporate planning terms: (1) mission statement, (2) corporate scope, (3) corporate objectives, and (4) corporate strategies.

How can the financial plan be used to help formulate corporate strategies?

17.2 THE SALES FORECAST

Financial planning requires us to forecast and then analyze a set of financial statements. We begin with the *sales forecast*, which starts with a review of sales during the past 5 to 10 years, shown as a graph such as that in Figure 17-1 for Allied Foods, our illustrative company. These numbers are based on Allied's financial statements, which were first presented in Chapter 3. You may also refer to this chapter's *Excel* model. The data below the graph show five years of historical sales, which Allied thinks are most relevant for planning purposes.

FIGURE 17-1 Allied Food Products: 2006 Sales Projection (Millions of Dollars)



Year	Sales
2001	\$2,058
2002	2,534
2003	2,472
2004	2,850
2005	3,000
2006	3,300 (Projected)

Allied had its ups and downs during the period from 2001 to 2005. In 2003, poor weather in California's fruit-producing regions resulted in low production, which caused 2003 sales to fall below the 2002 level. Then a bumper crop in 2004 pushed sales up by 15 percent, an unusually high growth rate for a mature food processor. As shown in the chapter *Excel* model, the compound annual growth rate over the four-year period was 9.88 percent. However, due to planned new-product introductions, the firm's production and distribution capacity, its competitors' capacities and new-product introductions, pricing strategies, inflation, advertising campaigns, credit terms, and the like, management projects that the growth rate will increase to 10 percent in 2006, so sales should rise from \$3,000 million to \$3,300 million.

Forecasts are made for each of its three divisions, both in the aggregate and on an individual product basis. The individual product sales forecasts are summed, and this sum is compared with the aggregated division forecasts. Differences are reconciled, and the end result is a sales forecast for the company as a whole but with breakdowns by the three divisions and by individual products.

If the sales forecast is off, the consequences can be serious. First, if the market expands by *more* than Allied expects, it will not be able to meet demand. Its customers will end up buying competitors' products, and it will lose market share. On the other hand, if its projections are overly optimistic, it could end up with too much plant, equipment, and inventory. This would mean low turnover ratios, high costs for depreciation and storage, and write-offs of spoiled inventory. All of this would result in low profits, a low ROE, and a depressed stock price. If Allied finances its capacity expansion with debt, high interest charges would compound its problems.³



Why is an accurate sales forecast critical for financing planning?

17.3 THE AFN EQUATION

Increasing sales require additional assets, these assets must be financed, and it may or may not be possible to obtain all the funds needed for the firm's business plan. Therefore, a key element in the financial forecasting process is to determine the external financing requirements. The most accurate procedure for forecasting requirements is to develop a detailed forecast of the future financial statements, but Equation 17-1 can be used to get an approximation of the funds needed. **AFN** stands for "additional funds needed," and it represents the amount of external capital the firm must raise to support its growth.⁴

AFN

Additional funds needed, that is, the amount of external capital that will be needed to acquire the needed assets.

³ A sales forecast is actually the *expected value of a probability distribution*, so there are many possible levels of sales. Because any sales forecast is subject to uncertainty, financial planners are just as interested in the degree of uncertainty inherent in the sales forecast, as measured by the standard deviation, as in the expected level of sales.

⁴ In this chapter we do a lot of calculating, using calculators and *Excel*, which carry decimal places out to eight or so places. However, we round to show our results. You should disregard minor discrepancies because they are probably due to rounding. In forecasting, it's really silly to carry things out to very many decimal places, as the final results are bound to be off far more than any rounding differences.

$$\begin{aligned}
 \text{Additional funds needed} &= \text{Projected increase in assets} - \text{Spontaneous increase in liabilities} - \text{Increase in retained earnings} & (17-1) \\
 \text{AFN} &= (A^*/S_0)\Delta S - (L^*/S_0)\Delta S - MS_1(RR)
 \end{aligned}$$

Here

- AFN = additional funds needed.
- A^* = assets that are tied directly to sales and that must increase if sales are to increase. Note that A designates total assets and A^* designates those assets that must increase if sales are to increase. When the firm is operating at full capacity, as is the case here, $A^* = A$. Often, though, A^* and A are not equal, and then the equation must be modified.
- S_0 = sales during the past year.
- A^*/S_0 = percentage of required assets to sales, which also shows the required dollar increase in assets per \$1 increase in sales. For Allied, as shown in its financial statements in Chapter 3, $A^*/S_0 = \$2,000/\$3,000 = 0.6667$, so for every \$1 increase in sales, assets must increase by about 66.67 cents.
- L^* = liabilities that increase spontaneously with sales. Spontaneous liabilities include accounts payable and accruals, but not bank loans and bonds. Therefore, L^* is normally less than total liabilities.
- L^*/S_0 = percentage of spontaneous liabilities to sales, which is also the spontaneously generated financing per \$1 increase in sales. For Allied, $L^*/S_0 = (\$60 + \$140)/\$3,000 = 0.06667$, so every \$1 increase in sales generates 6.667 cents of spontaneous financing as accounts payable and accruals.
- S_1 = total sales projected for the coming year. Note that S_0 designates last year's sales, while S_1 is the forecasted sales, which for Allied is \$3,300 million.
- ΔS = change in sales = $S_1 - S_0 = \$3,300 - \$3,000 = \$300$ million for Allied.
- M = profit margin, or profit per \$1 of sales. $M = \$117.5/\$3,000 = 0.03917$ for Allied, so Allied earns 3.917 cents on each dollar of sales.
- RR = retention ratio, which is the percentage of net income that is retained during the last year. In 2005 Allied earned \$117.5 million and paid out \$57.5 million in dividends, so its retained earnings were \$60 million. Therefore, $RR = \$60/\$117.5 = 0.51064$.

Inserting Allied's numbers (dollars in millions) into Equation 17-1, we find that Allied's additional funds needed equal \$114 million:

$$\begin{aligned}
 \text{AFN} &= \text{Required asset increase} - \text{Spontaneous liability increase} - \text{Increase in retained earnings} \\
 &= 0.6667(\Delta S) - 0.06667(\Delta S) - 0.03917(S_1)(0.51064) \\
 &= 0.6667(\$300) - 0.06667(\$300) - 0.03917(\$3,300)(0.51064) \\
 &= \$200 - \$20 - \$66 \\
 &= \$114 \text{ million}
 \end{aligned}$$

To increase sales by \$300 million, Allied must increase assets by \$200 million, where \$20 million will come from spontaneous increases in payables and accruals, while another \$66 million will come from retained earnings. The remaining \$114 million must be raised from external sources. Note, though, that the AFN equation assumes that the key ratios in 2005 will be maintained in 2006. If economic conditions change and cause the ratios to change, then the forecasted \$114 million AFN will not be correct.

Key Determinants of External Funds Requirements

Note that the need for external financing depends on five key factors:

- *Sales growth* (ΔS). Rapidly growing companies require large increases in assets, other things held constant.
- *Capital intensity* (A^*/S_0). The amount of assets required per dollar of sales, A^*/S_0 in Equation 17-1, is called the **capital intensity ratio**, and it has a major effect on capital requirements. Companies with high assets-to-sales ratios require more assets for a given increase in sales, hence have a greater need for external financing. Electric utilities, with their expensive power plants and distribution systems, are very capital intensive, whereas grocery stores, whose high inventory turnover results in relatively little assets in relation to sales, are not capital intensive.
- *Spontaneous liabilities-to-sales ratio* (L^*/S_0). Companies that spontaneously generate a large amount of funds from accounts payable and accruals have a reduced need for external financing.
- *Profit margin* (M). The higher the profit margin, the larger the net income available to support increases in assets, hence the lower the need for external financing.
- *Retention ratio* (RR). Companies that retain a high percentage of their earnings rather than paying them out as dividends generate more retained earnings and thus need less external financing.

Capital Intensity Ratio

The amount of assets required per dollar of sales (A^*/S_0).

Based on the AFN equation, we forecasted that Allied will require \$114 million of external funds to carry out its business plan for 2006. Note, though, that changes in any of the key determinants could result in a situation where the AFN is *negative*, which would indicate that surplus funds would be generated and available for investment. In Allied's case, as we demonstrate in the chapter's *Excel* model, AFN would be zero at a sales growth rate of 3.447 percent, and at any lower growth rate surplus funds would be generated. Also, as we discuss here and later in Section 17.4, changes in the other determinants would also alter the calculated AFN.

Excess Capacity Adjustments

The AFN equation assumes that the ratio $A^*/S_0 = \$2,000/\$3,000 = 0.6667$ is a constant. However, note that A^* consists of all the firm's assets, and \$1,000 of that total was fixed assets. Thus, $\$1,000/\$3,000 = 0.3333$ of the 0.6667 is attributable to fixed assets. We then forecasted that Allied would need $0.6667(\Delta S) = 0.6667(\$300 \text{ million}) = \$200 \text{ million}$ of new assets, and \$100 million of that total would be for fixed assets.

Now suppose that excess capacity in fixed assets existed in the base year. For example, suppose Allied was using its fixed assets in 2005 at only 96 percent of capacity. This means that if fixed assets had been used to full capacity, 2005 sales could have been as high as \$3,125 million versus the \$3,000 million of actual sales:

$$\text{Full capacity sales} = \frac{\text{Actual sales}}{\text{Percentage of capacity at which fixed assets were operated}} = \$3,000/0.96 = \$3,125 \text{ million}$$

This indicates that Allied's target fixed assets/sales ratio should be 32.0 percent rather than 33.3 percent:

$$\begin{aligned} \text{Target fixed assets/Sales} &= \frac{\text{Actual fixed assets}}{\text{Full capacity sales}} \\ &= \$1,000/\$3,125 = 0.32 = 32\% \end{aligned}$$

Therefore, sales could increase to \$3,125 million with no increase in fixed assets, and a sales increase to \$3,300 million would require only \$1,056 million of fixed assets:

$$\begin{aligned} \text{Required level of fixed assets} &= (\text{Target fixed assets/Sales})(\text{Projected sales}) \\ &= 0.32(\$3,300) = \$1,056 \text{ million} \end{aligned}$$

Our earlier estimate of AFN assumed that fixed assets would have to increase at the same rate as sales, 10 percent, from \$1,000 million to \$1,100 million, or by \$100 million. Now we see that the actual required increase is only from \$1,000 million to \$1,056 million, or by \$56 million, a decline of \$44 million. This lowers the required AFN by \$44 million, from \$114 million to \$70 million.

The same situation could occur with respect to inventories, cash, or other assets. Moreover, the L^*/S_0 ratio might be too low because the firm is underutilizing supplier credit and accruals. Because of all this, it is useful to go beyond the AFN equation and on to projected financial statements, as we do in the next section.



If the key ratios are expected to remain constant, the AFN equation can be used to forecast the need for external funds. Write out the equation and explain its logic.

How do the following factors affect the AFN, or the requirements for external capital?

- (1) Retention ratio.
- (2) Capital intensity.
- (3) Profit margin.
- (4) Dividend payout ratio.
- (5) Sales growth.

Is it possible for the AFN to be negative? What would that indicate?

If excess capacity exists, how will that affect the AFN?

17.4 FORECASTED FINANCIAL STATEMENTS

The AFN equation provides useful insights into the forecasting process, but, as we noted earlier, the basic equation assumes that all of the company's key ratios remain constant, a condition that is not likely to hold true. Therefore, it is useful to forecast the firm's financial statements. We begin with a forecast based on the same assumption that underlies the AFN equation—namely, that most assets and many liabilities increase at the same rate as sales—after which we modify the assumptions to make the forecast more reflective of likely future conditions. The modified financial forecasts, and ratios based on the forecasted statements, are especially useful for comparing predicted results with target results as called for in the firm's strategic plan. If the predicted results deviate from the target results, then either the targets should be changed or the plan should be modified to help operating managers meet their targets.

Forecasting financial statements requires a lot of number crunching. It can be done with a calculator, but realistically it is necessary to use a spreadsheet like *Excel*. Therefore, in the text we discuss the concepts involved and the results generated with our model. If you want to learn about the details of the calculation, you should access the chapter model and go through it. This would be quite useful if you need to make a forecast for an actual company, but it is not necessary to understand the general ideas behind financial forecasting and to see how such forecasts are used.

Initial Forecast: "Business as Usual"

Allied, like most companies, begins by forecasting its financial statements on the assumption that things in the future go pretty much like they did in the recent past. This means that assets and spontaneous liabilities will grow at the same rate as sales, the profit margin will remain fairly constant, the capital structure will not be changed materially, and dividend policy will not be altered substantially. Sales for the coming year are then forecasted, and, based on the sales forecast, the expected future income statement and balance sheet are forecasted. The forecast actually proceeds (within the computer) in stages. A "first-pass" income statement and balance sheet are forecasted, holding constant the relationship between sales and most of the items on those statements. Here assets and those liabilities that increase spontaneously with sales are forecasted, but notes payable, long-term debt, and common stock are held constant at their prior level. Retained earnings in the first-pass balance sheet are set equal to the prior retained earnings plus the addition to retained earnings as found in the first-pass income statement. Typically, the first-pass balance sheet will not balance—the forecasted assets exceed the forecasted liabilities and equity, with the difference equal to an initial estimate of the AFN.

Tables 17-1 and 17-2 show Allied's forecasted income statements and balance sheets. The first column shows 2005 data. Then, in the second column, we show the first-pass statements. Note that the first-pass balance sheet does not balance, and the \$108.7 million of AFN must be financed. The first-pass AFN means that notes payable, long-term debt, and common stock must be increased by a total of \$108.7 million, and that will lead to a second-pass balance sheet (shown in the chapter model but not here) where those items are increased. When debt is increased in the second-pass balance sheet, this

TABLE 17-1

Actual 2005 and Forecasted 2006 Income Statements

	Actual 2005	2006 FORECAST		
		1st Pass	4th Pass	Modified
Sales	\$3,000.0	\$3,300.0	\$3,300.0	\$3,300.0
Costs except depreciation	2,616.2	2,877.8	2,877.8	2,854.5
Depreciation	100.0	110.0	110.0	105.0
Total operating costs	<u>\$2,716.2</u>	<u>\$2,987.8</u>	<u>\$2,987.8</u>	<u>\$2,959.5</u>
EBIT	\$ 283.8	\$ 312.2	\$ 312.2	\$ 340.5
Less interest	88.0	88.0	94.3	86.2
EBT	\$ 195.8	\$ 224.2	\$ 217.9	\$ 254.3
Taxes (40%)	78.3	89.7	87.2	101.7
Net income	<u>\$ 117.5</u>	<u>\$ 134.5</u>	<u>\$ 130.7</u>	<u>\$ 152.6</u>
Common dividends	\$ 57.5	\$ 63.3	\$ 63.3	\$ 63.3
Addition to RE	\$ 60.0	\$ 71.3	\$ 67.5	\$ 89.3

Note: Table 17-1 is an excerpt of this chapter's *Excel* model.

TABLE 17-2

Actual 2005 and Forecasted 2006 Balance Sheets

	Actual 2005	2006 FORECAST		
		1st Pass	4th Pass	Modified
Assets				
Cash	\$ 10.0	\$ 11.0	\$ 11.0	\$ 75.0
Accounts receivable	375.0	412.5	412.5	381.2
Inventories	615.0	676.5	676.5	578.2
Total current assets	\$1,000.0	\$1,100.0	\$1,100.0	\$1,034.4
Net plant and equipment	1,000.0	1,100.0	1,100.0	1,056.0
Total assets	<u>\$2,000.0</u>	<u>\$2,200.0</u>	<u>\$2,200.0</u>	<u>\$2,090.4</u>
Liabilities and Equity				
Accounts payable	\$ 60.0	\$ 66.0	\$ 66.0	\$ 66.0
Notes payable	110.0	110.0	117.9	91.1
Accruals	140.0	154.0	154.0	154.0
Total current liabilities	\$ 310.0	\$ 330.0	\$ 337.9	\$ 311.1
Long-term bonds	750.0	750.0	801.7	750.0
Total debt	\$1,060.0	\$1,080.0	\$1,139.6	\$1,061.1
Common stock	130.0	130.0	182.9	130.0
Retained earnings	810.0	881.3	877.5	899.3
Total common equity	<u>\$ 940.0</u>	<u>\$1,011.3</u>	<u>\$1,060.4</u>	<u>\$1,029.3</u>
Total liabilities and equity	<u>\$2,000.0</u>	<u>\$2,091.3</u>	<u>\$2,200.0</u>	<u>\$2,090.4</u>
Additional funds needed (AFN)		\$ 108.7	\$ 0.01	\$ 0.0
Cumulative AFN		\$ 108.7	\$ 112.50	-\$ 18.9

Note: Table 17-2 is an excerpt of this chapter's *Excel* model.

causes interest charges to increase, and that changes the second-pass income statement. Because of the higher interest charges, net income and thus the addition to retained earnings are lowered in the second pass, and that leads to a further increase in the calculated AFN, which leads to further changes in the statements.

The change in the AFN declines with each pass, or iteration, and after four passes the balance sheet is in balance out to one decimal place. In the text tables we show only the statements for the first and fourth passes, but the model itself shows results for the second and third passes, along with a detailed explanation of how the adjustments are made. Tables 17-1 and 17-2 also show, in the final column, some "Modified" results that we will discuss shortly.

Table 17-3 shows a set of ratios based on the calculated financial statements. Note that Allied's ROE for 2005 is below the industry average ROE of 15 percent, as is the fourth-pass ROE, which assumes no significant change in operations. (The forecasted ROE is slightly less than the 2005 figure because, in the forecast, the debt ratio declines very slightly.) Management looked at the ratios to try to determine why Allied has been performing worse than the industry average. They immediately saw that the inventory turnover was only half that of an average firm in its industry, meaning that Allied had almost twice as much inventory for its level of sales as an average firm in its industry does. Similarly, Allied's DSO was much higher than average, indicating an excessive investment in accounts receivable. These excessive investments in inventories and receivables involved carrying costs, which caused the operating costs/sales ratio to be high, and that reduced profits and the profit margin, which obviously hurt the ROE.

The Du Pont equation in the lower part of the table shows that under its current operating plan Allied's profit margin is relatively low and its asset turnover is also below average. On the other hand, Allied has an above average equity multiplier, which raises its ROE, but at the cost of a very high debt ratio and high interest costs. When we put these three factors together, the result is a relatively low ROE.

Allied's managers reviewed the actual 2005 results and the forecast for 2006 and noted that the company was performing below the industry average. They also saw that the unmodified 2006 forecast would require \$112.5 of external capital, with much of it coming from debt. However, in view of the company's high debt ratio and low TIE ratio, there were questions about whether lenders would actually provide Allied the required funds, and what the cost of those funds would be. After this review, management developed an operating plan designed to improve performance in 2006. Results under the proposed plan are shown in the tables under the column heading labeled "Modified." The plan calls for increasing the inventory turnover, lowering the DSO, and lowering the operating costs-to-sales ratio. As we also show in Table 17-3, Allied had a negative free cash flow in 2005, and under current conditions this key number would be only +\$7.3 million. However, under the modified forecast FCF would rise to \$313.9 million, largely because of reductions in inventories, accounts receivable, and fixed assets, plus an increase in net income. The FCF would be used to build the cash account, reduce long-term debt, and finance the assets needed to support the sales increase.

The bottom line is this: If management can indeed implement the proposed modifications, this would result in significantly higher profits and cash flows and a 14.8 percent ROE, which is close to the industry average. Those results would certainly improve the firm's stock price, which is management's ultimate goal.

TABLE 17-3 Actual 2005 and Forecasted 2006 Ratios and Free Cash Flow

	A	B	C	D	E	F
128				4th Pass	Modified	Industry
129			2005	2006	2006	Average
130	Current Ratio		3.2	3.3	3.3	4.2
131	Inventory Turnover		4.9	4.9	5.7	9.0
132	Days sales outstanding		45.6	45.6	42.2	36.0
133	Total assets turnover		1.5	1.5	1.6	1.8
134	Debt ratio		53.0%	51.8%	50.8%	40.0%
135	Assets/Equity (multiplier)		2.13	2.07	2.03	1.67
136	TIE		3.23	3.31	3.95	6.0
137	Operating costs/Sales		90.5%	90.5%	89.7%	87.0%
138	Profit Margin		3.9%	4.0%	4.6%	5.0%
139	Return on Assets		5.9%	5.9%	7.3%	9.0%
140	Return on Equity		12.5%	12.3%	14.8%	15.0%
141						
142				Total Asset	Equity	
143			Profit Margin	Turnover	Multiplier	ROE
144	Du Pont ROE, 2005	=	3.92%	1.50	2.13	12.50%
145	Du Pont ROE, 4th pass	=	3.96%	1.50	2.07	12.33%
146	Du Pont ROE, modified	=	4.62%	1.58	2.03	14.82%
147	Industry =		5.00%	1.80	1.67	15.03%
148						
149				4th	Modified	
150			2005	2006	2006	
151	Free Cash Flow		(\$109.7)	\$7.3	\$313.9	



What advantages does the forecasted financial statement method have over the AFN equation for forecasting financial requirements?

Using the AFN equation, we forecasted that Allied would need \$114 million of external funds, while the fourth-pass (final) AFN forecast based on financial statements was \$112.5 million. However, the AFN forecast under the modified statement approach was *negative*. What caused the huge change in AFN?

17.5 USING REGRESSION TO IMPROVE FINANCIAL FORECASTS

In our financial statement forecasts, we assumed that the various assets would increase at the same rate as sales. However, that is not necessarily the case. We noted in our discussion of the AFN equation that excess capacity might exist, in which case assets would increase less rapidly than sales. Similarly, economies of scale might exist, and if this condition holds, then again assets will not have to grow as fast as sales. Other conditions might also exist to invalidate the lock-step tie between sales and specific asset categories, even if the firm plans no major change in operations (like a change in credit policy or in inventory management

procedures). We can use regression techniques to investigate such situations and thus improve the financial forecasts.

To illustrate regression analysis for use in forecasting, consider Figure 17-2, which shows Allied's sales, inventories, and receivables during the last five years, and a scatter diagram plot of inventories and receivables versus sales. Estimated regression equations, determined using a financial calculator or a spreadsheet, can also be developed. For example, the estimated relationship between inventories and sales (in millions of dollars) is shown here:

$$\text{Inventories} = -\$35.7 + 0.186(\text{Sales})$$

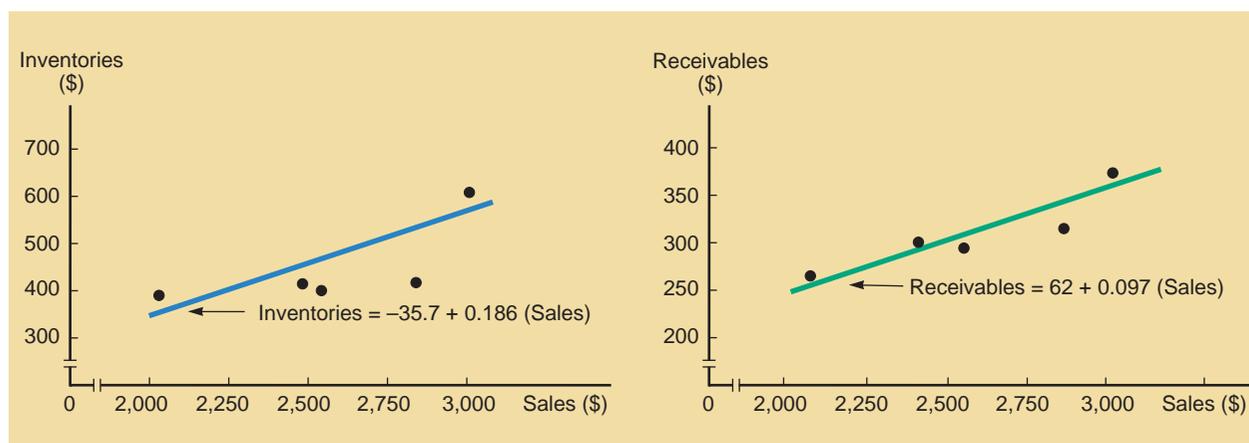
The plotted points are not very close to the regression line, which indicates that changes in inventory are affected by factors other than changes in sales. In fact, the correlation coefficient between inventories and sales is only 0.71, indicating that there is only a moderate linear relationship between these two variables. Still, the regression relationship is strong enough to help us consider a revision in the target inventory level, as described in Figure 17-2.

We can use the regression equation to estimate a "better" 2006 inventory level. As 2006 sales are projected at \$3,300 million, then according to the regression, 2006 inventories should be \$578 million:

$$\text{Inventories} = -\$35.7 + 0.186(\$3,300) = \$578 \text{ million}$$

This is \$99 million less than the fourth-pass forecast based on the projected financial statements. The difference occurs because the projected financial statement method assumed that the ratio of inventories to sales will remain constant,

FIGURE 17-2 Allied Food Products: Regression Models (Millions of Dollars)



Year	Sales	Inventories	Accounts Receivable
2001	\$2,058	\$387	\$268
2002	2,534	398	297
2003	2,472	409	304
2004	2,850	415	315
2005	3,000	615	375

whereas under the regression method it is forecasted to decline. Note also that although our graphs show linear relationships, we could have easily used a nonlinear regression model had we felt that such a relationship was more appropriate.

After analyzing the regression results, Allied's managers decided that a new forecast of AFN should be developed assuming a lower days sales outstanding (DSO) and a higher inventory turnover ratio. Management recognized that the 2005 levels of these accounts were above the industry averages, hence that the preliminary results projected for 2006 in Table 17-2 were unnecessarily high. When simple linear regression was used to forecast the receivables and inventory accounts, this caused the 2006 levels to reflect both the average relationships of these accounts to sales over the five-year period, as well as the trend in the variables' values. In contrast, the projected financial statement method assumed that the (nonoptimal) 2005 relationships would remain constant in 2006 and beyond. These new assumptions about DSO and inventory turnover contributed to the modified forecasts shown in the projected statements.



Examine the following statement: "Using regression to predict items like inventories is better than basing such predictions on the latest inventory/sales ratio because regression helps smooth out the effects of random fluctuations." Do you agree or disagree? Explain.

17.6 USING INDIVIDUAL RATIOS IN THE FORECASTING PROCESS

Thus far we have seen how financial statements can be forecasted assuming that there are no material changes in operations and that most things increase with sales, how ratios based on the projected statements can be calculated, and then how the initial forecasts can be modified so that the projected results will produce an improved set of ratios. Under this approach, a number of items can be changed, and the combined results can be observed.

Modifying Accounts Receivable

We can also look at the effects of modifying individual asset forecasts, such as inventories, receivables, and fixed assets. For example, consider accounts receivable. We saw in Table 17-3 that Allied's DSO is projected to be 45.6 days versus an industry average of 36 days. The 45.6 days is based on sales of \$3,300 million and a receivables balance of \$412.5 million as shown in Tables 17-1 and 17-2:

$$\text{DSO} = \frac{\text{Receivables}}{\text{Sales}/365} = \frac{\$412.5}{\$3,300/365} = \frac{\$412.5}{\$9.04} = 45.63 \text{ days}$$

We can then solve this equation for receivables:

$$\text{Receivables} = \$9.04(45.63) = \$412.5$$

Now we can use this expression to find the receivables Allied would have if it could change its credit operations so as to achieve the industry average DSO, 36 days:

$$\text{Modified receivables} = \$9.04(36.0) = \$325.4$$

Thus, Allied could generate a $\$412.5 - \$325.4 = \$87.1$ million one-time addition to its free cash flow, plus smaller improvements in FCF as it grows in later years, by improving its credit operations. The CFO could use this type of analysis to help motivate the credit manager to change his or her operations.

Modifying Inventories

Inventories can be analyzed in a similar manner. First, note in Table 17-3 that Allied's fourth-pass forecasted inventory turnover is 4.9 times versus 9.0 times for the industry. Moreover, in Table 17-2 Allied's forecasted inventory number is \$676.5 million against sales of \$3,300 million. Given these data, we can determine Allied's situation if it were able to lower inventories sufficiently to achieve the industry average turnover:

$$\text{Allied's inventory turnover} = \text{Sales/Inventories} = \$3,300/\$676.5 = 4.878$$

We can then solve this equation for Allied's inventory balance:

$$\text{Inventories} = \$3,300/4.878 = \$676.5$$

Now substitute the industry average inventory turnover, 9.0, into the expression for 4.878, and we calculate \$366.7 as the target inventory number. This indicates the potential for generating a one-time addition to FCF of $\$676.5 - \$366.7 = \$309.8$ million, plus additional savings as the company grows. Again, the CFO could use this example in a discussion with Allied's inventory manager.

Other "Special Studies"

Once a firm has developed a model to forecast its financial statements, it can do all types of special "what if" studies. For example, Allied could use its model to estimate the effects of changing the dividend policy both on the statements and on the required AFN. Indeed, the AFN equation itself could be modified to obtain a "quick and dirty" estimate of the effects of dividends on the AFN. As we saw earlier in Section 17.3 in the discussion of the AFN, Allied has a retention ratio of $RR = 0.51064$, and when that number was used in the AFN equation (dollars in millions), an AFN of \$114 million resulted:

$$\begin{aligned} \text{AFN} &= 0.6667(\Delta S) - 0.06667(\Delta S) - 0.03917(S_1)(0.51064) \\ &= 0.6667(\$300) - 0.06667(\$300) - 0.03917(\$3,300)(0.51064) \\ &= \$200 - \$20 - \$66 \\ &= \$114 \text{ million} \end{aligned}$$

The RR of approximately 0.51 implies a dividend payout of roughly $1.0 - 0.51 = 0.49$, or 49 percent. Assume that Allied would really have to raise \$114 million to carry out its business plan, that is, disregard the modifications we have suggested. Then, if the CFO anticipated a problem raising these funds, he or she might suggest to the directors that they consider lowering the dividend payout ratio to, say, 25 percent, which would result in $RR = 0.75$. With that RR, the AFN would decline by about \$31 million, to \$83 million. Of course, as we saw in the dividend chapter, lowering the dividend creates problems of its own, but at times such an action is necessary to maximize the firm's intrinsic value and long-run stock price.

Tying It All Together

This chapter described techniques for forecasting financial statements, which is a crucial part of the financial planning process. Both investors and corporations regularly use forecasting techniques to help value a company's stock; to estimate the benefits of potential projects; and to estimate how changes in capital structure, dividend policy, and working capital policy would influence shareholder value.

The type of forecasting described in this chapter is important for several reasons. First, if the projected operating results are unsatisfactory, management can "go back to the drawing board," reformulate its plans, and develop more reasonable targets for the coming year. Second, it is possible that the funds required to meet the sales forecast simply cannot be obtained. If so, it is obviously better to know this in advance and to scale back the projected level of operations than to suddenly run out of cash and have operations grind to a halt. And third, even if the required funds can be raised, it is desirable to plan for their acquisition well in advance of when the funds would be needed.

SELF-TEST QUESTIONS AND PROBLEMS (Solutions Appear in Appendix A)

- ST-1** **Key terms** Define each of the following terms:
- Pro forma (projected) financial statements
 - Additional funds needed (AFN); AFN equation
 - Capital intensity ratio
 - Spontaneously generated funds; retention ratio
 - Excess capacity adjustments
 - Regression analysis for forecasting
 - Use of ratios in forecasting
- ST-2** **Growth rate** Weatherford Industries Inc. has the following ratios: $A^*/S_0 = 1.6$; $L^*/S_0 = 0.4$; profit margin = 0.10; and retention ratio = 0.55, or 55 percent. Sales last year were \$100 million. Assuming that these ratios will remain constant, use the AFN equation to determine the maximum growth rate Weatherford can achieve without having to employ nonspontaneous external funds.
- ST-3** **Additional funds needed** Suppose Weatherford's financial consultants report (1) that the inventory turnover ratio is sales/inventory = 3 times versus an industry average of 4 times and (2) that Weatherford could reduce inventories and thus raise its turnover to 4 without affecting sales, the profit margin, or the other asset turnover ratios. Under these conditions, use the AFN equation to determine the amount of additional funds Weatherford would require next year if sales grow by 20 percent.

QUESTIONS

- 17-1** What are the 5 key factors on which external financing depends, as indicated in the AFN equation?

- 17-2** Assume that an average firm in the office supply business has a 6 percent after-tax profit margin, a 40 percent debt/assets ratio, a total assets turnover of 2 times, and a dividend payout ratio of 40 percent. Is it true that if such a firm is to have *any* sales growth ($g > 0$), it will be forced either to borrow or to sell common stock (that is, it will need some nonspontaneous, external capital even if g is very small)?
- 17-3** Would you agree that computerized corporate planning models were a fad during the 1990s but, because of a need for flexibility in corporate planning, they are no longer used by most firms?
- 17-4** Certain liability and net worth items generally increase spontaneously with increases in sales. Put a check (✓) by those items that typically increase spontaneously:

Accounts payable	_____
Notes payable to banks	_____
Accrued wages	_____
Accrued taxes	_____
Mortgage bonds	_____
Common stock	_____
Retained earnings	_____

- 17-5** Suppose a firm makes the following policy changes. If the change means that external, nonspontaneous financial requirements (AFN) will increase, indicate this by a (+); indicate a decrease by a (-); and indicate an indeterminate or negligible effect by a (0). Think in terms of the immediate, short-run effect on funds requirements.
- The dividend payout ratio is increased. _____
 - A computer company decides to produce computers for sale only after an order has been received rather than produce them in advance. _____
 - The firm decides to pay all suppliers on delivery, rather than after a 30-day delay, to take advantage of discounts for rapid payment. _____
 - The firm begins to sell on credit (previously all sales had been on a cash basis). _____
 - The firm's profit margin is eroded by increased competition; sales are steady. _____
 - Advertising expenditures are stepped up. _____
 - A decision is made to substitute long-term mortgage bonds for short-term bank loans. _____
 - The firm begins to pay employees on a weekly basis (previously it had paid employees at the end of each month). _____

PROBLEMS

Easy
Problems 1–6

- 17-1** **AFN equation** Carter Corporation's sales are expected to increase from \$5 million in 2005 to \$6 million in 2006, or by 20 percent. Its assets totaled \$3 million at the end of 2005. Carter is at full capacity, so its assets must grow in proportion to projected sales. At the end of 2005, current liabilities are \$1 million, consisting of \$250,000 of accounts payable, \$500,000 of notes payable, and \$250,000 of accrued liabilities. The after-tax profit margin is forecasted to be 5 percent, and the forecasted retention ratio is 30 percent. Use the AFN equation to forecast Carter's additional funds needed for the coming year.
- 17-2** **AFN equation** Refer to Problem 17-1. What would the additional funds needed be if the company's year-end 2005 assets had been \$4 million? Assume that all other numbers are the same. Why is this AFN different from the one you found in Problem 17-1? Is the company's "capital intensity" the same or different? Explain.
- 17-3** **AFN equation** Refer to Problem 17-1 and assume that the company had \$3 million in assets at the end of 2005. However, now assume that the company pays no dividends. Under these assumptions, what would be the additional funds needed for the coming year? Why is this AFN different from the one you found in Problem 17-1?

- 17-4 Pro forma income statement** Austin Grocers recently reported the following 2005 income statement (in millions of dollars):

Sales	\$700
Operating costs including depreciation	<u>500</u>
EBIT	\$200
Interest	<u>40</u>
EBT	\$160
Taxes (40%)	<u>64</u>
Net income	<u>\$ 96</u>
Dividends	\$ 32
Addition to retained earnings	\$ 64

This year the company is forecasting a 25 percent increase in sales, and it expects that its year-end operating costs including depreciation will equal 70 percent of sales. Austin's tax rate, interest expense, and dividend payout ratio are all expected to remain constant.

- What is Austin's projected 2006 net income?
- What is the expected growth rate in Austin's dividends?

- 17-5 Excess capacity** Walter Industries has \$5 billion in sales and \$1.7 billion in fixed assets. Currently, the company's fixed assets are operating at 90 percent of capacity.

- What level of sales could Walter Industries have obtained if it had been operating at full capacity?
- What is Walter's target fixed assets/sales ratio?
- If Walter's sales increase 12 percent, how large of an increase in fixed assets would the company need in order to meet its target fixed assets/sales ratio?

- 17-6 Regression and inventories** Jasper Furnishings has \$300 million in sales. The company expects that its sales will increase 12 percent this year. Jasper's CFO uses a simple linear regression to forecast the company's inventory level for a given level of projected sales. On the basis of recent history, the estimated relationship between inventories and sales (in millions of dollars) is

$$\text{Inventories} = \$25 + 0.125(\text{Sales})$$

Given the estimated sales forecast and the estimated relationship between inventories and sales, what are your forecasts of the company's year-end inventory level and the inventory turnover ratio?

Intermediate
Problems 7–12

- 17-7 Pro forma income statement** At the end of last year, Roberts Inc. reported the following income statement (in millions of dollars):

Sales	\$3,000
Operating costs excluding depreciation	<u>2,450</u>
EBITDA	\$ 550
Depreciation	<u>250</u>
EBIT	\$ 300
Interest	<u>125</u>
EBT	\$ 175
Taxes (40%)	<u>70</u>
Net income	<u>\$ 105</u>

Looking ahead to the following year, the company's CFO has assembled the following information:

- Year-end sales are expected to be 10 percent higher than the \$3 billion in sales generated last year.
- Year-end operating costs, excluding depreciation, are expected to equal 80 percent of year-end sales.
- Depreciation is expected to increase at the same rate as sales.
- Interest costs are expected to remain unchanged.
- The tax rate is expected to remain at 40 percent.

On the basis of this information, what will be the forecast for Roberts' year-end net income?

- 17-8 Long-term financing needed** At year-end 2005, total assets for Ambrose Inc. were \$1.2 million and accounts payable were \$375,000. Sales, which in 2005 were \$2.5 million, are expected to increase by 25 percent in 2006. Total assets and accounts payable are proportional to sales, and that relationship will be maintained; that is, they will grow at the same rate as sales. Ambrose typically uses no current liabilities other than accounts payable. Common stock amounted to \$425,000 in 2005, and retained earnings were \$295,000. Ambrose plans to sell new common stock in the amount of \$75,000. The firm's profit margin on sales is 6 percent; 60 percent of earnings will be retained.
- What was Ambrose's total debt in 2005?
 - How much new, long-term debt financing will be needed in 2006?
(Hint: $AFN - \text{New stock} = \text{New long-term debt}$.)
- 17-9 Sales increase** Pierce Furnishings generated \$2.0 million in sales during 2005, and its year-end total assets were \$1.5 million. Also, at year-end 2005, current liabilities were \$500,000, consisting of \$200,000 of notes payable, \$200,000 of accounts payable, and \$100,000 of accrued liabilities. Looking ahead to 2006, the company estimates that its assets must increase by 75 cents for every \$1 increase in sales. Pierce's profit margin is 5 percent, and its retention ratio is 40 percent. How large a sales increase can the company achieve without having to raise funds externally?
- 17-10 Regression and receivables** Edwards Industries has \$320 million in sales. The company expects that its sales will increase 12 percent this year. Edwards's CFO uses a simple linear regression to forecast the company's receivables level for a given level of projected sales. On the basis of recent history, the estimated relationship between receivables and sales (in millions of dollars) is

$$\text{Receivables} = \$9.25 + 0.07(\text{Sales})$$

Given the estimated sales forecast and the estimated relationship between receivables and sales, what are your forecasts of the company's year-end balance for receivables and its year-end days sales outstanding (DSO) ratio? Assume that DSO is calculated on the basis of a 365-day year.

- 17-11 Regression and inventories** Charlie's Cycles Inc. has \$110 million in sales. The company expects that its sales will increase 5 percent this year. Charlie's CFO uses a simple linear regression to forecast the company's inventory level for a given level of projected sales. On the basis of recent history, the estimated relationship between inventories and sales (in millions of dollars) is

$$\text{Inventories} = \$9 + 0.0875(\text{Sales})$$

Given the estimated sales forecast and the estimated relationship between inventories and sales, what are your forecasts of the company's year-end inventory level and its inventory turnover ratio?

- 17-12 Excess capacity** Edney Manufacturing Company has \$2 billion in sales and \$0.6 billion in fixed assets. Currently, the company's fixed assets are operating at 80 percent of capacity.
- What level of sales could Edney have obtained if it had been operating at full capacity?
 - What is Edney's target fixed assets/sales ratio?
 - If Edney's sales increase 30 percent, how large of an increase in fixed assets would the company need in order to meet its target fixed assets/sales ratio?

Challenging
Problems
13–14

- 17-13 Additional funds needed** Morrissey Technologies Inc.'s 2005 financial statements are shown here.

Morrissey Technologies Inc.: Balance Sheet as of December 31, 2005

Cash	\$ 180,000	Accounts payable	\$ 360,000
Receivables	360,000	Notes payable	156,000
Inventories	<u>720,000</u>	Accrued liabilities	<u>180,000</u>
Total current assets	\$1,260,000	Total current liabilities	\$ 696,000
Fixed assets	1,440,000	Common stock	1,800,000
		Retained earnings	<u>204,000</u>
Total assets	<u>\$2,700,000</u>	Total liabilities and equity	<u>\$2,700,000</u>

Morrissey Technologies Inc.: Income Statement for December 31, 2005

Sales	\$3,600,000
Operating costs	<u>3,279,720</u>
EBIT	\$ 320,280
Interest	<u>20,280</u>
EBT	\$ 300,000
Taxes (40%)	<u>120,000</u>
Net Income	<u>\$ 180,000</u>

Per Share Data:

Common stock price	\$24.00
Earnings per share (EPS)	\$ 1.80
Dividends per share (DPS)	\$ 1.08

- Suppose that in 2006 sales increase by 10 percent over 2005 sales and that 2006 DPS will increase to \$1.12. Construct the pro forma financial statements using the projected financial statement method. Use AFN to balance the pro forma balance sheet. How much additional capital will be required? Assume the firm operated at full capacity in 2005.
- If the profit margin were to remain at 5 percent and the dividend payout rate were to remain at 60 percent, at what growth rate in sales would the additional financing requirements be exactly zero? (Hint: Set AFN equal to zero and solve for g .)

17-14 Excess capacity Krogh Lumber's 2005 financial statements are shown here.**Krogh Lumber: Balance Sheet as of December 31, 2005 (Thousands of Dollars)**

Cash	\$ 1,800	Accounts payable	\$ 7,200
Receivables	10,800	Notes payable	3,472
Inventories	<u>12,600</u>	Accrued liabilities	<u>2,520</u>
Total current assets	\$25,200	Total current liabilities	\$13,192
		Mortgage bonds	5,000
		Common stock	2,000
Net fixed assets	<u>21,600</u>	Retained earnings	<u>26,608</u>
Total assets	<u>\$46,800</u>	Total liabilities and equity	<u>\$46,800</u>

Krogh Lumber: Income Statement for December 31, 2005 (Thousands of Dollars)

Sales	\$36,000
Operating costs	<u>30,783</u>
Earnings before interest and taxes	\$ 5,217
Interest	<u>1,017</u>
Earnings before taxes	\$ 4,200
Taxes (40%)	<u>1,680</u>
Net income	<u>\$ 2,520</u>
Dividends (60%)	\$ 1,512
Addition to retained earnings	\$ 1,008

- Assume that the company was operating at full capacity in 2005 with regard to all items *except* fixed assets; fixed assets in 2005 were being utilized to only 75 percent of capacity. By what percentage could 2006 sales increase over 2005 sales without the need for an increase in fixed assets?
- Now suppose 2006 sales increase by 25 percent over 2005 sales. How much additional external capital will be required? Assume that Krogh cannot sell any fixed assets. (Hint: Use the projected financial statement method to develop a pro forma income statement and balance sheet as in Tables 17-1 and 17-2.) Assume that any required financing is borrowed as notes payable. Use a pro forma income statement to determine the addition to retained earnings. (Another hint: Notes payable = \$6,021.)

COMPREHENSIVE/SPREADSHEET PROBLEM

- 17-15 Forecasting financial statements** Use a spreadsheet model to forecast the financial statements in Problems 17-13 and 17-14.

Integrated Case

New World Chemicals Inc.

- 17-16 Financial forecasting** Sue Wilson, the new financial manager of New World Chemicals (NWC), a California producer of specialized chemicals for use in fruit orchards, must prepare a formal financial forecast for 2006. NWC's 2005 sales were \$2 billion, and the marketing department is forecasting a 25 percent increase for 2006. Wilson thinks the company was operating at full capacity in 2005, but she is not sure about this. The first step in her forecast was to assume that key ratios would remain unchanged and that it would be "business as usual" at NWC. The 2005 financial statements, the 2006 initial forecast, and a ratio analysis for 2005 and the 2006 initial forecast are given in Table IC17-1.

TABLE IC17-1 *Financial Statements and Other Data on NWC (Millions of Dollars)*

A. BALANCE SHEETS

	2005	2006E
Cash and equivalents	\$ 20	\$ 25
Accounts receivable	240	300
Inventories	<u>240</u>	<u>300</u>
Total current assets	\$ 500	\$ 625
Net fixed assets	<u>500</u>	<u>625</u>
Total assets	<u>\$1,000</u>	<u>\$1,250</u>
Accounts payable and accrued liabilities	\$ 100	\$ 125
Notes payable	<u>100</u>	<u>190</u>
Total current liabilities	\$ 200	\$ 315
Long-term debt	100	190
Common stock	500	500
Retained earnings	<u>200</u>	<u>245</u>
Total liabilities and equity	<u>\$1,000</u>	<u>\$1,250</u>

TABLE IC17-1 *continued***B. INCOME STATEMENT**

	2005	2006E
Sales	\$2,000.00	\$2,500.00
Less: Variable costs	1,200.00	1,500.00
Fixed costs	700.00	875.00
Earnings before interest and taxes (EBIT)	\$ 100.00	\$ 125.00
Interest	16.00	16.00
Earnings before taxes (EBT)	\$ 84.00	\$ 109.00
Taxes (40%)	33.60	43.60
Net income	\$ 50.40	\$ 65.40
Dividends (30%)	\$ 15.12	\$ 19.62
Addition to retained earnings	\$ 35.28	\$ 45.78

C. KEY RATIOS

	NWC(2005)	NWC(2006E)	Industry	Comment
Basic earning power	10.00%	10.00%	20.00%	
Profit margin	2.52	2.62	4.00	
Return on equity	7.20	8.77	15.60	
Days sales outstanding (365 days)	43.80 days	43.80 days	32.00 days	
Inventory turnover	8.33×	8.33×	11.00×	
Fixed assets turnover	4.00	4.00	5.00	
Total assets turnover	2.00	2.00	2.50	
Debt/assets	30.00%	40.34%	36.00%	
Times interest earned	6.25×	7.81×	9.40×	
Current ratio	2.50	1.99	3.00	
Payout ratio	30.00%	30.00%	30.00%	

Assume that you were recently hired as Wilson's assistant, and your first major task is to help her develop the formal financial forecast. She asked you to begin by answering the following set of questions.

- a. Assume (1) that NWC was operating at full capacity in 2005 with respect to all assets, (2) that all assets must grow at the same rate as sales, (3) that accounts payable and accrued liabilities will also grow at the same rate as sales, and (4) that the 2005 profit margin and dividend payout will be maintained. Under these conditions, what would the AFN equation predict the company's financial requirements to be for the coming year?
- b. Consultations with several key managers within NWC, including production, inventory, and receivable managers, have yielded some very useful information.
 - (1) NWC's high DSO is largely due to one significant customer who battled through some hardships over the past 2 years but who appears to be financially healthy again and is generating strong cash flow. As a result, NWC's accounts receivable manager expects the firm to lower receivables enough to make the DSO equal to 34 days, without adversely affecting sales.
 - (2) NWC was operating a little below capacity, but its forecasted growth will require a new facility, which is expected to increase NWC's net fixed assets to \$700 million.
 - (3) A relatively new inventory management system (installed last year) has taken some time to catch on and operate efficiently. NWC's inventory turnover improved slightly last year, but this year NWC expects even more improvement as inventories decrease and inventory turnover is expected to rise to 10×. Incorporate this information into the 2006 initial forecast results, as these adjustments to the initial forecast represent the final forecast for 2006.

- c. Calculate NWC's forecasted ratios based on its final forecast, and compare them with the company's 2005 historical ratios, the 2006 initial forecast ratios, and with the industry averages. How does NWC compare with the average firm in its industry, and is the company's financial position expected to improve during the coming year?
- d. Based on the final forecast, calculate NWC's free cash flow for 2006. How does this FCF differ from the FCF forecasted by NWC's initial, "business as usual" forecast?
- e. Initially, some NWC managers questioned whether the new facility expansion was necessary, especially since it results in increasing net fixed assets from \$500 million to \$700 million (a 40 percent increase). However, after extensive discussions about NWC needing to position itself for future growth and being flexible and competitive in today's marketplace, NWC's top managers agreed the expansion was necessary. Among the issues raised by opponents was that NWC's fixed assets were being operated at only 85 percent of capacity. Assuming that its fixed assets were operating at only 85 percent of capacity, by how much could sales have increased, both in dollar terms and in percentage terms, before NWC reached full capacity?
- f. How would changes in these items affect the AFN? (1) The dividend payout ratio, (2) the profit margin, (3) the capital intensity ratio, and (4) if NWC begins buying from its suppliers on terms that permit it to pay after 60 days rather than after 30 days. (Consider each item separately and hold all other things constant.)



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Forecasting the Future Performance of Abercrombie & Fitch

Clothing retailer Abercrombie & Fitch enjoyed phenomenal success in the late 1990s. Between 1996 and 2000, its sales grew almost fourfold, from \$335 million to more than \$1.2 billion, and its stock price soared by more than 500 percent. More recently, however, the growth rate has begun to slow down, and Abercrombie has had a hard time meeting its quarterly earnings targets. As a result, the stock price in late 2002 was about half of what it was 3 years earlier. Abercrombie's struggles resulted from increased competition, a sluggish economy, and the challenges of staying ahead of the fashion curve. Since 2002, the company's stock has rebounded strongly but questions always remain about the firm's long-term growth prospects.

Given the questions about Abercrombie's future growth rate, analysts have focused on the company's earnings reports. Thomson One provides a convenient and detailed summary of the company's recent earnings history, along with a summary of analysts' earnings forecasts.

To access this information, we begin by entering the company's ticker symbol, ANF, on Thomson One's main screen and then selecting "GO." This takes us to an overview of the company's recent performance. After checking out the overview, you should click on the tab labeled "Estimates," near the top of your screen. Here you will find a wide range of information about the company's past and projected earnings.

Discussion Questions

1. What are the mean and median forecasts for Abercrombie's earnings per share over the next fiscal year?
2. Based on analysts' forecasts, what is the expected long-term growth rate in earnings?
3. Have analysts made any significant changes to their forecasted earnings for Abercrombie & Fitch in the past few months?
4. Historically, have Abercrombie's reported earnings generally met, exceeded, or fallen short of analysts' forecasted earnings?
5. How has Abercrombie's stock performed this year relative to the S&P 500?