

Chapter 16 Financial Planning

Chapter Overview

The *What Companies Do* opening feature looks at David Jones and its strategic review in late 2012. In 2012, the company suffered a fall of 40% in profits. As a result, they cut their final dividend by 33% and commenced a structured review to unlock future growth potential. This chapter illustrates how business planning can prepare a company for an uncertain future.

What Companies Do Discussion Questions:

1. If you are among the financial executives at David Jones, what do you think represents the next set of market movements in retail spending that you would hear them anticipating?
2. How can any firm best evaluate the potential for the eventual success or failure of its plans?

This chapter covers:

- 16-1. Overview of the Planning Process
- 16-2. Planning for Growth
- 16-3. Planning and Control

Technology

1. **Smart Video.** Jackie Sturm, director of finance for technology and manufacturing giant Intel Corp, talks about overall business plans and how they impact the annual planning process.
2. **Smart Video.** John Eck, President of Broadcast and Network Operations for NBC, reviews the assumptions that the network makes in order to complete its forecasts.
3. **Smart Video.** Daniel Carter, Vice President of Finance for BevMol, discusses how the firm uses its forecasted information to in turn provide information to investors.
4. **Smart Video.** Beth Acton, former vice president and treasurer of Ford Motor Co., talks about the long cycle time for developing new products and the implications of this long lead time on business planning.
5. **Smart Concepts.** This concept is on long-term financing and short-term fluctuations in asset growth and the sustainable growth model.
6. **Smart Solutions.** A step-by-step solution to Problem 16-2, concerning the impact of a company's restructuring on its sustainable growth rate.
7. **Smart Solutions.** The solution to problem 16-7, developing a set of pro forma statements.

After studying this chapter you should be able to:

- understand the relationship between a company's strategy and its plans, and the roles that finance plays in constructing strategic plans
- describe the impact of growth on the company's balance sheet and the role of the sustainable growth model as a planning device
- discuss the role of pro forma financial statements in the financial planning process and the shorthand approach for estimating external funds required

- explain the 'plug figure' used in constructing a pro forma balance sheet and the information it provides in the financial planning process
- review the conservative, aggressive and matching financing strategies that a company might employ to fund the long-term trend and seasonal fluctuations in its business
- describe the role of the cash budget in planning and monitoring the company's cash inflows and outflows on a short-term basis.

Lecture Guide

16-1 Overview of the Planning Process

Before a company can plan for its future, it must have goals and a strategy to meet those goals. This is a chapter that can be used to integrate material from other disciplines into the course. The firm must have a product or service and a marketing strategy for that product. Many students discuss competitive advantages in their marketing courses – this is an opportunity to bring in the knowledge of marketing and management majors in a finance class.

16-1a Successful Long-Term Planning

The firm must bring in techniques from previous chapters in order to accomplish its financial planning. It must first decide on the long-term goals for the firm and then seek out positive net present value projects that meet those goals.

16-1b The Role of Finance in Long-Term Planning

The firm's strategic plan generally spans a period of years. This process spans disciplines – the firm must consider marketing and operations as well as finance – who are the competitors, where are the markets for the firm, what location minimises production costs, etc.

16-2 Planning for Growth

Once the plan is determined, it is up to the finance function to assess whether the plan is feasible. Can the necessary money be raised? The instructor can bring in the opening focus story – not only must the firm decide which positive net present value projects to accept, it must find the means to finance the projects. Financing includes the funding the initial investment, but also ensuring that the firm maintains sufficient liquidity during its operations. The finance function may also manage the risks of the project, for example, hedging currency risks, if the operations involve foreign exchange.

16-2a Sustainable Growth

While high growth is generally desirable, a goal most firms strive to achieve, many small businesses have grown too quickly, and were unable to come up with sufficient cash to continue the business. Point out that having a great idea is not a sure-fire guarantee of success. A firm must have a sound business plan and sufficient capital to carry out that plan.

- **Sustainable Growth Model**

- In the sustainable growth model, note how the variables interact. If the firm has a higher profit margin, it will have a higher growth rate. If the firm chooses to have more debt financing, in other words, a higher assets to equity ratio, then the sustainable growth rate also increases. If a firm increases its total asset turnover ratio, then it will also grow more quickly. In other words, more efficient use of assets will lead to higher growth. Reducing dividend payouts also increases growth because more earnings are retained and re-invested in the firm. Point out to students that reducing dividend payouts to increase growth is difficult to achieve in reality – a firm that cuts its dividend is perceived as a financially troubled firm. Most dividend paying firms consider the dividend to be a fixed payment, even though legally, the firm is free to change that payment. Congress recently reduced the personal tax rate on dividend income. What impact would this have on a company's need for growth fuelled by internal funds?

Figure 16.1 Sustainable Growth Equality**16-2b Pro Forma Financial Statements**

Pro forma financial statements have fallen into some disfavor with the recent accounting scandals. Some firms were accused of painting too rosy a picture of the future with their publicly released pro forma statements. What can a company do to ensure that its future predictions are credible? For example, the firm could release past pro forma statements and compare them to actual statements to show how accurate their predictions have been in the past.

- **Example: Walk-A-Bout Shoes**
 - This section presents a current balance sheet and income statement for Walk-A-Bout Shoes. The assumptions of the model are detailed, and present the pro forma statements, given the assumptions. The instructor can go line by line through the numbers in this section, demonstrating how to calculate each of the numbers.
- **External Funds Required (EFR) for Walk-A-Bout Shoes**
 - Using the numbers from the previous example, Walk-A-Bout's external funds needs are calculated. The solution immediately points out a problem with preparing pro forma statements. The equation-generated amount is not the same as the pro forma generated amount of funds needed. This is because the equation assumes the asset to sales ratio is constant, and it is not.

Table 16.1 Financial Statements for 2012 (\$ thousands)**Table 16.2 Pro Forma Financial Statements for 2013 (\$ thousands)****16-3 Planning and Control****16-3a Short-Term Financing Strategies**

Firms are faced with fluctuating sales, even if the long-term trend is upward. A firm has a choice of strategies to finance the variations:

1. Conservative – using more expensive long-term debt to finance both permanent and temporary needs.
2. Aggressive – using less expensive but riskier short-term debt to finance its seasonal and some of its long term needs.
3. Matching – using short-term debt to finance seasonal needs and long-term debt to finance permanent needs.

This is a good place to bring out the costs and risks of short term vs long-term debt. Short-term interest rates are usually less than long-term rates. Short-term debt is safer for the lender (it is easier to predict interest rates over the short term) and riskier for the borrower (the money might come due before the firm has earned enough to pay it back). A cash budget is an excellent tool to ensure that cash disbursements will be in line with cash receipts.

Figure 16.2 Quarterly Sales and Total Current Assets for the Hershey Company (1992 to the fourth quarter of 2009)

This section presents graphs of the short-term financing strategies available to Hershey.

16-3b The Cash Budget

Cash is the lifeblood of a firm. A firm with continual liquidity problems may not stay in business very long. Cash budgets generally start with a sales forecast. Point out that one of the main differences between a cash budget and a set of free cash flows prepared for a discounted cash flow analysis is that the cash budget looks exactly at when cash is received and spent. It distinguishes between cash sales and credit sales, for example, entering the amount received from collecting accounts receivable, rather than entering the sales amount for the month.

- **Example: Farrell Industries**
 - **Cash Receipts:** This section begins the development of a cash budget for Farrell Industries. Its cash receipts come from cash and credit sales and looks specifically at what per cent of each month's sales are collected each month.
 - **Schedule of Projected Cash Receipts for Farrell Traders**
 - Using the information given in the previous section, the instructor can show how much money from each month's sales is actually collected and therefore part of cash receipts.

Table 16.3 Schedule of Projected Cash Receipts for Farrell Traders

- **Cash Disbursements for Farrell Traders**
 - This section details the assumptions underlying Farrell's cash expenditures, using purchases as a per cent of sales. Some of the purchases are paid for in cash; other purchases are made on credit and are paid one to two months after purchase.
- **Projected Cash Disbursements for Farrell Traders**
 - Using the information in the previous two sections, the instructor can develop, line by line, the cash disbursements for Farrell.
- **Net Cash Flow, Ending Cash, Financing Needs and Excess Cash**
 - Once the cash budget is developed, the analyst can see exactly how much excess cash the firm will have each month, or how much additional financing the firm will need. You must know the firm's starting cash balance, and then each month add the difference between cash receipts and cash disbursements. *Note that this difference may be negative or positive.* The firm may have a minimum amount of cash desired. If there is a shortfall in receipts, the firm may have additional funding needs to bring the cash level to the desired minimum.

Table 16.4 Schedule of Projected Cash Disbursements for Farrell Traders (\$ thousands)

- **Cash Budget for Farrell Traders**
 - Once the firm has completed its cash budget it must decide what to do with excess funds (invest in marketable securities, for example), or if there is insufficient cash, it must decide where it will get additional cash needed, for example, by increasing notes payable.

Table 16.5 Cash Budget for Farrell Traders (\$ thousands)

Financial Planning and Management Summary

The main takeaways from the chapter are listed in this last section.

Answers to Concept Review Questions

1. If a firm decides to make a major investment in modernising production facilities, then such an investment will require a great deal of cash. This could mean that the firm will have to cut dividends (or hold them constant rather than increasing them), add more leverage to its capital structure, issue new equity, or cut back on other investments.
2. Company A probably creates and monitors cash budgets more frequently and carefully than company B. Company A's cash flows are less certain than Company B's, so Company A has to monitor its cash position carefully to ensure that it maintains enough liquidity to operate on a daily basis.
3. The return on investment (ROI) is an accounting based ratio of a firm's earnings to its assets. Economic value-added or (EVA®) is the after-tax net operating profits less the cost of funds where the cost of funds is calculated as the cost of capital multiplied by the total investment. Both EVA® and ROI are used to contrast firm performance with the firm's cost of capital leading to a potential problem when using an accounting measure to assess true value creation. While targeting growth to sales or assets is easier to measure and understand as a benchmark, once a growth rate is determined, presumably to maximise shareholder wealth, then effects on future investments and financing needs ought to be considered to complement the strategy.
4. The optimal growth rate is the rate that maximises shareholder wealth. Another way to say this is the optimal growth rate is the rate that occurs when a firm pursues all positive NPV projects. The optimal growth rate may or may not equal the sustainable growth rate given the firm's profit margin, capital structure, asset turnover, and dividend policy. When a firm has many profitable investment opportunities, its optimal growth rate may be very high, even above the sustainable rate. In that case the firm may wish to raise new capital or take other steps to ensure that it can grow at the optimal rate without getting into financial distress. When a firm operates in a market with few investment opportunities, the optimal growth rate may be less than the sustainable rate. A firm that has made profitable investments in the past may generate a lot of cash flow, resulting in a high sustainable growth rate, but it does not follow that this firm should invest in new negative NPV projects.
5. Current asset accounts like cash and inventory often grow at a slower rate than sales because there is a buffer stock motivation for holding these assets. Firms keep extra cash on hand to meet unexpected cash outflows, and similarly they keep extra inventory on hand to prevent stock shortages when demand is unexpectedly high. Often, as a firm grows unexpected changes in cash flow or product demand become smaller, relative to the size of the firm. That is, a firm with \$2 billion in revenues does not need twice the buffer stock in inventory that a firm with \$1 billion in revenue requires. All of this suggests that a firm's asset turnover increases as it grows, rather than remaining constant as the sustainable growth rate model assumes.
6. The matching financing strategy does not imply that current assets equal current liabilities. Instead, it implies that a company finances permanent assets with permanent liabilities. Some portion of current assets may be considered permanent in the sense that cash, inventory, and receivable balances tend to rise over time, despite seasonal fluctuations.
7. Companies prepare cash budgets to ensure that they have temporary financing in place to cover temporary shortfalls of cash and to ensure that temporary excess cash balances can be invested wisely. Collection and payment patterns affect cash budgets in an intuitive manner. The faster a company collects from customers, the greater will be the cash balance (and the lower the financing

need), but the faster it pays its suppliers, the lower will be the cash balance (and the greater the financing need).

8. The more uncertain a company's cash flows are, the greater is the risk that an unplanned for cash surplus or deficit could arise. Even if an intra-monthly cash budget predicts no cash shortages, large outflows of cash during the month could result in an unexpected shortfall.

Solutions to Self-Test Problems

ST16-1. Use the following key financial data from the most recent annual report of Rancho Ltd to answer the following questions.

Sales	\$12.7 million
Net income	\$ 1.3 million
Total assets	\$ 7.6 million
Total equity	\$ 5.2 million
Dividends	\$ 0.3 million

The firm's CFO wishes to use this data to estimate the firm's sustainable growth rate.

- a. Use the data provided to calculate Rancho's net profit margin, assets-to-equity ratio, asset turnover ratio, and its dividend payout ratio.
- b. Use your findings in part (a) to find Rancho's *sustainable growth rate*.
- c. Interpret the sustainable growth rate calculated in part (b). Does this rate of growth assure shareholder wealth maximisation? Explain.
- d. If the firm's board feels that it is best for its shareholders if the firm grows more slowly, what alterations in each of the baseline assumptions would be necessary to achieve this objective?

A:

- a. $m = \text{net profit margin} = \$1.3 \text{ million} \div \$12.7 \text{ million} = 0.1024$
 $A/E = \text{assets-to-equity ratio} = \$7.6 \text{ million} \div \$5.2 \text{ million} = 1.46$
 $S/A = \text{asset turnover ratio} = \$12.7 \text{ million} \div \$7.6 \text{ million} = 1.67$
 Note: $A/S = 1.0 \div S/A = 1.0 \div 1.67 = 0.599$
 $d = \text{dividend payout ratio} = \$0.3 \text{ million} \div \$1.3 \text{ million} = 0.231$

- b. Substituting the relevant values from part a into Equation 16.1, we get

$$\begin{aligned} g^* &= [0.1024 \times (1.0 - 0.231) \times 1.46] \div [0.599 - (0.1024 \times (1.0 - 0.231) \times 1.46)] \\ &= 0.1150 \div 0.4840 \\ &= 0.2376 = 23.76\% \end{aligned}$$

- c. The 23.76 per cent sustainable growth rate calculated in part b indicates that the firm can increase sales by this percentage in the coming year and maintain its balance sheet identity, i.e., its outflows (increases in assets) and inflows (increases in liabilities and equity) will be in balance. This growth rate *does not* assure wealth maximisation of the wealth of Rancho's shareholders. It merely serves as a planning device that the firm can use to prepare for the consequences of its growth plans, which will be driven by the growth rate believed consistent with shareholder wealth maximisation.
- d. A lower profit margin (clearly not a good idea), a decrease in asset turnover (clearly not a good idea), a decrease in leverage, or an increase in the dividend payout ratio would lower Rancho's sustainable growth rate. Clearly the best strategy for lowering the firm's sustainable growth rate would be to either reduce leverage or pay out a larger percentage of net income as dividends.

ST16-2. Planet & Partners wishes to construct a pro forma income statement and a pro forma balance sheet for the coming year using the following data.

1. Sales are forecast to grow by 5% from \$809.5 million last year to \$850 million in the coming year.
 2. Cost of goods sold is expected to represent 72% of forecast sales.
 3. Operating expenses are expected to represent 11% of forecast sales.
 4. Depreciation expense on the firm's existing net fixed assets, which currently total \$275 million, is expected to remain at \$55 million per year for at least four more years.
 5. Planet's marginal tax rate is expected to remain at 40%.
 6. Planet is expected to continue its policy of paying out 10% of net income as dividends.
 7. Planet's net profit margin last year was 5.2%.
 8. Planet wishes to maintain a minimum cash balance of \$8 million in the coming year.
 9. The firm's accounts receivable are expected to equal about 15% of sales.
 10. The firm's inventory has historically averaged about 12% of cost of goods sold.
 11. Planet is planning to invest an additional \$35 million in fixed assets that will be depreciated on a straight-line basis over a 7-year life.
 12. The firm's accounts payable, which totalled \$63.5 million at the end of last year, are expected to equal about 11% of cost of goods sold in the coming year.
 13. Planet plans to maintain its notes payable of \$42 million requiring annual interest of 5%, which totals \$2.1 million.
 14. The firm has \$80 million of long-term debt that matures as a lump sum due and payable in full in 5 years. Annual interest of \$4.8 million must be paid on this debt.
 15. Planet has no preferred shares outstanding and its retained earnings and ordinary shares currently total \$250 million.
 16. Planet's total assets at the end of last year were \$435 million.
- a. Use the preceding data to prepare Planet's pro forma income statement for the coming year.
 - b. Use the data provided and your findings in part (a) to prepare Planet's pro forma balance sheet for the coming year. Use notes payable as the balancing figure and ignore any change in annual interest expense caused by the change in notes payable.
 - c. Explain the amount of notes payable used as the balancing figure in part (b). Indicate the resulting amount of the *plug figure* needed to create the balancing figure. Will Planet be able to fund its planned growth internally? Explain.
 - d. Use Equation 16.2 along with Planet's relevant data to determine its *external funds required (EFR)*. Compare this value to the *plug figure* you found in part (c) and explain in general terms why differences between these two values might result.

A:	a. Sales:	\$850.0
	Less: COGS ($72\% \times 850$)	612.0
	Less: Operating expense ($0.11 \times \$850$)	93.5
	Less: Depreciation expense [$\$55 + (\$35 \div 7)$]	<u>60.0</u>
	Operating profit	\$ 84.5
	Less: Interest expense ($\$2.1 + \4.8)	<u>6.9</u>
	Pre-tax income	\$ 77.6
	Less: Taxes ($0.40 \times \$77.6$)	<u>31.0</u>
	Net income	\$ 46.6
	Less: Dividends ($0.10 \times \$46.6$)	<u>4.7</u>
	To retained earnings	<u>\$ 41.9</u>

b.

Planet Inc.
Balance Sheet
For the End of the Coming Year
(\$ in millions)

Cash	\$ 8.0	Accounts payable ($0.11 \times \$612$)	\$ 67.3
Accts rec. ($0.15 \times \$850$)	127.5	Notes payable [\$42.0	
Inventory ($0.12 \times \$612$)	73.4	– ($\$481.2 - \458.9)]	19.7
Current assets	\$208.9	Current liabilities	\$ 87.0
Net fixed assets ($\$275 + \35		Long-term debt	80.0
– [$\$55 + (\$35 \div 7)$])	250.0	Retained earnings and ordinary	
Total assets	<u>\$458.9</u>	shares ($\$250 + \41.9)	291.9
		Total liabilities and equity	<u>\$458.9</u>

- c. The balancing figure of \$19.7 of notes payable resulted from the fact that the initial notes payable of \$42.0 were more than was necessary to allow Planet's total liabilities and equity to equal its forecast \$458.9 of total assets. With the initial \$42.0 of notes payable, Planet's total liabilities and equity would have totalled \$481.2; in other words Planet had more financing than it needed to support its assets in the coming year. Therefore, using the notes payable as the balancing figure, the firm can pay down its notes by \$22.3 million ($\$481.2 - \458.9) reducing them to \$19.7 million ($\$42.0 - \22.3) as noted on the pro forma balance sheet. The \$22.3 million reduction in notes payable is the *plug figure*. During the coming year Planet's internally generated financing is in excess of its need and therefore it can pay down its notes payable as shown.

- d. Using the data provided, the values of the key variables needed to apply Equation 16.2 to find the external funds required (*EFR*) are:

$$\begin{aligned}
 A/S &= \$435 \text{ million} \div \$809.5 \text{ million} = 0.5374 \\
 \Delta S &= \$850 \text{ million} - \$809.5 \text{ million} = \$40.5 \text{ million} \\
 AP/S &= \$63.5 \text{ million} \div \$809.5 \text{ million} = .0784 \\
 m &= \text{net profit margin} = .052 \\
 g &= \text{growth rate of sales} = .050 \\
 d &= \text{dividend payout ratio} = 0.10
 \end{aligned}$$

Substituting these values into Equation 16.2 we get Planet's external funds required (*EFR*):

$$\begin{aligned}
 EFR &= (0.5374 \times \$40.5 \text{ million}) - (.0784 \times \$40.5 \text{ million}) \\
 &\quad - [.052 \times \$809.5 \text{ million} \times (1.00 + 0.05) \times (1.00 - 0.10)] \\
 &= \$21.8 \text{ million} - \$3.18 \text{ million} - \$39.8 \text{ million} \\
 &= -\$21.19 \text{ million}
 \end{aligned}$$

The *EFR* of $-\$21.19$ is very close to the $-\$22.3$ million plug figure, which represented the reduction in notes payable discussed in part c. The difference in these two estimates is attributable to the fact that some of the assumptions in Equation 16.2 do not hold in the more detailed pro forma analysis. For example, in the *EFR* equation we assumed that the assets-to-sales ratio (*A/S*) was 0.5374, but in the pro forma calculations it becomes 0.5399 ($\$458.9 \text{ million} \div \850 million). Other similar differences further contribute to the difference between the *EFR* and the *plug figure*.

- ST16-3.** Sportif Pty Ltd's financial analyst has compiled sales and total cash disbursement estimates for the coming months of January to May. Historically, 60% of sales are for cash, with the remaining 40% collected in the following month. The ending cash balance in January is \$1,000. The company's minimum cash balance is \$1,000. The analyst plans to use this data to prepare a cash budget for the months of February to May.

Month	Sales	Total Cash Disbursements
January	\$ 5,000	\$6,000
February	6,000	8,000
March	10,000	8,000
April	10,000	6,000
May	10,000	5,000

- Use the data provided to prepare Sportif's *cash budget* for the four months of February to May.
- How much total financing will Sportif need to meet its financial requirements for the period February to May?
- If a pro forma balance sheet dated at the end of May was prepared from the information presented, how much would Sportif have in accounts receivable?

A:	a.	Jan.	Feb.	Mar.	Apr.	May
	Sales (\$000)	<u>\$5.0</u>	<u>\$6.0</u>	<u>\$10.0</u>	<u>\$10.0</u>	<u>\$10.0</u>
	Cash sales (0.60)	<u>\$3.0</u>	<u>\$3.6</u>	<u>\$ 6.0</u>	<u>\$ 6.0</u>	<u>\$ 6.0</u>
	Collections (0.40 _{t-1})		<u>2.0</u>	<u>2.4</u>	<u>4.0</u>	<u>4.0</u>
	Total Receipts		<u>\$5.6</u>	<u>\$ 8.4</u>	<u>\$10.0</u>	<u>\$10.0</u>
	Less: Total disbursements		<u>8.0</u>	<u>8.0</u>	<u>6.0</u>	<u>5.0</u>
	Net cash flow		<u>-\$2.4</u>	<u>\$ 0.4</u>	<u>\$ 4.0</u>	<u>\$ 5.0</u>
	Add: Beginning cash		<u>1.0</u>	<u>-1.4</u>	<u>- 1.0</u>	<u>3.0</u>
	Ending cash balance		<u>-\$1.4</u>	<u>\$-1.0</u>	<u>\$ 3.0</u>	<u>\$ 8.0</u>
	Less: Minimum cash balance		<u>1.0</u>	<u>1.0</u>	<u>1.0</u>	<u>1.0</u>
	Required total financing (N/P)		<u>\$2.4</u>	<u>\$ 2.0</u>		
	Excess cash balance (M/S)				<u>\$ 2.0</u>	<u>\$ 7.0</u>

- Based on the cash budget prepared in part a, Sportif will need to be able to borrow up to \$2.4 thousand to cover its shortages in the months of February and March.
- Sportif would have accounts receivable of \$4.0 thousand at the end of May. The receivables would represent the 40% of May's sales of \$10.0 thousand that would be uncollected at that time.

Answers to End-of-Chapter Questions

- Q16-1.** What is the financial planning process? What is a *strategic plan*? Describe the roles that financial managers play with regard to strategic planning.

- A16-1.** The financial planning process is a firm's attempt to forecast the future, both long- and short-term future for sales, expenses, etc. The financial manager must assess the feasibility of the firm's strategic objectives. What does it cost? Can the firm afford it? Will the investment add to shareholder wealth? What kind of financing can be raised for the project? Thus, the financial manager adds numbers to the strategic goals. Financial managers also perform a control function, for example, preparing and updating cash budgets to ensure the firm does not have a liquidity problem. The finance function also includes risk management, including

managing the firm's exposures through hedging.

- Q16-2.** Briefly describe the following popular growth targets: (1) accounting-based *return on investment (ROI)*, (2) *economic value added (EVA®)*, and (3) target growth rate of sales or assets. Which is most widely used, and why?
- A16-2.** All three measures require information from the firm's financial statements. ROI is the same as ROA and equals the earnings after taxes divided by the total assets. EVA is the net operating profits after taxes (NOPAT) less the cost of funds. The target growth rate is generally based on the sustainable growth rate for sales that is computed using the net profit margin, the dividend payout ratio, the assets dividend by equity, and the assets divided by sales. (equation 16.1). Growth in sales tends to be the most widely used metric which flows directly into pro forma analysis.
- Q16-3.** In the sustainable growth model, what does the word *sustainable* mean? In what ways can the sustainable growth model highlight conflicts between a firm's competing objectives?
- A16-3.** Sustainable growth refers to how fast a firm can grow while maintaining a balance between its sources and uses of funds. It states how much growth a company can achieve with its current profit margin, asset efficiency, retained earnings and leverage.
The sustainable growth model highlights conflicts between a firm's competing objectives. For example, the sales manager may want to have the highest sales growth possible, while the finance manager may want to maintain a certain credit rating. High growth may mean higher borrowing is needed. More debt may mean a lower credit rating. Higher sales growth could mean a wide variety of products is needed, which in turn calls for higher inventory. Higher inventory levels may mean less efficient use of assets (lower asset turnover).
- Q16-4.** With reference to Equation 16.1, explain how each of the variables influences the company's sustainable growth rate. If high leverage allows a company to increase its sustainable growth rate, does that mean higher leverage is necessarily good for the company?
- A16-4.** In Equation 16-1, a higher asset turnover ratio (greater asset efficiency) means a higher sustainable growth rate. A lower dividend payout ratio means higher growth, as does a higher profit margin. A higher leverage ratio (assets to equity) also means a higher sustainable growth rate. Although higher leverage means a higher sustainable growth rate, other things equal, higher leverage is not necessarily good for the company. For instance, when a company increases its leverage ratios, it may find that its borrowing costs rise, which in turn may lead to a shrinking profit margin. A company with too much leverage may have difficulty meeting its interest or principal obligations and go into financial default.
- Q16-5.** A company chooses to grow at a rate above its sustainable rate. What changes might we expect to see on the company's financial statements in the next year? What changes would result from growing at a rate below the company's sustainable rate?
- A16-5.** If a company chooses to grow at a rate above its sustainable rate, you might see higher debt (the company borrows to increase its asset to equity ratio), more retained earnings (the company lowers its dividend payout ratio), a higher profit margin (the company cuts costs), or fewer assets (the company makes more efficient use of its assets).
If a company chooses to grow at a rate below its sustainable rate, you might see lower debt (the company repays some of its debt), less retained earnings (the company pays more in dividends), lower profit margins, or more assets (the company increases its assets faster than its sales growth).

- Q16-6.** Describe the differences between *top-down* and *bottom-up* sales forecasting methods. Describe advantages and disadvantages of each. Do you think one approach is likely to be more accurate than the other?
- A16-6.** A top-down sales forecast relies heavily on macroeconomic and industry forecasts. A firm could use a statistical model or subscribe to a forecast made by firms specialising in econometric modelling. Senior managers establish firm objectives for increased sales. Divisions then receive goals to collectively achieve the increased sales goal. The bottom up method for forecasting sales starts with talking to customers. Estimates from each division are developed and passed up to senior managers to create an overall forecast for the company.
- Q16-7.** What is the logic of the percentage-of-sales method for constructing pro forma statements? On a year-to-year basis, which balance sheet and income statement items do you think will fluctuate most closely with sales, and which items are not likely to vary as directly with sales volume?
- A16-7.** The logic behind per cent of sales method for calculating pro forma statements is that most accounts increase or decrease as sales increase or decrease. This may not be a completely linear relationship, but it is a rough enough guide to a company's future needs as its sales increase.
- On a year-to-year basis, the company's current assets, accounts receivable, cash and inventory, are most likely to be tied closely to sales increases and decreases. Capital expenses are also tied to sales, but most likely not as directly. Capital expenditures may increase more as step function – level with a certain range of sales, followed by a jump up when high enough sales mandate further investment in plant or equipment.
- Q16-8.** Why does it make sense to let the company's cash balance or a short-term liability account serve as the *plug figure* in pro forma projections? Why not use gross fixed assets as the plug figure?
- A16-8.** It makes sense to have cash or short-term debt as the plug. If a company has excess cash, it will likely put it into a safe, short-term investment, such as a money market security. Likewise, if the company has a shortfall it is likely that it will cover the shortfall with short-term borrowing, at least initially. A decision to increase fixed assets is a longer term decision, generally requiring more analysis. The company may not need additional fixed assets – perhaps the best use for excess cash will be paying a dividend, rather than investing in more assets.
- Q16-9.** Why might pro forma statements and the equation for *external funds required* (EFR) yield different projections for a company's financing needs?
- A16-9.** There may be a discrepancy between the results of the external funds requirement equation and pro forma statements. The equation for the external funds requirement is a shortcut and will not necessarily take into account the complexities of the company. A company may not have a constant ratio of assets to sale, for example.
- Q16-10.** What is the difference between the *conservative strategy*, the *aggressive strategy*, and the *matching strategy* for funding the long-term trend and the seasonal fluctuations in a company's total current assets? Which strategy is most risky? Which is least profitable?
- A16-10.** In a conservative strategy, the company makes sure it has enough long-term financing to cover its permanent investment in fixed and current assets and additional seasonal investment in current assets. This means at times the company will have excess cash which it

will invest in marketable securities. In an aggressive strategy, the company will rely more heavily on short term borrowing to meet seasonal peaks and to finance part of the long-term growth in sales and assets. In a matching strategy, the company will finance fixed assets with long term financing and seasonal needs with short term financing.

Q16-11. How is a *cash budget* different from a set of pro forma financial statements? Why do you think that companies typically create cash budgets at higher frequencies than they create pro forma financial statements?

A16-11. Cash budgets show when cash is received and when it is paid. This may be different from when expenses and revenues are 'booked' on a pro forma balance sheet or income statement. For example, a cash budget will show outflows for equipment expenditures when the equipment is actually purchased. A pro forma income statement subtracts only the allowed depreciation for the equipment as an expense, not the full amount of the equipment. Cash budgets are typically created more frequently than pro forma statements because a company wishes to know if it has sufficient cash to pay its bills on time or if it will need to borrow to meet those needs.

Q16-12. Explain how slower inventory turnovers, slower receivables collections, or faster payments to suppliers would influence the numbers produced by a cash budget.

A16-12. Slower inventory turns means more cash is tied up in inventory – more of an inventory expense needs to be made to keep more inventory on hand. This will reduce cash. Slower receivables collections will also reduce cash. The firm that collects more slowly will have more of an investment in accounts receivable, a use of cash. Faster payments to creditors also reduce cash. The faster money goes out to creditors, the less that is available for use to support inventories or accounts receivable.

Solutions to End-of-Chapter Problems

Planning for Growth

P16-1. Go to <http://finance.yahoo.com> or another financial website, and download the most recent two years' balance sheets and income statements for a company of your choice. Do not choose a company that issued or retired a significant amount of common stock in either year.

- Calculate the actual percentage change in sales from two years ago to last year.
- Using the balance sheet and income statement from two years ago, calculate the company's sustainable growth rate.
- If the sustainable growth rate does not equal the actual growth rate in sales, explain how changes in the company's financial ratios in the second year reflected the company's decision in the previous year to grow at a rate other than the sustainable rate.

A16-1. Internet exercise – answers will vary.

P16-2. Eisner Amusement Parks reported the following data in its most recent annual report:

Sales	\$42.5 million
Net income	\$3.8 million
Dividends	\$1.1 million
Assets	\$50.0 million

Eisner is financed 100% with equity. What is the company's sustainable growth rate? Suppose that Eisner issued bonds to the public and used the proceeds to repurchase half of its outstanding shares. This recapitalisation would create additional interest expenses of \$2 million.

Assuming that the company faces a 35% tax rate, what impact would this restructuring have on its sustainable growth rate?

- A16-2.** Eisner's sustainable growth requires a profit margin, dividend payout ratio, assets to equity and assets to sales ratios.

Eisner's profit margin is $\text{net income/sales} = 3.8/42.5 = 0.0894$

Dividend payout = $\text{dividends/net income} = 1.1/3.8 = 0.2895$

Assets to equity = $\text{assets/equity} = 50/50 = 1$

Assets to sales = $50/42.5 = 1.1765$

Putting these numbers into Equation 16.1 yields:

$$g = 0.057 = 5.7\%$$

If the firm issues bonds and uses the proceeds to repurchase equity, it will impact its net income and assets to equity ratio. Its new net income is $3.8\text{M} - \text{Interest} \times (1 - T) = 3.8\text{M} - (2\text{M} \times .65) = 2.5\text{M}$.

Its assets will remain at \$50M, but now equity is \$25M and debt, \$25M. The new ratios are:

Profit margin = $2.5/42.5 = 0.0588$

Dividend payout = $1.1/2.5 = .44$

Assets to equity = $50/25 = 2$

Assets to sales = $50/42.5 = 1.1765$

Putting these numbers into Equation 16.1 yields:

$$g = 0.059 = 5.9\%$$

Restructuring has impacted many of the inputs into the sustainable growth formula, but overall the firm's sustainable growth has increased.

- P16-3.** Review the abbreviated financial statements for the last two years for Norne Energy Corp. All values are expressed in billions of dollars.

Norne Energy Corp.
Balance Sheet

	2012	2011
Current assets	\$2.7	\$2.5
Fixed assets	3.5	3.4
Total assets	<u>\$6.2</u>	<u>\$5.9</u>
Current liabilities	\$1.9	\$1.8
Long-term debt	2.1	2.2
Shareholders' equity	2.2	1.9
Total liabilities and equity	<u>\$6.2</u>	<u>\$5.9</u>

Norne Energy Corp.
Income Statement

	2012	2011
Sales	\$7.5	\$7.1
Net income	0.5	0.4
Dividends	0.2	0.1

- What was Norne's sustainable growth rate at the end of 2011?
- How rapidly did Norne actually grow in 2012?

- c. What changes in Norne's financial condition from 2011 to 2012 can you trace to the difference between the actual and sustainable growth rates?

- A16-3.** a. At the end of 2011, profit margin = Net income/Sales = $0.4/7.1 = 0.0563$
 Dividend payout = Dividends/Net income = $0.1/0.4 = 0.25$
 Assets to equity = $5.9/1.9 = 3.105$
 Assets to sales = $5.9/7.1 = 0.831$

Putting these numbers into Equation 16.1 yields the *sustainable growth rate*:

$$g = 0.1875 = 18.75\%$$

- b. The firm's actual growth in 2012 was $(7.5 - 7.1)/7.1 = 5.6\%$
- c. Norne grew at a slower rate than its sustainable rate in 2012. We should expect to see some combination of a lower profit margin, higher dividend payout, lower leverage, and slower asset turnover. In 2012, compared to 2011, Norne had a higher dividend payout ratio and lower leverage. However, at the same time the company increased its profit margin and asset turnover somewhat.

- P16-4.** The 2013 sales forecast for Clearwater Development Co. is \$150 million. Interest expense will not change in the coming year. Use Clearwater's 2012 income statement presented below to answer the questions that follow:

Clearwater Development Co. Income Statement (\$ in thousands)	
Sales	\$125,000
Less: Cost of goods sold	<u>80,000</u>
Gross profit	\$ 45,000
Less: Operating expenses	<u>30,000</u>
Less: Interest	<u>10,000</u>
Pre-tax profit	\$ 5,000
Less: Taxes (35%)	<u>1,750</u>
Net income	<u><u>\$ 3,250</u></u>

- a. Use the percentage-of-sales method to construct a pro forma income statement for 2013.
- b. You learn that 25 per cent of the cost of goods sold and operating expense figures for 2012 are fixed costs that will not change in 2013. Reconstruct the pro forma income statement.
- c. Compare and contrast the statement prepared in parts (a) and (b). Which statement will likely provide the better estimate of 2013 income? Explain.

A16-4.

a.		
Sales	125000	1.00
Cost of goods sold	80000	0.64
Gross profit	45000	0.36
Operating expenses	30000	0.24
Interest	10000	0.08
Pre-tax profit	5000	0.04
Taxes (35%)	1750	0.014
Net income	3250	0.026

Pro forma statement for 2013:

Sales	\$150,000
Cost of goods sold	<u>96,000</u>
Gross profit	\$ 54,000
Operating expenses	-36,000
Interest	<u>-12,000</u>
Pre-tax profit	\$ 6,000
Taxes (35%)	<u>2,100</u>
Net income	<u>\$ 3,900</u>

b. New pro forma assuming 25% of cost of goods sold is fixed:

Cost of goods sold: $80,000 \times .25 = 20,000$

60,000 is variable: $60,000/125,000 = .48$

Operating expenses: $30,000 \times .25 = 7,500$

22,500 is variable: $22,500/125,000 = .18$

Sales	\$150,000
Fixed COGS	-20,000
Cost of goods sold	<u>-72,000</u>
Gross profit	\$ 58,000
Fixed operating exp.	-7,500
Operating expenses	-27,000
Interest	<u>-10,000</u>
Pre-tax profit	\$ 13,500
Taxes (35%)	<u>4,725</u>
Net Income	<u>\$ 8,775</u>

c. The second statement is likely to be more accurate. Most costs do have a fixed and variable component, so having some of the cost of goods sold and operating expenses fixed is reasonable. Also, if the firm is not planning on taking on more debt, it is likely that interest expense will remain the same.

P16-5. Hill Propane Distributors wants to construct a pro forma balance sheet for 2013. Build the statement using the following data and assumptions:

1. Projected sales for 2013 are \$35 million.
2. Hill's gross profit margin is 35%.
3. Operating expenses average 10% of sales.
4. Depreciation expense last year was \$5 million.
5. Hill faces a tax rate of 35%.
6. Hill distributes 20% of its net income to shareholders as a dividend.
7. Hill wants to maintain a minimum cash balance of \$3 million.
8. Accounts receivable equal 8.5% of sales.
9. Inventory averages 10% of cost of goods sold.
10. Last year's balance sheet lists net fixed assets of \$30 million. All these assets are depreciated on a straight-line basis, and none of them will be fully depreciated for at least three years.
11. Hill plans to invest an additional \$1 million in fixed assets that it will depreciate over a five-year life on a straight-line basis.
12. In 2012, Hill reported ordinary shares and retained earnings of \$20 million.
13. Accounts payable averages 9% of sales.

Will Hill Propane's cash balance at the end of 2013 exceed its minimum requirement of \$3 million?

A16-5.

Income Statement 2013	
Sales	\$35,000,000
Cost of goods sold	<u>22,750,000</u>
Gross profit	\$12,250,000
Operating expenses	3,500,000
Depreciation	<u>5,200,000</u>
Pre-tax profit	\$ 3,550,000
Taxes (35%)	<u>1,242,500</u>
Net income	<u>\$ 2,307,500</u>

Retained earnings = 80% × net income = \$1,846,000

Balance Sheet 2013	
Cash	\$ 3,000,000
Accounts receivable	2,975,000
Inventory	2,275,000
Net fixed assets	<u>25,800,000</u>
Total assets	<u>\$34,050,000</u>
Accounts payable	\$ 3,150,000
Equity	<u>21,846,000</u>
Total liab. & equity	<u>\$24,996,000</u>

In the income statement, we arrive at the depreciation figure as follows. First, existing assets are depreciated on a straight-line basis, and none of them will be fully depreciated during 2013. This implies that the 2013 depreciation charge on existing assets will be the same as the 2012 charge, \$5 million. Next, we assume that the firm takes a full year (1/5 of \$1 million) of depreciation on its new investment in fixed assets for the year, or \$200,000. This brings total 2013 depreciation charges to \$5.2 million.

On the balance sheet, net fixed assets equals \$30 million from last year, plus \$1 million in new investments, minus the \$5.2 depreciation charge for 2013. The equity account simply equals its value from last year plus this year's retained earnings.

There is a funding gap of \$9,054,000. Hill Propane has a substantial need for additional financing. Without raising \$9,054,000 in additional financing, Hill Propane will not be able to achieve its target cash balance.

P16-6. Review the following 2012 balance sheet and income statement for T. F. Baker Cosmetics appear below. The numerical values are in thousands of dollars.

T. F. Baker Cosmetics
Balance Sheet

Cash	\$ 5,000	Accounts payable	\$10,000
Accounts receivable	12,500	Short-term bank loan	15,000
Inventory	10,000	Long-term debt	10,000
Current assets	<u>\$27,500</u>	Ordinary shareholder equity	15,000
Gross fixed assets	\$65,000	Retained earnings	<u>12,500</u>
Less: Accum. depr.	<u>30,000</u>	Total liabilities and equity	<u>\$62,500</u>
Net fixed assets	<u>\$35,000</u>		
Total assets	<u>\$62,500</u>		

T. F. Baker Cosmetics
Income Statement

Sales	\$150,000
Less: Cost of goods sold	<u>120,000</u>
Gross profit	\$ 30,000
Less: Operating expenses	-15,000
Less: Depreciation	-5,000
Less: Interest expense	<u>-2,000</u>
Pre-tax profit	\$ 8,000
Less: Taxes (35%)	<u>2,800</u>
Net income	<u>\$ 5,200</u>

At a recent board meeting, the company decided on the following objectives for 2013:

1. The company would increase liquidity. For competitive reasons, accounts receivable and inventory balances were expected to continue their historical relationships with sales and cost of goods sold, respectively, but the board felt that the company should double its cash holdings.
2. The company would accelerate payments to suppliers. This would have two effects. First, by paying more rapidly, the company would be able to take advantage of early payment discounts, which would increase its gross margin from 20% to 22%. Second, by paying earlier, the company's accounts payable balance, which historically averaged about 8.3% of cost of goods sold, would decline to 4% of cost of goods sold.
3. The company would expand its warehouse, which would require an investment in fixed assets of \$10 million. This would increase projected depreciation expense from \$5 million in 2012 to \$7 million in 2013.
4. The company would issue no new common stock during the year, and it would initiate a dividend. Dividend payments in 2013 would total \$1.2 million.
5. Operating expenses would remain at 10% of sales.
6. The company did not expect to retire any long-term debt, and it was willing to borrow up to the limit of its current credit line with the bank, \$20 million. The interest rate on its outstanding debts would average 8%.
7. The company set a sales target for 2013 of \$200 million.

Develop a set of pro forma financial statements to determine whether or not T. F. Baker Cosmetics can achieve all of these goals simultaneously.

A16-6. Start with the income statement for 2013. All figures are in thousands of dollars.

Sales	\$200,000	
COGS	<u>156,000</u>	(78% of sales)
Gross profit	\$ 44,000	
Oper. expense	-20,000	(10% of sales)
Depreciation	-7,000	
Interest expense	<u>-2,000</u>	(8% of last year's outstanding debt as an initial projection)
Pre-tax profit	\$ 15,000	
Taxes (35%)	<u>5,250</u>	
Net income	\$ 9,750	
Dividend	<u>1,200</u>	
Addition to Retained earnings	\$ 8,550	

Now turn to the balance sheet. Again, all figures are in thousands of dollars.

Cash	\$10,000	
Accts. receivable	16,667	(12,500 ÷ 150,000) (200,000)
Inventory	<u>13,000</u>	(10,000 ÷ 120,000) (156,000)
Tot current	<u>\$39,667</u>	
Gross fixed	\$75,000	(last year's + \$10 million new investment)
Accum depr	<u>37,000</u>	(last year's + 2010 depreciation expense)
Net fixed	<u>\$38,000</u>	
Total assets	<u>\$77,667</u>	
Accts pay	\$ 6,240	(4% of COGS)
Bank loan	15,000	(assume last year's level for initial estimate)
Long-term debt	10,000	(assume last year's level for initial estimate)
Ordinary shareholder equity	15,000	
Ret. earnings	<u>21,050</u>	
Tot. liab. & equity	<u>\$67,290</u>	

$$\text{Funding gap} = \text{Assets} - (\text{Liabilities} + \text{Equity}) = \$10,377$$

The company has a funding gap of just over \$10.37 million. This means that it cannot fully meet all of its 2013 goals. The problem states that the company is willing to borrow up to \$20 million from the bank, but that would provide only \$5 million in additional financing. Furthermore, if the company did borrow the full \$20 million from the bank, its interest expense for the year would rise, resulting in reduced retained earnings. Lower retained earnings would slightly exaggerate the funding gap problem. For example, if we assume that the company borrows up to \$20 million from the bank and it pays interest on the full amount for the year, then its total interest expense will rise to \$2.4 million. The resulting decline in profits would mean that the company would retain about one-quarter of a million dollars less than shown in the statements above.

Planning and Control

P16-7. A company has actual sales of \$50,000 in January and \$70,000 in February. It expects sales of \$90,000 in March and \$110,000 in both April and May. Assuming that sales are the only source of cash inflow, and that 60 % of these are for cash and the rest are collected evenly over the

following two months, what are the company's expected cash receipts for March, April, and May?

A16-7.

	January	February	March	April	May	June	July
Sales	50,000	70,000	90,000	110,000	110,000		
Cash	30,000	42,000	54,000	66,000	66,000		
Credit	20,000	28,000	36,000	44,000	44,000		
Jan coll.	30,000	10,000	10,000				
February		42,000	14,000	14,000			
March			54,000	18,000	18,000		
April				66,000	22,000	22,000	
May					66,000	22,000	22,000
Receipts	30,000	52,000	78,000	98,000	106,000	44,000	22,000

P16-8. Bachrach Fertiliser Corp. had sales of \$2 million in March and \$2.2 million in April. Expected sales for the next three months are \$2.4 million, \$2.5 million, and \$2.7 million. Bachrach has a cash balance of \$200,000 on 1 May and does not want its balance to dip below that level. Prepare a cash budget for May, June, and July given the following information:

1. Of total sales, 30% are for cash, 50% are collected in the month after the sale, and 20% are collected two months after the sale.
2. Bachrach has cash receipts from other sources of \$100,000 per month.
3. The company expects to purchase items for \$2 million in each of the next three months. All purchases are paid for in cash.
4. Bachrach has fixed cash expenses of \$150,000 per month and variable cash expenses equal to 5 % of the previous month's sales.
5. Bachrach will pay a cash dividend of \$300,000 in June.
6. The company must make a \$250,000 loan payment in June.
7. Bachrach plans to acquire fixed assets worth \$500,000 in July.
8. Bachrach must make a tax payment of \$225,000 in June.

A16-8. May

720,000	cash sales in May
400,000	collections on credit sales from March
1,100,000	collections on credit sales from April
100,000	other cash receipts for May
2,320,000	total cash receipts
2,000,000	purchases
260,000	fixed and variable expenses
2,260,000	total cash outflow
60,000	net cash inflow
260,000	ending cash balance

<u>June</u>	
750,000	cash sales in June
440,000	collections on credit sales from April
1,200,000	collections on credit sales from May
100,000	other cash receipts for June
2,490,000	total cash receipts
2,000,000	purchases
270,000	fixed and variable expenses

300,000	dividend payment
250,000	loan payment
225,000	tax payment
3,045,000	total cash outflow
-555,000	net cash outflow
295,000	ending cash balance

Notice here that the company would have to borrow \$495,000 to take its cash balance back up to the desired \$200,000 level.

July

810,000	cash sales in July
480,000	collections on credit sales from May
1,250,000	collections on credit sales from June
100,000	other cash receipts for July
2,640,000	total cash receipts for July
2,000,000	purchases
275,000	fixed and variable expenses
500,000	fixed asset purchase
2,775,000	total cash outflow
-135,000	net cash outflow
65,000	ending cash balance (200,000 – 135,000)

The ending cash balance figure assumes that the company does borrow \$495,000 to cover the cash deficit from the previous month. This month the company needs to increase its borrowing by \$135,000 to bring the cash account up to its target level.

P16-9. The actual sales and purchases for White Partnership for September and October 2012, along with its forecast sales and purchases for November 2012 to April 2013, follow.

Year	Month	Sales	Purchases
2012	September	\$310,000	\$220,000
2012	October	350,000	250,000
2012	November	270,000	240,000
2012	December	260,000	200,000
2013	January	240,000	180,000
2013	February	280,000	210,000
2013	March	300,000	200,000
2013	April	350,000	190,000

The firm makes 30 per cent of all sales for cash and collects 35% of its sales in each of the two months following the sale. Other cash inflows are expected to be \$22,000 in September and April, \$25,000 in January and March, and \$37,000 in February. The firm pays cash for 20% of its purchases. It pays for 40% of its purchases in the following month and for 40% of its purchases two months later.

Wages and salaries amount to 15% of the preceding month's sales. Lease expenses of \$30,000 per month must be paid. Interest payments of \$20,000 are due in January and April. A principal payment of \$50,000 is also due in April. The firm expects to pay a cash dividend of \$30,000 in January and April. Taxes of \$120,000 are due in April. The firm also intends to make a \$55,000 cash purchase of fixed assets in December.

- a. Assuming that the firm has a cash balance of \$42,000 at the beginning of November and its desired minimum cash balance is \$25,000, prepare a cash budget for November through April.
- b. If the firm is requesting a line of credit, how large should the line be? Explain your answer.

A16-9. a.

	Nov.	Dec.	Jan.	Feb.	March	April
Cash Inflows						
Current month cash sales	\$81,000	\$78,000	\$72,000	\$84,000	\$90,000	\$105,000
Collections from previous month	\$122,500	\$94,500	\$91,000	\$84,000	\$98,000	\$105,000
Collections from two months ago	\$108,500	\$122,500	\$94,500	\$91,000	\$84,000	\$98,000
Other cash inflow			\$25,000	\$37,000	\$25,000	\$22,000
Total cash inflow	\$312,000	\$295,000	\$282,500	\$296,000	\$297,000	\$330,000
Cash Outflows						
Current month cash purchases	\$48,000	\$40,000	\$36,000	\$42,000	\$40,000	\$38,000
Payments on last month's purchases	\$100,000	\$96,000	\$80,000	\$72,000	\$84,000	\$80,000
Payments on purch. two months ago	\$88,000	\$100,000	\$96,000	\$80,000	\$72,000	\$84,000
Wages	\$52,500	\$40,500	\$39,000	\$36,000	\$42,000	\$45,000
Lease payment	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000
Interest			\$20,000			\$20,000
Principal						\$50,000
Dividends			\$30,000			\$30,000
Taxes						\$120,000
Fixed assets		\$55,000				
Total cash outflow	\$318,500	\$361,500	\$331,000	\$260,000	\$268,000	\$497,000
	Nov.	Dec.	Jan.	Feb.	March	April
Net cash flow	-\$6,500	-\$66,500	-\$48,500	\$36,000	\$29,000	-\$167,000
Beginning cash balance	\$42,000	\$35,500	\$25,000	\$25,000	\$61,000	\$90,000
Ending cash balance	\$35,500	-\$31,000	-\$23,500	\$61,000	\$90,000	-\$77,000
Borrowing need		\$56,000	\$48,500	\$0	\$0	\$102,000
Excess cash		\$0	\$0	\$36,000	\$65,000	\$0

- b. Assuming that the firm's forecasts are accurate, White, Inc. should request a minimum line of credit of \$206,500 ($56,000 + 48,500 + 102,000$) to meet its cash needs for the period November to April.

P16-10. Berlin Ltd expects sales of \$300,000 during each of the next three months. It will make monthly purchases of \$180,000 during this time. Wages and salaries are \$30,000 per month plus 5% of monthly sales. The company expects to make a tax payment of \$60,000 in the first month and a \$45,000 purchase of fixed assets in the second month and to receive \$24,000 in cash from

the sale of an asset in the third month. All sales and purchases are for cash. Beginning cash and the minimum cash balance equal zero.

- Construct a cash budget for the next three months.
- Berlin is unsure of the level of sales, but all other figures are certain. If the most pessimistic sales figure is \$240,000 per month and the most optimistic is \$360,000 per month, what are the minimum and maximum monthly ending cash balances that the firm can expect for each month?
- Discuss how the financial manager can use the data in parts (a) and (b).

A16-10. a.

	Month 1	Month 2	Month 3
Sales	\$300,000	\$300,000	\$300,000
Asset sale			\$24,000
Cash inflow	\$300,000	\$300,000	\$324,000
Purchases	\$180,000	\$180,000	\$180,000
Wages	\$45,000	\$45,000	\$45,000
Taxes	\$60,000		
Fixed assets		\$45,000	
Cash outflow	\$285,000	\$270,000	\$225,000
Net cash flow	\$15,000	\$30,000	\$99,000
Beginning cash	\$0	\$15,000	\$45,000
Ending cash	\$15,000	\$45,000	\$144,000

b. Pessimistic Case

	Month 1	Month 2	Month 3
Sales	\$240,000	\$240,000	\$240,000
Asset sale			\$24,000
Cash inflow	\$240,000	\$240,000	\$264,000
Purchases	\$180,000	\$180,000	\$180,000
Wages	\$42,000	\$42,000	\$42,000
Taxes	\$60,000		
Fixed Assets		\$45,000	
Cash outflow	\$282,000	\$267,000	\$222,000
Net cash flow	-\$42,000	-\$27,000	\$42,000
Beginning cash	\$0	-\$42,000	-\$69,000
Ending cash	-\$42,000	-\$69,000	-\$27,000

Optimistic Case

	Month 1	Month 2	Month 3
Sales	\$360,000	\$360,000	\$360,000
Asset sale			\$24,000
Cash inflow	\$360,000	\$360,000	\$384,000
Purchases	\$180,000	\$180,000	\$180,000
Wages	\$48,000	\$48,000	\$48,000
Taxes	\$60,000		
Fixed assets		\$45,000	
Cash outflow	\$288,000	\$273,000	\$228,000
Net cash flow	\$72,000	\$87,000	\$156,000
Beginning cash	\$0	\$72,000	\$159,000
Ending cash	\$72,000	\$159,000	\$315,000

	Month 1	Month 2	Month 3
Optimistic case	\$72,000	\$159,000	\$315,000
Pessimistic case	-\$42,000	-\$69,000	-\$27,000

- c. The financial manager can use this data to point out the need for contingency financing if the most pessimistic case occurs. It would be useful to know the probabilities of the worst, best and most likely case. The financial manager can at least prepare for financing for the worst case scenario, for example, by requesting a line of credit that could be drawn upon in time of need.

Answer to MiniCase**Financial Planning**

Bar BQ, a regional restaurant chain, has decided to expand nationwide, and consequently expects rapid growth. As Bar BQ's new CFO you are in charge of planning for this growth. Before starting to plan, you decide to refresh your knowledge of financial planning by answering the following questions.

1. One method of estimating the effects of growth is the sustainable growth model. What are the assumptions inherent with this model?
2. Another method of estimating growth is for company's managers to forecast pro forma financial statements. How are the sales forecasts that are necessary to create pro forma statements derived?
3. Why might the estimates for external fund required (EFR) differ between using the percentage-of-sales method to estimate pro forma statements and using the shorthand approach in Equation 16.2?
4. If sales volume fluctuates in the short term around the long-term estimated trend, what alternative financing strategies might be considered?
5. Discuss how managers might monitor a company's cash inflows and outflows on a day-to-day basis.

Answers

1. The sustainable growth model assumes the following: (i) the firm has only ordinary equity and will issue no new shares of ordinary equity next year, (ii) the firm's total asset turnover ratio remains constant, (iii) the firm pays out a constant fraction of its earnings as dividends, (iv) the firm maintains a constant assets-to-equity ratio, and (v) the firm's net profit margin is constant.

2. The sales forecast may be derived in either a 'top-down' or 'bottom-up' approach. Top-down sales forecasts rely heavily on macroeconomic and industry forecasts. Some firms use complex statistical models or subscribe to forecasts produced by firms specialising in econometric modeling. In the top-down approach, senior managers establish a firm-wide objective for increased sales. Next, individual divisions or business units receive targets that may not be identical but that collectively aggregate to achieve the firm's overall growth target. Division heads pass down sales targets to product line managers and other smaller-scale units. Again, the sales targets will vary across units within the division, but they must add up to achieve the divisional goal. Firms that use a bottom-up method for forecasting sales begin by talking with customers. Sales personnel try to assess demand in the coming year on a customer-by-customer basis. These figures are added up across sales territories, product lines, and divisions to arrive at the overall sales forecast for the company.
3. Estimates for external funds required may differ because several of the assumptions made when using the shorthand approach (Equation 16.2) do not hold when we conduct a more complete analysis based on building projections on an account-by-account basis.
4. Three strategies that may be considered are the conservative, the aggressive, and the matching strategies. The conservative strategy calls for managers to make sure that there is enough long-term financing to cover both the firm's permanent investments in fixed and current assets and the additional investments in current assets that it makes during the third and fourth quarters each year. The aggressive strategy calls for managers to rely heavily on short-term borrowing, not only to meet the seasonal peaks each year but also to finance a portion of the long-term growth in sales and assets. With the matching strategy managers finance permanent assets (fixed assets plus the permanent component of current assets) with long-term funding sources, and they finance their temporary or seasonal asset requirements with short-term debt.

The matching strategy is a middle-of-the-road approach compared to the other alternatives. The aggressive strategy, with its reliance on short-term debt, will result in the firm having smaller cash surpluses than under the conservative approach, but its borrowing costs will be lower, on average, because it substitutes less costly short-term debt for long-term debt. Interest costs will typically be higher under the matching approach than in the aggressive strategy, but it will face less exposure to refinancing risk, and its interest costs will not fluctuate as much quarter-to-quarter.

5. Managers could use a cash budget, which is a statement of the firm's planned inflows and outflows of cash, typically spanning a 1-year period of time. Managers use the cash budget to ensure that they will have enough cash available to meet short-term financial obligations and that any surplus cash resources can be invested quickly and efficiently. A cash budget includes cash receipts and cash disbursements. Cash receipts include all the firm's cash inflows in a given period. The most common components of cash receipts are cash sales, collections of accounts receivable, and other cash receipts. The collections of accounts receivable are estimated using the payment patterns of the firm's customers. Cash disbursements include all outlays of cash by the firm during the period. The most common cash disbursements are cash purchases, fixed asset outlays, payments of accounts payable, wages, interest payments, taxes, and rent and lease payments, but cash disbursements may also include items such as dividends paid and share repurchases. It is important to remember that depreciation and other non-cash expenses are not included in the cash budget because they merely represent a scheduled write-off of an earlier cash outflow. However, depreciation does have a cash outflow effect through its impact on tax payments.