

Short-Term Financial Planning

Learning Objectives

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|--|---|
| b¹ Use the percent of sales method to forecast the financing requirements of a firm. | Financial Forecasting |
| b² Describe the limitations of the percent of sales forecast method. | Limitations of the Percent of Sales Forecasting Method |
| b³ Prepare a cash budget and use it to evaluate the amount and timing of a firm's financing needs. | Constructing and Using a Cash Budget |

In the summer of 2012, the price of a gallon of diesel was over \$4.00. If you were a financial manager in July 2012 working on the financial plans for the coming year at the United Parcel Service (UPS), the level of the price of fuel would be of great concern, given that fuel costs are a major component of the operating expenses of UPS. Clearly, having an estimate of future fuel costs is a critical variable in the financial forecast of UPS's future profitability. Yet there are countless examples of when our ability to predict the future is not very good.

If forecasting the future is so difficult and plans are built on forecasts, why do firms engage in planning efforts? Obviously, they do, but why? The answer, oddly enough, does not lie in the accuracy of the firm's projections, for planning offers its greatest value when the future is the most uncertain. The value of planning is derived out of the process itself. That is, by thinking about what the future might be like, the firm builds contingency plans that can improve its ability to respond to adverse events and take advantage of opportunities that arise.

Chapter 14 has two primary objectives:

- ◆ First, it will help you gain an appreciation for the role forecasting plays in the firm's financial planning process. Basically, forecasts of future sales revenues and their associated expenses give the firm the information it needs to project its future financing needs.
- ◆ Second, this chapter provides an overview of the basic elements of a financial plan: the cash budget, pro forma (planned) income statement, and pro forma balance sheet.

Pro forma financial statements are a very useful tool for analyzing the effects of the firm's forecasts and planned activities on its financial performance, as well as its needs for financing. In addition, pro forma statements can be used as a benchmark or standard to compare against actual operating results. Used in this way, pro forma statements are an instrument for monitoring and controlling the firm's progress throughout the planning period. For example, after the first energy crisis of the 1970s, the price of crude oil rose from \$2.00 to more than \$20.00 per barrel. Many thought that the price would rise above \$50.00. Then in 1986, the price dropped to only \$10.00 per barrel, and the \$50.00 price looked like a foolish dream. However, in 2008, the price of a barrel of oil rose to \$140.00 and then dropped below \$90 in October 2012. What's next, will the price continue to rise or will it drop again as it did in an earlier crisis?



Financial Forecasting

Financial forecasting is the process of attempting to estimate a firm's future financing requirements. The basic steps involved in predicting those financing needs are the following:

- STEP 1** Project the firm's sales revenues and expenses over the planning period.
- STEP 2** Estimate the levels of investment in current and fixed assets that are needed to support the projected sales forecast.
- STEP 3** Determine the firm's financing needs throughout the planning period that are required to fund its assets.

The Sales Forecast

The key ingredient in the firm's planning process is the sales forecast. This projection is generally derived using information from a number of sources. At a minimum, the sales forecast for the coming year reflects (1) any past trend in sales that is expected to carry through into the new year and (2) the influence of any anticipated events that might materially affect that trend.¹ An example of the latter is the initiation of a major advertising campaign or a change in the firm's pricing policy.

Forecasting Financial Variables

Traditional financial forecasting takes the sales forecast as a given and projects its impact on the firm's various expenses, assets, and liabilities. The most commonly used method for making these projections is the percent of sales method.

b¹ Use the percent of sales method to forecast the financing requirements of a firm.

¹A complete discussion of forecast methodologies is outside the scope of this book. The interested reader will find a large number of books on business forecasting with a simple Web search.

percent of sales method a method of financial forecasting that involves estimating the level of an expense, asset, or liability for a future period as a percent of the sales forecast.

The Percent of Sales Method of Financial Forecasting

The **percent of sales method** involves *estimating the level of an expense, asset, or liability for a future period as a percentage of the sales forecast*. The percentage used can come from the most recent financial statement item as a percentage of current sales, from an average computed over several years, from the judgment of the analyst, or from some combination of these sources.

Table 14-1 presents a complete example that uses the percent of sales method of financial forecasting for Drew Inc. In this example each item in the firm's balance sheet that varies with sales is converted to a percentage of 2013 sales, which was \$10 million. The forecast of the new balance for each item is then calculated by multiplying this percentage times the \$12 million in projected sales for the 2014 planning period. This method offers a relatively low-cost and easy-to-use way to estimate the firm's future financing needs.

Note that in the example in Table 14-1, both current and fixed assets are assumed to vary with the level of sales. This means that the firm does not have sufficient productive capacity to absorb a projected increase in sales. Thus, if sales were to rise by \$1, fixed assets would rise by \$0.40, or 40 percent of the projected increase in sales. If instead the fixed assets the firm currently owns are sufficient to support the projected level of sales, then the assets will not be converted to a percentage of sales and will be projected to remain unchanged for the period being forecast.

Also, note that accounts payable and accrued expenses are the only liabilities allowed to vary with sales. Both these liability accounts might reasonably be expected to rise and fall with the level of firm sales, hence, the use of the percent of sales forecast. Because these two

TABLE 14-1 Using the Percent of Sales Method to Forecast Drew Inc.'s Financing Requirements for 2014

	A	B	C	D	E	F	G	H	I
1	Drew Inc.						Drew Inc.		
2	Income Statement for 2013						Pro forma Income Statement for 2014		
3									
4									
5	Sales		\$ 10,000,000				Sales growth rate =	20%	
6	Net Income		\$ 500,000				Sales	\$10 million $\times$ (1+.20) =	\$ 12,000,000
7							Net Income	\$12 million $\times$.05 =	\$ 600,000
8									
9									
10	Drew Inc.						Drew Inc.		
11	Balance Sheet for 2013						Pro forma Balance Sheet for 2014		
12									
13									
14	Current assets		\$ 2,000,000				Current assets	20 $\times$ \$12m =	\$ 2,400,000
15	Net fixed assets		4,000,000				Net fixed assets	40 $\times$ \$12m =	\$ 4,800,000
16	Total		\$ 6,000,000				Total		\$ 7,200,000
17									
18	Accounts payable		\$ 1,000,000				Accounts payable	10 $\times$ \$12m =	\$ 1,200,000
19	Accrued expenses		1,000,000				Accrued expenses	10 $\times$ \$12m =	1,200,000
20	Notes payable		500,000				Notes payable	No change	500,000
21	Current Liabilities		\$ 2,500,000				Current Liabilities		\$ 2,900,000
22	Long-term debt		2,000,000				Long-term debt	No change	\$ 2,000,000
23	Total Liabilities		\$ 4,500,000				Total Liabilities		\$ 4,900,000
24	Common stock (par)		100,000				Common stock (par)	No change	100,000
25	Paid-in capital		200,000				Paid-in capital	No change	200,000
26	Retained earnings		1,200,000				Retained earnings	Calculation ^a	1,500,000
27	Common Equity		\$ 1,500,000				Common Equity		1,800,000
28	Total		\$ 6,000,000				Total Financing Provided		\$ 6,700,000
29							Discretionary Financing Needed (Plug) ^c		\$ 500,000
30							Total Financing Needed = Total Assets		\$ 7,200,000
31									

^aNot applicable. These account balances do not vary with sales.

^bProjected retained earnings for 2014 equals \$1,500,000 which is equal to the 2013 level of retained earnings of \$1,200,000 plus net income of \$600,000 less common dividends equal to 50% of projected net income or \$300,000.

^cDiscretionary financing needed (DFN) for 2014 is a "plug figure" that equals the difference in the firm's projected total financing requirements or total assets equal to \$7,200,000 and total financing provided which is \$6,700,000. In this scenario DFN is \$500,000.

categories of current liabilities normally vary directly with the level of sales, they are often referred to as sources of **spontaneous financing**. Included in spontaneous financing are *trade credit and other accounts payable that arise spontaneously in the firm's day-to-day operations*. Chapter 15, which discusses working-capital management, has more to say about these forms of financing. Notes payable, long-term debt, common stock, and paid-in capital are not assumed to vary directly with the level of firm sales. These sources of financing are termed **discretionary financing**, *which requires an explicit decision on the part of the firm's management every time funds are raised. An example is a bank note that requires that negotiations be undertaken and an agreement signed setting forth the terms and conditions for the financing*. Finally, note that the level of retained earnings does vary with estimated sales. The predicted change in the level of retained earnings equals the estimated after-tax profits (projected net income) equal to 5 percent of sales, or \$600,000, less the common stock dividends of \$300,000.

In the Drew Inc. example found in Table 14-1, we estimate that firm sales will increase from \$10 million to \$12 million, which will cause the firm's need for total assets to rise to \$7.2 million. These assets will then be financed by \$4.9 million in existing liabilities plus spontaneous liabilities; \$1.8 million in owner funds, including an additional \$300,000 in retained earnings from next year's sales; and finally, \$500,000 in discretionary financing, which can be raised by issuing notes payable, selling bonds, offering an issue of stock, or some combination of these sources.

In summary, we can estimate the firm's discretionary financing needs (*DFN*), using the percent of sales method of financial forecasting, by following a four-step procedure:

STEP 1 Convert each asset and liability account that varies directly with firm sales to a percentage of the current year's sales.

$$\frac{\text{Current assets}}{\text{sales}} = \frac{\$2\text{M}}{\$10\text{M}} = 0.2, \text{ or } 20\%$$

STEP 2 Project the level of each asset and liability account in the balance sheet using its percentage of sales multiplied by projected sales or by leaving the account balance unchanged when the account does not vary with the level of sales.

$$\text{Projected current assets} = \text{projected sales} \times \frac{\text{current assets}}{\text{sales}} = \$12\text{M} \times 0.2 = \$2.4\text{M}$$

STEP 3 Project the addition to retained earnings available to help finance the firm's operations. This equals projected net income for the period less planned common stock dividends.

$$\begin{aligned} \text{Projected addition to retained earnings} &= \text{projected sales} \times \frac{\text{net income}}{\text{sales}} \times \left(1 - \frac{\text{cash dividends}}{\text{net income}}\right) \\ &= \$12\text{M} \times 0.05 \times (1 - 0.5) = \$300,000 \end{aligned}$$

STEP 4 Project the firm's *DFN* as the projected level of total assets less projected liabilities and owners' equity.

$$\begin{aligned} \text{Discretionary financing needed} &= \text{projected total assets} - \text{projected total liabilities} - \text{projected owners' equity} \\ &= \$7.2\text{M} - \$4.9\text{M} - \$1.8\text{M} = \$500,000 \end{aligned}$$

Analyzing the Effects of Profitability and Dividend Policy on *DFN*

Projecting discretionary financing needed, we can quickly and easily evaluate the sensitivity of our projected financing requirements to changes in key variables. For example, using the information from the preceding example, we evaluate the effect of net profit margins (*NPMs*) equal to 1 percent, 5 percent, and 10 percent in

spontaneous financing the trade credit and other accounts payable that arise spontaneously in the firm's day-to-day operations.

discretionary financing sources of financing that require an explicit decision on the part of the firm's management every time funds are raised. Bank notes provide a typical example of this type of financing.

combination with dividend payout ratios of 30 percent, 50 percent, and 70 percent, as follows:

Discretionary Financing Needed for Various Net Profit Margins and Dividend Payout Ratios

NET PROFIT MARGIN	DIVIDEND PAYOUT RATIOS = DIVIDENDS ÷ NET INCOME		
	30%	50%	70%
1%	\$716,000	\$740,000	\$764,000
5%	380,000	500,000	620,000
10%	(40,000)	200,000	440,000

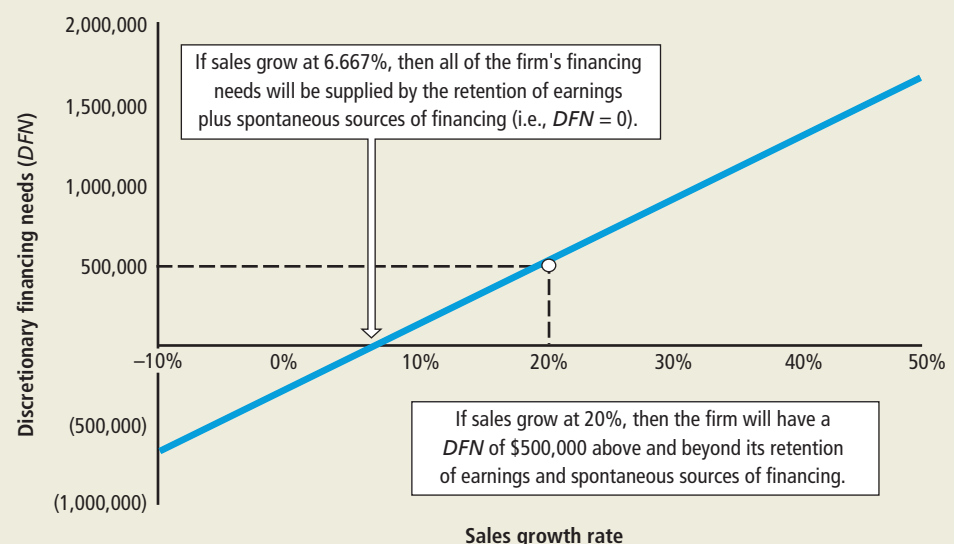
If these *NPMs* are reasonable estimates of the possible ranges of values the firm might experience, and if the firm is considering dividend payouts ranging from 30 percent to 70 percent, then we estimate that the firm's financing requirements will range from (\$40,000), which represents a surplus of \$40,000, to a situation in which it would need to acquire \$764,000. Lower *NPMs* mean higher funding requirements. Also, higher dividend payout percentages, other things remaining constant, lead to a need for more discretionary financing. This is a direct result of the fact that a high-dividend-paying firm retains less of its earnings.

Analyzing the Effects of Sales Growth on a Firm's *DFN*

In Figure 14-1 we analyzed the *DFN* for Drew Inc., whose sales were expected to grow from \$10 million to \$12 million during the coming year. Recall that the 20 percent expected increase in sales led to an increase in the firm's needs for financing in the amount of \$500,000. We referred to this added financing requirement as the firm's *DFN* because all these funds must be raised from sources, such as bank borrowing or a new equity issue, that require that management exercise its discretion in selecting the source. In this section we want to investigate how a firm's *DFN* varies with different rates of anticipated sales growth.

Table 14-2 expands on the financial forecast found in Table 14-1. Specifically, we use the same assumptions and prediction methods that underlie Table 14-1 but apply them to sales growth rates of 0 percent, 20 percent, and 40 percent. The *DFN* for these sales growth rates ranges from (\$250,000) to \$1,250,000. When *DFN* is negative, this means that the firm has more money than it needs to finance the assets used to generate the projected sales. Alternatively, when *DFN* is positive, this means that the firm must raise additional

FIGURE 14-1 Sales Growth and the Discretionary Financing Needs of the Firm



CAN YOU DO IT?

PERCENT OF SALES FORECASTING

The CFO for Madrigal Plumbing Supplies Inc. is developing financial plans for next year when he estimates that his sales will reach \$10 million. During the 4 years the firm has been in business, its inventories have represented approximately 15 percent of its revenues. What would you estimate the firm's needs for inventories to be next year (using the percent of sales forecast method)? If Madrigal has economies of scale, would you expect its inventory needs to be more than, the same as, or less than the percent of sales forecast? (The solution can be found on page 442.)

TABLE 14-2 Discretionary Financing Needs (DFN) and the Growth Rate in Sales

	A	B	C	D	E	F	G	H	I	J	K
1	Drew Inc.						Drew Inc.				
2	Income Statement for 2013						Pro forma Income Statement for 2014				
3											
4											
5											
6											
7											
8											
9	Drew Inc.						Drew Inc.				
10	Balance Sheet for 2013						Pro forma Balance Sheet for 2014				
11											
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37											
38											

Not applicable. These account balances do not vary with sales.

Projected retained earnings for 2014 based on the 20% growth rate scenario is \$1,500,000 and is calculated as follows: The 2013 retained earnings of \$1,200,000 added to 2014 projected net income of \$600,000 less common dividends of \$300,000. Note that dividends are assumed to be 50% of net income, so dividends vary across the three scenarios.

*Discretionary financing needed (DFN) for 2014 and the 20% growth rate scenario is a "plug figure" that equals the difference in the firm's projected total financing requirements or total assets of \$7,200,000 and total financing provided of \$6,700,000. In this scenario DFN is \$500,000.

funds in this amount, by either borrowing or issuing stock. We can calculate *DFN* using the following relationship:

$$DFN = \text{predicted change in total assets} - \text{predicted change in spontaneous liabilities} - \text{predicted change in retained earnings} \quad (14-1)$$

Notice that in defining *DFN* we consider only changes in spontaneous liabilities, which you will recall are those liabilities that arise more or less automatically in the course of doing business (examples include accrued expenses and accounts payable). In Table 14-1 the only liabilities that are allowed to change with sales are spontaneous liabilities, so we can calculate the change in spontaneous liabilities simply by comparing total liabilities at the current sales level with total liabilities for the predicted sales level.

DID YOU GET IT?

PERCENT OF SALES FORECASTING

Madrigal projects that its inventories will be 15 percent of revenues such that its projected inventory needs for next year will be the following:

$0.15 \times \$10 \text{ million} = \$1,500,000$

If Madrigal faces economies of scale, then its inventory needs will be less than the \$1,500,000 predicted using the percent of sales method. When economies of scale are present, the firm's inventory needs do not increase proportionately with sales (nor do they decrease proportionately).

Equation (14-1) can be used to estimate the *DFN* numbers found in Table 14-2. For example, when sales are expected to grow at a rate of 10 percent (that is, *g* equals 10 percent), *DFN* can be calculated as follows:

$$DFN(g = 10\%) = (\$6,600,000 - \$6,000,000) - (\$4,700,000 - \$4,500,000) - (\$1,475,000 - \$1,200,000) = \$125,000$$

external financing needs that portion of a firm's requirements for financing that exceeds its sources of internal financing (i.e., the retention of earnings) plus spontaneous sources of financing (e.g., trade credit).

Sometimes analysts prefer to calculate a firm's **external financing needs** (*EFN*), which include *all the firm's needs for financing beyond the funds provided internally through the retention of earnings*. Thus,

$$EFN = \text{predicted change in total assets} - \text{change in retained earnings} \tag{14-2}$$

For an anticipated growth in sales of 10 percent, *EFN* equals \$325,000. The difference between *EFN* and *DFN* equals the \$200,000 in added spontaneous financing that the firm anticipates receiving when its sales rise from \$10 million to \$11 million. We prefer to use the *DFN* concept because it focuses the analyst's attention on the amount of funds that the firm must actively seek to meet the firm's financing requirements.

Figure 14-1 contains a graphic representation of the relationship between growth rates for sales and *DFN*. The straight line in the graph depicts the level of *DFN* for each of the different rates of growth in firm sales. For example, if sales grow by 20 percent, then the firm projects a *DFN* of \$500,000, which must be raised externally by

FINANCIAL DECISION TOOLS

Name of Tool	Formula	What It Tells You
Percent of sales forecast of inventories	$\text{Inventory forecast} = \frac{\text{sales forecast}}{\text{sales}} \times \frac{\text{inventories}}{\text{sales}}$	• An estimate of inventories for a particular sales forecast and assuming the inventories to sales ratio is constant • We can substitute any asset or liability for inventories in this equation so long as that asset or liability is expected to vary proportionately with sales.
Discretionary financing needed (<i>DFN</i>)	$DFN = \text{predicted change in total assets} - \text{predicted change in spontaneous liabilities} - \text{predicted change in retained earnings}$	• An estimate of the amount of new funding the firm's management must obtain from new sources that they must actively negotiate • Spontaneous funding and retained earnings are passively raised as a result of the firm's ongoing operations.

borrowing or a new equity offering. Note that when sales grow at 6.667 percent, the firm's *DFN* will be exactly zero. For firms that have limited sources of external financing or choose to grow through internal financing plus spontaneous financing, it is important that they be able to estimate the sales growth rate that they can “afford,” which in this case is 6.667 percent.

Concept Check

1. If we cannot predict the future perfectly, then why do firms engage in financial forecasting?
2. Why are sales forecasts so important to developing a firm's financial plans?
3. What is the percent of sales method of financial forecasting?
4. What are some examples of spontaneous and discretionary sources of financing?
5. What is the distinction between discretionary financing needs (*DFN*) and external financing needs (*EFN*)?

Limitations of the Percent of Sales Forecasting Method



Describe the limitations of the percent of sales forecast method.

The percent of sales method of financial forecasting provides reasonable estimates of a firm's financing requirements only when asset requirements and financing sources can be accurately forecast as a constant percent of sales. For example, predicting inventories for 2013 using the percent of sales method involves the following equation.

$$\text{Predicted inventories for 2014} = \left(\frac{\text{inventories for 2013}}{\text{sales for 2013}} \right) \times \text{predicted sales for 2014}$$

Figure 14-2A depicts this predictive relationship. Note that the percent of sales predictive model is simply a straight line that passes through the origin (that is, has a zero intercept). There are some fairly common instances in which this type of relationship fails to describe the relationship between an asset category and sales. Two such examples involve assets for which there are scale economies and assets that must be purchased in discrete quantities (“lumpy assets”).

Economies of scale are sometimes realized from investing in certain types of assets. For example, a new computer system is likely to support a firm's operations over a wide range of firm sales. This means that these assets do not increase in direct proportion to sales. Figure 14-2B reflects one instance in which the firm realizes economies of scale from its investment in inventory. Note that inventories as a percentage of sales decline from 120 percent of sales, or \$120 when sales are \$100, to 30 percent of sales, or \$300 when sales equal \$1,000. This reflects the fact that there is a fixed component of inventories (in this case \$100) that the firm must have on hand regardless of the level of sales, plus a variable

FIGURE 14-2A Percent of Sales Forecast

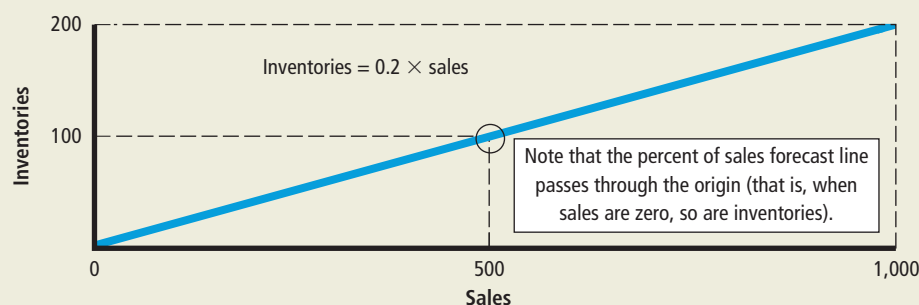
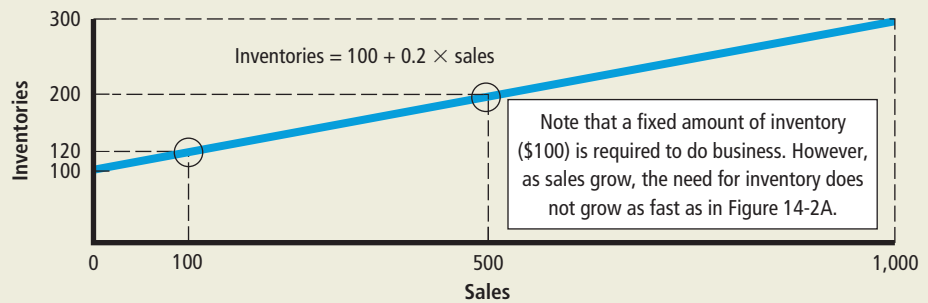
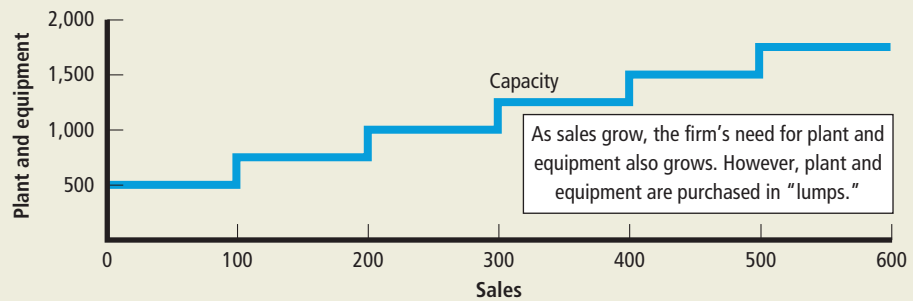


FIGURE 14-2B Economies of Scales**FIGURE 14-2C Economies of Scale with Lumpy Investments**

component (20 percent of sales). In this instance the predictive equation for inventories is as follows:

$$\text{Inventories}_t = a + b \text{ sales}_t$$

In this example, a (the **intercept**² of the inventories equation) is equal to 100 and b (the **slope coefficient** in the equation) is 0.20.

Figure 14-2C is an example of *lumpy assets*, that is, assets that must be purchased in large, nondivisible components. For example, if the firm spends \$500 on plant and equipment, it can produce up to \$100 in sales per year. If it spends another \$500 (for a total of \$1,000), then it can support sales of \$200 to \$300 per year, and so forth. Note that when a block of assets is purchased, it creates excess capacity until sales grow to the point at which the capacity is fully used. The result is a step function like the one depicted in Figure 14-2C. Thus, if the firm does not expect sales to exceed the current capacity of its plant and equipment, there would be no projected need for added plant and equipment capacity.

intercept the constant term in a linear equation. This is the value predicted in a linear equation for the item being forecast (e.g., operating expenses) where revenues are equal to zero.

slope coefficient the rate of change in the item being forecast with a linear equation and the change in sales.



b³ Prepare a cash budget and use it to evaluate the amount and timing of a firm's financing needs.

budget an itemized forecast of a company's expected revenues and expenses for a future period.

Constructing and Using a Cash Budget

The cash budget, like the pro forma income statement and pro forma balance sheet, is an essential tool of financial planning. The cash budget contains a detailed listing of planned cash inflows and outflows for each year of the planning period.

Budget Functions

A **budget** is simply a *forecast of future events*. For example, students preparing for final exams make use of time budgets to help them allocate their limited preparation time among their

²Economies of scale are evidenced by the nonzero intercept value. However, scale economies can also result in nonlinear relationships between sales and a particular asset category. Later, when we discuss cash management, we will find that one popular cash management model predicts a nonlinear relationship between the optimal cash balance and the level of cash transactions.

ETHICS IN FINANCIAL MANAGEMENT

TO BRIBE OR NOT TO BRIBE

The pressure to “get the forecast right” can be tremendous, and these pressures can lead managers to engage in practices (especially in underdeveloped countries) of offering bribes and pay-offs to public officials because they are considered the norm in business transactions. This raises a perplexing ethical question. If paying bribes is not considered unethical in a foreign country, should you consider it unethical to make these payments?

This situation provides an example of an ethical issue that gave rise to legislation. The Foreign Corrupt Practices Act of 1977 (as amended in the Omnibus Trade and Competitiveness Act of 1988) established criminal penalties for making payments to foreign officials, political parties, or candidates in order to obtain or retain business. Ethical problems are frequently areas

just outside the boundaries of current legislation and often lead to the passage of new legislation.

Consider the following question: If you were involved in negotiating an important business deal in a foreign country and the success or failure of the deal hinged on whether you paid a local government official to help you consummate the deal, would you authorize the payment? Assume that the form of the payment is such that you do not expect to be caught and punished; for example, your company agrees to purchase supplies from a family member of the government official at a price slightly above the competitive price. Can you see any pitfalls related to such a deal?

courses. Students also must budget their financial resources among competing uses, such as books, tuition, food, rent, clothes, and extracurricular activities.

Budgets perform three basic functions for a firm.

- ◆ First, they indicate the amount and timing of the firm’s needs for future financing.
- ◆ Second, they provide the basis for taking corrective action in the event budgeted figures do not match actual or realized figures.
- ◆ Third, budgets provide the basis for performance evaluation and control. Plans are carried out by people, and budgets provide benchmarks that management can use to evaluate the performance of those responsible for carrying out those plans and, in turn, to control their actions.

Concept Check

1. What, in words, is the fundamental relationship (equation) used in making percent of sales forecasts?
2. Under what circumstances does a firm violate the basic relationship underlying the percent of sales forecast method?

The Cash Budget

The **cash budget** represents a *detailed plan of future cash flows* and is composed of four elements: cash receipts, cash disbursements, net change in cash for the period, and new financing needed.

cash budget a detailed plan of future cash flows. This budget is composed of four elements: cash receipts, cash disbursements, net change in cash for the period, and new financing needed.

EXAMPLE 14.1

Constructing a cash budget

To demonstrate the construction and use of the cash budget, consider Salco Furniture Company Inc., a regional distributor of household furniture. Salco is in the process of preparing a monthly cash budget for the upcoming 6 months (January through June 2014). The company’s sales are highly seasonal, peaking in the months of March through May. Roughly 30 percent of Salco’s sales are collected 1 month after the sale, 50 percent 2 months after the sale, and the remainder during the third month following the sale.

Salco attempts to pace its purchases with its forecast of future sales. Purchases generally equal 75 percent of sales and are made 2 months in advance of anticipated

sales. Payments are made in the month following purchases. For example, June sales are estimated at \$100,000; thus, April purchases are $0.75 \times \$100,000 = \$75,000$. Correspondingly, payments for purchases in May equal \$75,000. Wages, salaries, rent, and other cash expenses are recorded in Table 14-3, which shows Salco's cash budget for the 6-month period ended in June 2011. Additional expenditures are recorded in the cash budget related to the purchase of equipment in the amount of \$14,000 during February and the repayment of a \$12,000 loan in May. In June, Salco will pay \$7,500 interest on its \$150,000 in long-term debt for the period of January to June 2011. Interest on the \$12,000 short-term note repaid in May for the period January through May equals \$600 and is paid in May.

Salco currently has a cash balance of \$20,000 and wants to maintain a minimum balance of \$10,000. Additional borrowing necessary to maintain that minimum balance is estimated in the final section of Table 14-3. Borrowing takes place at the beginning of the month in which the funds are needed. Interest on the borrowed funds equals 12 percent per annum, or 1 percent per month, and is paid in the month following the one in which funds are borrowed. Thus, interest on funds borrowed in January will be paid in February equal to 1 percent of the loan amount outstanding during January.

STEP 1: FORMULATE A SOLUTION STRATEGY

Construct a cash budget that includes estimates of the firm's cash inflows and outflows for each of the next 6 months. This requires the preparation of estimates of monthly revenues and expenses, but this is not the end of the process. The analyst must then estimate when the revenues will actually be received (cash sales and collection of accounts receivable) as well as when the expenses will actually be paid. Once these estimates have been prepared, we can construct the cash budget and estimate the change in cash for the firm in each month of the forecast period.

STEP 2: CRUNCH THE NUMBERS

Table 14-3 contains the monthly cash budget and all the supporting estimates that are required.

STEP 3: ANALYZE YOUR RESULTS

The financing-needed line in Salco's cash budget determines that the firm's cumulative short-term borrowing will rise to \$97,599 by May. However, this need for borrowing begins to subside in June and the firm is able to reduce its borrowing to \$79,875. Note that the cash budget indicates not only the amount of financing needed during the period but also when the funds will be needed.

ETHICS IN FINANCIAL MANAGEMENT

BEING HONEST ABOUT THE UNCERTAINTY OF THE FUTURE

Put yourself in the shoes of Ben Tolbert, who is the CFO of Bonajet Enterprises. Ben's CEO is scheduled to meet with a group of outside analysts tomorrow to discuss the firm's financial forecast for the last quarter of the year. Ben's analysis suggests that there is a very real prospect that the coming quarter's results could be very disappointing. How would you handle Ben's dilemma?

As Ben looks over a draft of the report he must submit to the company CEO, he becomes increasingly concerned. Although the forecast is below initial expectations, this is not what worries Ben. The problem is that some of the basic assumptions underlying his prediction might not come true. If this is the case, then the company's performance for the last

quarter of the year will be dramatically below its annual forecast. The result would be a potentially severe reaction in the investment community, causing a downward adjustment of unknown proportions in the firm's stock price.

Bonajet's CEO is a no-nonsense guy who really doesn't like to see his CFO hedge his predictions, so Ben is under pressure to decide whether to ignore the downside prospects or make them known to his CEO. Complicating matters is the fact that the worst-case scenario would probably give rise to a reorganization of Bonajet that would lead to substantial layoffs of its workforce. Here is Ben's dilemma: what should he tell the CEO in their meeting tomorrow morning?

TABLE 14-3 Salco Furniture Co. Inc. Cash Budget for 6 Months Ended June 30, 2014

	A	B	C	D	E	F	G	H	I	J	K	L
	October	November	December	January	February	March	April	May	June	July	August	
1												
2	Worksheet											
3	Sales (forecasted)	55,000	62,000	50,000	60,000	75,000	88,000	100,000	110,000	100,000	80,000	75,000
4	Purchases (75% of sales in 2 months)			56,250	66,000	75,000	82,500	75,000	60,000	56,250		
5												
6	Cash Receipts											
7	Collections:											
8	First Month after sale (30%)				15,000	18,000	22,500	26,400	30,000	33,000		
9	Second Month after sale (50%)				31,000	25,000	30,000	37,500	44,000	50,000		
10	Third Month after sale (20%)				11,000	12,400	10,000	12,000	15,000	17,800		
11	Total Cash Receipts				57,000	55,400	62,500	75,900	89,000	100,800		
12												
13	Cash Disbursements											
14	Payments (one-month lag of purchases from row 4)				56,250	66,000	75,000	82,500	75,000	60,000		
15	Wages and Salaries				3,000	10,000	7,000	8,000	6,000	4,000		
16	Rent				4,000	4,000	4,000	4,000	4,000	4,000		
17	Other Expenses				1,000	500	1,200	1,500	1,500	1,200		
18	Interest expense on existing debt ^a								600	7,500		
19	Taxes						4,480			5,200		
20	Purchase of Equipment					14,000						
21	Loan Repayment ^b								12,000			
22	Total Cash Disbursements				64,250	94,500	91,680	96,000	99,100	81,900		
23												
24	Net Change in Cash for the Period				(7,250)	(39,100)	(29,180)	(20,100)	(10,100)	18,700		
25	Plus: Beginning cash balance				20,000	12,750	10,000	10,000	10,000	10,000		
26	Less: Interest on short-term borrowing				0	0	(364)	(659)	(866)	(976)		
27	Equals: Ending cash balance before short-term borrowing				12,750	(26,350)	(19,524)	(10,759)	(966)	27,724		
28												
29	New Financing Needed ^c				0	36,350	29,524	20,759	10,966	(17,724) ^d		
30	Ending cash balance				12,750	10,000	10,000	10,000	10,000	10,000		
31	Cumulative borrowing				0	36,350	65,874	86,633	97,599	79,875		
32												
33												
34	^a An interest payment of \$600 on the \$12,000 loan is due in May, and an interest payment of \$7500 on the \$150,000 long-term debt is due in June.											
35	^b The principal amount of the \$12,000 loan is also due in May.											
36	^c The amount of financing that is required to raise the firm's ending cash balance up to its \$10,000 desired cash balance.											
37	^d Negative financing needed simply means the firm has excess cash that can be used to retire a part of its short-term borrowing from prior months.											
38												

Concept Check

1. What is a cash budget?
2. How is a cash budget used in financial planning?

Chapter Summaries

Use the percent of sales method to forecast the financing requirements of a firm. (pgs. 437–443)



SUMMARY: The percent of sales method is commonly used to forecast a firm's assets, liabilities, and expenses. These forecasts are then used to prepare a financial plan that can be used to estimate the firm's future financing requirements. Developing a financial forecast can be viewed as a three step process:

- STEP 1** Project the firm's sales revenues and expenses over the planning period.
- STEP 2** Estimate the levels of investment in current and fixed assets that are needed to support the sales forecast.
- STEP 3** Determine the firm's financing needs throughout the planning period that are required to fund its assets.

KEY TERMS

Percent of sales method, page 438 A method of financial forecasting that involves estimating the level of an expense, asset, or liability for a future period as a percent of the sales forecast. For

example, to estimate cost of goods sold for the current year the analyst might use the ratio of cost of goods sold for sales for last year multiplied by the sales forecast for the coming year.

Spontaneous financing, page 439 The credit and other accounts payable that arise spontaneously in the course of the firm's day-to-day operations.

Discretionary financing, page 439 Sources of financing that require an explicit decision on the part of the firm's management every time

funds are raised. Bank notes provide a typical example of this type of financing.

External financing needs, page 442 That portion of a firm's financing requirements that exceeds its sources of internal financing (i.e., the retention of current earnings) plus spontaneous sources of financing (e.g., trade credit).



Describe the limitations of the percent of sales forecast method. (pgs. 443–444)

SUMMARY: The equation or model that underlies a percent of sales forecast is a straight line that passes through the intercept. Very simply, if we are forecasting a firm's inventory balance, then the percent of sales method will predict a zero inventory balance for a zero sales level. Although this may be roughly correct for some firms, it is often the case that the firm will plan on having inventory items in stock even when the sales level drops very low. For example, the firm might intend to keep 100,000 units in stock as a minimum regardless of the level of predicted sales (this recognizes the fact that forecasting is highly imperfect and also you can't sell anything if you do not have something to sell). Thus, the percent of sales method of forecasting is probably "roughly" correct for most things but is inherently inexact where the relationship between the item being forecast and sales is not linear or where there is some minimum level of the item the firm plans to have, regardless of the level of firm sales.

KEY TERMS

Intercept, page 444 The constant term in a linear equation. This is the value predicted in a linear equation for the item being forecast (e.g., operating expenses) where revenues are equal to zero.

Slope coefficient, page 444 The rate of change in the item being forecast with a linear equation and the change in sales.



Prepare a cash budget and use it to evaluate the amount and timing of a firm's financing needs. (pgs. 444–447)

SUMMARY: The cash budget, like the pro forma income statement and balance sheet, is an essential tool of financial planning. Specifically, the cash budget contains estimates of cash inflows and outflows organized by month, quarter, or year spanning the entire financial planning period. As such, the cash budget provides the firm's CFO and other financial analysts the opportunity to try to forecast the effect of their operating decisions on the firm's operations.

KEY TERMS

Budget, page 444 An itemized forecast of a firm's expected revenues and expenses for a future period.

Cash budget, page 445 A detailed plan of future cash flows. This budget is composed of

four elements: cash receipts, cash disbursements, net change in cash for the period, and new financing needed.

Review Questions

All Review Questions are available in [MyFinanceLab](#).

14-1. United Parcel Service (UPS) provides package delivery services throughout the United States and the world. Discuss the impact of seasonal variations in the delivery business for forecasting the firm's financing requirements.

14-2. Discuss the shortcomings of the percent of sales method of financial forecasting.

14-3. What would be the probable effect on a firm's cash position of the following events?

- Rapidly rising sales
- A delay in the payment of payables

- c. A more liberal credit policy on sales (to the firm's customers)
- d. Holding larger inventories

14-4. A cash budget is usually thought of as a means of planning for future financing needs. Why would a cash budget also be important for a firm that has excess cash on hand?

Study Problems

All Study Problems are available in [MyFinanceLab](#).

14-1. (*Financial forecasting*) Zapatera Enterprises is evaluating its financing requirements for the coming year. The firm has been in business for only 1 year, but its CFO predicts that the firm's operating expenses, current assets, net fixed assets, and current liabilities will remain at their current proportion of sales.



Last year Zapatera had \$12 million in sales, and net income of \$1.2 million. The firm anticipates that next year's sales will reach \$15 million, with net income rising to \$2 million. Given its present high rate of growth, the firm retains all its earnings to help defray the cost of new investments.

The firm's balance sheet for 2013 is found below:

Zapatera Enterprises Inc.

BALANCE SHEET		
	12/31/2013	% OF SALES
Current assets	\$3,000,000	25%
Net fixed assets	6,000,000	50%
Total	<u>\$9,000,000</u>	
LIABILITIES AND OWNERS' EQUITY		
Accounts payable	\$3,000,000	25%
Long-term debt	2,000,000	NA ^a
Total liabilities	<u>\$5,000,000</u>	
Common stock	1,000,000	NA
Paid-in capital	1,800,000	NA
Retained earnings	1,200,000	
Common equity	<u>4,000,000</u>	
Total	<u>\$9,000,000</u>	

^aNot applicable. This figure does not vary directly with sales and is assumed to remain constant for purposes of making next year's forecast of financing requirements.

Estimate Zapatera's financing requirements (that is, total assets) for 2014 and its discretionary financing needs (DFN).

14-2. (*Pro forma accounts receivable balance calculation*) On March 31, 2013, Mike's Bike Shop had outstanding accounts receivable of \$17,500. Mike's sales are roughly evenly split between credit and cash sales, with the credit sales collected half in the month after the sale and the remainder 2 months after the sale. Historical and projected sales for the bike shop are given here:

MONTH	SALES	MONTH	SALES
January	\$15,000	March	\$25,000
February	20,000	April (projected)	30,000

- a. Under these circumstances, what should the balance in accounts receivable be at the end of April?
- b. How much cash did Mike's realize during April from sales and collections?

14-3. (*Financial forecasting*) Sambonoza Enterprises projects its sales next year to be \$4 million and expects to earn 5 percent of that amount after taxes. The firm is currently in the process of projecting its financing needs and has made the following assumptions (projections):

1. Current assets will equal 20 percent of sales, and fixed assets will remain at their current level of \$1 million.

2. Common equity is currently \$0.8 million, and the firm pays out half its after-tax earnings in dividends.
3. The firm has short-term payables and trade credit that normally equal 10 percent of sales, and it has no long-term debt outstanding.

What are Sambonoza's financing needs for the coming year?

14-4. (*Financial forecasting—percent of sales*) Tulley Appliances Inc. projects next year's sales to be \$20 million. Current sales are \$15 million, based on current assets of \$5 million and fixed assets of \$5 million. The firm's net profit margin is 5 percent after taxes. Tulley forecasts that its current assets will rise in direct proportion to the increase in sales but that its fixed assets will increase by only \$100,000. Currently, Tulley has \$1.5 million in accounts payable (which vary directly with sales), \$2 million in long-term debt (due in 10 years), and common equity (including \$4 million in retained earnings) totaling \$6.5 million. Tulley plans to pay \$500,000 in common stock dividends next year.

- a. What are Tulley's total financing needs (that is, total assets) for the coming year?
- b. Given the firm's projections and dividend payments plans, what are its discretionary financing needs?
- c. Based on your projections, and assuming that the \$100,000 expansion in fixed assets will occur, what is the largest increase in sales the firm can support without having to resort to the use of discretionary sources of financing?

14-5. (*Pro forma balance sheet construction*) Use the following industry-average ratios to construct a pro forma balance sheet for Phoebe's Cat Foods Inc.

Total asset turnover	1.5 times
Average collection period (assume 365-day year)	15 days
Fixed asset turnover	5 times
Inventory turnover (based on cost of goods sold)	3 times
Current ratio	2 times
Sales (all on credit)	\$3.0 million
Cost of goods sold	75% of sales
Debt ratio	50%
	Current liabilities
Cash	Long-term debt
Accounts receivable	Common stock plus
Net fixed assets	Retained earnings

14-6. (*Percent of sales forecasting*) Which of the following accounts would most likely vary directly with the level of a firm's sales? Discuss each briefly.

	YES	NO		YES	NO
Cash	—	—	Notes payable	—	—
Marketable securities	—	—	Plant and equipment	—	—
Accounts payable	—	—	Inventories	—	—

14-7. (*Financial forecasting—percent of sales*) The balance sheet of the Boyd Trucking Company (BTC) follows:

Boyd Trucking Company Balance Sheet, December 31, 2013 (\$ Millions)

Current assets	\$10	Accounts payable	\$ 5
Net fixed assets	<u>15</u>	Notes payable	0
Total	<u>\$25</u>	Bonds payable	10
		Common equity	<u>10</u>
		Total	<u>\$25</u>

BTC had sales for the year ended December 31, 2013, of \$25 million. The firm follows a policy of paying all net earnings out to its common stockholders in cash dividends. Thus, BTC generates

no funds from its earnings that can be used to expand its operations. (Assume that depreciation expense is just equal to the cost of replacing worn-out assets.)

- If BTC anticipates sales of \$40 million during the coming year, develop a pro forma balance sheet for the firm on December 31, 2014. Assume that current assets vary as a percent of sales, net fixed assets remain unchanged, and accounts payable vary as a percent of sales. Use notes payable as a balancing entry.
- How much “new” financing will BTC need next year?
- What limitations does the percent of sales forecast method suffer from? Discuss briefly.

14-8. (Financial forecasting—discretionary financing needs) The most recent balance sheet for the Armadillo Dog Biscuit Co. Inc. is shown in the following table. The company is about to embark on an advertising campaign, which is expected to raise sales from the current level of \$5 million to \$7 million by the end of next year. The firm is currently operating at full capacity and will have to increase its investment in both current and fixed assets to support the projected level of new sales. In fact, the firm estimates that both categories of assets will rise in direct proportion to the projected increase in sales.

Armadillo Dog Biscuit Co. Inc. (\$ Millions)

	PRESENT LEVEL	PERCENT OF SALES	PROJECTED LEVEL
Current assets	\$2.0		
Net fixed assets	3.0		
Total	<u>\$5.0</u>		
Accounts payable	\$0.5		
Accrued expense	0.5		
Notes payable	<u>0</u>		
Current liabilities	\$1.0		
Long-term debt	\$2.0		
Common stock	0.5		
Retained earnings	<u>1.5</u>		
Common equity	<u>\$2.0</u>		
Total	<u>\$5.0</u>		

The firm’s net profits were 6 percent of the current year’s sales but are expected to rise to 7 percent of next year’s sales. To help support its anticipated growth in asset needs next year, the firm has suspended plans to pay cash dividends to its stockholders. In past years a \$1.50-per-share dividend has been paid annually. Armadillo’s accounts payable and accrued expenses are expected to vary directly with sales. In addition, notes payable will be used to supply the funds needed to finance next year’s operations that are not forthcoming from other sources.

- Fill in the table and project the firm’s needs for discretionary financing. Use notes payable as the balancing entry for future discretionary financing needs.
- Compare Armadillo’s current ratio and debt ratio (total liabilities ÷ total assets) before the growth in sales and after. What was the effect of the expanded sales on these two dimensions of Armadillo’s financial condition?
- What difference, if any, would have resulted if Armadillo’s sales had risen to \$6 million in 1 year and \$7 million only after 2 years? Discuss only; no calculations are required.

14-9. (Forecasting discretionary financing needs) Fishing Charter Inc. estimates that it invests \$0.30 in assets for each dollar of new sales. However, \$0.05 in profits are produced by each dollar of additional sales, of which \$0.01 can be reinvested in the firm. If sales rise by \$500,000 next year from their current level of \$5 million, and the ratio of spontaneous liabilities to sales is 15 percent, what will be the firm’s need for discretionary financing? (*Hint:* In this situation you do not know what the firm’s existing level of assets is, nor do you know how those assets have been financed. Thus, you must estimate the change in financing needs and match this change with the expected changes in spontaneous liabilities, retained earnings, and other sources of discretionary financing.)

14-10. (Forecasting net income) In November of each year the CFO of Barker Electronics begins the financial forecasting process to determine the firm’s projected needs for new financing during the coming year. Barker is a small electronics manufacturing company located in Moline, Illinois, which is best known as the home of the John Deere Company. The CFO begins the process with the most recent year’s income statement, projects sales growth for the coming year, and then estimates net income and finally the additional earnings he can expect to retain and reinvest in the firm. The firm’s income statement for 2010 follows (in \$000):

Income Statement (\$000)

	YEAR ENDED DECEMBER 31, 2010
Sales	\$ 1,500
Cost of goods sold	(1,050)
Gross profit	\$ 450
Operating costs	(225)
Depreciation expense	(50)
Net operating profit	\$ 175
Interest expense	(10)
Earnings before taxes	\$ 165
Taxes	(58)
Net income	\$ 107
Dividends	\$ 20
Addition to retained earnings	\$ 87

The electronics business has been growing rapidly over the past 18 months as the economy recovers, and the CFO estimates that sales will expand by 20 percent in the next year. In addition, he estimates the following relationships between each of the income statement expense items and sales:

COGS/sales	70%
Operating expenses/sales	15%
Depreciation expense (\$000)	\$50
Interest expense (\$000)	\$10
Tax rate	35%

Note that for the coming year both depreciation expense and interest expense are projected to remain the same as in 2010.

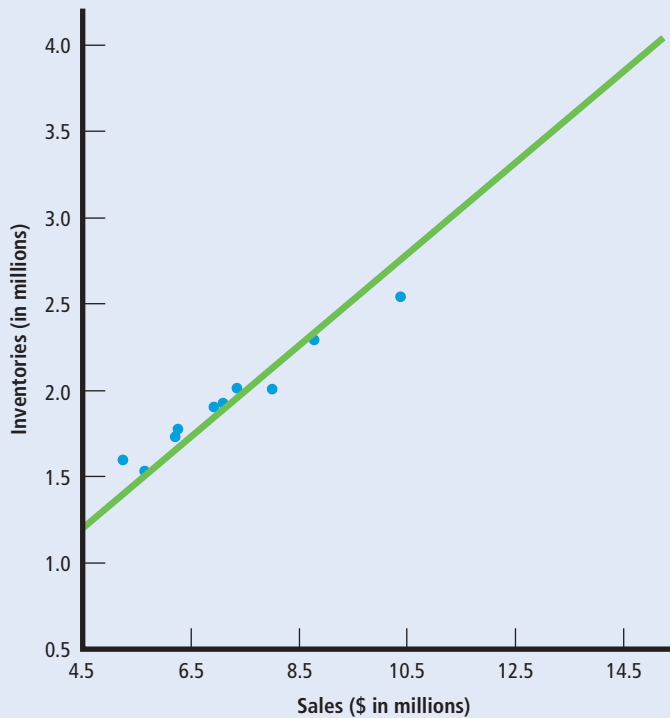
- Estimate Barker's net income for 2011 and its addition to retained earnings under the assumption that the firm leaves its dividends paid at the 2010 level.
- Reevaluate Barker's net income and addition to retained earnings where sales grow at 40 percent over the coming year. However, this scenario requires the addition of new plant and equipment in the amount of \$100,000, which increases annual depreciation to \$58,000 per year, and interest expense rises to \$15,000.



14-11. (*Misusing the percent of sales method*) The Caraway Seed Company has grown rapidly over the last decade and is trying to forecast the firm's inventory requirements for the next 5 years. Historical sales and inventories for the last 10 years are found below along with projected sales for the next 5 years.

YEAR	SALES	INVENTORIES
2005	\$ 5,250,000	\$1,590,924
2006	6,200,000	1,724,221
2007	6,940,000	1,899,573
2008	5,650,000	1,530,054
2009	6,255,000	1,772,059
2010	7,100,000	1,919,042
2011	7,350,000	2,012,025
2012	8,010,000	2,006,023
2013	8,775,000	2,292,119
2014	10,390,000	2,537,486
2015	11,500,000	
2016	12,000,000	
2017	12,500,000	
2018	13,000,000	
2019	13,500,000	

- Use the percent of sales method for forecasting Caraway's inventories for the next 5 years where the percent of sales is equal to the average of the percent of sales for the last 10 years.
- The following graph includes a plot of the historical relationship between inventories and sales along with a line representing the percent of sales forecast. Analyze the forecast line compared to the plot of inventory and sales to see if you see any problems with the percent of sales forecast. Discuss.



14-12. (Forecasting inventories) Findlay Instruments produces a complete line of medical instruments used by plastic surgeons and has experienced rapid growth over the past 5 years. In an effort to make more accurate predictions of its financing requirements, Findlay is currently attempting to construct a financial-planning model based on the percent of sales forecasting method. However, the firm's chief financial analyst (Sarah Macias) is concerned that the projections for inventories will be seriously in error. She recognizes that the firm has begun to accrue substantial economies of scale in its inventory investment and has documented this fact in the following data and calculations:

YEAR	SALES (\$000)	INVENTORY (\$000)	% OF SALES
2006	\$15,000	\$1,150	7.67%
2007	18,000	1,180	6.56%
2008	17,500	1,175	6.71%
2009	20,000	1,200	6.00%
2010	25,000	1,250	5.00%
Average			6.39%

- Plot Findlay's sales and inventories for the past 5 years. What is the relationship between these two variables?
- Estimate firm inventories for 2011, when firm sales are projected to reach \$30 million. Use the average percentage of sales for the past 5 years, the most recent percentage of sales, and your evaluation of the true relationship between the sales and inventories from part (a) to make three predictions.

14-13. (Cash budget) The Sharpe Corporation's projected sales for the first 8 months of 2014 follow on the next page:

January	\$190,000	May	\$300,000
February	120,000	June	270,000
March	135,000	July	225,000
April	240,000	August	150,000

Of Sharpe's sales, 10 percent is for cash, another 60 percent is collected in the month following the sales, and 30 percent is collected in the second month following sales. November and December sales for 2010 were \$220,000 and \$175,000, respectively.

Sharpe purchases its raw materials 2 months in advance of its sales. The purchases are equal to 60 percent of the final sales price of Sharpe's products. The supplier is paid 1 month after it makes a delivery. For example, purchases for April sales are made in February, and payment is made in March. In addition, Sharpe pays \$10,000 per month for rent and \$20,000 each month for other expenditures. Tax prepayments of \$22,500 are made each quarter, beginning in March.

The company's cash balance on December 31, 2013, was \$22,000. This is the minimum balance the firm wants to maintain. Any borrowing that is needed to maintain this minimum is paid off in the subsequent month if there is sufficient cash. Interest on short-term loans (12 percent) is paid monthly. Borrowing to meet estimated monthly cash needs takes place at the beginning of the month. Thus, if in the month of April the firm expects to have a need for an additional \$60,500, these funds would be borrowed at the beginning of April with interest of \$605 ($0.12 \times 1/12 \times \$60,500$) owed for April and paid at the beginning of May.

- Prepare a cash budget for Sharpe covering the first 7 months of 2014.
- Sharpe has \$200,000 in notes payable due in July that must be repaid or renegotiated for an extension. Will the firm have ample cash to repay the notes?

14-14. (*Preparation of a cash budget*) Lewis Printing has projected its sales for the first 8 months of 2014 as follows:

January	\$100,000	April	\$300,000	July	\$200,000
February	120,000	May	275,000	August	180,000
March	150,000	June	200,000		

Lewis collects 20 percent of its sales in the month of the sale, 50 percent in the month following the sale, and the remaining 30 percent 2 months following the sale. During November and December of 2013, Lewis's sales were \$220,000 and \$175,000, respectively.

Lewis purchases raw materials 2 months in advance of its sales. These purchases are equal to 65 percent of its final sales. The supplier is paid 1 month after delivery. Thus, purchases for April sales are made in February and payment is made in March.

In addition, Lewis pays \$10,000 per month for rent and \$20,000 each month for other expenditures. Tax prepayments of \$22,500 are made each quarter beginning in March. The company's cash balance as of December 31, 2013, was \$28,000; a minimum balance of \$25,000 must be maintained at all times to satisfy the firm's bank line of credit agreement. Lewis has arranged with its bank for short-term credit at an interest rate of 12 percent per annum (1 percent per month) to be paid monthly. Borrowing to meet estimated monthly cash needs takes place at the end of the month, and interest is not paid until the end of the following month. Consequently, if the firm needed to borrow \$50,000 during April, then it would pay \$500 ($= 0.01 \times \$50,000$) in interest during May. Finally, Lewis follows a policy of repaying its outstanding short-term debt in any month in which its cash balance exceeds the minimum desired balance of \$25,000.

- Lewis needs to know what its cash requirements will be for the next 6 months so that it can renegotiate the terms of its short-term credit agreement with its bank, if necessary. To evaluate this problem, the firm plans to evaluate the impact of a ± 20 percent variation in its monthly sales efforts. Prepare a 6-month cash budget for Lewis and use it to evaluate the firm's cash needs.
- Lewis has a \$20,000 note due in June. Will the firm have sufficient cash to repay the loan?

Mini Case

This Mini Case is available in [MyFinanceLab](#).

Phillips Petroleum is an integrated oil and gas company with headquarters in Bartlesville, Oklahoma, where it was founded in 1917. The company engages in petroleum exploration and

production worldwide. In addition, it engages in natural gas gathering and processing, as well as petroleum refining and marketing primarily in the United States. The company has three operating groups: Exploration and Production, Gas and Gas Liquids, and Downstream Operations, which encompasses Petroleum Products and Chemicals.

In the mid-1980s, Phillips engaged in a major restructuring following two failed takeover attempts, one led by T. Boone Pickens and the other by Carl Ichan.³ The restructuring resulted in a \$4.5 billion plan to exchange a package of cash and debt securities for roughly half the company's shares and to sell \$2 billion worth of assets. Phillips's long-term debt increased from \$3.4 billion in late 1984 to a peak of \$8.6 billion in April 1985.

During 1992, Phillips was able to strengthen its financial structure dramatically. Its subsidiary Phillips Gas Company completed an offering of \$345 million of Series A 9.32% cumulative preferred stock. As a result of this action and prior years' debt reductions, the company lowered its long-term debt-to-capital ratio over the past 5 years from 75 percent to 55 percent. In addition, the firm refinanced over a billion dollars of its debt at reduced rates. A company spokesman said, "Our debt-to-capital ratio is still on the high side, and we'll keep working to bring it down. But the cost of debt is manageable, and we're beyond the point where debt overshadows everything else we do."⁴

Highlights of Phillips's financial condition from 1986 to 1992 are found in the accompanying table. These data reflect the company's financial restructuring following the downsizing and reorganization of Phillips's operations begun in the mid-1980s.

**Summary Financial Information for Phillips Petroleum Corporation:
1986 to 1992 (in Millions of Dollars Except for per Share Figures)**

	1986	1987	1988	1989	1990	1991	1992
Sales	\$10,018.00	\$10,917.00	\$11,490.00	\$12,492.00	\$13,975.00	\$13,259.00	\$12,140.00
Net income	228.00	35.00	650.00	219.00	541.00	98.00	270.00
EPS	0.89	0.06	2.72	0.90	2.18	0.38	1.04
Current assets	2,802.00	2,855.00	3,062.00	2,876.00	3,322.00	2,459.00	2,349.00
Total assets	12,403.00	12,111.00	11,968.00	11,256.00	12,130.00	11,473.00	11,468.00
Current liabilities	2,234.00	2,402.00	2,468.00	2,706.00	2,910.00	2,503.00	2,517.00
Long-term debt	8,175.00	7,887.00	7,387.00	6,418.00	6,505.00	6,113.00	5,894.00
Total liabilities	10,409.00	10,289.00	9,855.00	9,124.00	9,411.00	8,716.00	8,411.00
Preferred stock	270.00	205.00	0.00	0.00	0.00	0.00	359.00
Common equity	1,724.00	1,617.00	2,113.00	2,132.00	2,719.00	2,757.00	2,698.00
Dividends per share	2.02	1.73	1.34	0.00	1.03	1.12	1.12

Source: Phillips annual reports for 1986 to 1992.

Phillips's managers are currently developing its financial plans for the next 5 years and want to develop a forecast of its financing requirements. As a first approximation, they have asked you to develop a model that can be used to make "ballpark" estimates of the firm's financing needs under the proviso that existing relationships found in the firm's financial statements remain the same over the period. Of particular interest is whether Phillips will be able to further reduce its reliance on debt financing. You may assume that Phillips's projected sales (in millions) for 1993 through 1997 are as follows: \$13,000; \$13,500; \$14,000; \$14,500; and \$15,500.

- Project net income for 1993 to 1997 using the percent of sales method based on an average of this ratio for 1986 to 1992.
- Project total assets and current liabilities for 1993 to 1997 using the percent of sales method and your sales projections from part (a).
- Assuming that common equity increases only as a result of the retention of earnings and holding long-term debt and preferred stock equal to its 1992 balances, project Phillips's discretionary financing needs for 1993 to 1997. (*Hint:* Assume that total assets and current liabilities vary as a percentage of sales as per your answers to part (b). In addition, assume that Phillips plans to continue to pay its dividends of \$1.12 per share in each of the next 5 years.)

³This discussion is based on a story in the *New York Times*, January 7, 1986.

⁴From *SEC Online*, 1992.