4 Financial Forecasting

LEARNING OBJECTIVES

- **LO4-1** Financial forecasting is essential to the strategic growth of the firm.
- **LO4-2** The three financial statements for forecasting are the pro forma income statement, the cash budget, and the pro forma balance sheet.
- **LO4-3** The percent-of-sales method may also be used for forecasting on a less precise basis.
- **LO4-4** The various methods of forecasting enable the firm to determine the amount of new funds required in advance.
- **LO4-5** The process of forecasting forces the firm to consider seasonal and other effects on cash flow.

Forecasting for the future has never been easy, but in recent years it has become increasingly difficult for those in the retail industry. Let's consider Dollar General Corp. How does it intend to meet its goals in the future?

While many retail stores have suffered in recent years, dollar stores such as Dollar General have been one of the few bright spots. In fact, between 2008 and 2012, Dollar General's store count grew by 5 percent per year. Now, Dollar General operates more than 10,000 stores in 40 states and estimates that it will continue opening or renovating over 500 stores per year. Dollar General differentiates itself from its largest competitor, Walmart, by locating in shopping plazas or strip malls of smaller communities.

The company's motto, "Save Time. Save Money. Every Day!", emphasizes their goal of offering consumers the lowest prices. For example, a 2011 study by Deutsche Bank concluded that in the New York area, Dollar General had lower prices than Walmart on a 30-item basket of goods. This pricing strategy is one of the reasons that Dollar General has grown its revenue to nearly $15 billion in 2012. However, a low-price strategy can be risky because the company has very slim profit margins. When profit margins are tight, good financial forecasting becomes critical.

If there is one talent that is essential to the financial manager, it is the ability to plan ahead and to make necessary adjustments before actual events occur. We likely could construct the same set of external events for two corporations (inflation, recession, severe new competition, and so on), and one firm would survive, while the other would not. The outcome might be a function not only of their risk-taking desires, but also of their ability to hedge against risk with careful planning.

While we may assume that no growth or a decline in volume is the primary cause for a shortage of funds, this is not necessarily the case. A rapidly growing firm may witness a significant increase in accounts receivable, inventory, and plant and equipment that cannot be financed in the normal course of business. Assume sales go from $100,000 to $200,000 in one year for a firm that has a 5 percent profit margin on sales. At the same time, assume assets represent 50 percent of sales and go from $50,000 to $100,000 as

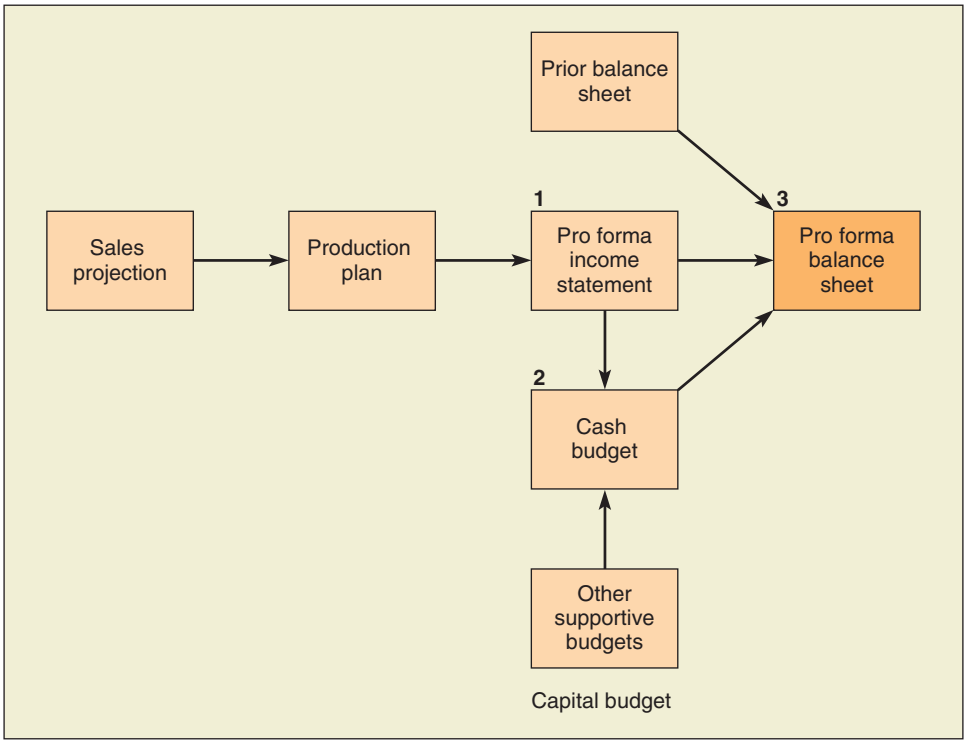
sales double. The $10,000 of profit (5 percent × $200,000) will hardly be adequate to finance the $50,000 asset growth. The remaining $40,000 must come from suppliers, the bank, and perhaps stockholders. You should recognize that profit alone is generally inadequate to finance significant growth and a comprehensive financing plan must be developed. Too often, the small businessperson (and sometimes the big one as well) is mystified by an increase in sales and profits but less cash in the till.

Constructing Pro Forma Statements

The most comprehensive means of financial forecasting is to develop a series of pro forma, or projected, financial statements. We will give particular attention to the **pro forma income statement,** the **cash budget,** and the **pro forma balance sheet.** Based on the projected statements, the firm is able to estimate its future level of receivables, inventory, payables, and other corporate accounts as well as its anticipated profits and borrowing requirements. The financial officer can then carefully track actual events against the plan and make necessary adjustments. Furthermore, the statements are often required by bankers and other lenders as a guide for the future.

A systems approach is necessary to develop pro forma statements. We first construct a pro forma income statement based on sales projections and the production plan, then translate this material into a cash budget, and finally assimilate all previously developed material into a pro forma balance sheet. The process of developing pro forma financial statements is depicted in Figure 4-1. We will use a six-month time

Figure 4-1 Development of pro forma statements



frame to facilitate the analysis, though the same procedures could be extended to one year or longer.

Pro Forma Income Statement

Assume the Goldman Corporation has been asked by its bank to provide pro forma financial statements for midyear 2014. The pro forma income statement will provide a projection of how much profit the firm anticipates making over the ensuing time period. In developing the pro forma income statement, we will follow four important steps.

1. Establish a sales projection.
2. Determine a production schedule and the associated use of new material, direct labor, and overhead to arrive at gross profit.
3. Compute other expenses.
4. Determine profit by completing the actual pro forma statement.

Establish a Sales Projection

For purposes of analysis, we shall assume the Goldman Corporation has two primary products: wheels and casters. Our sales projection calls for the sale of 1,000 wheels and 2,000 casters at prices of $30 and $35, respectively. As indicated in Table 4-1, we anticipate total sales of $100,000.

Go to www.mhhe.com/bhd15e to access the Excel file for all of the Chapter 4 tables.

Table 4-1 Projected wheel and caster sales (first six months, 2014)

	A	B	C	D	E	F
1		**Wheels**	**Casters**			
2	Quantity	1,000	2,000			
3	Sales price	$30	$35			
4	Sales revenue	$30,000	$70,000			
5	Total			$100,000		

Determine a Production Schedule and the Gross Profit

Based on anticipated sales, we determine the necessary production plan for the six-month period. The number of units produced will depend on the beginning inventory of wheels and casters, our sales projection, and the desired level of ending inventory. Assume that on January 1, 2014, the Goldman Corporation has in stock the items shown in Table 4-2.

Table 4-2 Stock of beginning inventory

	A	B	C	D	E	F
9		**Wheels**	**Casters**			
10	Quantity	85	180			
11	Cost	$16	$20			
12	Total value	$1,360	$3,600			
13	Total			$4,960		

Finance in ACTION | managerial

Sales Forecasting: Where Marketing and Finance Come Together

All the financial analysis in the world can prove useless if a firm does not have a meaningful sales projection. To the extent that the firm has an incorrect sales projection, an inappropriate amount of inventory will be accumulated, projections of accounts receivable and accounts payable will be wrong, and profits and cash flow will be off target. Although a corporate treasurer may understand all the variables influencing income statements, balance sheets, cash budgets, and so on, he or she is out of luck if the sales projection is wrong.

While statistical techniques such as regression and time series analysis may be employed to project sales, it is the marketing staff who are best able to predict future sales. For example, the executives at the Radio Shack Corporation look to the salespeople in their thousands of stores across the country to determine the sales projections for various products. These are the people that are closest to the customer on a daily basis and know which electrical components and products are currently in demand and which are not. Salespeople are also able to judge the economic mood of customers. While an innovative cellular telephone design may bring praise from window shoppers, the question remains, "Is it within the economic boundaries of what customers can afford?" Shoppers vote with their dollars and the salesforce is best able to tabulate the vote count.

Over the last two decades, the marketing profession has developed many sophisticated techniques for analyzing and projecting future sales, and it is important that the financial manager look to the marketing staff to help supply the essential variable for financial forecasting.

www.radioshack.com

We will add the projected quantity of unit sales for the next six months to our desired ending inventory and subtract our stock of beginning inventory (in units) to determine our production requirements. This process is illustrated below.

Units
+ Projected sales
+ Desired ending inventory
− Beginning inventory
= Production requirements

Following this process, in Table 4-3 we see a required production level of 1,015 wheels and 2,020 casters.

Table 4-3 Production requirements for six months

	A	B	C	D
16		**Wheels**	**Casters**	
17	Projected unit sales (Table 4-1)	+1,000	+2,000	
18	Desired ending inventory (assumed to represent 10% of unit sales for the time period)	+100	+200	
19	Beginning inventory (Table 4-2)	−85	−180	
20	Units to be produced	1,015	2,020	

We must now determine the cost to produce these units. In previously mentioned Table 4-2 we see that the cost of units in stock was $16 for wheels and $20 for casters. However, we shall assume the price of materials, labor, and overhead going into the new products is now $18 for wheels and $22 for casters, as indicated in Table 4-4.

Table 4-4 Unit costs

	A	B	C	D	E	F
23		**Wheels**	**Casters**			
24	Materials	$10	$12			
25	Labor	5	6			
26	Overhead	3	4			
27	Total	$18	$22			

The *total* cost to produce the required new items for the next six months is shown in Table 4-5.

Table 4-5 Total production costs

	A	B	C	D	E
30		**Wheels**	**Casters**		
31	Units to be produced (Table 4-3)	1,015	2,020		
32	Cost per unit (Table 4-4)	$18	$22		
33	Total cost	$18,270	$44,440	$62,710	

Cost of Goods Sold The main consideration in constructing a pro forma income statement is the costs specifically associated with units sold during the time period (the **cost of goods sold**). Note that in the case of wheels we anticipate sales of 1,000 units, as indicated in Table 4-1, but are producing 1,015, as indicated in Table 4-3, to increase our inventory level by 15 units. For profit measurement purposes, we will *not* charge these extra 15 units against current sales.[1] Furthermore, in determining the cost of the 1,000 units sold during the current time period, we will *not* assume that all of the items sold represent inventory manufactured in this period. We shall assume the Goldman Corporation uses FIFO (first-in, first-out) accounting and it will first allocate the cost of current sales to beginning inventory and then to goods manufactured during the period.

In Table 4-6, we look at the revenue, associated cost of goods sold, and gross profit for both products. For example, 1,000 units of wheels are to be sold at a total revenue of $30,000. Of the 1,000 units, 85 units are from beginning inventory at a $16 cost, and the balance of 915 units is from current production at an $18 cost. The total cost of goods sold for wheels is $17,830, yielding a gross profit of $12,170. The pattern is the same for casters, with sales of $70,000, cost of goods sold of $43,640, and gross profit of $26,360. The combined sales for the two products are $100,000, with cost of goods sold of $61,470 and gross profit of $38,530.

[1]Later in the analysis we will show the effect these extra units have on the cash budget and the balance sheet.

Table 4-6 Allocation of manufacturing cost and determination of gross profits

	A	B	C	D	E	F
36		**Wheels**		**Casters**		**Combined**
37	Quantity sold (Table 4-1)		1,000		2,000	3,000
38	Sales price		$30		$35	
39	Sales revenue		$30,000		$70,000	$100,000
40	Cost of goods sold:					
41	Old inventory (Table 4-2)					
42	Quantity (units)	85		180		
43	Cost per unit	$16		$20		
44	Total		$1,360		$3,600	
45	New inventory (the remainder)					
46	Quantity (units)	915		1,820		
47	Cost per unit (Table 4-4)	$18		$22		
48	Total		16,470		40,040	
49	Total cost of goods sold		17,830		43,640	$61,470
50	Gross profit		$12,170		$26,360	$38,530

At this point, we also compute the value of ending inventory for later use in constructing financial statements. As indicated in Table 4-7, the value of ending inventory will be $6,200.

Table 4-7 Value of ending inventory

	A	B	C	D	E	F
53	+	Beginning inventory (Table 4-2)	$4,960			
54	+	Total production costs (Table 4-5)	62,710			
55		Total inventory available for sales	67,670			
56	−	Cost of goods sold (Table 4-6)	61,470			
57		Ending inventory	$6,200			

Other Expense Items

Having computed total revenue, cost of goods sold, and gross profits, we must now subtract other expense items to arrive at a net profit figure. We deduct general and administrative expenses as well as interest expenses from gross profit to arrive at earnings before taxes, then subtract taxes to determine aftertax income, and finally deduct dividends to ascertain the contribution to retained earnings. For the Goldman Corporation, we shall assume general and administrative expenses are $12,000, interest expense is $1,500, and dividends are $1,500.

Actual Pro Forma Income Statement

Combining the gross profit in Table 4-6 with our assumptions on other expense items, we arrive at the pro forma income statement presented in Table 4-8. As shown toward the bottom of the table, we anticipate earnings after taxes of $20,024, dividends of $1,500, and an increase in retained earnings of $18,524.

Table 4-8 Income statement

	A	B	C	D
61	**Pro Forma Income Statement June 30, 2014**			
62	Sales revenue	$100,000		
63	Cost of goods sold	61,470		
64	Gross profit	38,530		
65	General and administrative expense	12,000		
66	Operating profit (EBIT)	26,530		
67	Interest expense	1,500		
68	Earnings before taxes (EBT)	25,030		
69	Taxes (20%)*	5,006		
70	Earnings after taxes (EAT)	20,024		
71	Common stock dividends	1,500		
72	Increase in retained earnings	$18,524		

*A 20 percent tax rate is used for simplicity.

Cash Budget

As previously indicated, the generation of sales and profits does not necessarily ensure there will be adequate cash on hand to meet financial obligations as they come due. This was especially true in the credit crisis period of 2007–2009 as many firms had to go into temporary bankruptcy. Macy's and Chrysler are two examples.

A profitable sale may generate accounts receivable in the short run but no immediate cash to meet maturing obligations. For this reason, we must translate the pro forma income statement into cash flows. In this process, we divide the longer-term pro forma income statement into smaller and more precise time frames to anticipate the seasonal and monthly patterns of cash inflows and outflows. Some months may represent particularly high or low sales volume or may require dividends, taxes, or capital expenditures.

Cash Receipts

In the case of the Goldman Corporation, we break down the pro forma income statement for the first half of the year 2014 into a series of monthly cash budgets. In Table 4-1, we showed anticipated sales of $100,000 over this time period; we shall now assume these sales can be divided into monthly projections, as indicated in Table 4-9.

Table 4-9 Monthly sales pattern

	C	D	E	F	G	H
1	**January**	**February**	**March**	**April**	**May**	**June**
2	$15,000	$10,000	$15,000	$25,000	$15,000	$20,000

A careful analysis of past sales and collection records indicates 20 percent of sales is collected in the month of sales and 80 percent in the following month. The cash receipt pattern related to monthly sales is shown in Table 4-10. It is assumed that sales for December 2013 were $12,000.

Table 4-10 Monthly cash receipts

	A	B	C	D	E	F	G	H	I	J
6		**December**	**January**	**February**	**March**	**April**	**May**	**June**		
7	Sales	$12,000	$15,000	$10,000	$15,000	$25,000	$15,000	$20,000		
8	Collections:									
9	(20% of current sales)		$3,000	$2,000	$3,000	$5,000	$3,000	$4,000	$16,000	Ending A/R
10	Collections:								Ending Accounts Receivable:	
11	(80% of previous month's sales)		9,600	12,000	8,000	12,000	20,000	12,000	$20,000 June sales −4,000 Collected	
12	Total cash receipts		$12,600	$14,000	$11,000	$17,000	$23,000	$16,000	$16,000	

The cash inflows will vary between $11,000 and $23,000, with the high point in receipts coming in May.

We now examine the monthly outflows.

Cash Payments

The primary considerations for cash payments are monthly costs associated with inventory manufactured during the period (material, labor, and overhead) and disbursements for general and administrative expenses, interest payments, taxes, and dividends. We must also consider cash payments for any new plant and equipment, an item that does not show up on our pro forma income statement. Costs associated with units manufactured during the period may be taken from the data provided in Table 4-5. In Table 4-11, we simply recast these data in terms of material, labor, and overhead.

Table 4-11 Component costs of manufactured goods

	A	B	C	D	E	F	G	H
15		**Wheels**			**Casters**			
16		**Units Produced**	**Cost per Unit**	**Total Cost**	**Units Produced**	**Cost per Unit**	**Total Cost**	**Combined Cost**
17	Materials	1,015	$10	$10,150	2,020	$12	$24,240	$34,390
18	Labor	1,015	5	5,075	2,020	6	12,120	17,195
19	Overhead	1,015	3	3,045	2,020	4	8,080	11,125
20								$62,710

We see that the total costs for components in the two products in Table 4-11 are materials, $34,390; labor, $17,195; and overhead, $11,125. We shall assume all these costs are incurred on an equal monthly basis over the six-month period. Even though the sales volume varies from month to month, we assume we are employing level monthly production to ensure maximum efficiency in the use of various productive resources. Average monthly costs for materials, labor, and overhead are as shown in Table 4-12 on the following page.

Table 4-12 Average monthly manufacturing costs

	A	B	C	D
23		**Total Costs**	**Time Frame**	**Average Monthly Cost**
24	Materials	$34,390	6 months	$5,732
25	Labor	17,195	6 months	2,866
26	Overhead	11,125	6 months	1,854

We shall pay for materials one month after the purchase has been made. Labor and overhead represent direct monthly cash outlays, as is true of interest, taxes, dividends, and the purchases of $8,000 in new equipment in February and $10,000 in June. We summarize all of our cash payments in Table 4-13. Past records indicate that $4,500 in materials was purchased in December.

Table 4-13 Summary of all monthly cash payments

	A	B	C	D	E	F	G	H	I
29		**December**	**January**	**February**	**March**	**April**	**May**	**June**	
30	From Table 4-12:								
31	Monthly material purchase	$4,500	$5,732	$5,732	$5,732	$5,732	$5,732	$5,732	Ending A/P
32	Payment for material (prior month's purchase)		$4,500	$5,732	$5,732	$5,732	$5,732	$5,732	
33	Monthly labor cost		2,866	2,866	2,866	2,866	2,866	2,866	
34	Monthly overhead		1,854	1,854	1,854	1,854	1,854	1,854	
35	From Table 4-8:								
36	General and administrative expense ($12,000 over 6 months)		2,000	2,000	2,000	2,000	2,000	2,000	
37	Interest expense							1,500	
38	Taxes (two equal payments)				2,503			2,503	
39	Cash dividend							1,500	
40	Also:								
41	New equipment purchases			8,000				10,000	
42	Total payments		$11,220	$20,452	$14,955	$12,452	$12,452	$27,955	

Actual Budget

We are now in a position to bring together our monthly cash receipts and payments into a cash flow statement, illustrated in Table 4-14. The difference between monthly receipts and payments is net cash flow for the month.

Table 4-14 Monthly cash flow

	A	B	C	D	E	F	G
45		**January**	**February**	**March**	**April**	**May**	**June**
46	Total receipts (Table 4-10)	$12,600	$14,000	$11,000	$17,000	$23,000	$16,000
47	Total payments (Table 4-13)	(11,220)	(20,452)	(14,955)	(12,452)	(12,452)	(27,955)
48	Net cash flow	$1,380	($6,452)	($3,955)	$4,548	$10,548	($11,955)

The primary purpose of the cash budget is to allow the firm to anticipate the need for outside funding at the end of each month. In the present case, we shall assume the Goldman Corporation wishes to have a minimum cash balance of $5,000 at all times. If it goes below this amount, the firm will borrow funds from the bank. If it goes above $5,000 and the firm has a loan outstanding, it will use the excess funds to reduce the loan. This pattern of financing is demonstrated in Table 4-15; this table illustrates a fully developed cash budget with borrowing and repayment provisions.

Table 4-15 Cash budget with borrowing and repayment provisions

	A	B	C	D	E	F	G
51		**January**	**February**	**March**	**April**	**May**	**June**
52	Net cash flow	$1,380	($6,452)	($3,955)	$4,548	$10,548	($11,955)
53	Beginning cash balance	5,000*	6,380	5,000	5,000	5,000	11,069
54	Cumulative cash balance	6,380	(72)	1,045	9,548	15,548	(886)
55	Monthly loan (or repayment)	—	5,072	3,955	(4,548)	(4,479)	5,886
56	Cumulative loan balance	—	5,072	9,027	4,479	—	5,886
57	Ending cash balance	6,380	5,000	5,000	5,000	11,069	5,000

*We assume the Goldman Corporation has a beginning cash balance of $5,000 on January 1, 2014, and it desires a minimum monthly ending cash balance of $5,000.

The first line in Table 4-15 shows net cash flow (from Table 4-14), which is added to the beginning cash balance to arrive at the cumulative cash balance. The fourth entry is the additional monthly loan or loan repayment, if any, required to maintain a minimum cash balance of $5,000. To keep track of our loan balance, the fifth entry represents cumulative loans outstanding for all months. Finally, we show the cash balance at the end of the month, which becomes the beginning cash balance for the next month.

At the end of January the firm has $6,380 in cash, but by the end of February the cumulative cash position of the firm is negative, necessitating a loan of $5,072 to maintain a $5,000 cash balance. The firm has a loan on the books until May, at which time there is an ending cash balance of $11,069. During the months of April and May the cumulative cash balance is greater than the required minimum cash balance of $5,000, so loan repayments of $4,548 and $4,479 are made to retire the loans completely in May. In June, the firm is once again required to borrow $5,886 to maintain a $5,000 cash balance.

Pro Forma Balance Sheet

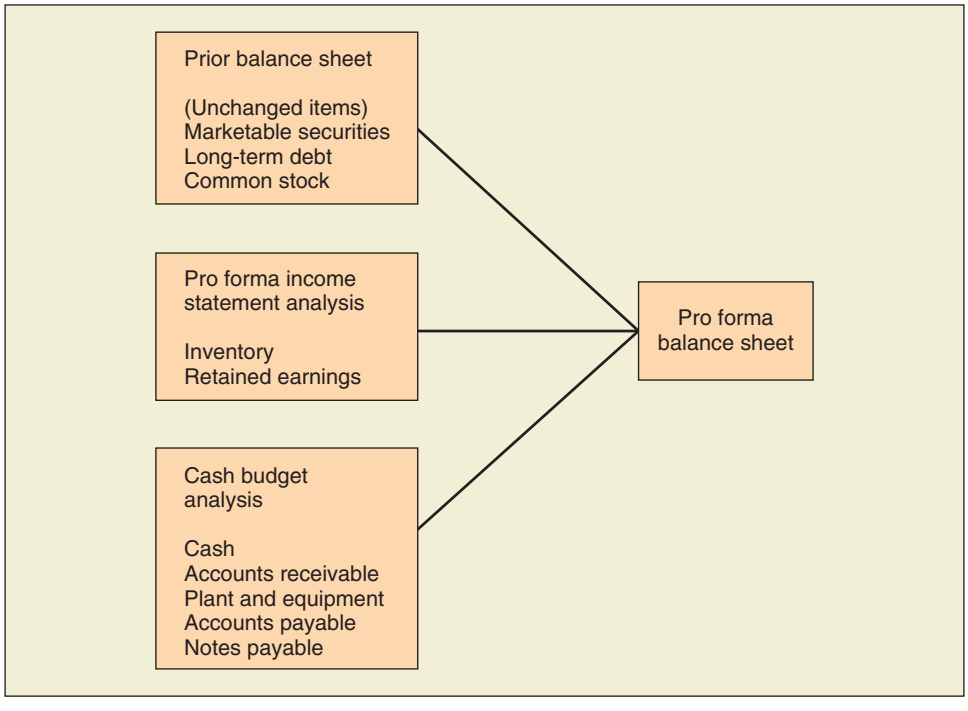
Now that we have developed a pro forma income statement and a cash budget, it is relatively simple to integrate all of these items into a pro forma balance sheet. Because the balance sheet represents cumulative changes in the corporation over time, we first examine the *prior* period's balance sheet and then translate these items through time to represent June 30, 2014. The last balance sheet, dated December 31, 2013, is shown in Table 4-16.

Table 4-16

	A	B	C	D
3	**Balance Sheet December 31, 2013**			
4	**Assets**			
5	Current assets:			
6	Cash	$5,000		
7	Marketable securities	3,200		
8	Accounts receivable	9,600		
9	Inventory	4,960		
10	Total current assets	22,760		
11	Plant and equipment	27,740		
12	Total assets	$50,500		
13	**Liabilities and Stockholders' Equity**			
14	Accounts payable	$4,500		
15	Notes payable	0		
16	Long-term debt	15,000		
17	Common stock	10,500		
18	Retained earnings	20,500		
19	Total liabilities and stockholders' equity	$50,500		

In constructing our pro forma balance sheet for June 30, 2014, some of the accounts from the old balance sheet will remain unchanged, while others will take on new values, as indicated by the pro forma income statement and cash budget. The process is depicted in Figure 4-2.

Figure 4-2 Development of a pro forma balance sheet



We now present the new pro forma balance sheet as of June 30, 2014, in Table 4-17.

Explanation of Pro Forma Balance Sheet

Each item in Table 4-17 can be explained on the basis of a prior calculation or assumption. The explanations begin below the table.

Table 4-17

	E	F	G	H
3	**Pro Forma Balance Sheet June 30, 2014**			
4	**Assets**			
5	Current assets:			
6	1. Cash	$5,000	Table 4-15	
7	2. Marketable securities	3,200	Table 4-16	
8	3. Accounts receivable	16,000	Table 4-10	
9	4. Inventory	6,200	Table 4-7	
10	Total current assets	30,400		
11	5. Plant and equipment	45,740	Table 4-16 plus 4-13	
12	Total assets	$76,140		
13	**Liabilities and Stockholders' Equity**			
14	6. Accounts payable	$5,732	Table 4-13	
15	7. Notes payable	5,886	Table 4-15	
16	8. Long-term debt	15,000	Table 4-16	
17	9. Common stock	10,500	Table 4-16	
18	10. Retained earnings	39,024	Table 4-16 plus Table 4-8	
19	Total liabilities and stockholders' equity	$76,142		

1. Cash ($5,000)—minimum cash balance as shown in Table 4-15.
2. Marketable securities ($3,200)—remains unchanged from prior period's value in Table 4-16.
3. Accounts receivable ($16,000)—based on June sales of $20,000 in Table 4-10. Twenty percent will be collected that month, while 80 percent will become accounts receivable at the end of the month.

$20,000	Sales
×80%	
$16,000	Receivables

4. Inventory ($6,200)—ending inventory as shown in Table 4-7.
5. Plant and equipment ($45,740).

Initial value (Table 4-16)	$27,740
Purchases* (Table 4-13)	18,000
Plant and equipment	$45,740

*For simplicity, depreciation is not explicitly considered.

6. Accounts payable ($5,732)—based on June purchases in Table 4-13. They will not be paid until July, and thus are accounts payable.
7. Notes payable ($5,886)—the amount that must be borrowed to maintain the cash balance of $5,000, as shown in Table 4-15.
8. Long-term debt ($15,000)—remains unchanged from prior period's value in Table 4-16.
9. Common stock ($10,500)—remains unchanged from prior period's value in Table 4-16.
10. Retained earnings ($39,024)—initial value plus pro forma income.

Initial value (Table 4-16)	$20,500
Transfer of pro forma income to retained earnings (Table 4-8)	18,524
Retained earnings	$39,024

Analysis of Pro Forma Statement

In comparing the pro forma balance sheet (Table 4-17) to the prior balance sheet (Table 4-16), we note that assets are up by $25,642.

Total assets (June 30, 2014)	$76,142
Total assets (Dec. 31, 2013)	50,500
Increase	$25,642

The growth was financed by accounts payable, notes payable, and profit (as reflected by the increase in retained earnings). Though the company will enjoy a high degree of profitability, it must still look to bank financing of $5,886 (shown as notes payable in Table 4-17) to support the increase in assets. This represents the difference between the $25,642 buildup in assets, and the $1,232 increase in accounts payable as well as the $18,524 buildup in retained earnings.

Percent-of-Sales Method

An alternative to tracing cash and accounting flows to determine financial needs is to assume that accounts on the balance sheet will maintain a given percentage relationship to sales. We then indicate a change in the sales level and ascertain our related financing needs. This is known as the **percent-of-sales method.** For example, for the Howard Corporation, introduced in Table 4-18, we show the following balance sheet accounts in dollars and their percentage of sales, based on a sales volume of $200,000.

Cash of $5,000 represents 2.5 percent of sales of $200,000; receivables of $40,000 are 20 percent of sales; and so on. No percentages are computed for notes payable, common stock, and retained earnings because they are not assumed to maintain a direct relationship with sales volume.

Once we know how much money we need to finance our growth, we will then decide whether to finance the sales growth with notes payable or sale of common stock, or use long-term debt. There are two possible scenarios for our calculations. First, if the company is operating at full capacity, it will need to buy new plant and

Table 4-18

	A	B	C	D
3	**HOWARD CORPORATION Balance Sheet and Percent-of-Sales Table**			
4	**Assets**		**Liabilities and Stockholders' Equity**	
5	Cash	$5,000	Accounts payable	$40,000
6	Accounts receivables	40,000	Accrued expenses	10,000
7	Inventory	25,000	Notes payable	15,000
8	Total current assets	$70,000	Common stock	10,000
9	Plant and equipment	50,000	Retained earnings	45,000
10	Total assets	$120,000	Total liabilities and stockholders' equity	$120,000
11	**$200,000 Sales Percent of Sales**			
12	Cash	2.5%	Accounts payable	20.0%
13	Accounts receivable	20.0	Accrued expenses	5.0
14	Inventory	12.5		25.0%
15	Total current assets	35.0		
16	Plant and equipment	25.0		
17		60.0%		

equipment to produce more goods to sell. If the company is operating at less than full capacity, it has the ability to increase sales with its current plant and equipment and so it will only need to add more current assets to increase its sales.

In the case of full capacity, any dollar increase in sales will necessitate a 35 percent increase in current assets, as well as a 25 percent increase in plant and equipment. These percentages are found in the bottom half of Table 4-18. Of this 60 percent, 25 percent will be spontaneously or automatically financed through accounts payable and accrued expenses, leaving 35 percent to be financed by profit or additional outside sources of financing. We will assume the Howard Corporation has an aftertax return of 6 percent on the sales dollar and 50 percent of profits are paid out as dividends.[2]

If sales increase from $200,000 to $300,000, the $100,000 increase in sales will necessitate $35,000 (35 percent) in additional financing. Since we will earn 6 percent on total sales of $300,000, we will show a profit of $18,000. With a 50 percent dividend payout, $9,000 will remain for internal financing. This means $26,000 out of the $35,000 must be financed from outside sources. Our formula to determine the need for new funds is:

Required new funds—

$$(\text{RNF}) = \frac{A}{S}(\Delta S) - \frac{L}{S}(\Delta S) - PS_2(1 - D) \qquad (4\text{-}1)$$

where

$\frac{A}{S}$ = relationship of variable assets to sales [60%]

ΔS = Change in sales [$100,000]

[2]Some may wish to add back depreciation under the percent-of-sales method. Most, however, choose the assumption that funds generated through depreciation (in the sources and uses of funds sense) must be used to replace the fixed assets to which depreciation is applied.

$\frac{L}{S}$ = relationship of variable liabilities to sales [25%]
P = Profit margin [6%]
S_2 = New sales level [$300,000]
D = Dividend payout ratio [0.50]

Plugging in the values, we show:

$$\begin{aligned}\text{RNF} &= 60\%\ (\$100{,}000) - 25\%\ (\$100{,}000) - 6\%\ (\$300{,}000)\ (1 - .50)\\ &= \$60{,}000 - \$25{,}000 - \$18{,}000\ (.50)\\ &= \$35{,}000 - \$9{,}000\\ &= \$26{,}000 \text{ required sources of new funds (at full capacity)}\end{aligned}$$

Presumably the $26,000 can be financed at the bank or through some other appropriate source.

What if the company is operating at less than full capacity and doesn't need to buy new plant and equipment? This often happens when the economy is coming out of a recession. In this case, we will only need to increase our assets by the 35 percent of spontaneous current assets. Repeating the equation:

$$\begin{aligned}\text{RNF} &= 35\%\ (\$100{,}000) - 25\%\ (\$100{,}000) - 6\%\ (\$300{,}000)\ (1 - .50)\\ &= \$35{,}000 - \$25{,}000 - \$18{,}000\ (.50)\\ &= \$35{,}000 - \$25{,}000 - \$9{,}000\\ &= \$1{,}000 \text{ required sources of new funds (at less than full capacity)}\end{aligned}$$

Notice that when we don't need to buy new equipment, the required new funds amount drops significantly. In this case, we only need an extra $1,000 of financing.

Using the percent-of-sales method is much easier than tracing through the various cash flows to arrive at the pro forma statements. Nevertheless, the output is much less meaningful and we do not get a month-to-month breakdown of the data. The percent-of-sales method is a broad-brush approach, while the development of pro forma statements is more exacting. Of course, whatever method we use, the results are only as meaningful or reliable as the assumptions about sales and production that went into the numbers.

SUMMARY

Financial forecasting allows the financial manager to anticipate events before they occur, particularly the need for raising funds externally. An important consideration is that growth may call for additional sources of financing because profit is often inadequate to cover the net buildup in receivables, inventory, and other asset accounts.

A systems approach is necessary to develop pro forma statements. We first construct a pro forma income statement based on sales projections and the production plan, then translate this material into a cash budget, and finally assimilate all previously developed material into a pro forma balance sheet.

www.mhhe.com/bhd15e

An alternative to tracing cash and accounting flows to determine financial needs is to assume that accounts on the balance sheet will maintain a given percentage relationship to sales. We can then indicate a change in the sales level and ascertain our related financing needs. This is known as the percent-of-sales method.

Regardless of what method is used to forecast the future financial needs of the firm (whether it is pro forma financial statements or the percent-of-sales method), the end product is the determination of the amount of new funds needed to finance the activities of the firm.

For firms that are in highly seasonal businesses, it is particularly important to identify peaks and slowdowns in the activities of the firm and the associated financial requirements.

LIST OF TERMS

pro forma income statement 97
cash budget 97
pro forma balance sheet 97
cost of goods sold 100
percent-of-sales method 108

DISCUSSION QUESTIONS

1. What are the basic benefits and purposes of developing pro forma statements and a cash budget? *(LO4-1)*
2. Explain how the collections and purchases schedules are related to the borrowing needs of the corporation. *(LO4-4)*
3. With inflation, what are the implications of using LIFO and FIFO inventory methods? How do they affect the cost of goods sold? *(LO4-2)*
4. Explain the relationship between inventory turnover and purchasing needs. *(LO4-2)*
5. Rapid corporate growth in sales and profits can cause financing problems. Elaborate on this statement. *(LO4-1)*
6. Discuss the advantage and disadvantage of level production schedules in firms with cyclical sales. *(LO4-5)*
7. What conditions would help make a percent-of-sales forecast almost as accurate as pro forma financial statements and cash budgets? *(LO4-3)*

PRACTICE PROBLEMS AND SOLUTIONS

Cost of goods sold—FIFO and LIFO *(LO4-2)*

1. At the end of January, Medical Products Corp. had 625 units in inventory, which had cost $15 to produce. During February, the firm produced 550 units at a cost of $20 per unit. If the firm sold 800 units in February, what was the cost of goods sold?
   a. Assume FIFO inventory accounting.
   b. Assume LIFO inventory accounting.

www.mhhe.com/bhd15e

Schedule of cash receipts
(LO4-2)

2. Eaton Stores has forecast credit sales for the fourth quarter of the year as:

September (actual)	$100,000
Fourth Quarter	
October	$ 70,000
November	50,000
December	80,000

Experience has shown that 30 percent of sales receipts are collected in the month of sale and 60 percent in the following month, and 10 percent are never collected. Prepare a schedule of cash receipts for Eaton Stores covering the fourth quarter (October through December).

Solutions

1. *a.* FIFO Accounting

Cost of goods sold on 800 units

Old inventory:		
Quantity (units)	625	
Cost per unit	$15	
Total		$ 9,375
New inventory:		
Quantity (units)	175	
Cost per unit	$20	
Total		3,500
Total cost of goods sold		$12,875

b. LIFO Accounting

Cost of goods sold on 800 units

New inventory:		
Quantity (units)	550	
Cost per unit	$20	
Total		$11,000
Old inventory:		
Quantity (units)	250	
Cost per unit	$15	
Total		3,750
Total cost of goods sold		$14,750

2.

	September	October	November	December
Sales	$100,000	$70,000	$50,000	$80,000
Collections:				
(30% of current sales)		21,000	15,000	24,000
Collections:				
(60% of previous month's sales)		60,000	42,000	30,000
Total cash receipts		$81,000	$57,000	$54,000

The 10 percent that is never collected does not go into the schedule of cash receipts.

www.mhhe.com/bhd15e

PROBLEMS

Selected problems are available with Connect. Please see the preface for more information.

Basic Problems

1. Eli Lilly is very excited because sales for his nursery and plant company are expected to double from $600,000 to $1,200,000 next year. Eli notes that net assets (Assets − Liabilities) will remain at 50 percent of sales. His firm will enjoy an 8 percent return on total sales. He will start the year with $120,000 in the bank and is bragging about the Jaguar and luxury townhouse he will buy. Does his optimistic outlook for his cash position appear to be correct? Compute his likely cash balance or deficit for the end of the year. Start with beginning cash and subtract the asset buildup (equal to 50 percent of the sales increase) and add in profit. Growth and financing *(LO4-4)*

2. Philip Morris expects the sales for his clothing company to be $550,000 next year. Philip notes that net assets (Assets − Liabilities) will remain unchanged. His clothing firm will enjoy a 12 percent return on total sales. He will start the year with $150,000 in the bank. What would Philip's ending cash balance be? Growth and financing *(LO4-4)*

3. Galehouse Gas Stations Inc. expects sales to increase from $1,550,000 to $1,750,000 next year. Mr. Galehouse believes that net assets (Assets − Liabilities) will represent 50 percent of sales. His firm has an 8 percent return on sales and pays 45 percent of profits out as dividends. Growth and financing *(LO4-4)*
   a. What effect will this growth have on funds?
   b. If the dividend payout is only 25 percent, what effect will this growth have on funds?

4. The Alliance Corp. expects to sell the following number of units of copper cables at the prices indicated, under three different scenarios in the economy. The probability of each outcome is indicated. What is the expected value of the total sales projection? Sales projections *(LO4-2)*

Outcome	Probability	Units	Price
A	0.70	225	$20
B	0.10	370	35
C	0.20	510	45

5. Bronco Truck Parts expects to sell the following number of units at the prices indicated under three different scenarios in the economy. The probability of each outcome is indicated. What is the expected value of the total sales projection? Sales projections *(LO4-2)*

Outcome	Probability	Units	Price
A	0.40	350	$21
B	0.10	600	$30
C	0.50	1,050	$35

6. Cyber Security Systems had sales of 3,500 units at $75 per unit last year. The marketing manager projects a 30 percent increase in unit volume sales this year with a 40 percent price increase. Returned merchandise will represent 8 percent of total sales. What is your net dollar sales projection for this year? Sales projections *(LO4-2)*

www.mhhe.com/bhd15e

Sales projections *(LO4-2)*

7. Dodge Ball Bearings had sales of 15,000 units at $45 per unit last year. The marketing manager projects a 30 percent increase in unit volume sales this year with a 20 percent price decrease (due to a price reduction by a competitor). Returned merchandise will represent 8 percent of total sales. What is your net dollar sales projection for this year?

Production requirements *(LO4-2)*

8. Sales for Ross Pro's Sports Equipment are expected to be 4,800 units for the coming month. The company likes to maintain 10 percent of unit sales for each month in ending inventory. Beginning inventory is 300 units. How many units should the firm produce for the coming month?

Production requirements *(LO4-2)*

9. Vitale Hair Spray had sales of 13,000 units in March. A 70 percent increase is expected in April. The company will maintain 30 percent of expected unit sales for April in ending inventory. Beginning inventory for April was 650 units. How many units should the company produce in April?

Production requirements *(LO4-2)*

10. Delsing Plumbing Company has beginning inventory of 16,500 units, will sell 55,000 units for the month, and desires to reduce ending inventory to 25 percent of beginning inventory. How many units should Delsing produce?

Cost of goods sold—FIFO *(LO4-2)*

11. On December 31 of last year, Wolfson Corporation had in inventory 450 units of its product, which cost $22 per unit to produce. During January, the company produced 850 units at a cost of $25 per unit. Assuming that Wolfson Corporation sold 800 units in January, what was the cost of goods sold (assume FIFO inventory accounting)?

Cost of goods sold—FIFO *(LO4-2)*

12. At the end of January, Higgins Data Systems had an inventory of 650 units, which cost $16 per unit to produce. During February the company produced 950 units at a cost of $19 per unit. If the firm sold 1,150 units in February, what was its cost of goods sold (assume LIFO inventory accounting)?

Cost of goods sold—LIFO and FIFO *(LO4-2)*

13. At the end of January, Mineral Labs had an inventory of 775 units, which cost $12 per unit to produce. During February, the company produced 900 units at a cost of $16 per unit. If the firm sold 1,500 units in February, what was the cost of goods sold?
    a. Assume LIFO inventory accounting.
    b. Assume FIFO inventory accounting.

Intermediate Problems

Gross profit and ending inventory *(LO4-2)*

14. Convex Mechanical Supplies produces a product with the following costs as of July 1, 2012:

Material	$ 6
Labor	4
Overhead	2
	$12

Beginning inventory at these costs on July 1 was 5,000 units. From July 1 to December 1, Convex produced 15,000 units. These units had a material cost of $10 per unit. The costs for labor and overhead were the same. Convex uses FIFO inventory accounting.

www.mhhe.com/bhd15e

Assuming that Convex sold 17,000 units during the last six months of the year at $20 each, what would gross profit be? What is the value of ending inventory?

15. The Bradley Corporation produces a product with the following costs as of July 1, 2014: Gross profit and ending inventory *(LO4-2)*

Material	$4 per unit
Labor	4 per unit
Overhead	2 per unit

Beginning inventory at these costs on July 1 was 3,250 units. From July 1 to December 1, 2014, Bradley produced 12,500 units. These units had a material cost of $5, labor of $4, and overhead of $5 per unit. Bradley uses LIFO inventory accounting.

Assuming that Bradley sold 14,000 units during the last six months of the year at $19 each, what is its gross profit? What is the value of ending inventory?

16. Sprint Shoes Inc. had a beginning inventory of 9,250 units on January 1, 2013. The costs associated with the inventory were: Gross profit and ending inventory *(LO4-2)*

Material	$15.00 per unit
Labor	8.00 per unit
Overhead	7.10 per unit

During 2013, the firm produced 43,000 units with the following costs:

Material	$17.50 per unit
Labor	8.80 per unit
Overhead	10.30 per unit

Sales for the year were 47,350 units at $44.60 each. Sprint Shoes uses LIFO accounting. What was the gross profit? What was the value of ending inventory?

17. J. Lo's Clothiers has forecast credit sales for the fourth quarter of the year as: Schedule of cash receipts *(LO4-2)*

September (actual)	$70,000
Fourth Quarter	
October	$60,000
November	55,000
December	80,000

Experience has shown that 30 percent of sales are collected in the month of sale, 60 percent in the following month, and 10 percent are never collected.

Prepare a schedule of cash receipts for J. Lo's Clothiers covering the fourth quarter (October through December).

www.mhhe.com/bhd15e

Schedule of cash receipts
(LO4-2)

18. Simpson Glove Company has made the following sales projections for the next six months. All sales are credit sales.

March	$41,000
April	50,000
May	32,000
June	47,000
July	58,000
August	62,000

Sales in January and February were $41,000 and $39,000, respectively. Experience has shown that of total sales receipts 10 percent are uncollectible, 40 percent are collected in the month of sale, 30 percent are collected in the following month, and 20 percent are collected two months after sale.

Prepare a monthly cash receipts schedule for the firm for March through August.

Schedule of cash receipts
(LO4-2)

19. Watt's Lighting Stores made the following sales projection for the next six months. All sales are credit sales.

March	$35,000
April	41,000
May	30,000
June	39,000
July	47,000
August	49,000

Sales in January and February were $38,000 and $37,000, respectively.

Experience has shown that of total sales, 10 percent are uncollectible, 30 percent are collected in the month of sale, 40 percent are collected in the following month, and 20 percent are collected two months after sale.

Prepare a monthly cash receipts schedule for the firm for March through August.

Of the sales expected to be made during the six months from March through August, how much will still be uncollected at the end of August? How much of this is expected to be collected later?

Schedule of cash payments
(LO4-2)

20. Ultravision Inc. anticipates sales of $290,000 from January through April. Materials will represent 50 percent of sales, and because of level production, material purchases will be equal for each month during the four months of January, February, March, and April.

Materials are paid for one month after the month purchased. Materials purchased in December of last year were $25,000 (half of $50,000 in sales). Labor costs for each of the four months are slightly different due to a provision in the labor contract in which bonuses are paid in February and April. The labor figures are:

January	$15,000
February	18,000
March	15,000
April	20,000

www.mhhe.com/bhd15e

Fixed overhead is $11,000 per month. Prepare a schedule of cash payments for January through April.

21. The Denver Corporation has forecast the following sales for the first seven months of the year: Schedule of cash payments *(LO4-2)*

January	$15,000	May	$15,000
February	17,000	June	21,000
March	19,000	July	23,000
April	25,000		

Monthly material purchases are set equal to 40 percent of forecasted sales for the next month. Of the total material costs, 50 percent are paid in the month of purchase and 50 percent in the following month. Labor costs will run $4,500 per month, and fixed overhead is $4,500 per month. Interest payments on the debt will be $3,500 for both March and June. Finally, the Denver salesforce will receive a 3.00 percent commission on total sales for the first six months of the year, to be paid on June 30.

Prepare a monthly summary of cash payments for the six-month period from January through June. (Note: Compute prior December purchases to help get total material payments for January.)

22. Wright Lighting Fixtures forecasts its sales in units for the next four months as follows: Schedule of cash payments *(LO4-2)*

March	4,000
April	10,000
May	8,000
June	6,000

Wright maintains an ending inventory for each month in the amount of one and one-half times the expected sales in the following month. The ending inventory for February (March's beginning inventory) reflects this policy. Materials cost $7 per unit and are paid for in the month after production. Labor cost is $3 per unit and is paid for in the month incurred. Fixed overhead is $10,000 per month. Dividends of $14,000 are to be paid in May. Eight thousand units were produced in February.

Complete a production schedule and a summary of cash payments for March, April, and May. Remember that production in any one month is equal to sales plus desired ending inventory minus beginning inventory.

23. The Volt Battery Company has forecast its sales in units as follows: Schedule of cash payments *(LO4-2)*

January	1,300	May	1,850
February	1,150	June	2,000
March	1,100	July	1,700
April	1,600		

Volt Battery always keeps an ending inventory equal to 110 percent of the next month's expected sales. The ending inventory for December (January's beginning inventory) is 1,460 units, which is consistent with this policy.

www.mhhe.com/bhd15e

Materials cost $14 per unit and are paid for in the month after purchase. Labor cost is $7 per unit and is paid in the month the cost is incurred. Overhead costs are $8,500 per month. Interest of $8,500 is scheduled to be paid in March, and employee bonuses of $13,700 will be paid in June.

Prepare a monthly production schedule and a monthly summary of cash payments for January through June. Volt produced 1,100 units in December.

Cash budget *(LO4-2)*

24. Graham Potato Company has projected sales of $6,000 in September, $10,000 in October, $16,000 in November, and $12,000 in December. Of the company's sales, 20 percent are paid for by cash and 80 percent are sold on credit. Experience shows that 40 percent of accounts receivable are paid in the month after the sale, while the remaining 60 percent are paid two months after. Determine collections for November and December.

Also assume Graham's cash payments for November and December are $13,000 and $6,000, respectively. The beginning cash balance in November is $5,000, which is the desired minimum balance.

Prepare a cash budget with borrowing needed or repayments for November and December. (You will need to prepare a cash receipts schedule first.)

Advanced Problems

Complete cash budget *(LO4-2)*

25. Harry's Carryout Stores has eight locations. The firm wishes to expand by two more stores and needs a bank loan to do this. Mr. Wilson, the banker, will finance construction if the firm can present an acceptable three-month financial plan for January through March. The following are actual and forecasted sales figures:

Actual		Forecast		Additional Information	
November	$260,000	January	$400,000	April forecast	$400,000
December	340,000	February	440,000		
		March	410,000		

Of the firm's sales, 60 percent are for cash and the remaining 40 percent are on credit. Of credit sales, 20 percent are paid in the month after sale and 80 percent are paid in the second month after the sale. Materials cost 20 percent of sales and are purchased and received each month in an amount sufficient to cover the following month's expected sales. Materials are paid for in the month after they are received. Labor expense is 50 percent of sales and is paid for in the month of sales. Selling and administrative expense is 15 percent of sales and is also paid in the month of sales. Overhead expense is $31,000 in cash per month.

Depreciation expense is $10,600 per month. Taxes of $8,600 will be paid in January, and dividends of $5,000 will be paid in March. Cash at the beginning of January is $92,000, and the minimum desired cash balance is $87,000.

For January, February, and March, prepare a schedule of monthly cash receipts, monthly cash payments, and a complete monthly cash budget with borrowings and repayments.

www.mhhe.com/bhd15e

26. Archer Electronics Company's actual sales and purchases for April and May are shown here along with forecasted sales and purchases for June through September.

Complete cash budget *(LO4-2)*

	Sales	Purchases
April (actual)	$370,000	$155,000
May (actual)	350,000	145,000
June (forecast)	325,000	145,000
July (forecast)	325,000	205,000
August (forecast)	340,000	225,000
September (forecast)	380,000	220,000

The company makes 20 percent of its sales for cash and 80 percent on credit. Of the credit sales, 50 percent are collected in the month after the sale and 50 percent are collected two months later. Archer pays for 20 percent of its purchases in the month after purchase and 80 percent two months after.

Labor expense equals 15 percent of the current month's sales. Overhead expense equals $12,500 per month. Interest payments of $32,500 are due in June and September. A cash dividend of $52,500 is scheduled to be paid in June. Tax payments of $25,500 are due in June and September. There is a scheduled capital outlay of $350,000 in September.

Archer Electronics' ending cash balance in May is $22,500. The minimum desired cash balance is $10,500. Prepare a schedule of monthly cash receipts, monthly cash payments, and a complete monthly cash budget with borrowing and repayments for June through September. The maximum desired cash balance is $50,500. Excess cash (above $50,500) is used to buy marketable securities. Marketable securities are sold before borrowing funds in case of a cash shortfall (less than $10,500).

27. Owen's Electronics has 9 operating plants in seven southwestern states. Sales for last year were $100 million, and the balance sheet at year-end is similar in percentage of sales to that of previous years (and this will continue in the future). All assets (including fixed assets) and current liabilities will vary directly with sales. The firm is working at full capacity.

Percent-of-sales method *(LO4-3)*

Balance Sheet (in $ millions)

Assets		Liabilities and Stockholders' Equity	
Cash	$ 7	Accounts payable	$ 20
Accounts receivable	25	Accrued wages	7
Inventory	28	Accrued taxes	13
Current assets	$ 60	Current liabilities	$ 40
Fixed assets	45	Notes payable	15
		Common stock	20
		Retained earnings	30
Total assets	$105	Total liabilities and stockholders' equity	$105

www.mhhe.com/bhd15e

Owen's has an aftertax profit margin of 10 percent and a dividend payout ratio of 45 percent.

If sales grow by 20 percent next year, determine how many dollars of new funds are needed to finance the growth.

Percent-of-sales method *(LO4-3)*

28. The Manning Company has financial statements as shown next, which are representative of the company's historical average.

The firm is expecting a 35 percent increase in sales next year, and management is concerned about the company's need for external funds. The increase in sales is expected to be carried out without any expansion of fixed assets, but rather through more efficient asset utilization in the existing store. Among liabilities, only current liabilities vary directly with sales.

Using the percent-of-sales method, determine whether the company has external financing needs, or a surplus of funds. (Hint: A profit margin and payout ratio must be found from the income statement.)

Income Statement	
Sales	$250,000
Expenses	192,000
Earnings before interest and taxes	$ 58,000
Interest	7,500
Earnings before taxes	$ 50,500
Taxes	15,500
Earnings after taxes	$ 35,000
Dividends	$ 7,000

Balance Sheet

Assets		Liabilities and Stockholders' Equity	
Cash	$ 8,500	Accounts payable	$ 26,400
Accounts receivable	63,000	Accrued wages	2,350
Inventory	91,000	Accrued taxes	3,750
Current assets	$162,500	Current liabilities	$ 32,500
Fixed assets	85,000	Notes payable	7,500
		Long-term debt	17,500
		Common stock	125,000
		Retained earnings	65,000
Total assets	$247,500	Total liabilities and stockholders' equity	$247,500

Percent-of-sales method *(LO4-3)*

29. Conn Man's Shops Inc. a national clothing chain, had sales of $350 million last year. The business has a steady net profit margin of 9 percent and a dividend payout ratio of 25 percent. The balance sheet for the end of last year is shown next.

The firm's marketing staff has told the president that in the coming year there will be a large increase in the demand for overcoats and wool slacks. A sales increase of 20 percent is forecast for the company.

www.mhhe.com/bhd15e

Balance Sheet End of Year (in $ millions)			
Assets		**Liabilities and Stockholders' Equity**	
Cash	$ 25	Accounts payable	$ 64
Accounts receivable	40	Accrued expenses	31
Inventory	82	Other payables	45
Plant and equipment	133	Common stock	50
		Retained earnings	90
Total assets	$280	Total liabilities and stockholders' equity	$280

All balance sheet items are expected to maintain the same percent-of-sales relationships as last year,* except for common stock and retained earnings. No change is scheduled in the number of common stock shares outstanding, and retained earnings will change as dictated by the profits and dividend policy of the firm. (Remember the net profit margin is 9 percent.)

a. Will external financing be required for the company during the coming year?

b. What would be the need for external financing if the net profit margin went up to 10.5 percent and the dividend payout ratio was increased to 60 percent? Explain.

*This included fixed assets as the firm is at full capacity.

COMPREHENSIVE PROBLEM

Mansfield Corporation (external funds requirement) *(LO4-4)*

Mansfield Corporation had 2013 sales of $100 million. The balance sheet items that vary directly with sales and the profit margin are as follows:

	Percent
Cash	5%
Accounts receivable	15
Inventory	20
Net fixed assets	40
Accounts payable	15
Accruals	10
Profit margin after taxes	10%

The dividend payout rate is 50 percent of earnings, and the balance in retained earnings at the end of 2013 was $33 million. Notes payable are currently $7 million. Long-term bonds and common stock are constant at $5 million and $10 million, respectively.

a. How much additional external capital will be required for next year if sales increase 15 percent? (Assume that the company is already operating at full capacity.)

www.mhhe.com/bhd15e

b. What will happen to external fund requirements if Mansfield Corporation reduces the payout ratio, grows at a slower rate, or suffers a decline in its profit margin? Discuss each of these separately.

c. Prepare a pro forma balance sheet for 2014 assuming that any external funds being acquired will be in the form of notes payable. Disregard the information in part *b* in answering this question (that is, use the original information and part *a* in constructing your pro forma balance sheet).

COMPREHENSIVE PROBLEM

Marsh Corporation (financial forecasting with seasonal production) *(LO4-5)*

The difficult part of solving a problem of this nature is to know what to do with the information contained within a story problem. Therefore, this problem will be easier to complete if you rely on Chapter 4 for the format of all required schedules.

The Marsh Corporation makes standard-size 2-inch fasteners, which it sells for $155 per thousand. Mr. Marsh is the majority owner and manages the inventory and finances of the company. He estimates sales for the following months to be:

January	$263,500 (1,700,000 fasteners)
February	$186,000 (1,200,000 fasteners)
March	$217,000 (1,400,000 fasteners)
April	$310,000 (2,000,000 fasteners)
May	$387,500 (2,500,000 fasteners)

Last year Marsh Corporation's sales were $175,000 in November and $232,500 in December (1,500,000 fasteners).

Mr. Marsh is preparing for a meeting with his banker to arrange the financing for the first quarter. Based on his sales forecast and the following information he has provided, your job as his new financial analyst is to prepare a monthly cash budget, monthly and quarterly pro forma income statements, a pro forma quarterly balance sheet, and all necessary supporting schedules for the first quarter.

Past history shows that Marsh Corporation collects 50 percent of its accounts receivable in the normal 30-day credit period (the month after the sale) and the other 50 percent in 60 days (two months after the sale). It pays for its materials 30 days after receipt. In general, Mr. Marsh likes to keep a two-month supply of inventory in anticipation of sales. Inventory at the beginning of December was 2,600,000 units. (This was not equal to his desired two-month supply.)

The major cost of production is the purchase of raw materials in the form of steel rods, which are cut, threaded, and finished. Last year, raw material costs were $52 per 1,000 fasteners, but Mr. Marsh has just been notified that material costs have risen, effective January 1, to $60 per 1,000 fasteners. The Marsh Corporation uses FIFO inventory accounting. Labor costs are relatively constant at $20 per thousand fasteners, since workers are paid on a piecework basis. Overhead is allocated at $10 per thousand units, and selling and administrative expense is 20 percent of sales. Labor expense and overhead are direct cash outflows paid in the month incurred, while interest and taxes are paid quarterly.

www.mhhe.com/bhd15e

The corporation usually maintains a minimum cash balance of $25,000, and it puts its excess cash into marketable securities. The average tax rate is 40 percent, and Mr. Marsh usually pays out 50 percent of net income in dividends to stockholders. Marketable securities are sold before funds are borrowed when a cash shortage is faced. Ignore the interest on any short-term borrowings. Interest of $8,000 on the long-term debt is paid in March, but is allocated over each month for accounting purposes. Taxes and dividends are paid in March.

As of year-end, the Marsh Corporation balance sheet was as follows:

	A	B	C	D
1	**MARSH CORPORATION Balance Sheet December 31, 20IX**			
2	**Assets**			
3	Current assets:			
4	Cash	$30,000		
5	Accounts receivable	320,000		
6	Inventory	237,800		
7	Total current assets		$587,800	
8	Fixed assets:			
9	Plant and equipment	1,000,000		
10	Less: Accumulated depreciation	200,000	800,000	
11	Total assets		$1,387,800	
12	**Liabilities and Stockholders' Equity**			
13	Accounts payable	$93,600		
14	Notes payable	0		
15	Long-term debt, 8 percent	400,000		
16	Common stock	504,200		
17	Retained earnings	390,000		
18	Total liabilities and stockholders' equity	$1,387,800		

WEB EXERCISE

1. Barnes & Noble is a company in transition in terms of financial performance. Go to www.barnesandnoble.com.
2. Scroll to the bottom of the page. Under B&N Services, click "Investor Relations." At the bottom of the Investor Relations page, click on "Stock Quotes." What is the current stock price? How does it compare to the 52-week high and low?
3. Return to the main Investor Relations page by clicking "For Investors" at the top of the Stock Quotes page. Locate the box to the right entitled "Financial News." Write a brief paragraph summary of any three press releases appearing in this box (three paragraphs in total).

www.mhhe.com/bhd15e

4. At the bottom of the Investor Relations page, click the link titled "Annual Reports" and open the most recent annual report.
5. Scroll down on the left-hand bookmarks until you get to "Consolidated Statements of Operations." Has Barnes & Noble been profitable in the last three years?
6. Click on "Consolidated Balance Sheet." What is the ratio of "Total Current and Non-Current Liabilities to Total Assets" for the past two periods? Anything over 70 percent is considered too high. How does Barnes & Noble look?

Note: Occasionally a topic we have listed may have been deleted, updated, or moved into a different location at a Web site. If you click on the site map or site index, you will be introduced to a table of contents that should aid you in finding the topic you are looking for.

www.mhhe.com/bhd15e