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# 6

## Forecasting for Financial Planning

*“An economist’s guess is liable to be as good as anybody else’s.”*

—Will Rogers

### Google: Where Is It Going?

Google is an information company. You have likely used the Google search engine to find information. The company makes money primarily by selling advertising to the companies you find in your search. It went public in August of 2004 at a price of \$85 per share. Look up its stock price now to see if anything has changed since then.

βGoogle had net income of just under \$1.5 billion in 2005 on sales revenue of over \$6.1 billion. It had assets of over \$10.2 billion in that year. This is pretty good for a company that didn’t exist until 1998.

Google is much more than a search engine company, however. Google does maps, satellite images, software, on-line calendars, Gmail, translation from one language to another, news, shopping, and desktop features for your computer just to name a few.

Where is Google going next? Will it go head to head with Microsoft in the areas of operating systems and application software? Will it go after Apple’s music and music player business? Google executives tend to be quite secretive about future plans for the company, but Google is not the kind of company that stands still.

The company has public stockholders to answer to now. What are the future sources of revenue and profit? How fast will it grow? What investments will be needed?

We may not be privy to the forecasts Goggle executives are making but you can be sure those forecasts are being made. The world may very well be different depending on which direction Google takes.

Source: The Google Company website ([www.google.com/intl/en/options](http://www.google.com/intl/en/options)).

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All of this will require that the firm be financially ready to handle these future endeavors. What will future income statements look like? What about future balance sheets? What kind of financing will be needed to get there? These are some of the questions addressed in this chapter.

## Chapter Overview

Business owners who want to run a successful business must be able to answer many questions about the future, including the following:

- How much profit will your business make?
- How much demand will there be for your product or service?
- How much will it cost to produce your product or offer your service?
- How much money will you need to borrow, when, and how will you pay it back?

Business people must estimate the future all the time. The task of estimating future business events is daunting and darn near impossible, but in business it is necessary. Without some idea of what is going to happen in the future, it is impossible to plan and to succeed in business.

We will look first at the forecasting task, discuss why it is important, and explain what forecasting approaches business people use. Then, step by step, we will build a set of projected financial statements. We will conclude with a discussion of how to analyze forecasts to plan for the financial success of the company.

### Learning Objectives

After reading this chapter, you should be able to:

1. Explain why forecasting is vital to business success.
2. Describe the financial statement forecasting process.
3. Prepare pro forma (projected) financial statements.
4. Explain the importance of analyzing forecasts.

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## Why Forecasting Is Important

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Every day you make decisions based on forecasts. When you go shopping, for example, you decide how much money to spend based on your forecast of how much money you need for other reasons. When you plan trips, you decide how much money to take along based on your forecast of the trip's expenses. You choose what to wear in the morning based on the weather forecaster's prediction of good or bad weather.

The situation is similar in business—particularly in finance. Financial decisions are based on forecasts of situations a business expects to confront in the future. Businesses develop new products, set production quotas, and select financing sources based on forecasts about the future economic environment and the firm's condition. If economists predict interest rates will increase, for example, a firm may borrow now to lock in today's rates.

Forecasting in business is especially important because failing to anticipate future trends can be devastating. The following business examples show why:

- In 2006 *Mission Impossible III* was supposed to be a surefire hit since the first two had been huge. Tom Cruise wasn't able to deliver this time the numbers studio executives had hoped to see.
- United Airlines predicted a profitable future when it emerged from Chapter 11 bankruptcy. It was discharged by the federal bankruptcy court on February 1, 2006 with billions of dollars of liabilities wiped off its books. It recorded a \$306 million loss, however, when the first quarter of 2006 ended. Whether it returns to profitability, or ends up in a Chapter 7 liquidation, is something financial analysts will be trying to predict.

Undoubtedly, analysts wish these forecasts had been more accurate.

Firms often spend a large amount of time, effort, and money to obtain accurate forecasts. Let's take a look at some of the ways forecasters approach the forecasting task.

### Forecasting Approaches

Forecasting simply means making projections about what we think will happen in the future. To make these projections, forecasters use different approaches depending on the situation. Financial managers concentrate on three general approaches: *experience*, *probability*, and *correlation*.

**Experience** Sometimes we think things will happen a certain way in the future because they happened that way in the past. For instance, if it has always taken you 15 minutes to drive to the grocery store, then you will probably assume that it will take you about 15 minutes the next time you drive to the store. Similarly, financial managers often assume sales, expenses, or earnings will grow at certain rates in the future because that is how the rates grew in the past.

**Probability** Sometimes we think things will happen a certain way in the future because the laws of probability indicate that they will be so. For example, let's say insurance company statisticians calculate that male drivers under 25 years of age during a one-year period will have a .25 probability of having an accident. That company insures 10,000

male drivers under 25, so the company's financial manager—based on probability figures—will forecast that 2,500 of the firm's under-25 male policyholders ( $.25 \times 10,000 = 2,500$ ) will have an accident during the coming year. Financial managers use probabilities to forecast the number of customers who won't pay their bills, the number of rejects in a production process, and so on.

**Correlation** Sometimes we think things will happen a certain way in the future because there is a high correlation between the behavior of one item and the behavior of another item that we know more about. For example, if you knew that most people buy new cars right after they graduate from college, you could forecast new-car sales to recent graduates fairly accurately. You would base your plans on the amount of correlation between the number of people graduating and new-car sales. In a similar manner, financial managers forecast more sales for snow tires in the winter and more sales of lawn mowers in the summer.

### Why Forecasts Are Sometimes Wrong

In general, forecasting the future is based on what has happened in the past (either past experience, past probability, or past correlation). However, just because something has occurred in the past does not *ensure* that it will happen the same way in the future, which is why forecasts are sometimes spectacularly wrong. No one can forecast the future with absolute precision. For example, the 9/11 attacks on the World Trade Center and on the Pentagon in 2001 were completely unforeseen.

The approaches to forecasting range from being quite simple to complex and sophisticated, depending on what is being forecast and how much the business needs to rely on an accurate forecast. In the sections that follow, we will examine some of the approaches that business people use to predict future sales and the way that finance people predict their firms' future.

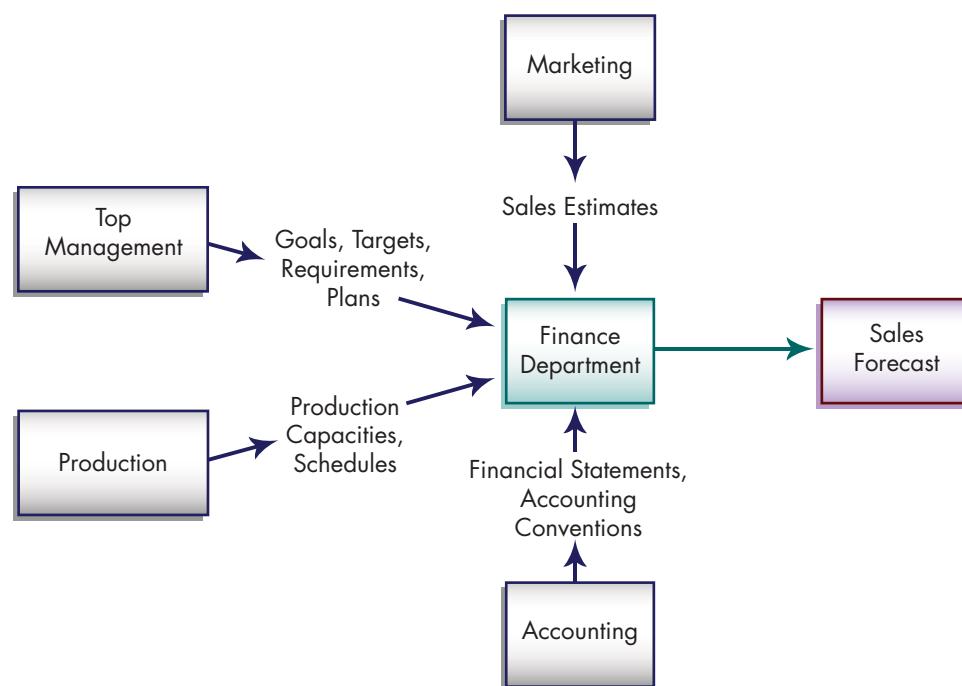
## Forecasting Sales

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Producing a sales forecast is not purely a financial task. Estimates of future sales depend on the demand for the firm's products and the strength of the competition. Sales and marketing personnel usually provide assessments of demand and of the competition. Production personnel usually provide estimates of manufacturing capacity and other production constraints. Top management will make strategic decisions affecting the firm as a whole. Sales forecasting, then, is a group effort. Financial managers coordinate, collect, and analyze the sales forecasting information. Figure 6-1 shows a diagram of the process.

Sometimes financial analysts make a quick estimate of a company's future sales by extending the trend of past sales. Figure 6-2 illustrates this technique, with the sales record of Esoteric Enterprises, Inc., for 2001 to 2006.

The graph in Figure 6-2 shows that Esoteric's sales have been somewhat constant during the five-year period. A forecaster, by extending the past trend, would estimate that Esoteric's sales in 2007 are likely to be about \$220,000. The technique of extending a past trend works well when the past trend is discernible and no outside factors, such as new competition, act to change the trend.



**Figure 6-1** Sales Record, Esoteric Enterprises

This chart shows how a company's sales forecast is developed from many different sources. Marketing data, company goals, production capabilities, and accounting data are analyzed, weighed, and combined to produce the final sales estimate.

## Forecasting Financial Statements

After the sales forecast is completed, financial managers determine whether the firm can support the sales forecast financially. They do this by extending the firm's financial statements into future time periods. These forecasted financial statements are commonly referred to as *pro forma* financial statements.<sup>1</sup> *Pro forma* financial statements show what the firm will look like if the sales forecasts are indeed realized and management's plans carried out. By analyzing the projected financial statements, managers can tell if funds needed to make purchases will be available, if the firm will be able to make loan payments on schedule, if external financing will be required, what return on investment the stockholders can expect, and so on.

### Budgets

Financial managers use a variety of budgets to help produce *pro forma* financial statements. Budgets contain estimates of future receipts and expenditures for various activities. Financial managers produce *pro forma* statements that assume the budget figures will, in fact, occur.

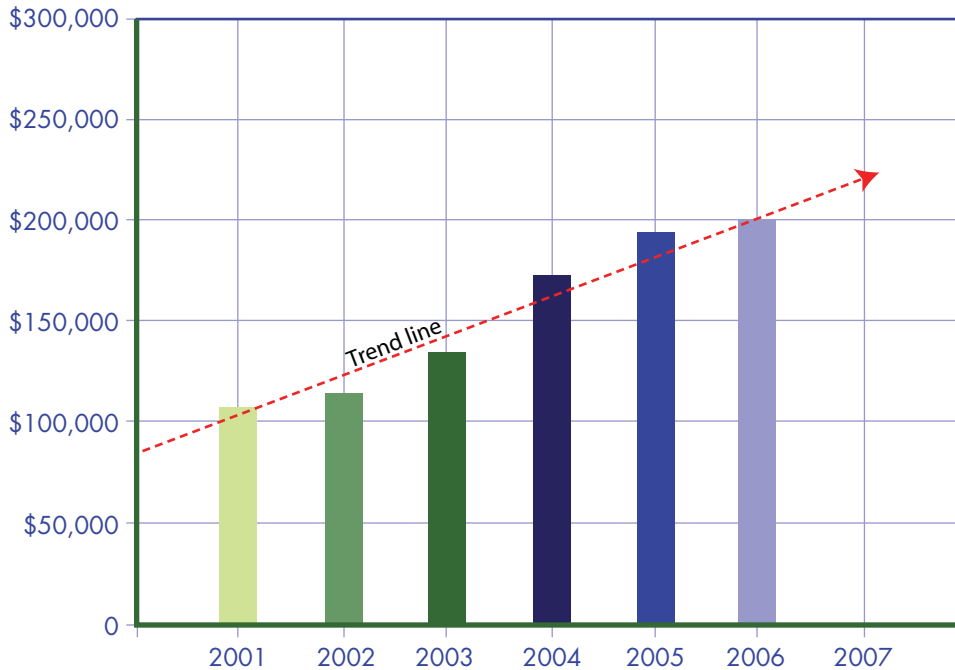
Two budgets are particularly important to forecasters. These are the cash budget and the capital budget. The **cash budget** shows the projected flow of cash in and out of the firm for specified time periods. The capital budget shows planned expenditures for major asset acquisitions. In the sections that follow, we will see how forecasters incorporate data from these budgets into *pro forma* financial statements.

#### Take Note

Developing a cash budget and a capital budget is a complex matter. We discuss cash budgets in Chapter 18, and capital budgets in Chapters 10 and 11.

<sup>1</sup>*Pro forma* is a Latin term meaning "as a matter of form." *Pro forma* financial statements show what the business will look like (its form) if expected events take place.





**Figure 6-2** Sales Record, Esoteric Enterprises

This chart shows the sales record for Esoteric Enterprises, Inc., during 2001 to 2006. Sales growth has been fairly constant during the five-year period. By extending the sales trend, an analyst might estimate Esoteric's sales in 2007 to be about \$220,000.

## Producing *Pro Forma* Financial Statements

Now that we have reviewed the sales forecast and the budgets from which data are drawn to produce *pro forma* financial statements, we can discuss how to produce *pro forma* financial statements. In the following sections, we explore the step-by-step process of creating both a *pro forma* income statement and a *pro forma* balance sheet for Esoteric Enterprises, Inc.

Esoteric Enterprises makes one product: a rechargeable lithium battery used in industrial facilities throughout the United States to power emergency lights. The company's income statement and balance sheet for 2006 are shown in the first column of Figures 6-3a and 6-3b. We will create a *pro forma* income statement and balance sheet for 2007 by filling in the blanks in the second column of Figures 6-3a and 6-3b.

For convenience, assume that we are preparing this forecast on January 1, 2007. (Being dedicated, we have come in on New Year's Day to do this.)

**Choosing the Forecasting Basis** Before we make *pro forma* forecasts of each income statement and balance sheet line item, let's consider our procedure. Unfortunately, no universal procedure applies to all line items on *pro forma* financial statements because forecasters choose values for a variety of reasons. There are three main reasons: (1) management specifies a target goal, (2) the value is taken from either the cash or capital budgets, or (3) the value is an extension of a past trend. If management does not specify a target value and if no value from a budget is available, then forecasters must evaluate how the item has behaved in the past and estimate a future value based on experience, probability, or correlation, as discussed earlier in the chapter.

**Figure 6-3a** Esoteric Enterprises Income Statements

The first column in this figure shows Esoteric Enterprises' income statement for 2006. The pro forma forecast for 2007 will be inserted in the second column.

	<b>Actual 2006</b>	<b>Forecast for 2007</b>
Net Sales	\$201,734	_____
Cost of Goods Sold	<u>107,280</u>	_____
Gross Profit	94,454	_____
Operating Expenses:		
Depreciation	4,500	_____
Selling and Marketing Expenses	32,392	_____
General and Administrative Expense	<u>10,837</u>	_____
Operating Income	46,725	_____
Interest Expense	<u>2,971</u>	_____
Before-Tax Income	43,754	_____
Income Taxes (rate = 40%)	<u>17,502</u>	_____
Net Income	<u>\$ 26,252</u>	_____
Dividends Paid	\$ 23,627	_____
Addition to Retained Earnings	\$ 2,625	_____

As we consider each financial statement item on Esoteric's *pro forma* statements, we will determine its value by seeing whether management has a target goal or whether a budget sets the value for the item. If not, we will extend the trend based on experience, probability, and correlation.

Let's begin with Esoteric Industries' *pro forma* income statement for 2007.

**The Pro Forma Income Statement** To prepare the *pro forma* income statement, we project the values of the following items: sales, costs and expenses associated with sales, general and administrative expenses, depreciation, interest, taxes, dividends paid, and addition to retained earnings. We will examine how to project each value next.

**The Sales Projection** At the top of our *pro forma* income statement for 2007 (shown in Figure 6-3a), we need a figure for sales. Assume that our analysis of marketing, production, finance, and management information results in a sales forecast of \$221,907. Enter this figure in the "Forecast for 2007" column of Figure 6-3a, as shown:

	<b>Forecast for 2007</b>
Net Sales	\$221,907

**Cost of Goods Sold (COGS) and Selling and Marketing Expenses** After sales, the next two items are cost of goods sold (COGS) and selling and marketing expenses. We do not have a management target or budget figure for these expenses, so we will forecast them based on past experience. For Esoteric Enterprises, experience suggests that over time both these items have remained a constant percentage of sales. That is, over the years, COGS has been about 53 percent of sales, and selling and marketing expenses

	<b>Actual Dec 31, 2006</b>	<b>Forecast Dec 31, 2007</b>
<b>Assets</b>		
Current Assets:		
Cash and Marketable Securities	\$ 65,313	_____
Accounts Receivable	13,035	_____
Inventory	<u>21,453</u>	_____
Total Current Assets	99,801	_____
Property, Plant, and Equipment, Gross	133,369	_____
Less Accumulated Depreciation	<u>(40,386)</u>	_____
Property, Plant, and Equipment, Net	92,983	_____
Total Assets	<u>\$192,784</u>	_____
<b>Liabilities and Equity</b>		
Current Liabilities:		
Accounts Payable	\$ 4,733	_____
Notes Payable	<u>302</u>	_____
Total Current Liabilities	5,035	_____
Long-Term Debt	<u>37,142</u>	_____
Total Liabilities	42,177	_____
Common Stock (35 mil. shares, \$1.00 par value)	35,000	_____
Capital in Excess of Par	32,100	_____
Retained Earnings	<u>83,507</u>	_____
Total Stockholders' Equity	150,607	_____
Total Liabilities and Equity	<u>\$192,784</u>	_____

**Figure 6-3b** Esoteric Enterprises Balance Sheets

The first column in this figure shows Esoteric Enterprises' balance sheet as of December 31, 2006. The *pro forma* forecast for December 31, 2007, will be inserted in the second column.

have been about 16 percent of sales. So we conclude that in 2007 these items will be 53 percent and 16 percent of sales, respectively, shown as follows:

**Forecast for 2007**

Cost of Goods Sold	$\$221,907 \times .53 = \$117,611$
Selling and Marketing Expenses	$\$221,907 \times .16 = \$ 35,505$

**General and Administrative Expenses** General and administrative expenses are closely related to the size of Esoteric's manufacturing plant. For our 2007 forecast we assume that Esoteric's property, plant, and equipment will not change. This means that our projected value for general and administrative expenses is \$10,837, the same value as in the previous year:

**Forecast for 2007**

General and Administrative Expenses	\$10,837
-------------------------------------	----------

**Take Note**

For simplicity we use the straight-line depreciation method instead of MACRS to determine depreciation expense for 2007. As a result, we obtain a constant depreciation expense value as long as no equipment is replaced.

**Depreciation Expense** For our depreciation expenses forecast, let us say that Esoteric Enterprises' capital budget does not include the purchase of any additional property, plant, or equipment, and that no equipment is near the end of its projected useful life. The projected depreciation expense, then, will be \$4,500, the same value as it was for 2006.

<b>Forecast for 2007</b>	
Depreciation Expense	\$4,500

**Interest Expense** The amount of interest to be paid in 2007 depends on the amount of debt outstanding in that year. That hasn't been determined yet because it is part of the balance sheet forecast. At this point we have no information indicating new debt will be obtained or old debt paid off, so we will project that interest expense in 2007 will be \$2,971, the same as its 2006 value.

<b>Forecast for 2007</b>	
Interest Expense	\$2,971

**Income Taxes** Esoteric's effective 2006 tax rate, shown in Figure 6-3a, is 40 percent.<sup>2</sup> We assume no changes in the tax law for 2007, so to obtain income tax expense for 2007, multiply the 2007 before-tax income by 40 percent, as follows:

<b>Forecast for 2007</b>	
Income Tax Expense	$\$50,483 \times .40 = \$20,193$

**Dividends Paid and Additions to Retained Earnings** Esoteric's management plans to continue the current dividend policy of paying 90 percent of net income in dividends and retaining 10 percent in 2007. We forecast net income in 2007 as \$30,290 (see Figure 6-4), so dividends paid and the addition to retained earnings will be as follows:

<b>Forecast for 2007</b>	
Dividends Paid	$\$30,290 \times .90 = \$27,261$
Addition to Retained Earnings	$\$30,290 \times .10 = \$3,029$

This completes our *pro forma* income statement. The results are summarized in Figure 6-4. Now let's turn to the *pro forma* balance sheet.

**The Pro forma Balance Sheet** Now we will create the *pro forma* balance sheet for 2007 (December 31) by examining each individual line item account. If no target value is specified by management and if no value from a budget is available, then we will evaluate the item's past performance and estimate its future value based on experience, probability, or correlation.

**Cash and Marketable Securities** The forecast value for cash and marketable securities is normally drawn from the company's *cash budget*, as discussed earlier. Let's assume that financial managers at Esoteric have prepared a cash budget that predicts the amount of cash on hand at the end of 2007 will be \$71,853.

<sup>2</sup>We assume that Esoteric pays 35 percent of its income to the federal government and 5 percent to the state. Caution: When you are forecasting, be sure to check the latest tax rate schedule set by Congress.

	<b>Forecast for 2007</b>
Net Sales	\$221,907
Cost of Goods Sold	<u>117,611</u>
Gross Profit	104,296
Operating Expenses:	
Depreciation	4,500
Selling and Marketing Expenses	35,505
General and Administrative Expense	<u>10,837</u>
Operating Income	53,454
Interest Expense	2,971
Before-Tax Income	50,483
Income Taxes (rate = 40%)	<u>20,193</u>
Net Income	\$ 30,290
Dividends Paid	\$ 27,261
Addition to Retained Earnings	\$ 3,029

**Figure 6-4** Esoteric Enterprises *Pro Forma* Income Statement for 2007

This figure shows Esoteric Enterprises' anticipated 2007 values for each income statement line item. Each forecast value was calculated separately, according to the forecasting assumptions given.

**Accounts Receivable and Inventory** Experience has shown that the accounts receivable and inventory accounts tend to remain the same percentage of sales, similar to the cost of goods sold and selling and marketing expenses on the income statement. In the past, accounts receivable has been 6 percent of sales and inventory has been 11 percent of sales. Therefore, we will assume that these items will be 6 percent and 11 percent of 2007 sales, respectively, at the end of 2007:

	<b>Forecast for 2007</b>
Accounts Receivable	$\$221,907 \times .06 = \$13,314$
Inventory	$\$221,907 \times .11 = \$24,410$

**Property, Plant, and Equipment** Esoteric's capital budget does not include any provision for purchasing production equipment, buildings, or land. In our income statement forecast, we assumed that in 2007 Esoteric Enterprises will not need any additional equipment, no equipment will be disposed of, and no equipment will reach the end of its useful life. Property, plant, and equipment gross at the end of 2007, then, will be the same as its end of 2006 value of \$133,369. Property, plant, and equipment net will be the 2006 gross value less the additional depreciation expense (\$4,500) accumulated during 2007. Here are the calculations:

	<b>Forecast for 2007 12/31/07</b>
Property, Plant, and Equipment (gross) (Same as 12/31/06)	\$ 133,369
Less:	
Accumulated Depreciation	$\$40,386 + \$4,500 = \$ 44,886$
[end of 2006 accumulated depreciation (\$40,386) plus 2007 depreciation expense (\$4,500)]	<u>44,886</u>
Property, Plant, and Equipment (net)	\$ 88,483

**Accounts Payable** Experience has shown that, like accounts receivable and inventory, accounts payable tends to remain the same percentage of sales. In the past accounts payable has been about 2 percent of sales. Therefore, we will assume that accounts payable at the end of 2007 will be 2 percent of 2007 sales. Here is the calculation:

**Forecast for 2007  
12/31/07**

Accounts Payable	$\$221,907 \times .02 = \$4,438$
------------------	----------------------------------

**Notes Payable** We assume based on experience and management policy that any notes outstanding at the end of a year will be paid off by the end of the following year, resulting in a zero balance in the notes payable account. Accordingly, Esoteric's notes payable value for the end of 2007 will be \$0, shown as follows:

**Forecast for 2007  
12/31/07**

Notes Payable	\$0
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**Long-Term Debt** We will assume that no principal payments on Esoteric's long-term debt are due in 2007, and no new debt financing arrangements have yet been made. Therefore, the long-term debt value at the end of 2007 will be the same as the end of 2006 value, \$37,142.

**Forecast for 2007  
12/31/07**

Long-Term Debt (Same as 2006 value)	\$37,142
-------------------------------------	----------

**Common Stock and Capital in Excess of Par** Esoteric's management has no plans to issue or to buy back stock in 2007. The common stock and capital in excess of par values, then, will remain the same at the end of 2007 as they were at the end of 2006, \$35,000 and \$32,100, respectively. The forecast follows:

**Forecast for 2007  
12/31/07**

Common Stock (same as 2006 value)	\$35,000
Capital in Excess of Par (same as 2006 value)	\$32,100

**Retained Earnings** As discussed in Chapter 4, the retained earnings account represents the sum of all net income not paid out in the form of dividends to stockholders.

At the end of 2007, the retained earnings value will be the total of the end of 2006 figure (\$83,507) plus the 2007 addition to retained earnings (\$3,029), as shown on the income statement forecast.

**Forecast for 2007  
12/31/07**

Retained Earnings	$\$83,507 + \$3,029 = \$86,536$
-------------------	---------------------------------

<b>Forecast</b>	
<b>Dec. 31, 2007</b>	
<b>Assets</b>	
Current Assets:	
Cash and Marketable Securities	\$ 71,853
Accounts Receivable	13,314
Inventory	<u>24,410</u>
Total Current Assets	109,577
Property, Plant, and Equipment, Gross	133,369
Less Accumulated Depreciation	<u>(44,886)</u>
Property, Plant, and Equipment, Net	88,483
Total Assets	<u><u>\$198,060</u></u>
 <b>Liabilities and Equity</b>	
Current Liabilities:	
Accounts Payable	\$ 4,438
Notes Payable	<u>0</u>
Total Current Liabilities	4,438
Long-Term Debt	<u>37,142</u>
Total Liabilities	41,580
Common Stock (35 mil. shares, \$1.00 par value)	35,000
Capital in Excess of Par	32,100
Retained Earnings	<u>86,536</u>
Total Stockholders' Equity	153,636
Total Liabilities and Equity	<u><u>\$195,216</u></u>

**Figure 6-5** Esoteric Enterprises *Pro Forma* Balance Sheets for Dec. 31, 2007

This figure shows Esoteric Enterprises' projected end of 2007 values for each balance sheet line item. Each forecasted value was calculated separately by assessing management goals, budget figures, or past trends.

This completes our *pro forma* balance sheet. Figure 6-5 summarizes the results.

**Additional Funds Needed** When the *pro forma* balance sheet is completed, total assets and total liabilities and equity will rarely match. Our forecast in Figure 6-5—in which total assets are forecast to be \$198,060, but total liabilities and equity are forecast to be only \$195,216—is typical. The discrepancy between forecasted assets and forecasted liabilities and equity (\$2,844 in our example) results when either too little or too much financing is projected for the amount of asset growth expected. The discrepancy is called additional funds needed (AFN) when forecasted assets needed exceed forecasted liabilities and equity. It is called excess financing when forecasted liabilities and equity exceed forecasted assets. Our forecast indicates that \$2,844 of additional funds are needed to support Esoteric's needed asset growth.

The determination of additional funds needed is one of the most important reasons for producing *pro forma* financial statements. Armed with the knowledge of how much additional external funding is needed, financial managers can make the necessary financing arrangements in the financial markets before a crisis occurs. Esoteric only needs a small amount, \$2,844, so the company would probably obtain the funds from a line of credit with its bank. When large amounts are required, other funding sources include a new bond or stock issue.

	<b>Actual Dec. 31, 2006</b>	<b>Forecast Dec. 31, 2007</b>	<b>Source Notes</b>
Net Sales	\$201,734	\$221,907	Sales forecast
Cost of Goods Sold	107,280	117,611	53% of sales
Gross Profit	94,454	104,296	
Operating Expenses:			
Depreciation	4,500	4,500	Keep same
Selling and Marketing Expenses	32,392	35,505	16% of sales
General and Administrative Expense	10,837	10,837	Keep same
Operating Income	46,725	53,454	
Interest Expense	2,971	2,971	Keep same
Before-Tax Income	43,754	50,483	
Income Taxes (rate = 40%)	17,502	20,193	Same tax rate, 40%
Net Income	\$ 26,252	\$ 30,290	
Dividends Paid	\$ 23,627	\$ 27,261	Same payout policy, 90%
Addition to Retained Earnings	\$ 2,625	\$ 3,029	Net income— dividends paid

**Figure 6-6a** Esoteric Enterprises Income Statements

The first column in this figure shows Esoteric Enterprises' income statement for 2006. The second column shows the *pro forma* forecast for 2007. The last column contains notes on where each line item value was obtained.



### Interactive Module

Go to the Interactive Spreadsheets you downloaded for chapter 6. Go to the Interactive Spreadsheet for chapter 6. See the *pro forma* income statement and the *pro forma* balance sheet. Follow the instructions there. Note how the growth rate in sales connects to the amount of additional funds needed.

**A Note on Interest Expense** According to Esoteric's *pro forma* financial statements, the company needs \$2,844 of new external financing in 2007. If it borrows the money (as we implied it would), then Esoteric will incur new interest charges that were not included in the original *pro forma* income statement. To be accurate, forecasters should revise the *pro forma* income statement to include the new interest. However, if they make this revision, it will reduce 2007's net income—which, in turn, will reduce 2007's retained earnings on the balance sheet forecast. This will change the total liabilities and equity figure for 2007, throwing the balance sheet out of balance again and changing the amount of additional funds needed!

In forecasting circles, this is known as the *balancing problem*. If the forecast is done on an electronic spreadsheet, it is not difficult to recast the financial statements several times over until the additional amount of interest expense becomes negligible. In this chapter, however, to avoid repeating the forecast over and over, we will simply stay with our original interest expense figure.

Now both our *pro forma* financial statements for Esoteric Enterprises are complete. Figures 6-6a and 6-6b contain the complete 2007 forecast, including source notes explaining the reasons for each forecasted item's value.

### Analyzing Forecasts for Financial Planning

The most important forecasting task begins after the *pro forma* financial statements are complete. At that time, financial managers must analyze the forecast to determine:

1. What current trends suggest will happen to the firm in the future
2. What effect management's current plans and budgets will have on the firm
3. What actions to take to avoid problems revealed in the *pro forma* statements



	<b>Actual Dec. 31, 2006</b>	<b>Forecast Dec. 31, 2007</b>	<b>Source Notes</b>
<b>Assets</b>			
Current Assets:			
Cash and Marketable Securities	\$ 65,313	\$ 71,853	Cash budget
Accounts Receivable	13,035	13,314	6% of sales
Inventory	<u>21,453</u>	<u>24,410</u>	11% of sales
Total Current Assets	99,801	109,577	
Property, Plant, and Equipment, Gross	133,369	133,369	Keep same
Less Accumulated Depreciation	<u>(40,386)</u>	<u>(44,886)</u>	2006 plus 2007 depreciation expense
Property, Plant, and Equipment, Net	<u>92,983</u>	<u>88,483</u>	
Total Assets	<u>\$192,784</u>	<u>\$198,060</u>	
<b>Liabilities and Equity</b>			
Current Liabilities:			
Accounts Payable	\$ 4,733	\$ 4,438	2% of sales
Notes Payable	<u>302</u>	<u>0</u>	Pay off
Total Current Liabilities	5,035	4,438	
Long-Term Debt	<u>37,142</u>	<u>37,142</u>	Keep same
Total Liabilities	42,177	41,580	
Common Stock (35 mil. shares, \$1.00 par value)	35,000	35,000	Keep same
Capital in Excess of Par	32,100	32,100	Keep same
Retained Earnings	83,507	86,536	End of year 2006 + total addition to retained earnings
Stockholders' Equity	<u>150,607</u>	<u>153,636</u>	
Total Liabilities and Equity	<u>\$192,784</u>	<u>\$195,216</u>	2007 AFN = \$2,844

**Figure 6-6b** Esoteric Enterprises' Balance Sheets

The first column in this figure shows Esoteric Enterprises' balance sheet as of December 31, 2006. The second column shows the pro forma forecast for December 31, 2007. The last column contains notes on where each line item value was obtained.

When analyzing the *pro forma* statements, financial managers often see signs of emerging positive or negative conditions. If forecasters discover positive indicators, they will recommend that management continue its current plans. If forecasters see negative indicators, they will recommend corrective action.

To illustrate, let's see how Esoteric Enterprises' financial managers would analyze the company's *pro forma* financial statements and plan for the future.

Scanning the first column in Figure 6-6a, we calculate Esoteric Enterprises' 2006 net profit margin (net income divided by sales) as follows:

$$\text{Current Net Profit Margin} = \$26,252 / \$201,734 = .13, \text{ or } 13\%$$

Using the figures from the *pro forma* forecast (see Figure 6-6a, column 2), Esoteric's forecasted net profit margin in 2007 is as follows:

$$\text{Forecasted Net Profit Margin} = \$30,290 / \$221,907 = .136, \text{ or } 13.6\%$$

The expected increase in the net profit margin from 13 percent to 13.6 percent is a desirable trend, so Esoteric's financial managers will probably recommend that the business maintain its current course of action.

However, if the analysis had shown a projected decline in the net profit margin to, say, 11 percent, the financial managers would try to determine the cause of this decline (perhaps administrative expenses are too high or asset productivity is too low). After the financial managers found the cause, they would recommend appropriate corrective action. Once the company adjusted its plans to correct the problem, the financial managers would prepare a new set of *pro forma* financial statements that reflected the changes.

We presented a brief example to illustrate the process of analyzing *pro forma* financial statements. A complete analysis would involve calculating profitability ratios, asset productivity ratios, liquidity ratios, and debt management ratios, as described in Chapter 5.

## What's Next

---

In this chapter we described forecasting and prepared *pro forma* statements. In Chapter 7, we turn to the risk/return relationship, one of the key concepts of finance.

## Summary

---

### 1. Explain the need for forecasting.

Business planning is based on forecasts of the company's future financial performance. Without forecasting, a business cannot succeed. Incorrect forecasts can be costly—so costly, in some cases, that the mistakes lead to failure.

### 2. Describe the financial statement forecasting process.

Forecasting means making assumptions about what will happen in the future. The three main approaches to making these assumptions are

- **Experience.** We assume things will happen a certain way in the future because they have happened that way in the past.
- **Probability.** We assume things will happen a certain way in the future because the laws of probability indicate that they will be so.
- **Correlation.** We assume things will happen a certain way in the future because of a high correlation between the thing we are interested in and another thing we know more about.

Financial managers use the sales forecast, a variety of budgets, and past trend information to produce financial statements for periods in the future. These projected financial statements are *pro forma* financial statements. *Pro forma* financial statements show what assets, liabilities, and equity a firm is expected to have in the future.

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### 3. Producing *pro forma* financial statements.

*Pro forma* financial statements are based on a company's current financial statements. The forecasted value of each current financial statement line item is determined by a target specified by management, a value extracted from a budget, or an extension of a past trend. In *pro forma* financial statement preparation, no general rule can be applied universally to all line items. Instead, each item must be examined individually. If no target value is specified by management and if no value from a budget is available, then forecasters must evaluate the past performance of the account and estimate a future value based on experience, probability, or correlation.

On the *pro forma* balance sheet, the forecasted values for total assets and total liabilities and equity rarely match. When forecasted assets exceed forecasted liabilities and equity, the difference is called additional funds needed (AFN). When forecasted liabilities and equity exceed forecasted assets, the difference is called excess financing. Additional funds needed is the additional external financing required to support projected asset growth. Excess financing means that too much funding has been set aside for expected asset growth.

### 4. Explain the importance of analyzing forecasts.

Once the *pro forma* financial statements are complete, financial managers must analyze them to determine if the company should continue with its current plans (as in the case of *pro forma* statements that show a growth in revenues), or if plans need to be modified to avoid problems in the future. Financial managers analyze the *pro forma* statements by using the ratio analysis techniques described in Chapter 5.

## Self-Test

---

**ST-1.** For the last five years, cost of goods sold (COGS) for the Heaven's Gate Corporation has averaged 60 percent of sales. This trend is expected to continue for the foreseeable future. If sales for 2007 are expected to be \$2.5 million, what would be the forecast 2007 value for COGS?

**ST-2.** In 2006 the Ishtar Corporation had \$180,000 in retained earnings. During 2007, the company expects net income to be \$750,000. What will the value of retained earnings be on the company's *pro forma* balance sheet for Dec. 31, 2007, if the company continues its policy of paying 50 percent of net income in dividends?

**ST-3.** The Far and Away Irish Import Company's *pro forma* balance sheet for Dec. 31, 2007, indicates that total assets will be \$8,420,000, but total liabilities and equity will be only \$7,685,000. What should Far and Away do to resolve the discrepancy between assets and liabilities?

**ST-4.** Refer to the *pro forma* financial statements for Esoteric Enterprises, Figures 6-6a and 6-6b. Calculate Esoteric's return on equity (ROE) ratio for 2006 and 2007. Comment on the results.

## Review Questions

---

1. Why do businesses spend time, effort, and money to produce forecasts?
2. What is the primary assumption behind the experience approach to forecasting?
3. Describe the sales forecasting process.
4. Explain how the cash budget and the capital budget relate to *pro forma* financial statement preparation.
5. Explain how management goals are integrated into *pro forma* financial statements.
6. Explain the significance of the term additional funds needed.
7. What do financial managers look for when they analyze *pro forma* financial statements?
8. What action(s) should be taken if analysis of *pro forma* financial statements reveals positive trends? Negative trends?

## Build Your Communication Skills

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- CS-1.** Refer to the current and *pro forma* financial statements for Esoteric Enterprises in Figures 6-6a and 6-6b. Analyze the financial statements using the techniques in Chapter 5 and prepare a report of Esoteric's strengths and weaknesses.
- CS-2.** Form small groups of four to six. Based on each group member's assessment of Esoteric's strengths and weaknesses, discuss whether Esoteric should change its business plans and how. Once the group has prepared a strategy, select a spokesperson to report the group's conclusions to the class.



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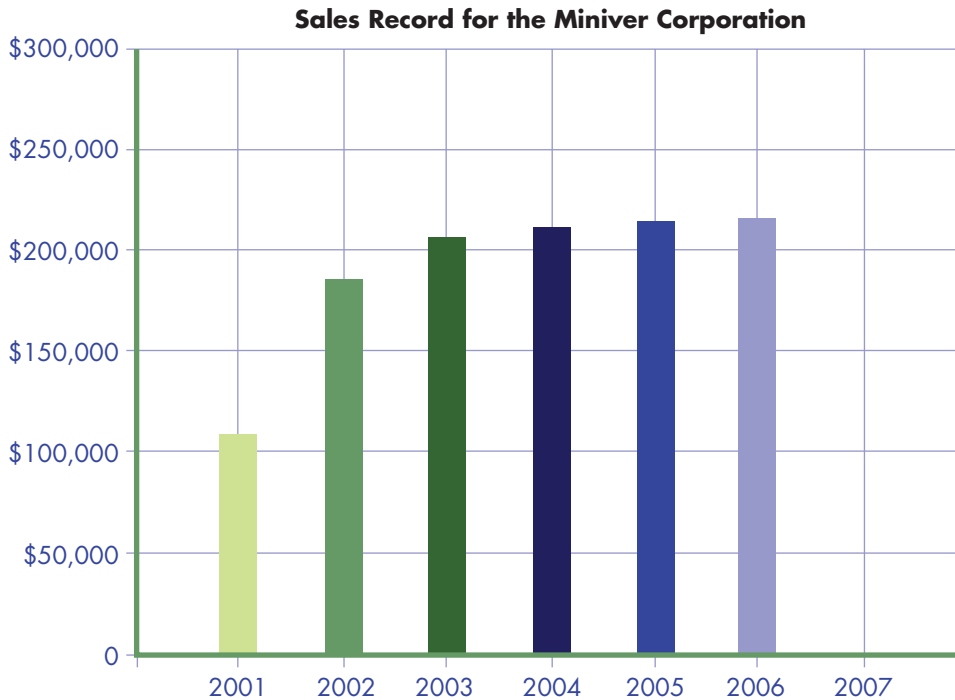
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## Problems

- 6-1.** Miniver Corporation grows flowers and sells them to major U.S. retail flower shops. Mrs. Miniver has asked you to prepare a forecast of expected future sales. The chart below shows the Miniver Corporation's sales record for the last six years. Make an estimate of 2007 sales by extending the trend. Justify your estimate to Mrs. Miniver.

 **Du Pont Equation**



- 6-2.** Complete the following *pro forma* financial statements. Use the forecasting assumptions in the far right-hand column.

 **Additional Funds Needed**

	This Year	Next Year	Forecasting Assumption
Sales	100	_____	Sales will grow 20%
Variable Costs	50	_____	Constant % of sales
Fixed Costs	40	_____	Remains same
Net Income	<u>10</u>	_____	
Dividends	5	_____	Keep 50% payout ratio
Current Assets	60	_____	Constant % of sales
Fixed Assets	100	_____	Remains same
Total Assets	<u>160</u>	_____	
Current Liabilities	20	_____	Constant % of sales
Long-Term Debt	20	_____	Remains same
Common Stock	20	_____	Remains same
Retained Earnings	<u>100</u>	_____	
Total Liabilities and Equity	<u>160</u>	_____	
AFN =		_____	

### Additional Funds Needed

- 6-3.** Jolly Joe's Pizza has just come out with a new pizza that Joe is sure will cause sales to double between 2006 and 2007. Using the following worksheet, complete Joe's *pro forma* financial forecast and answer the related questions. You may assume that COGS, current assets, and current liabilities will maintain the same percentage of sales as in 2006. Furthermore, you may assume that no new fixed assets will be needed in 2007, and the current dividend policy will be continued in 2007.

#### Jolly Joe's Pizza, Inc. Financial Status and Forecast

	<b>2006</b>	<b>Estimate for 2007</b>
Sales	\$ 10,000	
COGS	4,000	
Gross Profit	<u>6,000</u>	
Fixed Expenses	3,000	
Before-Tax Profit	<u>3,000</u>	
Tax @ 33.33%	1,000	
Net Profit	<u>\$ 2,000</u>	
Dividends	\$ 0	
Current Assets	\$ 25,000	
Net Fixed Assets	<u>15,000</u>	
Total Assets	<u><u>\$ 40,000</u></u>	
Current Liabilities	\$ 17,000	
Long-Term Debt	3,000	
Common Stock	7,000	
Retained Earnings	<u>13,000</u>	
Total Liabilities and Equity	<u><u>\$ 40,000</u></u>	

Will Joe be able to get by without any additional funds needed in 2007? If not, how much will he need?

### Pro Forma Income Statement

- 6-4.** Jose Tine owns Sugar Cane Alley, a small candy shop in Aspen, Colorado. He would like to expand his business and open a second store in Vail. Mr. Tine does not have the capital to undertake this project and would like to borrow the money from the local bank. He knows the banker will need projected income statement data for his current store when considering his loan application. Net sales for 2006 were \$90,000. Considering previous growth rates in his business and the anticipated increase in tourism, projected net sales for 2007 are \$110,000. Answer the questions based on the following assumptions. Cost of goods sold and selling and marketing expenses will remain the same percentage of sales as in 2006. General and administration expenses will remain the same value as 2006 at \$5,000. Mr. Tine uses the straight-line method of depreciation, so last year's depreciation expense figure of \$2,000 can also be applied to 2007.
- a. 2006 cost of goods sold was \$48,000. What is the forecasted value of cost of goods sold for 2007?
  - b. What is the forecasted gross profit for 2007?



- c. Selling and marketing expenses for 2006 were \$13,000. What is the forecasted value for 2007?
- d. Calculate the forecasted operating income for 2007.
- e. Assume the interest expense for 2007 will be \$800 and the tax rate is 30 percent. Calculate earnings before taxes (EBT) and net income expected for 2007 to the nearest dollar.
- f. If \$10,000 is distributed in dividends in 2007, what will be 2007's addition to retained earnings?

- 6-5.** After completing the *pro forma* income statement in problem 6-4, Mr. Tine now realizes he should also complete a *pro forma* balance sheet. Net sales in 2006 were \$90,000 and his forecasted sales for 2007 are \$110,000. All of Sugar Cane Alley's current assets will remain the same percentage of sales as they were in 2006. Mr. Tine does not plan to buy or sell any equipment, so his gross property and equipment amount will remain the same as 2006. In the liabilities and equity section, only accounts payable will remain the same percentage of sales as in 2006. Except for retained earnings, the other accounts are expected to remain the same value as 2006. The following balances were taken from Sugar Cane Alley's end-of-2006 balance sheet:

 **Pro Forma  
Balance Sheet**

Cash	\$10,000
Accounts Receivable	2,220
Inventory	8,000
Property and Equipment (gross)	25,000
Accumulated Depreciation	4,000
Property and Equipment (net)	21,000
Accounts Payable	1,380
Long-Term Notes Payable	8,000
Retained Earnings	5,000
Common Stock	26,840

- a. Calculate the forecasted end-of-2007 values for each of the current asset accounts.
- b. Depreciation expense for 2007 is estimated to be \$2,000. Calculate the estimated total assets for the end of 2007.
- c. Forecast the accounts payable for the end of 2007.
- d. What will total liabilities be at the end of 2007?
- e. Assuming the forecasted net income for 2007 is \$19,351 and cash dividends paid equal \$10,000, what total will be forecasted for the end-of-2007 total liabilities and equity?
- f. Based on these calculations of the *pro forma* balance sheet, are additional funds needed?
- g. Net income for 2006 was \$14,840. What was Sugar Cane Alley's net profit margin for 2006? The forecasted net income for 2007 is \$19,351. What is Sugar Cane Alley's forecasted 2007 net profit margin?

**Pro Forma**   
**Balance Sheet**
**Marsh, Inc.**  
**Balance Sheet, Dec. 31, 2006**

<b>Assets</b>		<b>Liabilities + Equity</b>	
Cash	\$10,000	Accounts Payable	\$10,500
Acct. Rec.	25,000	Notes Payable	10,000
Inventory	20,000	Accrued Expenses	11,000
Prepaid Exp.	2,000	Long-Term Debt	15,000
Total Current Assets	57,000	Common Equity	38,500
Fixed Assets	32,000	Total Liabilities and Equity	85,000
Accum. Dep.	4,000		
Total Assets	85,000		

Marsh's net sales for 2006 were \$150 million. Sales growth is expected to be 25 percent in 2007, and all current asset and current liability accounts will have the same percentage of sales as in 2006. Net fixed assets will remain the same dollar amount. There is a 100 percent dividend payout ratio. Prepare a *pro forma* balance sheet for 2007.

**Pro Forma Income**   
**Statement**

- 6-7. Fill in the missing values of the *pro forma* income statement for 2007. Sales will increase by 25 percent and the dividend payouts will increase from 40 percent to 55 percent. Variable costs will be 5 percentage points less than the original percentage of sales.

	<b>2006</b>	<b>2007</b>
Sales	1,000	_____
Variable Costs	500	_____
Fixed Costs	<u>160</u>	_____
Net Income	<u>340</u>	_____
Dividends	136	_____

**Pro Forma**   
**Balance Sheet**

- 6-8. The balance sheet of Free Enterprises, Inc., at the end of 2006 follows.

**Free Enterprises, Inc.**  
**Balance Sheet, Dec. 31, 2006**  
**(Thousands of Dollars)**

<b>Assets</b>		<b>Liabilities + Equity</b>	
Cash	\$ 4,000	Accounts Payable	\$ 4,400
Accounts Receivable	10,000	Notes Payable	4,000
Inventory	13,000	Accrued Expenses	5,000
Prepaid Expenses	400	Total Current Liabilities	13,400
Total Current Assets	27,400	Bonds Payable	6,000
Fixed Assets	<u>11,000</u>	Common Equity	<u>19,000</u>
Total Assets	<u>\$38,400</u>	Total Liabilities and Equity	<u>\$38,400</u>

Net sales for 2006 were \$85,000,000. The average annual sales growth rate is expected to be 10 percent every year for the next three years. Over the past several years the earnings before taxes (EBT) were 11 percent of net sales and are expected to remain the same over the next three years. The company's tax rate is 40 percent, and it plans to maintain the dividend payout ratio (dividends paid/net income) at 60 percent.

Prepare a *pro forma* balance sheet for Free Enterprises, Inc., for December 31, 2007. Assume the accounts that are not a function of sales (fixed assets and bonds payable) remain the same as they were in 2006. Current assets and current liabilities will remain the same percentage of sales as in 2006. Assume the only change to common equity is for the addition to retained earnings.

- 6-9. Consider the current and *pro forma* financial statements that follow.



	<b>2006</b>	<b>2007</b>
Sales	200	220
Variable Costs	100	110
Fixed Costs	80	80
Net Income	<u>20</u>	<u>30</u>
Dividends	10	22
Current Assets	120	132
Fixed Assets	<u>200</u>	<u>200</u>
Total Assets	<u>320</u>	<u>332</u>
Current Liabilities	40	44
Long-Term Debt	40	40
Common Stock	40	40
Retained Earnings	<u>200</u>	<u>208</u>
Total Liabilities and Equity	<u>320</u>	<u>332</u>
		AFN = 0

Compute the following ratios for 2006 and 2007:

	<b>2006</b>	<b>2007</b>
Current Ratio	_____	_____
Debt to Assets Ratio	_____	_____
Sales to Assets Ratio	_____	_____
Net Profit Margin	_____	_____
Return on Assets	_____	_____
Return on Equity	_____	_____

Comment on any trends revealed by your ratio analysis.

**Challenge Problem**


**6-10. 1.** Develop a *pro forma* income statement and balance sheet for the Bright Future Corporation. The company's 2006 financial statements are shown below. Base your forecast on the financial statements and the following assumptions:

- Sales growth is predicted to be 20 percent in 2007.
- Cost of goods sold, selling and administrative expense, all current assets, accounts payable, and accrued expenses will remain the same percentage of sales as in 2006.
- Depreciation expense, interest expense, gross plant and equipment, notes payable, long-term debt, and equity accounts other than retained earnings in 2007 will be the same as in 2006.
- The company's tax rate in 2007 will be 40 percent.
- The same dollar amount of dividends will be paid to common stockholders in 2007 as in 2006.
- Bad debt allowance in 2007 will be the same percentage of accounts receivable as it was in 2006.

**Bright Future Corporation  
Income Statement for 2006**

Sales	\$10,000,000
Cost of Goods Sold	4,000,000
Gross Profit	<u>6,000,000</u>
Selling and Administrative Expenses	800,000
Depreciation Expense	<u>2,000,000</u>
Earnings before Interest and Taxes (EBIT)	3,200,000
Interest Expense	<u>1,350,000</u>
Earnings before Taxes (EBT)	1,850,000
Taxes (40%)	<u>740,000</u>
Net Income (NI)	1,110,000
Earnings per Share (EPS) (1 million shares)	\$ 1.11
Common Stock Dividends Paid	510,000
Addition to Retained Earnings	600,000

**Bright Future Corporation**  
**Balance Sheet Dec. 31, 2006**

**Assets:**

## Current Assets:

Cash	\$ 9,000,000
Marketable Securities	8,000,000
Accounts Receivable (Net)	1,000,000
Inventory	20,000,000
Prepaid Expenses	<u>1,000,000</u>
Total Current Assets	\$39,000,000

## Fixed Assets:

	11,000,000
Plant and Equipment (Gross)	20,000,000
Less Accumulated Depreciation	<u>(9,000,000)</u>
Plant and Equipment (Net)	11,000,000
Total Assets	\$50,000,000

**Liabilities and Equity:**

## Current Liabilities:

Accounts Payable	\$12,000,000
Notes Payable	5,000,000
Accrued Expenses	<u>3,000,000</u>
Total Current Liabilities	\$20,000,000
Bonds Payable (5%, due 2015)	<u>20,000,000</u>
Total Liabilities	\$40,000,000
Common Stock (1 mil. shares, \$1 par)	1,000,000
Capital in Excess of Par	4,000,000
Retained Earnings	<u>5,000,000</u>
Total Equity	10,000,000
Total Liabilities and Equity	\$50,000,000

2.
  - a. Calculate Bright Future's additional funds needed, or excess financing. If additional funds are needed, add them to long-term debt to bring the balance sheet into balance. If excess financing is available, increase common stock dividends paid (and, therefore, decrease 2007 retained earnings) until the balance sheet is in balance.
  - b. Calculate Bright Future's current ratio for the end of 2006 and 2007.
  - c. Calculate Bright Future's total asset turnover and inventory turnover ratios for 2007.
  - d. Calculate Bright Future's total debt to total assets ratio for 2006 and 2007.
  - e. Calculate Bright Future's net profit margin, return on assets, and return on equity ratios for 2006 and 2007.
3. Comment on Bright Future's liquidity, asset productivity, debt management, and profitability based on the results of your ratio analysis in 2b through 2e.
4. What recommendations would you provide to management based on your forecast and analysis?

## Answers to Self-Test

---

**ST-1.** If COGS is expected to remain 60 percent of sales, then in 2007 COGS will be 60 percent of 2007's sales:

$$.60 \times \$2,500,000 = \$1,500,000$$

**ST-2.** If Ishtar earns \$750,000 in 2000 and pays 50 percent of it to stockholders as dividends, then the other 50 percent, or \$375,000, will be retained and added to the existing retained earnings account. Therefore, retained earnings on Ishtar's December 31, 2007, *pro forma* balance sheet will be

$$\$180,000 + \$375,000 = \$555,000$$

**ST-3.** Far and Away's total liabilities and equity are forecast to be \$735,000 less than total assets. This means Far and Away must arrange for \$735,000 in additional financing to support expected asset growth. Possible sources of this financing include bank loans, a bond issue, a stock issue, or perhaps lowering the 2007 dividend (if any).

**ST-4.**

$$\text{ROE} = \frac{\text{Net Income}}{\text{Common Equity}}$$

For Esoteric in 2006 (from the 2006 financial statements):

$$\text{ROE} = \frac{\$26,252}{\$150,607} = .174, \text{ or } 17.4\%$$

For Esoteric in 2007 (from the 2007 *pro forma* financial statements):

$$\text{ROE} = \frac{\$30,290}{\$153,636} = .197, \text{ or } 19.7\%$$

### Take Note

Remember that risk and return go hand in hand. The financial managers at Esoteric Enterprises must evaluate the risk associated with the ROE figures before concluding that current plans will lead to desirable results.

Note that this is a favorable forecast. The gain of over two percentage points in an already respectable ROE value should be particularly pleasing to the stockholders. Esoteric's financial managers should recommend that the company continue with its current plans, assuming that the increase in ROE does not signal an excessive increase in risk.

# Campfire queen Cycling champion Sentimental geologist\*

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