

# Chapter 3

## Financial Planning and Growth

### EXECUTIVE SUMMARY

Financial planning establishes guidelines for change in the firm. These guidelines should include (1) an identification of the firm's financial goals, (2) an analysis of the differences between these goals and the current financial status of the firm, and (3) a statement of the actions needed for the firm to achieve its financial goals. In other words, as one member of GM's board was heard to say, "Planning is a process that at best helps the firm avoid stumbling into the future backwards."

The basic elements of financial planning comprise (1) the investment opportunities the firm elects to take advantage of, (2) the amount of debt the firm chooses to employ, and (3) the amount of cash the firm thinks is necessary and appropriate to pay shareholders. These are the financial policies that the firm must decide upon for its growth and profitability.

Almost all firms identify a companywide growth rate as a major component of their financial planning.<sup>1</sup> In one famous case Inter-

national Business Machines' stated growth goal was simple but typical: to match the growth of the computer industry, which was projected to be 15 percent per year through the end of the 1990s. Though we may have had some doubts about IBM's ability to sustain a 15-percent growth rate, we are certain there are important financial implications of the strategies that IBM will adopt to achieve that rate. There are direct connections between the growth that a company can achieve and its financial policy. One purpose of this chapter is to look at the financial aspects of how fast a firm can grow.

The chapter first describes what is usually meant by financial planning. This enables us to make an important point: Investment and financing decisions frequently interact. The different interactions of investment and financing decisions can be analyzed in the financial statements. We show how financial statements can be used to better understand how growth is achieved.

<sup>1</sup>We think that a firm's growth should be a consequence of its trying to achieve maximum shareholder value.

### 3.1 What Is Financial Planning?

Financial planning formulates the method by which financial goals are to be achieved. It has two dimensions: a time frame and a level of aggregation.

A financial plan is a statement of what is to be done in a future time. The GM board member was right on target when he explained the virtues of financial planning. Most decisions have long lead times, which means they take a long time to implement. In an uncertain world, this requires that decisions be made far in advance of their implementation. If a firm

wants to build a factory in 2006, it may need to line up contractors in 2004. It is sometimes useful to think of the future as having a short run and a long run. The short run, in practice, is usually the coming 12 months. Initially, we focus our attention on financial planning over the long run, which is usually taken to be a two-year to five-year period of time.

Financial plans are compiled from the capital-budgeting analyses of each of a firm's projects. In effect, the smaller investment proposals of each operational unit are added up and treated as a big project. This process is called **aggregation**.

Financial plans always entail alternative sets of assumptions. For example, suppose a company has two separate divisions: one for consumer products and one for gas turbine engines. The financial-planning process might require each division to prepare three alternative business plans for the next three years.

1. *A Worst Case.* This plan would require making the worst possible assumptions about the company's products and the state of the economy. It could mean divestiture and liquidation.
2. *A Normal Case.* This plan would require making the most likely assumptions about the company and the economy.
3. *A Best Case.* Each division would be required to work out a case based on the most optimistic assumptions. It could involve new products and expansion.

Because the company is likely to spend a lot of time preparing proposals on different scenarios that will become the basis for the company's financial plan, it seems reasonable to ask what the planning process will accomplish.

1. *Interactions.* The financial plan must make the linkages between investment proposals for the different operating activities of the firm and the financing choices available to the firm explicit. IBM's 15-percent growth target goes hand in hand with its financing program.
2. *Options.* The financial plan provides the opportunity for the firm to work through various investment and financing options. The firm addresses questions of what financing arrangements are optimal and evaluates options of closing plants or marketing new products.
3. *Feasibility.* The different plans must fit into the overall corporate objective of maximizing shareholder wealth.
4. *Avoiding Surprises.* Financial planning should identify what may happen in the future if certain events take place. Thus, one of the purposes of financial planning is to avoid surprises.

### Concept Questions

1. What are the two dimensions of the financial planning process?
2. Why should firms draw up financial plans?

## 3.2 A Financial-Planning Model: The Ingredients

Just as companies differ in size and products, financial plans are not the same for all companies. However, there are some common elements:

1. **Sales forecast.** All financial plans require a sales forecast. Perfectly accurate sales forecasts are not possible, because sales depend on the uncertain future state of the economy. Firms can get help from businesses specializing in macroeconomic and industry projections. A good sales forecast should be the consequence of having identified all valuable investment opportunities.

## Part I Value and Capital Budgeting

2. **Pro forma statements.** The financial plan will have a forecast balance sheet, an income statement, and a sources-and-uses statement. These are called *pro forma statements*, or *pro formas*.
3. **Asset requirements.** The plan will describe projected capital spending. In addition, it will discuss the proposed uses of net working capital.
4. **Financial requirements.** The plan will include a section on financing arrangements. This part of the plan should discuss dividend policy and debt policy. Sometimes firms will expect to raise equity by selling new shares of stock. In this case the plan must consider what kinds of securities must be sold and what methods of issuance are most appropriate.
5. **Plug.** Suppose a financial planner assumes that sales, costs, and net income will rise at a particular rate,  $g_1$ . Further suppose that the planner wants assets and liabilities to grow at a different rate,  $g_2$ . These two different growth rates may be incompatible unless a third variable is also adjusted. For example, compatibility may only be reached if outstanding stock grows at a different rate,  $g_3$ . In this example, we treat the growth in outstanding stock as the *plug* variable. That is, the growth rate in outstanding stock is chosen to make the growth rate in income-statement items consistent with the growth rate in balance-sheet items. Surprisingly, even if the income-statement items grow at the *same* rate as the balance-sheet items, consistency might be achieved only if outstanding stock grows at a different rate.

Of course, the growth rate in outstanding stock need not be the plug variable. One could have income-statement items grow at  $g_1$ , and assets, long-term debt, and outstanding stock grow at  $g_2$ . In this case, compatibility between  $g_1$  and  $g_2$  might be achieved by letting short-term debt grow at a rate of  $g_3$ .

6. **Economic assumptions.** The plan must explicitly state the economic environment in which the firm expects to reside over the life of the plan. Among the economic assumptions that must be made is the level of interest rates.

## EXAMPLE

The Computerfield Corporation's 20X1 financial statements are as follows:

Income Statement 20X1		Balance Sheet Year-End 20X1			
Sales	\$1,000	Assets	\$500	Debt	\$250
Costs	800			Equity	250
Net income	\$ 200	Total	\$500	Total	\$500

In 20X1, Computerfield's profit margin is 20 percent, and it has never paid a dividend. Its debt-equity ratio is 1. This is also the firm's *target* debt-equity ratio. Unless otherwise stated, the financial planners at Computerfield assume that all variables are tied directly to sales and that current relationships are optimal.

Suppose that sales increase by 20 percent from 20X1 to 20X2. Because the planners would then also forecast a 20-percent increase in costs, the pro forma income statement would be

Income Statement 20X2	
Sales	\$1,200
Costs	960
Net income	\$ 240

The assumption that all variables will grow by 20 percent will enable us to construct the pro forma balance sheet as well:

Balance Sheet Year-End 20X2			
Assets	\$600	Debt	\$300
		Equity	300
Total	\$600	Total	\$600

Now we must reconcile these two pro formas. How, for example, can net income be equal to \$240 and equity increase by only \$50? The answer is that Computerfield must have paid a dividend or repurchased stock equal to \$190. In this case dividends are the plug variable.

Suppose Computerfield does not pay a dividend and does not repurchase its own stock. With these assumptions, Computerfield's equity will grow to \$490, and debt must be retired to keep total assets equal to \$600. In this case the debt-to-equity ratio is the plug variable with \$600 in total assets and \$490 in equity, debt will have to be \$600 – \$490, or \$110. Since we started with \$250 in debt, Computerfield will have to retire \$250 – \$110, or \$140 of debt. The resulting balance sheet would look like this:

Balance Sheet Year-End 20X2			
Asset	\$600	Debt	\$110
		Equity	490
Total	\$600	Total	\$600

The thing to notice in our simple example is the way the change in liabilities and equity depends on the firm's financing policy and the firm's dividend policy. The firm ensures growth in assets by having a plan in place to finance such growth.

This example shows the interaction of sales growth and financial policy. The next section focuses on the need for external funds. It identifies a six-step procedure for constructing the pro forma balance sheet.

### 3.3 The Percentage Sales Method

In the previous section, we described a simple planning model in which every item increased at the same rate as sales. This may be a reasonable assumption for some elements. For others, such as long-term borrowing, it probably is not, because the amount of long-term borrowing is something set by management, and it does not necessarily relate directly to the level of sales.

In this section, we describe an extended version of our simple model. The basic idea is to separate the income statement and balance sheet accounts into two groups, those that do vary directly with sales and those that do not. Given a sales forecast, we will then be able to calculate how much financing the firm will need to support the predicted sales level.

The financial planning model we describe next is based on the **percentage of sales approach**. Our goal here is to develop a quick and practical way of generating pro forma statements. We defer discussion of some “bells and whistles” to a later section.

## The Income Statement

We start out with the most recent income statement for the Rosengarten Corporation, as shown in Table 3.1. Notice we have still simplified things by including costs, depreciation, and interest in a single cost figure. We separate these out in a later section.

Rosengarten has projected a 10 percent increase in sales for the coming year, so we are anticipating sales of \$20 million  $\times$  1.1 = \$22 million. To generate a pro forma income statement, we assume that total costs will continue to run at \$16.9697 million/\$20 million = 84.85% of sales. With this assumption, Rosengarten's pro forma income statement is as shown in Table 3.2. The effect here of assuming that costs are a constant percentage of sales is to assume that the profit margin is constant. To check this, notice that the profit margin was \$2 million/\$20 million = 10%. In our pro forma, the profit margin is \$2.2 million/\$22 million = 10%; so it is unchanged.

Next, we need to project the dividend payment. This amount is up to Rosengarten's management. We will assume Rosengarten has a policy of paying out a constant fraction of net income in the form of a cash dividend. For the most recent year, the **dividend payout ratio** was:

$$\begin{aligned}\text{Dividend payout ratio} &= \text{Cash dividends}/\text{Net income} \\ &= \$1 \text{ million}/\$2 \text{ million} = 50\% \quad (3.1)\end{aligned}$$

We can also calculate the ratio of the addition to retained earnings to net income as:

$$\text{Addition to retained earnings}/\text{Net income} = \$1 \text{ million}/\$2 \text{ million} = 50\%$$

This ratio is called the **retention ratio** or **plowback ratio**, and it is equal to 1 minus the dividend payout ratio because everything not paid out is retained. Assuming that the payout ratio is constant, the projected dividends and addition to retained earnings will be:

$$\text{Projected dividends paid to shareholders} = \$1.1 \text{ million} \times \frac{1}{2} = \$ 550 \text{ thousand}$$

$$\text{Projected addition to retained earnings} = \$1.1 \text{ million} \times \frac{1}{2} = \underline{\underline{550 \text{ thousand}}}$$

\$1,100 thousand

TABLE 3.1

### ROSENGARTEN CORPORATION Income Statement (\$ in thousands)

Sales	\$20,000
Costs	16,969.7
Taxable income	\$ 3,030.3
Taxes (34%)	1,030.3
Net income	<u>\$ 2,000</u>
Dividends	\$1,000
Addition to retained earnings	1,000

TABLE 3.2

### ROSENGARTEN CORPORATION Pro Forma Income Statement (\$ in thousands)

Sales (projected)	\$22,000
Costs (84.85% of sales)	18,666
Taxable income	\$ 3,334
Taxes (34%)	1,134
Net income	<u>\$ 2,200</u>

## The Balance Sheet

To generate a pro forma balance sheet, we start with the most recent statement, as shown in the table below.

On our balance sheet, we assume that most of the items vary directly with sales. Only common stock does not. For those items that do vary with sales, we express each as a percentage of sales for the year just completed. When an item does not vary directly with sales, we write “constant.”

For example, on the asset side, fixed assets are equal to 120 percent of sales (\$24 million/\$20 million) for the year just ended. We assume this percentage applies to the coming year, so for each \$1 increase in sales, fixed assets will rise by \$1.20.

Current Balance Sheet (\$ in thousands)		Pro Forma Balance Sheet (\$ in thousands)		Explanation
Current assets	\$ 6,000	\$ 6,600		
Fixed assets	24,000	26,400		120% of sales
Total assets	<u>\$30,000</u>	<u>\$33,000</u>		150% of sales
Short-term debt	\$10,000	\$11,000		50% of sales
Long-term debt	6,000	6,600		30% of sales
Common stock	4,000	4,000		Constant
Retained earnings	10,000	11,100		Net income
Total financing	<u>\$30,000</u>	<u>\$32,700</u>		
		<u>\$ 300</u>		Funds needed (the difference between total assets and total financing)

From this information we can determine the pro forma balance sheet, which is on the right-hand side. The change in retained earnings will be

$$\begin{aligned} \text{Net income} & - \text{Dividends} & = & \text{Change in retained earnings} \\ (0.10 \times \$22 \text{ million}) & - (0.5 \times 0.10 \times \$22 \text{ million}) & = & \$1.1 \text{ million} \end{aligned}$$

In this example the plug variable is new shares of stock. The company must issue \$300,000 of new stock. The equation that can be used to determine if external funds are needed is

### External Funds Needed (EFN):

$$\begin{aligned} & \left( \frac{\text{Assets}}{\text{Sales}} \right) \times \Delta \text{Sales} - \frac{\text{Debt}}{\text{Sales}} \times \Delta \text{Sales} - (p \times \text{Projected sales}) \times (1 - d) \\ & = (1.5 \times \$2 \text{ million}) - (0.80 \times \$2 \text{ million}) - (0.10 \times \$22 \text{ million} \times 0.5) \\ & = \$1.4 \text{ million} & - & \$1.1 \text{ million} \\ & = \$0.3 \text{ million} \end{aligned}$$

where

$$\frac{\text{Assets}}{\text{Sales}} = 1.5$$

$$\frac{\text{Debt}}{\text{Sales}} = 0.8$$

$$p = \text{Net profit margin} = 0.10$$

$$d = \text{Dividend payout ratio} = 0.5$$

$$\Delta \text{Sales} = \text{Projected change in sales}$$

**Part I Value and Capital Budgeting**

The steps in the estimation of the pro forma sheet for the Rosengarten Corporation and the external funds needed (EFN) are as follows:

1. Express balance-sheet items that vary with sales as a percentage of sales.
2. Multiply the percentages determined in step (1) by projected sales to obtain the amount for the future period.
3. Where no percentage applies, simply insert the previous balance-sheet figure in the future period.
4. Compute projected retained earnings as follows:

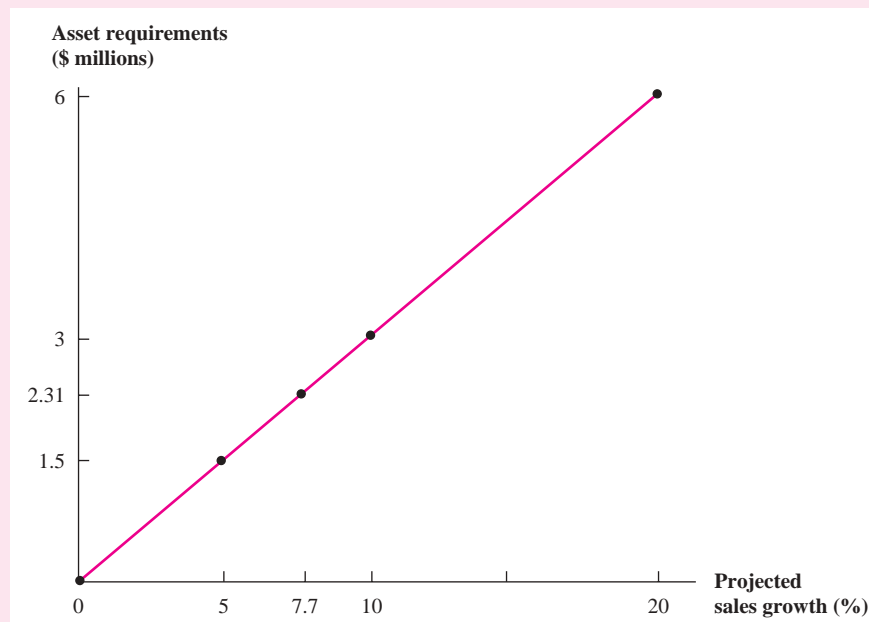
$$\begin{aligned} \text{Projected retained earnings} &= \text{Present retained earnings} \\ &\quad + \text{Projected net income} - \text{Cash dividends} \end{aligned}$$

5. Add the asset accounts to determine projected assets. Next, add the liabilities and equity accounts to determine the total financing; any difference is the *shortfall*. This equals external funds needed (EFN).
6. Use the plug to fill EFN.

Table 3.3 computes EFN for several different growth rates. For low growth rates, Rosengarten will run a surplus, and for high growth rates, it will run a deficit. The “break-even” growth rate is 7.7 percent. Figure 3.1 illustrates the relation between projected sales

Projected Sales Growth	Increase in Assets Required	Addition to Retained Earnings	External Financing Needed (EFN)	Projected Debt-to-Equity Ratio
0 %	\$ 0	\$1,000,000	−\$1,000,000	83.6%
5	1,500,000	1,050,000	−350,000	86.8
7.7	2,310,000	1,077,000	—	89.2
10	3,000,000	1,100,000	300,000	91.2
20	6,000,000	1,200,000	1,600,000	100.0

**FIGURE 3.1**  
Growth and EFN for the Rosengarten Corporation



growth and EFN. As can be seen, the need for new assets from projected sales growth grows much faster than the additions to retained earnings plus new debt. Eventually, a deficit is created and a need for external financing becomes evident.

### 3.4 What Determines Growth?

This section furthers our discussion of a firm's growth and its accounting statements. Firms frequently make growth forecasts an explicit part of financial planning. Donaldson reports on the pervasiveness of stating corporate goals in terms of growth rates.<sup>2</sup> This may seem puzzling in the light of our previous emphasis on maximizing the shareholder's value as the central goal of management. One way to reconcile the difference is to think of growth as an intermediate goal that leads to higher value. Rappaport correctly points out that, in applying the shareholder value approach, growth should not be a goal but must be a consequence of decisions that maximize shareholder value.<sup>3</sup> In fact, if the firm is willing to accept any project just to grow in size, growth will probably make the stockholders worse off.

Donaldson also concludes that most major industrial companies are very reluctant to use external equity as a regular part of their financial planning. To illustrate the linkages between the ability of a firm to grow and its accounting statements when the firm does not issue equity, we can make some planning assumptions.

1. The firm's assets will grow in proportion to its sales.
2. Net income is a constant proportion of its sales.
3. The firm has a given dividend-payout policy and a given debt-equity ratio.
4. The firm will not change the number of outstanding shares of stock.

There is only one growth rate that is consistent with the preceding assumptions. In effect, with these assumptions, growth has been made a plug variable. To see this, recall that a change in assets must always be equal to a change in debt plus a change in equity:

$$\begin{array}{|c|} \hline \text{Change} \\ \text{in} \\ \text{assets} \\ \hline \end{array} = \begin{array}{|c|} \hline \text{Change} \\ \text{in} \\ \text{debt} \\ + \\ \text{Change} \\ \text{in} \\ \text{equity} \\ \hline \end{array}$$

Now we can write the conditions that ensure this equality and solve for the growth rate that will give it to us.

The variables used in this demonstration are the following:

$T$  = The ratio of total assets to sales

$p$  = The net profit margin on sales

$d$  = The dividend-payout ratio

$L$  = The debt-equity ratio

$S_0$  = Sales this year

$\Delta S$  = The change in sales ( $S_1 - S_0 = \Delta S$ )

<sup>2</sup>G. Donaldson, *Managing Corporation Wealth: The Operations of a Comprehensive Financial Goals System* (New York: Praeger, 1984).

<sup>3</sup>A. Rappaport, *Creating Shareholder Value: The New Standard for Business Performance* (New York: Free Press, 1986).

**Part I Value and Capital Budgeting**

$S_1$  = Next year's projected sales

RE = Retained earnings = Net income  $\times$  Retention ratio =  $S_1 \times p \times (1 - d)$

NI = Net income =  $S_1 \times p$

If the firm is to increase sales by  $\Delta S$  during the year, it must increase assets by  $T\Delta S$ . The firm is assumed not to be able to change the number of shares of stock outstanding, so the equity financing must come from retained earnings. Retained earnings will depend on next year's sales, the payout ratio, and the profit margin. The amount of borrowing will depend on the amount of retained earnings and the debt-equity ratio.

$$\begin{array}{ll} \text{New equity:} & S_1 \times p \times (1 - d) \\ \text{plus} & \\ \text{Borrowing:} & [S_1 \times p \times (1 - d)] \times L \\ \text{equals} & \\ \text{Capital spending:} & T\Delta S \end{array}$$

Moving things around a little gives the following:

$$T\Delta S = [S_1 \times p \times (1 - d)] + [S_1 \times p \times (1 - d) \times L]$$

and

$$\frac{\Delta S}{S_0} = \frac{p \times (1 - d) \times (1 + L)}{T - [p \times (1 - d) \times (1 + L)]} = \text{Growth rate in sales} \quad (3.2)$$

This is the growth-rate equation. Given the profit margin ( $p$ ), the payout ratio ( $d$ ), the debt-equity ratio ( $L$ ), and the asset-requirement ratio ( $T$ ), the growth rate can be determined. It is the only growth possible with the preset values for the four variables. Higgins has referred to this growth rate as the firm's **sustainable growth rate**.<sup>4</sup>

**EXAMPLE**

Table 3.4 shows the current income statement, the sources-and-uses-of-funds statement, and the balance sheet for the Hoffman Corporation. Net income for the corporation was 16.5 percent (\$1,650/\$10,000) of sales revenue. The company paid out 72.4 percent (\$1,195/\$1,650) of its net income in dividends. The interest rate on debt was 10 percent, and the long-term debt was 50 percent (\$5,000/\$10,000) of assets. (Notice that, for simplicity, we use the single term *net working capital*, in Table 3.4, instead of separating current assets from current liabilities.) Hoffman's assets grew at the rate of 10 percent (\$910/\$9,090). In addition, sales grew at 10 percent, though this increase is not shown in Table 3.4.

The cash flow generated by Hoffman was enough not only to pay a dividend but also to increase net working capital and fixed assets by \$455 each. The company did not issue any shares of stock during the year. Its debt-equity ratio and dividend-payout ratio remained constant throughout the year.

The sustainable growth rate for the Hoffman Corporation is 10 percent, or<sup>5</sup>

$$\frac{0.165 \times 0.276 \times 2}{1 - (0.165 \times 0.276 \times 2)} = 0.1$$

However, suppose its desired growth rate was to be 20 percent. It is possible for Hoffman's desired growth to exceed its sustainable growth because Hoffman is able to issue new shares of stock. A

<sup>4</sup>R. C. Higgins, "Sustainable Growth under Inflation," *Financial Management* (Autumn 1981). The definition of sustainable growth was popularized by the Boston Consulting Group and others.

<sup>5</sup>This expression is exactly equal to the rate of return on equity (ROE) multiplied by the retention rate (RR):  $ROE \times RR$  if by ROE we mean net income this year divided by equity *last year*, i.e.,  $\$1,650/\$4,545 = 36.3\%$ . In this case  $ROE \times RR = 36.3\% \times 27.6\% = 10\%$  = sustainable growth in sales. On the other hand, if by ROE we mean net income this year divided by equity *this year*, i.e.,  $\$1,650/\$5,000 = 33\%$ , the sustainable growth rate in sales =  $ROE \times RR / 1 - (ROE \times RR)$ .

**TABLE 3.4**

**Current Financial Statements: The Hoffman Corporation (in thousands)**

<b>THE HOFFMAN CORPORATION</b>			
<b>Income Statement</b>			
			<i>This Year</i>
Net sales (\$)			\$10,000
Cost of sales			<u>7,000</u>
Earnings before taxes and interest			3,000
Interest expense			<u>500</u>
Earnings before taxes			2,500
Taxes			<u>850</u>
Net income (NI)			<u>\$ 1,650</u>
<b>Sources and Uses of Cash</b>			
			<i>This Year</i>
<b>Sources:</b>			
Net income (NI)			\$ 1,650
Depreciation			<u>500</u>
Operating cash flow			2,150
Borrowing			455
New stock issue			<u>0</u>
Total sources			\$ 2,605
<b>Uses:</b>			
Increase in net working capital			455
Capital spending			955
Dividends			<u>1,195</u>
Total uses			\$ 2,605
<b>Balance Sheet</b>			
	<i>This Year</i>	<i>Last Year</i>	<i>Change</i>
<b>Assets</b>			
Net working capital	\$ 5,000	\$4,545	\$455
Fixed assets	<u>5,000</u>	<u>4,545</u>	<u>455</u>
Total assets	<u>\$10,000</u>	<u>\$9,090</u>	<u>\$910</u>
<b>Liabilities and Stockholders' Equity</b>			
Debt	\$ 5,000	\$4,545	\$455
Equity	<u>5,000</u>	<u>4,545</u>	<u>455</u>
Total liabilities and stockholders' equity	<u>\$10,000</u>	<u>\$9,090</u>	<u>\$910</u>

firm can do several things to increase its sustainable growth rate as seen from the Hoffman example:

1. Sell new shares of stock.
2. Increase its reliance on debt.
3. Reduce its dividend-payout ratio.
4. Increase profit margins.
5. Decrease its asset-requirement ratio.

Now we can see the use of a financial-planning model to test the feasibility of the planned growth rate. If sales are to grow at a rate higher than the sustainable growth rate, the firm must improve operating performance, increase financial leverage, decrease dividends, or sell new shares. Of course, the planned rates of growth should be the result of a complete maximization of shareholder value-based planning process.

## In Their Own Words

### Robert C. Higgins on Sustainable Growth

Most financial officers know intuitively that it takes money to make money. Rapid sales growth requires increased assets in the form of accounts receivable, inventory, and fixed plant, which, in turn, require money to pay for assets. They also know that if their company does not have the money when needed, it can literally “grow broke.” The sustainable growth equation states these intuitive truths explicitly.

Sustainable growth is often used by bankers and other external analysts to assess a company’s creditworthiness. They are aided in this exercise by several sophisticated computer software packages that provide detailed analyses of the company’s past financial performance, including its annual sustainable growth rate.

Bankers use this information in several ways. Quick comparison of a company’s actual growth rate to its sustainable rate tells the banker what issues will be at the top of management’s financial agenda. If actual growth consistently exceeds sustainable growth, management’s problem will be where to get the cash to finance growth. The banker thus can anticipate interest in loan products. Conversely, if sustainable growth consistently exceeds actual, the banker had best be prepared to talk about

investment products, because management’s problem will be what to do with all the cash that keeps piling up in the till.

Bankers also find the sustainable growth equation useful for explaining to financially inexperienced small business owners and overly optimistic entrepreneurs that, for the long-run viability of their business, it is necessary to keep growth and profitability in proper balance.

Finally, comparison of actual to sustainable growth rates helps a banker understand why a loan applicant needs money and for how long the need might continue. In one instance, a loan applicant requested \$100,000 to pay off several insistent suppliers and promised to repay in a few months when he collected some accounts receivable that were coming due. A sustainable growth analysis revealed that the firm had been growing at four to six times its sustainable growth rate and that this pattern was likely to continue in the foreseeable future. This alerted the banker that impatient suppliers were only a symptom of the much more fundamental disease of overly rapid growth, and that a \$100,000 loan would likely prove to be only the down payment on a much larger, multiyear commitment.

Robert C. Higgins is Professor of Finance at the University of Washington. He pioneered the use of sustainable growth as a tool for financial analysis.

#### Concept Questions

1. When might the goals of growth and value maximization be in conflict, and when would they be aligned?
2. What are the determinants of growth?

## 3.5 Some Caveats of Financial-Planning Models

Financial-planning models such as sustainable growth suffer from a great deal of criticism. We present two commonly voiced attacks below.

First, financial-planning models do not indicate which financial policies are the best. For example, our model could not tell us whether Hoffman’s decision to issue new equity to achieve a higher growth rate raises the shareholder value of the firm.

Second, financial-planning models are too simple. In reality, costs are not always proportional to sales, assets need not be a fixed percentage of sales, and capital-budgeting involves a sequence of decisions over time. These assumptions are generally not incorporated into financial plans.

Financial-planning models are necessary to assist in planning the future investment and financial decisions of the firm. Without some sort of long-term financial plan, the firm may find itself adrift in a sea of change without a rudder for guidance. But, because of the assumptions and the abstractions from reality necessary in the construction of the financial plan, we also think that they should carry the label: Let the user beware!

## 3.6 SUMMARY AND CONCLUSIONS

Financial planning forces the firm to think about and forecast the future. It involves the following:

1. Building a corporate financial model.
2. Describing different scenarios of future development from worst to best cases.
3. Using the models to construct pro forma financial statements.
4. Running the model under different scenarios (conducting sensitivity analysis).
5. Examining the financial implications of ultimate strategic plans.

Corporate financial planning should not become a purely mechanical activity. If it does, it will probably focus on the wrong things. In particular, plans are formulated all too often in terms of a growth target with an explicit linkage to creation of value. We talk about a particular financial planning model called sustainable growth. It is a very simple model. Nonetheless, the alternative to financial planning is stumbling into the future.

### KEY TERMS

aggregation, 45	plug, 46
asset requirements, 46	pro forma statements, 46
dividend payout ratio, 48	retention ratio (plowback ratio), 48
economic assumptions, 46	sales forecast, 45
financial requirements, 46	sustainable growth rate, 52
percentage of sales approach, 47	

### SUGGESTED READINGS

*Some aspects of economic growth and stock market returns are covered in:*

Ritter, Jay. "Economic Growth—Equity Returns." Unpublished working paper. University of Florida, March 1, 2003.

*We also recommend:*

Campbell, John K., and Robert Shiller. "Valuation Ratios and the Long Run Stock Market Outlook: An Update." Cowles Foundation Discussion Paper, no. 1295.

Jorion, Phillippe, and William Coetzmann. "Global Stock Markets in the Twentieth Century." *Journal of Finance* (1995).

Owen, Lamont. "Earnings and Expect Returns." *Journal of Finance* 53 (1998).

### QUESTIONS & PROBLEMS

#### FINANCIAL-PLANNING MODELS: THE INGREDIENTS

- 3.1 After examining patterns from recent years, management found the following regression-estimated relationships between some company balance sheets and income statement accounts and sales.

$$CA = 0.5 \text{ million} + 0.25S$$

$$FA = 1.0 \text{ million} + 0.50S$$

$$CL = 0.1 \text{ million} + 0.10S$$

$$NP = 0.0 \text{ million} + 0.02S$$

where

- CA = Current assets
- FA = Fixed assets
- CL = Current liabilities
- NP = Net profit after taxes
- S = Sales

**Part I Value and Capital Budgeting**

The company's sales for last year were \$10 million. The year-end balance sheet is reproduced below.

Current assets	\$3,000,000	Current liabilities	\$1,100,000
Fixed assets	6,000,000	Bonds	2,500,000
		Common stock	2,000,000
		Retained earnings	3,400,000
Total	<u>\$9,000,000</u>	Total	<u>\$9,000,000</u>

Management further found that the company's sales bear a relationship to GNP. That relationship is

$$S = 0.00001 \times \text{GNP}$$

The forecast of GNP for next year is \$2.05 trillion. The firm pays out 34 percent of net profits after taxes in dividends.

Create a pro forma balance sheet for this firm.

- 3.2 Cheryl Colby, the CFO of Charming Florist Ltd., has created the firm's pro forma balance sheet for the next fiscal year. Sales are projected to grow at 10 percent to the level of \$330 million. Current assets, fixed assets, short-term debt, and long-term debt are 25 percent, 150 percent, 40 percent, and 45 percent of the total sales, respectively. Charming Florist pays out 40 percent of net income. The value of common stock is constant at \$50 million. The profit margin on sales is 12 percent.

- Based on Ms. Colby's forecast, how much external fund does Charming Florist need?
- Reconstruct the current balance sheet based on the projected figures.
- Lay out the firm's pro forma balance sheet for the next fiscal year.

**WHAT DETERMINES GROWTH?**

- 3.3 The Stieben Company has determined that the following will be true next year:

$$T = \text{Ratio of total assets to sales} = 1$$

$$P = \text{Net profit margin on sales} = 5\%$$

$$d = \text{Dividend-payout ratio} = 50\%$$

$$L = \text{Debt-equity ratio} = 1$$

- What is Stieben's sustainable growth rate in sales?
  - Can Stieben's actual growth rate in sales be different from its sustainable growth rate? Why or why not?
  - How can Stieben change its sustainable growth?
- 3.4 The Optimal Scam Company would like to see its sales grow at 20 percent for the foreseeable future. Its financial statements for the current year are presented below.

Income Statement (\$ millions)		Balance Sheet (\$ millions)	
Sales	32.00	Current assets	16
Costs	<u>28.97</u>	Fixed assets	<u>16</u>
Gross profit	3.03	Total assets	<u>32</u>
Taxes	<u>1.03</u>		
Net income	<u>2.00</u>	Current debt	10
		Long-term debt	<u>4</u>
Dividends	1.40	Total debt	14
Retained earnings	0.60	Common stock	14
		Ret. earnings	<u>4</u>
		Total liabilities and equity	<u>32</u>

The current financial policy of the Optimal Scam Company includes

- Dividend-payout ratio ( $d$ ) = 70%
- Debt-to-equity ratio ( $L$ ) = 77.78%
- Net profit margin ( $P$ ) = 6.25%
- Assets-sales ratio ( $T$ ) = 1

- a. Determine Optimal Scam's need for external funds next year.
  - b. Construct a pro forma balance sheet for Optimal Scam.
  - c. Calculate the sustainable growth rate for the Optimal Scam Company.
  - d. How can Optimal Scam change its financial policy to achieve its growth objective?
- 3.5 The MBI Company does not want to grow. The company's financial management believes it has no positive NPV projects. The company's operating financial characteristics are
- Profit margin = 10%
  - Assets-sales ratio = 150%
  - Debt-equity ratio = 100%
  - Dividend-payout ratio = 50%
- a. Calculate the sustainable growth rate for the MBI Company.
  - b. How can the MBI Company achieve its stated growth goal?
- 3.6 Throughout this text, you have learned that financial managers should select positive shareholder value projects. How does this project-selection criterion relate to financial-planning models?
- 3.7 Your firm recently hired a new MBA. She insists that your firm is incorrectly computing its sustainable growth rate. Your firm computes the sustainable growth rate using the following formula:

$$\frac{P \times (1 - d) \times (1 + L)}{T - P \times (1 - d) \times (1 - L)}$$

- $P$  = Net profit margin on sales
- $d$  = Dividend-payout ratio
- $L$  = Debt-equity ratio
- $T$  = Ratio of total assets to sales

Your new employee claims that the correct formula is  $\text{ROE} \times (1 - d)$  where ROE is net profit divided by net worth and  $d$  is dividends divided by net profit. Is your new employee correct?

- 3.8 Atlantic Transportation Co. has a payout ratio of 60 percent, debt-equity ratio of 50 percent, return on equity of 16 percent, and an assets-sales ratio of 175 percent.
- a. What is its sustainable growth rate?
  - b. What must its profit margin be in order to achieve its sustainable growth rate?
- 3.9 What are the shortcomings of financial-planning models that we should be aware of?
- 3.10 Use the annual income statements and balance sheets under the "Excel Analytics" link to calculate the sustainable growth rate for Coca-Cola (KO) each year for the past four years. Is the sustainable growth rate the same every year? What are possible reasons the sustainable growth rate may vary from year to year?
- 3.11 Extended Stay America (ESA) operates over 450 hotels in the United States. Under the "Financial Highlights" link you can find a five-year growth rate for sales. Using this growth rate and the most recent income statement and balance sheet, compute the external funds needed for ESA next year.

#### SOME CAVEATS OF FINANCIAL-PLANNING MODELS

#### S & P PROBLEMS



